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INDUSTRIAL AIR COOLERS AND BLAST FREEZERS

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

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This document **specifies the instructions** for installation, operating and maintenance of **Industrial Air Coolers and Blast Freezers (FSL and FES models)** manufactured by FRITERM A.Ş., Turkey.

1. GENERAL

The instructions below should be followed strictly for the health and safety reasons while installing and maintaining the equipments listed above.

Upon receipt, the equipment should be visually inspected, and in case of any damage or **deficiency**, the supplier should be notified within seven days.

2. HANDLING AND STORAGE

Check if there is any damage on product or on package.

Store the product in its original **package** in a dry area protected from the **improper weather conditions** or protect it from dirt and **environmental effects** until final installation is done.

Avoid exposure to extreme heat and cold.

Avoid excessive storage periods (one year of storage at maximum is recommended).

If the equipment is stationary for long periods in a humid atmosphere, the fans should be switched ON for minimum of two hours every month to remove any moisture that may have condensed within the motors.

During lifting, a suitable lifting tool like a forklift or a crane is to be employed.

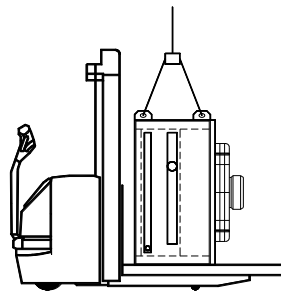


Figure 1. Handling scheme during carriage

3. INSTALLATION

The system installer is responsible that the inherent installation and security information are harmonized with the valid standards and guidelines (DIN EN 292 / 294).

The EMC guideline is to be observed in connection with the control units. The manufacturer or operator of the entire plant is responsible for keeping to the EMC guideline 89/336/EEC.

Before installing, it should be ensured that the technical specifications of the equipment are in accordance with the desired working conditions.

3.1. Location

The equipment is designed only for permanent installation. It should be fixed to a stable base.

The working fluid, the maximum working pressure and the voltage declared by the manufacturer should be suitable for the working environment.

The working area should be well ventilated and should not contain hazardous substances or explosives.

Air motion should not be adversely affected by obstructions and the inlet air should not be undesirably heated or cooled by **any** other equipment.

3.2. Mounting

Installation and electrical connection have to be performed **only** by qualified personnel.

Care should be taken while unpacking and installing of the products in order not to cause any damage to the tubes and piping connections.

It must be ensured that no electrical connection exists during installation.

The mounting position of the equipment should be in accordance with its design.

The method of mounting should be adequate to support the total operational forces.

The equipment should be mounted in such a way that no external vibration would be carried to the equipment and vibration caused by the equipment would be damped adequately.

