



INSTRUCTION NOTE FOR MOUNTING AND MAINTENANCE OF CENTRIFUGAL FANS, HIGH TEMPERATURE AND SMOKE EXHAUSTERS

This note assembles the necessary instructions for the installation, maintenance and storage together with the using limits of centrifugal fans (see also the instructions provided by the manufacturer of the motor).

The centrifugal fans equipped with electrical motors, whose instruction are referring to, are made for operating in industrial areas. This document gives consequently information that could be only used by qualified people. This information must be therefore completed with legislative clauses and the most recently technical norms and shall never act as a substitute of it. Centrifugal fans with electrical motors present dangerous parts. An inaccurate use, the protection setting-of, the undoing of the protection disposal, inspection and maintenance deficiencies could damage equipment and be dangerous for people.

In particularly, the staff must be informed of the danger when touching:

- switched-on parts,
- rotating parts,
- hot surfaces.

The person in charge of the security has to be sure that the ventilator was moved, installed, inspected, looked after and exclusively repaired by a qualified person that must have consequently:

- a technical training and specific knowledge,
- knowledge of technical norms and applicable laws,
- knowledge of the installation and the main security prescription (local and national),
- the ability of knowing and avoiding any possible dangers.

Any work on the ventilator must be done according the responsible of security and after having verified that:

- the equipment is switched-off and that no parts of the motor, including eventual auxiliaries, is under tension,
- the equipment is completely stopped and that any danger of accidental restarting is excluded.

When using the thermic protection with automatically re-establishment, allow appropriate measures in order to avoid dangers bound with the possibility of an improvised recovery.

A ventilator is a product destined to be used in industrial areas. Therefore, extra measures of protection should be adopted and guaranteed by the responsible of installation in case of it could need more restrictive protection conditions.

A) SETTING UP

The installer is responsible for the choice of the ventilator used for a given installation after having analysed the eventual danger existing in the zone of installation, according applicable laws.

The ventilator is a mechanical component incorporated to an other machine (separate or belonging to an installation) therefore the person in charge of installation must assure that, during running, the level of safety for people an equipment against eventual accidental contacts with moving parts must be appropriate.

The conditions of functioning different to normal ones must always be defined when placing the order, so that the ventilator is not running in conditions that compromise security and performances. Information concerning the utilization of the ventilator in explosive atmosphere is defined when selecting the equipment.

1) Precautions to be taken before set up :

- Check that the equipment is conform to your order and our delivery order (any order has its receipt acknowledgement),
- Insure that the motor is appropriate with the functioning at the predicted conditions,
- Check that the equipment has not been damaged during transport, storage or handling (guarantee only if reserve of the transporter),
- Manipulate the instrument with care, do not make it roll or shock parts that could damage the balance of the wheel,
- Insure by hand-driving that the impeller rotates freely on its shaft (that there isn't any foreign bodies),
- Check the proper tightening of the bolts,
- Check that all the safety devices (electrical and mechanical) are on service,
- Check that the installation has been done correctly,
- Take all the precautions in order that not any foreign bodies could penetrate into the fan and come in contact with the wheel.

2) Set up :

Operations on the ventilator must be executed only when the machine has been stopped and switched off.

- Insure that support and connection are plane to avoid any distortion of the fan and its connection during fixation,
- Insure that the wheel rotates freely,

- When the fan is mounted on anti-vibration mountings, the following accessories are required: common plate for fan and motor, inlet and/or outlet connection by supply sleeves,
- Check the alignment of supply sleeves with connection sleeves,
- Ambient temperature around motor must not exceed 40°C.
- If it's possible, the fan should be mounted in a way that allows removing the motor-turbine set in order to clean it without totally dismantling the equipment.
- **When functioning with or without spiral, the set-up phase is under the installer's responsibility. Make sure that all the piled games are respected (conform to the master plan). Check that the spiral and/or the aspiration hole are at medium position (+-3mm) when mounting.**

3) **Transmission :**

Insure that there isn't any foreign bodies in the transmission (no grease)

- Check the alignment of the fan with the motor and the parallelism of the pulleys,
- Never use a lever to mount or dismount the belts (reduce the tension of the belt),
- Tender the belts by moving motor on its slides and lock it,
- Avoid excessive tension of the belt to obtain a slack strand (an excessive tension of belt provides an unusual wear of bearings and shaft, a too much weak tension can let the belt slip),
- Check the tightening of the bearings.

4) **Electrical connection :**

- Check that the electric current on mains corresponds with supplied voltage of motor,
- Refer to the instruction provided by the manufacturer of the motor,
- Follow the wiring diagram to be found on motor plate, terminal box or on cover of terminal box,
- Termic protection: a circuit-breaker is recommended. The termic setting must correspond to the motor amperage, a burnt motor is never under guarantee,
- The fan running can depend on the installation running,
- The fan can be controlled separately but it must start some seconds before the starting of the installation and must be stopped some minutes after the stopping of the installation.

Option : Security microswitch (opened or closed contact) mounted on the fan an ordering stopping of the network (foresee a visual and sonorous signalling) when the fan does not work.

