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INSTRUCTION NOTE HC-EX VENTILATOR
N° NI-HC03B

This note assembles the necessary instructions for the installation, maintenance and storage together with the using limits of the HC-EX ventilators made for explosive atmosphere (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.
For classified zones destined motors with protection mode (Eex-d or Eex-e), the protection group and the class of temperature must be adequate. When a X appears on the motor plate near the certificate number, the extra conditions planed for normal working must be controlled with the help of the certificate.
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),
- Check that the equipment has not been damaged during transport, storage or handling (guarantee only if reserve of the transporter),
- Insure that the motor is appropriate with the functioning at the predicted conditions,

- 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 that the electric voltage on mains corresponds with supplied voltage of motor,
- Check that all the safety devices (electrical and mechanical) are on service,
- Check that the installation has been correctly done,

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2) Set up

- 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,
- Take all the precautions in order that not any foreign bodies could penetrate into the fan and come in contact with the wheel, for that it must be fitted up with protection grids or filters arranged upstream or downstream,
- When the fan is mounted on anti-vibration mountings, the following accessories are required: common plate for fan and motor, inlet and outlet connection by supples sleeves,
- Check the alignment of supple sleeves with connection sleeves,
- Ambient temperature around motor must not exceed 40°C.

3) Electrical connection

- Follow the wiring diagram to be found on motor plate, terminal box or on cover of terminal box,
- Refer to the instruction provided by the manufacturer of the motor,
- Termic protection: a circuit-breaker is recommended. The termic setting must correspond to the motor amperage, a burnt motor is never under guarantee,
- **Appropriate selection and connection of thermic protection for Eex-e motors are fundamental in order to guarantee the class of temperature and security against any danger of eventual explosion,**
- The ventilator external envelope must be connected to the main earth receptacle.

4) 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,
- Control absorbed power of the motor (it must be compatible with motor power),
- 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,
- 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).

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 lubrification 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 maid.

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) Lubrification of the motor

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

2) Accessories When present check appearance of supple sleeves and anti-vibration mountings.

2) 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.

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

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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.

IMPORTANT

No warranty can be accepted if the motor buns because of an insufficient protection. For any claim or spare parts, precise the reference number of the fan, noted on the fan plate.

F) DESCRIPTIVE PLATES

This ventilator, classified in group II category 2, is meant to be used exclusively in zone 1 or 21, according to the data written on its descriptive plate.

Marking: CE Ex II 2 G or GD T3, T4, T5 or T6

This ventilator, classified in group II category 3, is meant to be used exclusively in zone 2 or 22, according to the data written on its descriptive plate.

Marking: CE Ex II 3 G or GD T3, T4, T5 or T6

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TYPE :
SERIAL Nb :

CASE FILE Nb :
DATE :

CE Ex **II 2 or 3**

→ **Name and Address of the constructor**

→ **Nomination of the ventilator type**

→ **Fabrication Nb corresponding with the receipt acknowledgement of the constructor**

→ **Reference Nb of the constructor's technical case file**

→ **Date of fabrication**

→ Normative symbols : CE conformity and explosive atmosphere. Group II – Category 2 information follow-up : G=Gas, steam or Fog or GD=dust, Maximal surface temperature T3,T4,T5 or T6.

Motor complementary marking: CE Ex II B or IIC T3, T4, T5 or T6

The data written on the motor plate comprise specific complementary inquiries:

EEx d	Antideflagration envelope against explosion.
EEx de	Antideflagration envelope and type marker box « e » .
EEx e	Antideflagration envelope, « increased security» type.
IIB or IIC **2 G or 2GD** **3G or 3GD** **T3, T4, T5 or T6**	Motor for surface installation (II) in the presence of gas or steam, 2G or 2GD category, appropriate for zone 1 et (with redundancy) zone 2. Motor maximal surface temperature.
XXX	Name of the laboratory who delivered the CE certificate type followed by the year of issue and the Nb of the CE certificate type.

