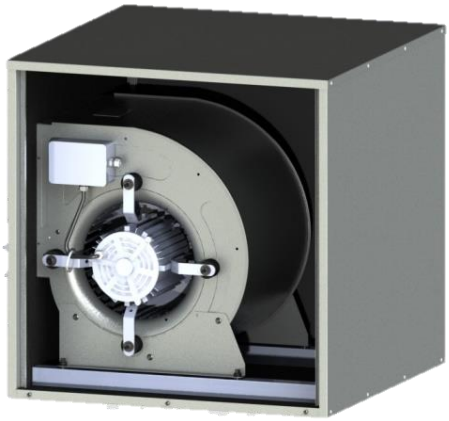
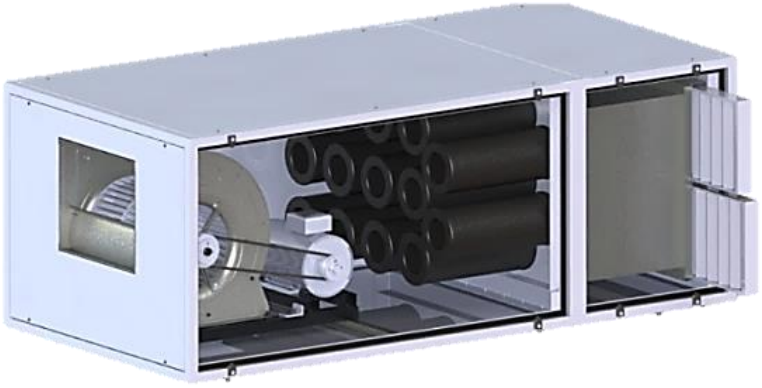
Operating instructions

Air boxes

MCK – VDI – CBT





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Index of revision	Amendment
Air boxes 1.0 – 09/ 2018	New Version

1. Safety notes

The following symbols refer to particular dangers or give advice for save operation.

Attention! Safety advice! Danger!

Danger from electric current or high Voltage!

Crush danger!

Danger! Do not step under hanging load!

Important information

2. Important information

Air boxes are designed and built comply with the requirements for health and safety of the EU Machinery Directive.

All Air boxes are tested before leave the factory checking they are working without any problem. The laboratory test and data sheet are available under request.

Nevertheless, air boxes can be dangerous:

- If they are not installed, operated and maintained by trained personnel.
- If they are not used for approved applications.

Please read these operating instructions carefully before starting to work with the air boxes . Observe the following warnings to prevent malfunctions or physical damage to both property and people.

Attention!
These operating instructions may be duplicated and forwarded to all people involved in the use of the air boxes , for information about potential dangers and their prevention.

The operating instructions:

- Describes the allowed use of the air boxes and protect against misuse.
- Contain safety notes which must be closely observed.
- Inform about the dangers in the use of the air boxes even when it is used in the correct way.
- Inform about important rules about safety and efficient use of air boxes

The producer is not responsible for any injury or damage that can occur in the case of not observance of the rules of this instruction manual.

Manufacture's guarantee doesn't apply following unauthorized and unacceptable conversions and alterations to the air boxes.

There is no responsibility for resultant damages!

3. Technical description

3.1 Air boxes description

Air extraction units with double inlet, belt driven or direct drive fans with asynchronous or brushless internal or external rotor motor; air extraction units with plug fans with asynchronous or brushless internal or external rotor motor, with built-in motors suitable for transporting clean air and other non-aggressive gases or vapors in accordance with the specific technical restrictions. Only for CBT series available an accessory called pressure sensor for filter units in accordance with the specific technical restrictions.

Correct use:

- The exclusive use of the air boxes in a stationary system.
- Ensure all maintenance.
- The use of the air boxes in environments with temperatures lower than the limit of use.

Improper use of the Air boxes

The use of the air boxes in the following ways is forbidden and may create risks:

- The use of the air boxes and the fans inside unbalanced, for example caused by deposits of dirt on the fan.
- The use of the air boxes in medical equipment.
- Submit the air boxes to external vibrations.
- Handling of solid parts by the air boxes.
- Painting of the air boxes .
- The use of the air boxes in potentially explosive areas.
- The use of the air boxes outside the limits of rpm, air flow rate and pressure.
- All application options that are not listed under proper use.
- Air boxes are designed and tested only for the extraction of air to the outside is necessary after filtration and deodorization stages not for air intake
- Cbt 10 and 20 are designed and tested only for an action of filtration and deodorization

Danger points: using the air boxes outside the limits may cause injury to people and material damage trough impeller breakage, the breaking of the fan shaft, fatigue failure, a fire due to sparks.

All components of the air boxes are made in unpainted galvanized sheet steel. The panels are not gas-tight. The motor can be closed or opened IP10/20/44/54, insulation class F or B, as shown on the label of the air boxes.

All motors are supplied with thermal contacts for the thermal protection of the motor, which intervene opening the electric circuit of the motor in case of the temperature of the engine reaches the threshold.

The electrical connections are inside the terminal box, special versions of the fan may not have the box and have a quick connector.

The air boxes are designed and manufactured to be incorporated into equipment and are not supplied with specific protections. The appropriate protection must to be taken in accordance with DIN EN ISO 13857.
Only after that, the air boxes can be set in operation.

3.2 Technical Data

Technical data and use limits are shown on the name plate of the air boxes, catalogs or in the data sheets and must be respected.

4. Transport

4.1 Transport damage

During transport, the air boxes can be damaged, before putting them into operation, check the integrity of the air boxes and packaging.

