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## AIREFRIG AUSTRALIA EG EB ED & EA UNIT COOLERS


### USER MANUAL



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## 1. Introduction

This manual relates to Karyer products EA, EB, ED and EG series of unit coolers. Please read this manual carefully for the correct usage and maintenance of these products.

### Model Explanation

EB – L – 016 – E – 1 – 300 – EVD

EB : model series code (EA, EB, ED, EG)  
L/M : application range (L; low temp. M; medium temp.)  
016E : model number  
1 : fan motor quantity  
300 : fan blade diameter (mm)  
EVD : factory fitted with EVD-ice valve

## 2. Application Range


- The operating temperature of low temperature models can vary from -35°C to 0°C
- The operating temperature of medium temperature models can vary from 1°C to 20°C.
- These unit cooler models are not suitable for use with CO<sub>2</sub> or NH<sub>3</sub> usage. They are only intended to be used with the refrigerants shown on the product label.


## 3. Safety Instructions

- Installation, electrical and operation should be done by only authorized personnel.
- Always wear protective gloves and steel-toed shoes.
- Wear protective glasses when welding and handling refrigerant.
- Wear protective helmets if the product is going to be installed overhead.
- Protect the product from danger of impact, vibration, falling and slipping etc.
- Never stand under or near the unit during lifting and moving.
- Disconnect electrical connections when lifting, maintenance, repair or cleaning.
- Product is delivered with a nitrogen charge and must be evacuated.  
(Note: ensure there is no danger of asphyxiation)
- System must comply with refrigerant type, working pressure and working temperature ranges shown on the product label.
- Do not have direct contact with the refrigerant as freeze burns may occur.
- Evaporators will have hot and cold zones during operation, please avoid contact.
- The product's materials maybe recyclable after the products life cycle.
- The installer is responsible for safety and installation as per local laws and regulations.
- The installer should observe EMC Guidelines during installation of control units (EMC 89/336/EEC)
- This User Manual is part of the product and should be stored in a safe place.

## 4. Product Label

- Required technical data can be found on the product label. The following label is for illustrative purposes only. Please refer to the relevant label on the product. Essential product specifications and label information supplied by the manufacturer should be understood as they are essential to the relevant products.

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TYP / MODEL	: EA-130AC10-A01 EVAPORATOR
CAPACITY / KAPASİTE	: 1256 W@5C2 R404A
WEIGHT/ AĞIRLIK	: 21 KG
MANUF.DATE / ÜRETİM TARİHİ	: 05 / 2014
SERİAL NO / SERİ NO	: 14051310
MAX/MIN OP. PRES/ ÇALIŞMA BASINCI	: 25 BAR / 1 BAR
TEST PRES. / BASINCI	: 35 BAR
MIN / MAX TEMP SICAKLIK:	-40°C / +60°C
FAN FAN	: S4E300-AS72-37 1x (0,32A - 72kW) 230V 1320D / D 50Hz
HEATER / ISITICI	: 6TKM. x 0,42kW (230V-1PH-50Hz) 2.52kW (TOTAL)
TOTAL POWER / TOP. GÜÇ:	72W 230V-1PH-50Hz
TEL : +90 212 567 55 09	FAX : +90 212 576 23 45
e-mail : info@karyergroup.com www . karyergroup .com	

## 5. Lifting and Handling Instructions

- Be sure that the delivery of your order is complete.
- Products are put through routine quality control checks to ensure the full serviceability before leaving the factory. However, there is always a possibility of damage during transportation.
- On receipt, please carefully check the package condition and identification label.
- In the case of transport damage contact Airefrig Australia and the freight company asap.
- Do not unpack the product until ready to install.
- Before the installation provide all the required lifting and transport equipment etc.
- Care should be taken when lifting, moving and installing the product to ensure the product is properly handled to prevent any accident that may cause injury and even death.
- Protect the product from impacts and excessive vibration during lifting and transportation.
- Lift and transport the product separately from items that are not part of the actual product.
- Do not apply any additional external force to pipe connections and headers.
- Ensure the full length of the forks are used by the forklift driver when lifting and transporting.