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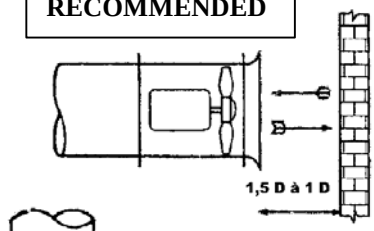
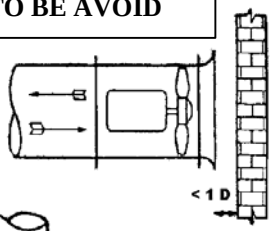
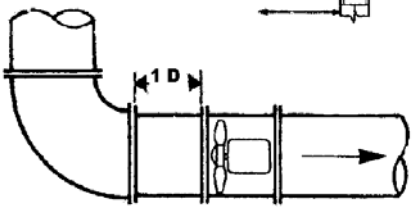
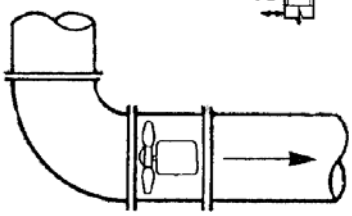
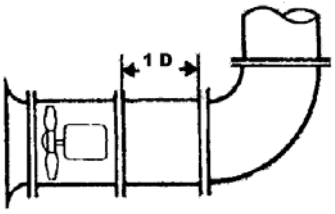
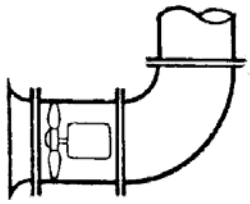
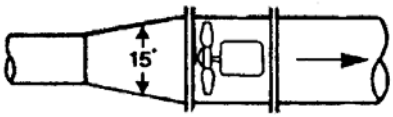
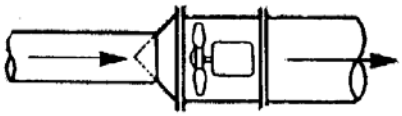
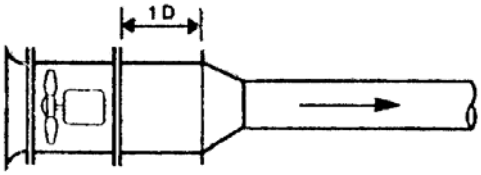
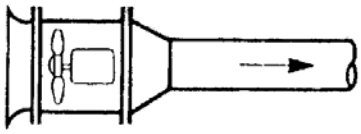
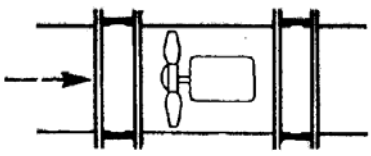
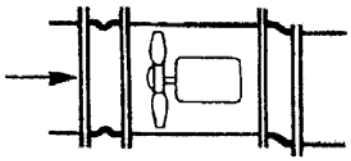
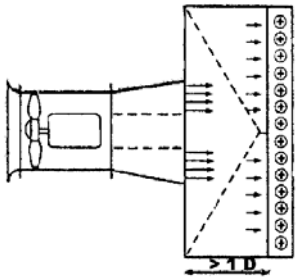
G) INSTALLATION INSTRUCTIONS

RECOMMENDED		TO BE AVOID
	1. An obstacle in inlet or outlet can create disturbances that reduce fan performances.	
	2. An elbow directly in inlet of a fan induces a reduction of datas ; this reduction comes from the non-uniformity of the air-flow through the impeller.	
	3. An elbow directly in outlet induces disturbances that increase power-loss of this elbow and reduce efficiency of the fan.	
	4. A sudden widening of section in inlet induces a disturbances area that is prejudicial to the good running of the fan.	
	5. A reduction directly in outlet induces a reduction of performances that can go up to 40%.	
	6. In case of supple mounting, insure that sleeves are correctly tightened to avoid any detachment of air-stream prejudicial to efficiency of the fan.	
	7. When an equipment such as battery, attenuator or else, is mounted below the fan, it is better to blow in a plenum equiped, in some cases, with a grille.