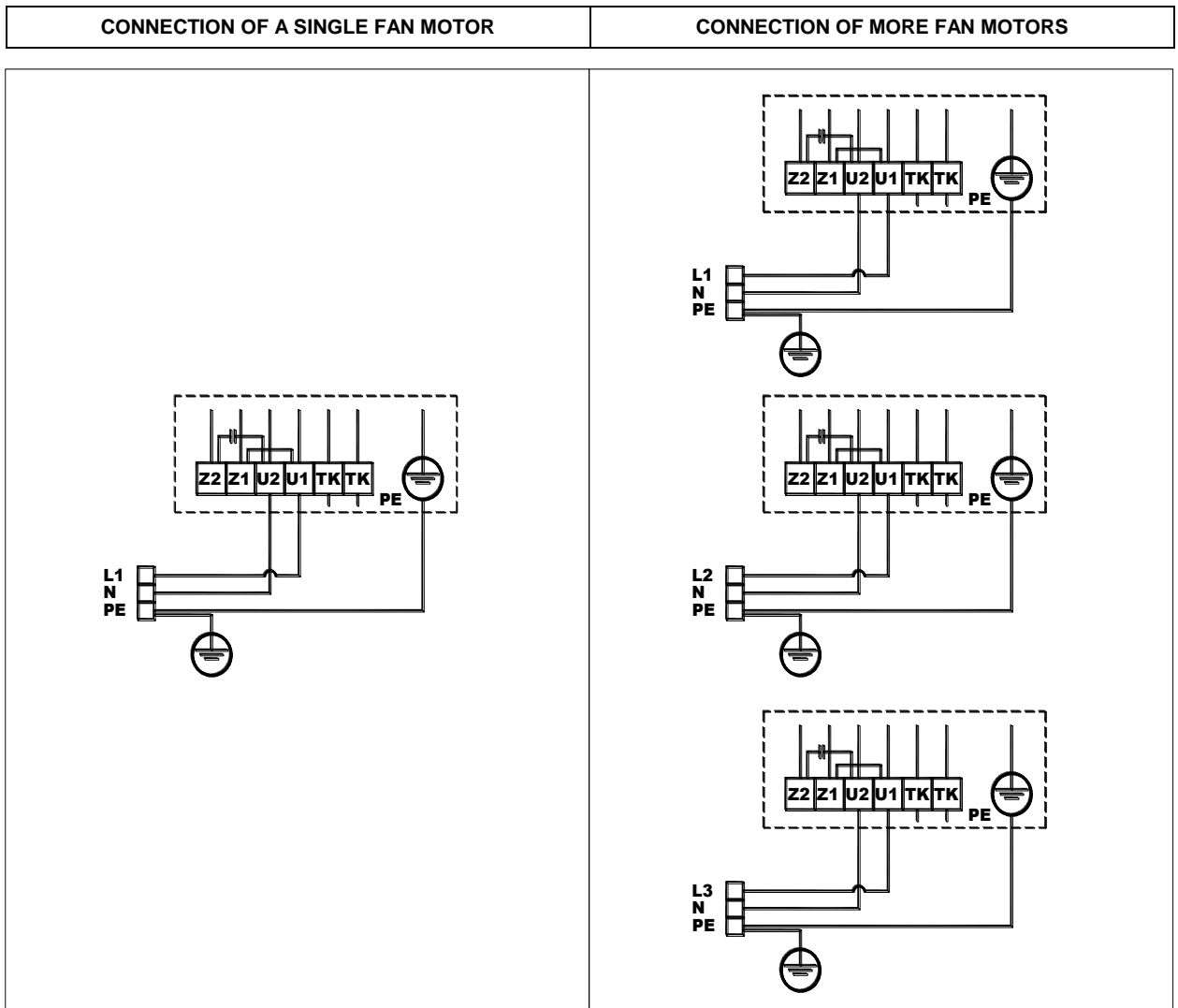


Figure 2. Ø630 mm single-phase fans connection

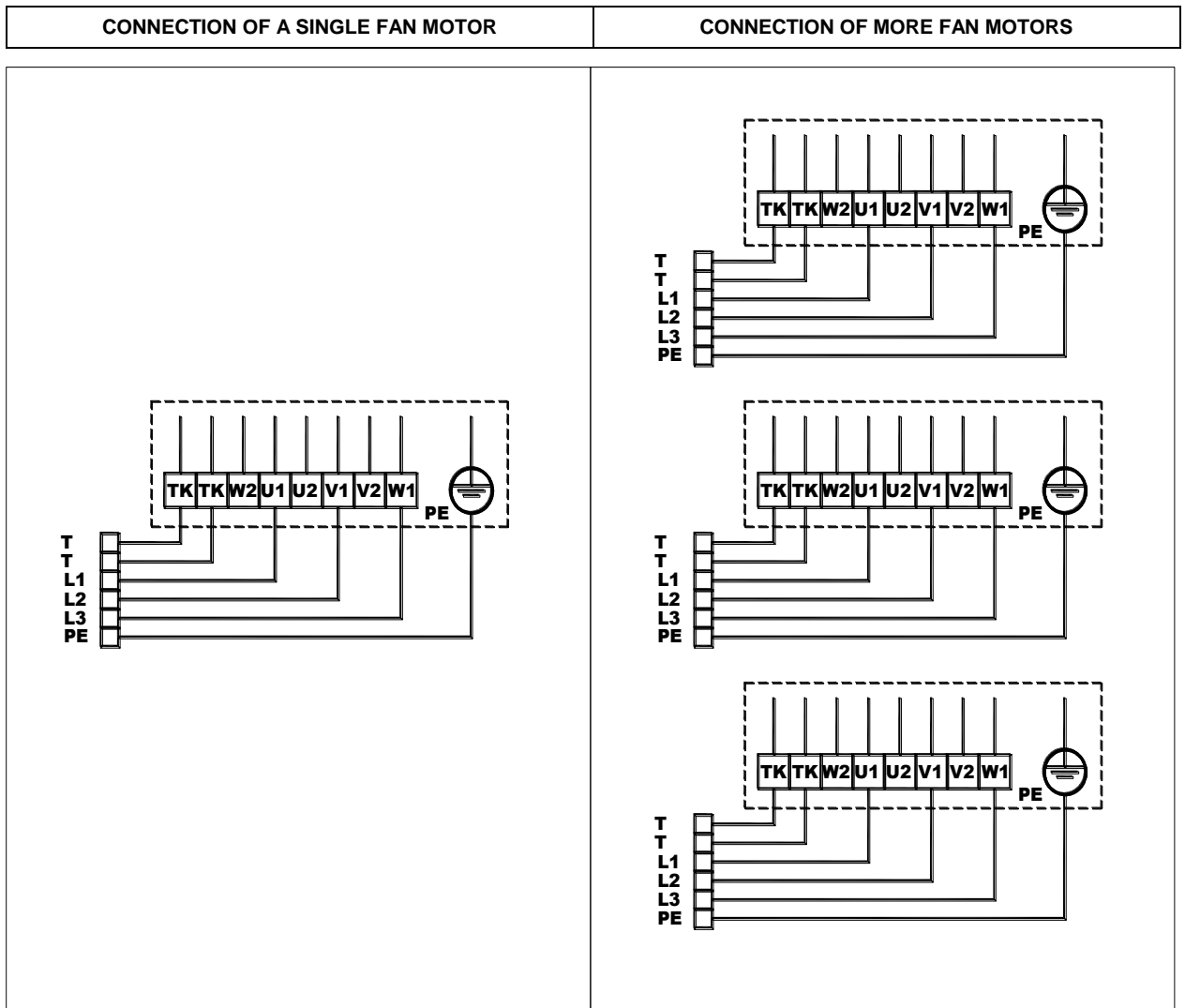


Figure 3. Ø800 mm three-phase fans connection

Electrical connection diagrams for fans. The fans described above are of standard products. Other suitable fans may be used with the same basis. Refer to product catalogs for the diameters and the number of the fans.