### 5.1 Storage

- The product must be stored in the original packing and identification label.
- The package must be stored on a flat surface.
- The package must be stored in a secure environment away from impact, shock, hitting plus high temperatures, high humidity, rain and such effects.

Note: Unsecured product can be blown over by the wind.

## 6. Location and Installation

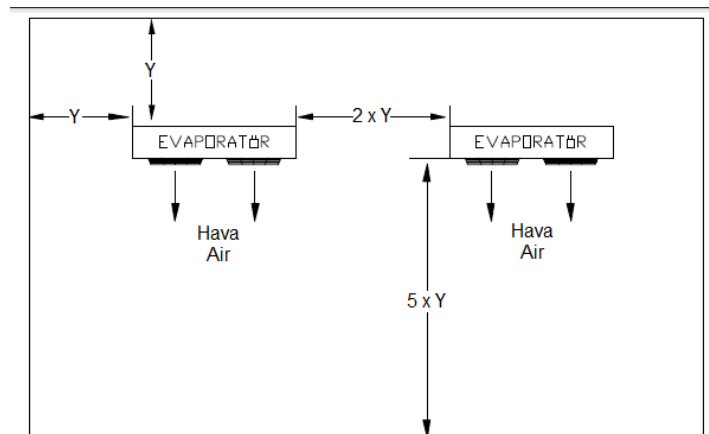
Selecting the position of the product placement and installation process should be carried out by authorized personal only. Incorrect selection, positioning and assembly will directly affect the products performance. Care should be taken to ensure the product is installed properly in accordance with local regulations taking in to account the weight and positioning during the installation.

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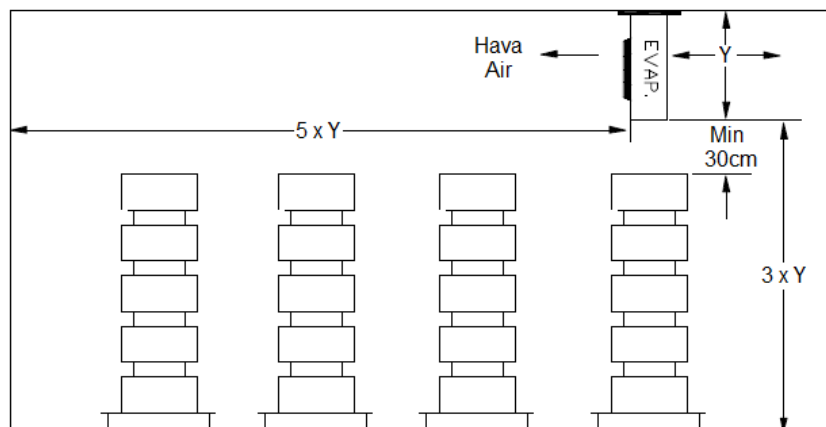
### 6.1 Positioning

- Allow for the correct distance between the product and wall before installing.
- Allow for the correct distances in between multiple products before installing.
- Always consider the quantity of the products when positioning.
- Ensure the air circulation covers the entire room.
- Allow enough space for maintenance, service and spare parts replacement.
- Ensure the side covers and drainage trays have good access and can be easily removed.
- Avoid mounting evaporators above doors to prevent outside air from mixing with cold air from within the refrigerated space.
- Sample dimensions for positioning are given in the table below (Y: Evaporator Height). Please consult your project firm for exact dimensions.
- These heat exchangers are not designed to have ducting connected to air inlet or outlets.


Evaporator Height	Distance between product and back wall	Distance between product and side wall	Distance between product and product	Distance between product and front wall	Distance between product and floor
Y	1 x Y	1 x Y	2 x Y	5 x Y	3 x Y



**Figure 6.1** Layout plan for positioning (top view)



**Figure 6.2** Layout plan for positioning (side view)

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## 6.2 Installation

- Mount the product in position with M10 bolts.
- Be sure product mounting is done even, level and stable.
- Comply with international and regional standards during installation.