4.2 Instructions for handling and storage

The Air boxes must be handled with appropriate equipment depending on the weight and structure of the air boxes.
Lift the air boxes with the packaging. Do not lift by the fans by holding:

- On the impeller.
- From the shaft or from the electric motor.
- By the housing of the fan

The air boxes should be stored in its original packaging in a dry and dust free area (humidity <75%) and at temperatures between -20 ° C and + 40 ° C.
With storage of more than 1 year please check the bearings on soft running before mounting (turn the impeller by hand) Prior to putting in operation the gap distances of rotating components must also be checked.
Avoid a distortion of casing or blades or other damage

DANGER! Do no step under hanging load

5. Mounting/Installation

5.1 Mechanical Connection

Be careful not to cut or having impacts with the air boxes when you are removing it from the packaging. Use shoes anti-injury and cut-resistant gloves.

- The air boxes must be fixed to its support without stresses to the supporting structure.
- inappropriate loads may cause damages or mechanical fatigue failures.
- It is recommended, when it is possible, the use of flexible couplings for fixing the air boxes to reduce vibrations.

- To Improve the efficacy of mechanical clamping it is recommended to use special liquid tightening.

5.2 Electrical connection

All the product are without a plug , in this case the electrical connection of the air boxes may only be carried out by trained personnel.

As first operation, always connect ground and then the air boxes in accordance with your application, observing the circuit diagram on the label fan or the data sheet of the same.

Safety notes:

- Use only cables suitable for isolation, voltage, current, load, etc.. The ground wire (PE) must have a cross section more than or equal to the section of the other conductors.
- Ensure that there is an adequate protection against accidental contacts.

- Connect the air boxes only in a circuit which can be interrupted by a switch.
- When you working on the air boxes it is required to disconnect the equipment or the system in which the air boxes itself is integrated.
- Ensure that all electrical connections are made and are located in a dry area**.**

- Should the appliance be connected through a regulator, make sure that the regulator is proportionate to the power of the concerning appliance.
- Provide proper electric protection according to the installed air boxes

5.2.1 Preliminary operations

Check the data on the label's air boxes corresponds with the electrical data of the system where the air boxes is installed.

5.2.2 Motor protection

The motors are equipped with thermal contacts (TOP) that protect them against thermal overload by opening the inside circuit motor. On request the leads of the thermal contact can be external.

The motors are designed for operation S1 continual operation.

5.2.3 Connection check

- Make sure that the voltage is interrupted at all stages.
- Check the wiring of each electric pole.
- Insert all the wires inside the terminal box, without forcing.
- Close the terminal box through all the screws.

6. Commisioning

The motor surfaces are hot. Ensure that no combustible or flammable substance is placed close to the engine.
Check that there are no objects inside the air boxes and the air boxes or in the conduct that may be threw into the fan during operation.

The air boxes may be commissioned only if all safety devices are correctly installed and if the impeller is safeguarded in accordance with DIN EN ISO 13857.

6.1 Test run

The air boxes should be switched on to check that the direction of rotation of the impeller is correct, in case of the impeller doesn't run in the correct direct of rotation check the electrical connection.

When the air boxes reaches a stable speed of rotation, measure the electric current and verify that it is lower than the maximum air boxes current, in case of overcurrent switch off immediately the fan.

Check that the air boxes during operation does not generate unusual noises.

7. Maintenance

Before working on the air boxes it is imperative to ensure:

- **The drive motor is separated from the mains**
- **The impeller doesn't working**
- **No surface is hot**
- **There is no possibility of an uncontrolled running of the fan during the maintenance.**

Once you remove the power to the air boxes, wait at least 5 minutes before working on the electrical contacts.

Remove any dust deposit or other debris that is deposited during the operation of maintenance, with the most appropriate method.

Do not use high pressure jets, aggressive substances containing acids or solvents or pointed tools for cleaning the fan.

Periodically check the connections, if present, in order to verify their integrity.

The frequency control and maintenance must be established according to the type of operation and the working environment of the fan.

What should check?	How to verify?	Frequency control	Which remedies apply?
Check the integrity of the impeller.	Visual check.	At least once every 6 months.	Change the impeller.
Check the integrity of the cables.	Visual check.	At least once every 6 months.	Change the motor.
Verify the efficacy of mechanical connections.	Visual check.	At least once every 6 months.	Tightening.
Check the level of vibration.	Accelerometer.	At least once every 6 months.	Check the impeller balancing.
Carbon Filter	Any deodorization effect	At least once every 6 months.	Change the filter or recharge it with carbon
Textile Filter	Visual check.	At least once every 6 months.	Change the textile filter

Washable Filter	Visual check.	At least once every 6 months.	Wash it in accordance with the soap restriction
Textile Filter with Pressure sensor (accessory)	Sound alarm or lights alarm	Periodical check	Change the filter, wash the filter or change the pressure sensor if the filters are clean.

8. Faults

Do not make any repair on the fan. Return the fan for repair or replacement.

Faults	Possible cause	Relief
The impeller does not run in balanced way.	Imbalance	Clean the impeller. If the imbalance does not improve after cleaning, replace the impeller.
The motor does not work.	Mechanical lock	Interrupt the power supply and remove the blockage.
	Interruption of the power line	Check the power supply and restore it in case of failure.
	Incorrect electrical connection	Disconnect the power supply and check the wiring according to the wiring diagram.
	Overheating	Allow the engine to cool, check the cause of the overheating and restore the correct operation.
Textile Filter with Pressure sensor (accessory)	Sound alarm or lights alarm	If the filters are clean, change the pressure sensor if it goes in alarm several times.