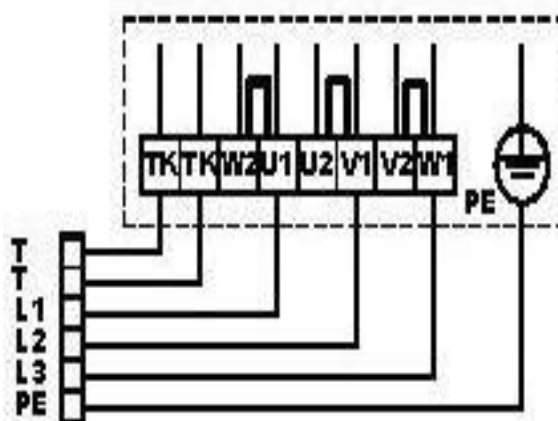


Figure 4. Three-phase fan high rpm connection scheme

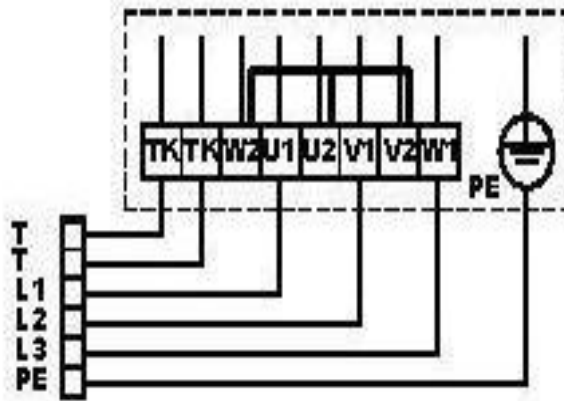