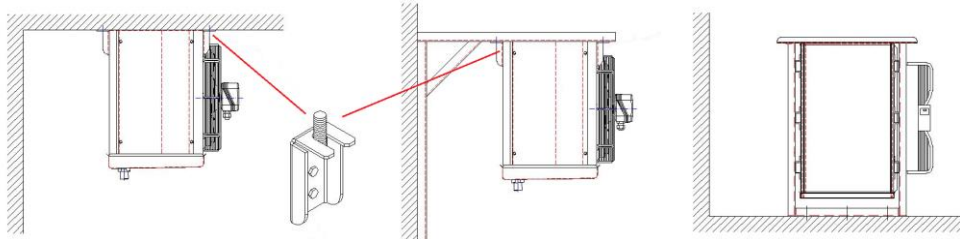


Figure 6.3 Connector

## 6.3 Piping

- Ensure the refrigerant lines are sized and fitted correctly for optimum refrigerant velocity for effective circulation, pressure drop and oil return to ensure the system performs to acceptable engineering standards.

## 6.4 Connections

- Ensure the product is kept clean during installation and prevent any foreign materials, humidity/moisture etc from entering the inside of the product.
- Do not leave refrigeration connections open to atmospheric air.
- Ensure connections are on the same line, don't move them from their original locations.
- Do not hold welding torch directly onto the product.

## 6.5 Drainage

- Ensure the drainage line is gradually lower than the drainage pan, the drainage line must be downward sloping for free and easy drainage.
- Drainage pans are manufactured in two standard options. One is screwed into place and completely detachable, the second is hinged to allow easy access for maintenance.
- Always disconnect drain line before opening/removing drain pan.
- Ensure there is no condensate water present prior to the drainage line and pan removal.
- Do not force the hinges on the drain pan to open more than its natural angle.

## 6.6 Fan

- EA and EB types have sucking fans, ED and EG types have blowing fans.
- Before the first start-up make sure fans rotate and run freely.


## 6.7 Refrigerant Charge

- Product is delivered with 6 bar nitrogen charge to ensure the inside of the tubes are clean and dry ready for system vacuum before charging with refrigerant.
- Ensure the correct refrigerant type and charge is used.

## 7. Operation

- Ensure electrical connections are tight and comply with this manual's electrical diagram and to local regulations.
- Refrigeration lines should be selected & installed in accordance with regional standards.
- Make sure heat exchanger mounting is done even, level and stable.
- Make sure all fan screws are tightened and fans run free and unobstructed.



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- Ensure the amount of refrigerant and its circulation is problem free.
- Be careful of any materials splashing, wear protective goggles.
- Make sure the system is evacuated to industry standards.
- There should be no air pockets or moisture inside the coil.
- Test the drainage pan with a small amount of water to ensure the water flows away.
- Make sure all the defrost heaters are working properly.
- Due to the high humidity of the ambient air heavy ice formation may occur during the initial start-up.
- Check the defrost cycle and ensure cables are not touching the defrost heaters.
- The defrost time can be extended if not long enough to clear ice that has formed.
- An incorrect defrost setup may damage the product.
- The defrost heaters are extremely hot when in operation. Do not touch without gloves.
- In case of fire disconnect the electricity immediately and use a fire extinguisher suitable for electrical fires.

## 8. Spare Parts


Please contact Airefrig Australia for spare parts. Use only genuine spare parts to ensure the product will not be damaged unless otherwise specified. Airefrig Australia will not accept responsibility and warranty maybe void if damage occurs through the use of incorrect parts.