5) **Starting up and setting :**

- Make sure that the rotation direction of the wheel corresponds to the direction of the arrows drawn on the external face of the external envelope,
 - Check that sound level and vibrations are corrects,
 - Airflow regulation pieces : open them progressively from the medium position,
 - Control absorbed power of the motor (it must be compatible with motor power),
- Control belts tension during the first hours of work. After a few days running, re-check the tension as the belts will have seated in and may be need adjustment. The belts must wear parallelly, a non parallel wear corresponds to a wrong alignment of the pulleys. In this case, change the complete set,
- Do not exceed the maximum speed and temperature, if fan is not adapted for overspeed and overheating ; insure of the good functioning after 50 hours of working,
 - Do not install a fan in a duct partially or totally closed to avoid pumping,
 - Insure that, during functioning, service conditions are normal (in particularly, that there aren't to important elevation of the ambient temperature and immoderate drop of tension).

NEVER STOP THE FAN WHEN GAZ ARE STILL WARM, EVEN IF THE NATURAL DRAUGHT IS SUFFICIENT

Nota Bene : In the case of an anomaly, stop the fan and call the AIRAP technical service or another Saqr-ATEX approved company.

B) INSPECTIONS

The long-range stability of the fans original characteristics must be guaranteed by a program of inspections and maintenance developed and applied by qualified technicians. The type of maintenance and the controls frequency depend on the functioning and conditions.

Generally, a first inspection is recommended after around 500 hours of functioning (after a year at most in any case) and the following inspections according to the programs fixed for lubrication or the general inspections.

Check that the fan and its motor are functioning regularly without noise or any unusual vibrations (when not, find the reason of the anomaly).

Insure that the ventilation of the electric motor is not disturbed by eventual deposit.

Check that the power cables do not present signs of deterioration and that the connexions are firmly closed; check that the conductors are in good condition.

Insure that the termic protection aren't inactivated and that there are correctly calibrated.



Control that no modifications that could have modified the electrical and mechanical functioning of the motor have been made.

Any irregularity or anomaly found during inspection must be immediately adjusted.

C) MAINTENANCE

Any operation on the fan must be done with the machine stopped, switched off and disconnected from the electrical net. All operations must be executed by respecting the prevention norms of workmen accidents as well as the security instructions.

1) Lubrication of the motor :

The instructions for setting up, maintenance and lubrication of the motor are supplied with the motor. The motor bearings being often lubricated for life, no intervention is required.

Exception : some motors have apparent grease nipples. The quality, quantity of grease and the lubrication periodical times are indicated on the motor plate.

2) Lubrication of the bearings :

The bearings with or without nipples are pre-lubricated.

- without nipples : lubricated for life,
- with nipples : do not over-lubricate too frequently (use a grease with a base Lithium).
- The bearings-block with a nipple allows a periodic lubrication.

To insure a good substitution and ejection of the worn grease, injection of fresh grease must be realized in low air-pressure, bearings in rotation (before, clean the head of nipple)

3) Accessories : Check appearance of supply sleeves and anti-vibration mountings.

4) Inspection door :

Some fans working with dust, smokes, . . . , are equipped with an access door. In that case, check:

- The cleanness of the wheel, the free rotation of the wheel, the proper tightening of the screw fixing the hub on the shaft.

On the other case, dismount the set motor/wheel and do a complete cleaning (if anything stays in the wheel, it can induce vibrations), dismount the balancing nippers settled on the blades.

- Check the proper tightening of the bolts.

Nota Bene: Never divide the hub from the wheel, this may lead to the loss of balance.

5) Transmission :

Check tension and appearance of belts,

Clean carefully belts. If any must be changed, replace the complete set,

Clean the pulleys.

In the case of an anomaly, stop the fan and call the AIRAP technical service or another Saqr-ATEX approved company.

6) Weatherproof :

Some ventilators are weatherproofed thanks to a mastic joint on the spiral and/or the accessories and also at the passing of motor/transmission shaft.

Check the cleanness of the joints and replace them if necessary.

D) STORAGE

- Fan must be kept under shelter, without dust, temperature and humidity,
- Obstruct inlet and outlet to avoid intrusion of foreign bodies,
- Every 6 months, let the impeller turn by hand, so that the weight does not apply to same point on bearings and move the stopping-place of the motor,
- After long storages, before setting up, grease or change of grease can be necessary on bearings of fan and motor (see also instructions of the manufacturer of the motor).

E) WARRANTY

- A fan is warranted for a period of 6 months from the delivery date. This warranty covers the supply of spare-parts, shipped by carriage to pay and the changing in our plant of defective pieces (the sending of the equipment will be paid by the customer),
- The user must respect speed and temperature limits before-mentioned,
- Our warranty, except reverse precision, covers use in clean air, in standard conditions of temperature (about 20°C).

IMPORTANT

No warranty can be accepted if the motor burns because of an insufficient protection, or if there is a stoppage of the fan during combustion, or if the temperature of smokes is excessive and induces a heat transmission by the motor-shaft that is not cooled.

For any claim or spare parts, precise the reference number of the fan, noted on the fan plate.