Figure 5. Three-phase fan low rpm connection scheme

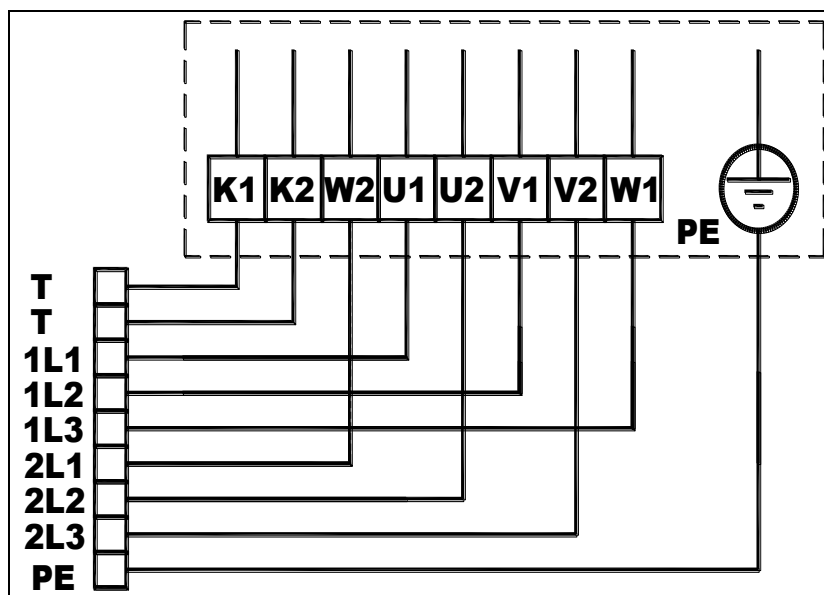
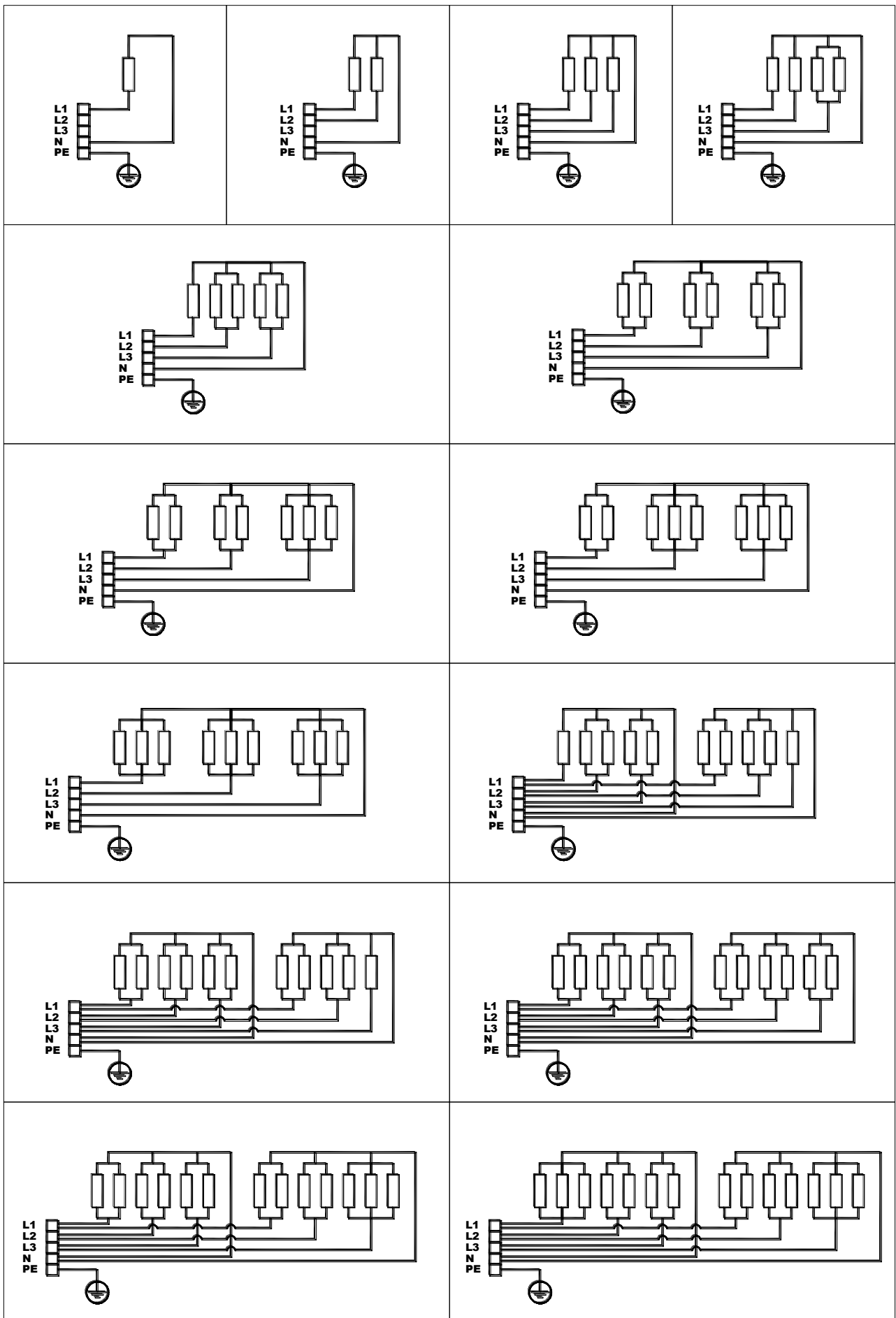
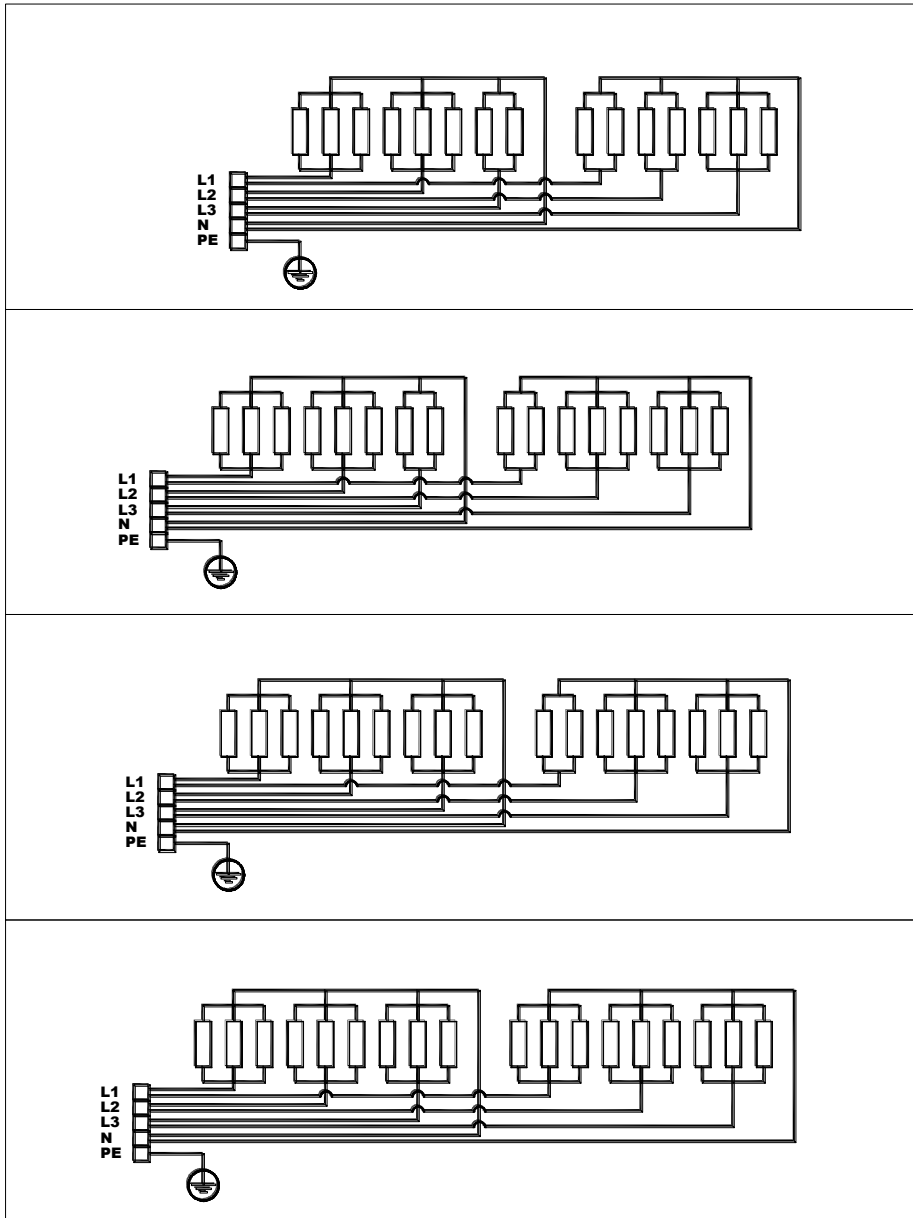