## 9. Maintenance

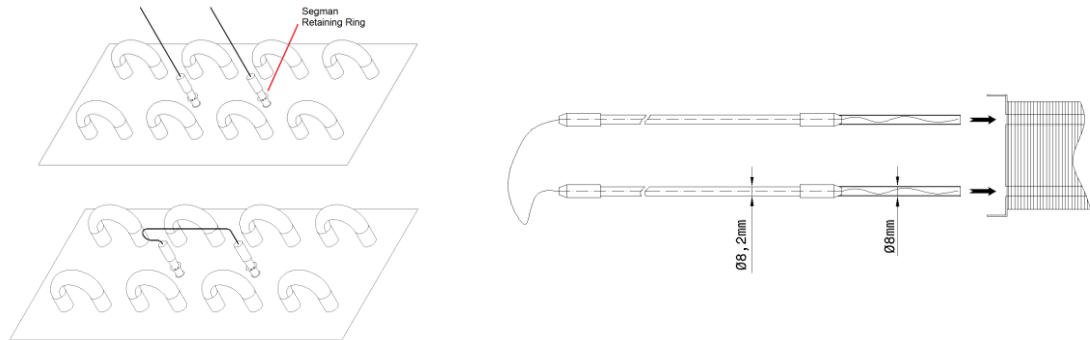
- Ensure that all maintenance/service work is carried out by authorized personnel only.
- Maintenance must be done according to national and local standards to ensure safety to all concerned.
- Regular inspections & periodic maintenance is recommended relevant to site conditions.
- Ensure the air is not being obstructed or excessive fouling exists in the product.
- Inspect all external surfaces, fins, tubes and welds for corrosion.
- Make sure drainage water flows freely. Also check water easily flows away at the drain pan opening and at the side covers.
- Commercial leak detectors should be used to detect any possible refrigerant leaks.
- Ensure each fan is running freely and without vibration, check & tighten fan screws.
- Any faulty screws should be replaced with replacements tightened to appropriate torque.
- Check the surface of fan blades for any build that may cause issues.
- Ensure the product is not being affected by abnormal and excessive vibration.
- Visually inspect the electrical wiring.
- Ensure the electrical and earth connections are tight and secure.
- Observe any ice formation and check defrost cycle for correct operation.
- Turn system off during maintenance/cleaning to prevent refrigerant circulation.
- Refrigerant must be removed from the product as per local regulations when soldering.
- If it is necessary, adjust the position of the defrost heaters where applicable.
- If the product is not used for long periods after installation, ensure fans are run for half an hour every month.

### 9.1 Changing Defrost Heaters

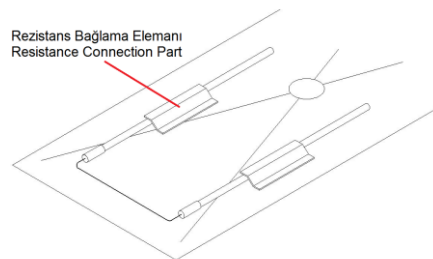
- There are two types of electric defrost heater options.
- One is for light ice formation between 0°C and 5°C temperatures and the other one for heavy ice formation below 0°C temperatures.

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- Before starting work ensure the electric power is disconnected.
- To avoid injury, ensure that the heaters have cooled enough before touching.
- To replace coil heaters, remove retaining rings and then replace faulty heaters.
- Drainage tray heaters are clamped and held in place to the tray or bottom of the coil.



**Figure 9.1** Disassembling coil heaters



**Figure 9.2** Changing drainage tray heaters

### 9.2 Changing Fans

- Ensure electrical power is disconnected.
- Remove fan electrical wiring.
- Remove mounting screws and fan motor.
- Fit replacement fan and tighten screws ensuring the fan blade is free from obstruction.
- Refit fan motor wiring.


### 9.3 Cleaning

- Periodically clean the product with a brush and pressurized water.
- Remove the drainage line connection.
- Remove the drainage tray and clean.
- Take care not to damage the drainage line and drainage tray during cleaning.
- Hold the cleaning water vertical to the fins to prevent damage.
- Rinse the product until all residue is gone.

## 10. Electrical Connections

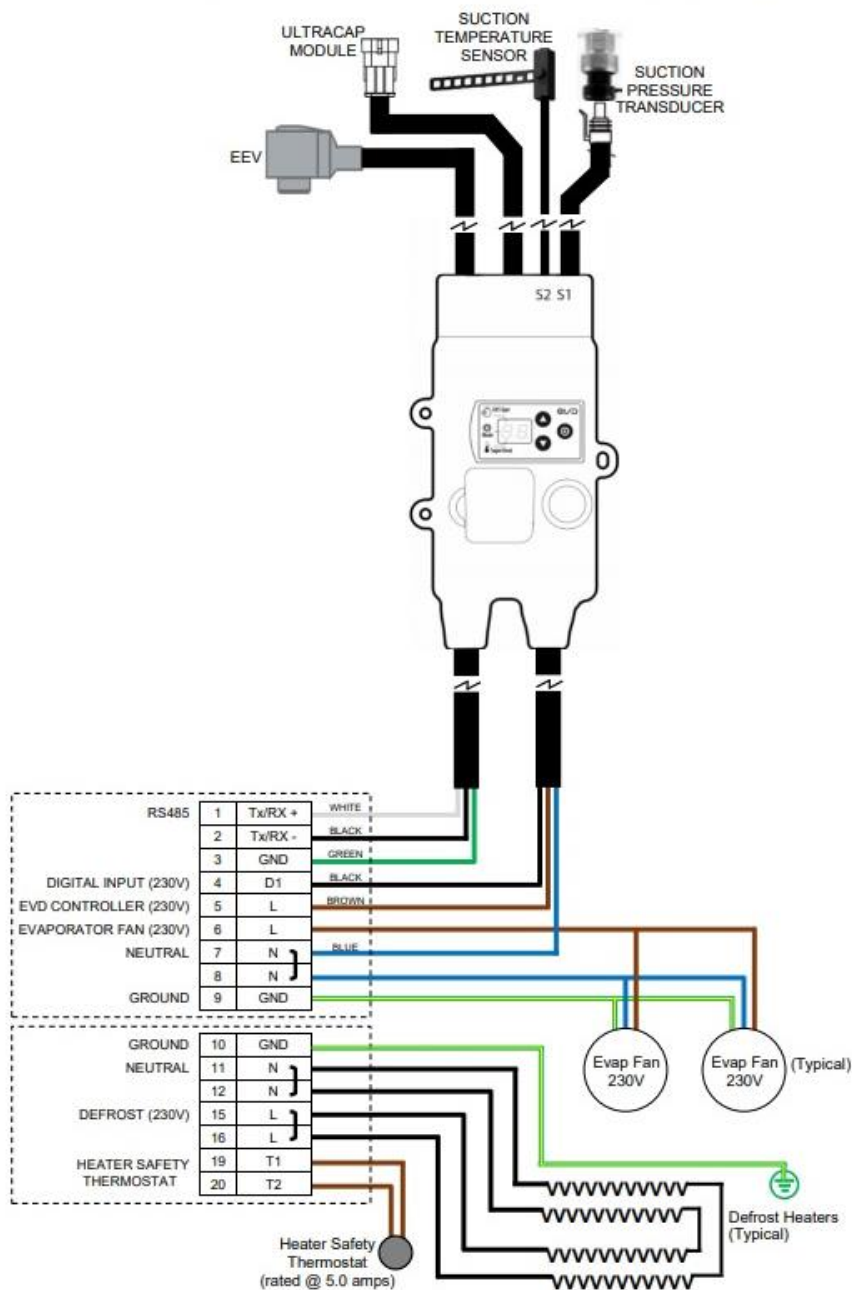
- Electrical connections should be carried out by authorized personnel only.
- The installer should observe EMC Guideline during installation of control units.
- The design and the application of the electrical circuits must be done according to the local regulations.