Figure 6. Three-phase fan double rpm connection scheme

Connections of the electric defrost heaters for Unit Air Coolers, including the heaters used in the drain pan is arranged as below.



For the numbers and values of the heaters, refer to Friterm Unit Air Coolers Catalog. In case the current on any line exceeds 25 A, the connections are arranged as below.



Special arrangement of the connections of the electric defrost resistances to prevent the current to exceed 25 A on any line.

The electrical connection must comply with the relevant specifications and special attention must be given to correct installation of the ground wires.

4. START UP

Before running the unit for the first time, **be sure that** all guards, motor mountings and electrical covers are secure, installation and electrical connection have been completed properly, internal wiring is clear off the fans and the fans can rotate freely.

5. OPERATING

If the equipment is stationary for long periods in a humid atmosphere, the fans should be switched ON at least two hours every month to remove any moisture that may have condensed within the motors.

The recommended starting time for the fans is 6 times and maximum value is 10 per hour.

While the fans are running, anything that could pass through the finger guards, like a piece of cloth or long hair, should be kept away from the fans.

Stay away from the airways of the fans while the fans are running.

The operation should be stopped and the supplier should be consulted in case of any unusual working condition, like abnormal operating noise, is realized. Intensive vibrations due to out-of- balance running of the fans may lead to outage.

Maintenance should not be performed while the equipment is in use.

6. MAINTENANCE AND SERVICE

Maintenance operation is to be performed by qualified personnel only.

Please **follow** the safety regulations and the worker's protection rules by all maintenance and service work (DIN EN 50110).

The fluid circulation should be stopped and it must be ensured that no electrical connection exists during maintenance. It is advisable to wait till the equipment comes to thermally balance with its surroundings if possible.

If the tubes within the equipment or the connection pipes were to be repaired, the fluid in the line would better be poured out beforehand.

Regarding the bearings, the fans are maintenance-free for 30-40.000 hours under normal operating conditions. Lifetime lubrication **is not necessary** within this period, and when this period is expired or the bearings are damaged, it is necessary to replace the bearings with original parts.

If the fans **are** worked on for maintenance reasons, the instruction manual prepared by the fan manufacturer should be followed. Contact manufacturer **if necessary**.

After maintenance is performed, ensure that no tools or other foreign materials are left in or near the equipment.

Refer to Initial Starting before operating the equipment after maintenance.

6.1. Periodical Controls (Once a year)

Corrosion on the fins and tubes should be inspected. If the tubes are worn-out, leakage may occur.

The pipeline should be controlled for damage and leakage.

Mechanical and electrical connections must be checked. Fans should rotate freely. Finger guard should be stable.

All the fixings, especially fan motor mountings and equipment installation fixings must be ensured to be secure.

6.2. When Necessary

The surface of the heat exchanger should be inspected for dirt and dust, and if needed, should be cleaned by a soft brush, with the help of pressurized air, pressurized hot water or by a similar way. Care should be taken not to damage the fins and the fans. Chemicals that may react with the materials used in the equipment should not be used. Electrical connections and the fan motors should not be wet while cleaning.

7. SOUND PRESSURE LEVELS

FAN DIAMETER	RPM	1	2	3	4
Ø 630	900	56	59	61	62
Ø 800	880	60	63	65	66

Sound pressure levels as dBA at a distance of 3 m for different number of standard fans used in FRITERM products (REF: EN13487). Test datas are taken from fan manufacturer's documents. The values given **above are only for comparison. Actual values may depend on the environmental factors and installation characteristics.**

8. INVALIDATION OF WARRANTY

The warranty declared in the sales contract is valid only **if** the instructions given in this manual are not violated.



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