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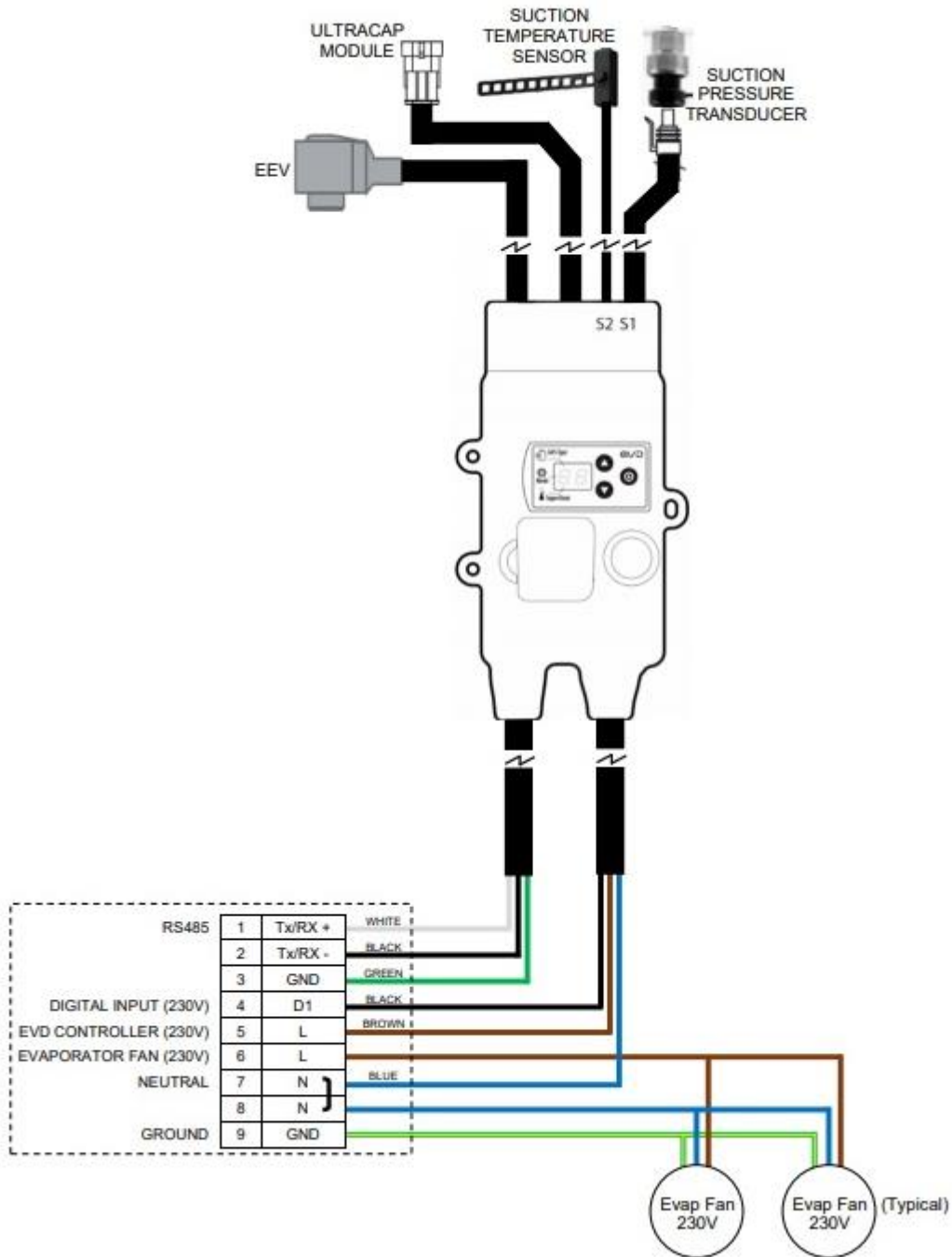
- Wiring connections are in fully covered electrical boxes.
- Fan connections are in a separate terminal box to Defrost Heaters.
- Central wiring should be installed and operated in accordance with EN 60204.
- Only operate the unit to the specific voltage and frequency displayed on the nameplate.
- Required fan motor current draws are shown on the product nameplate.
- Ensure that power is disconnected before any work is carried out.
- Ensure electrical wiring is not in contact with rotating fans and defrost heaters.
- Contact Airefrig Australia if the electrical diagram is missing from the terminal box.


### Low Temperature - Evaporator with EVD-ice Wiring



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### Medium Temperature - Evaporator with EVD-ice Wiring



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## 11. Warning Signs



**Do not shake, prevent from impacts.**



**Protect from moisture.**



**Lifting direction.**



**Be careful!  
It may be hot.**



**Danger!**  
**Danger of injury or life because of high voltage if instructions are not followed.**



**Caution!**  
**Danger of injury or life in case instructions are not followed.**



**Be careful!**  
**Fan rotation is a hazard if you have long hair or accessories like tie.**



**Sign of Earthing.**



**Use protective gloves.**



**Fan rotation direction (clockwise)**



**Fan rotation direction (counterclockwise)**