



## INSTALLATION, OPERATION AND MAINTENANCE MANUAL



### TRIOJET SYSTEM

*Please, read these instructions carefully before attempting installation*

#### SECURITY ADVISE SYMBOLS



*Attention, Danger, Safety Advice!*



*Danger from electric current or high voltage!*



*Injuries risk!*



*Danger! Do not stay underneath: Heavy load.*



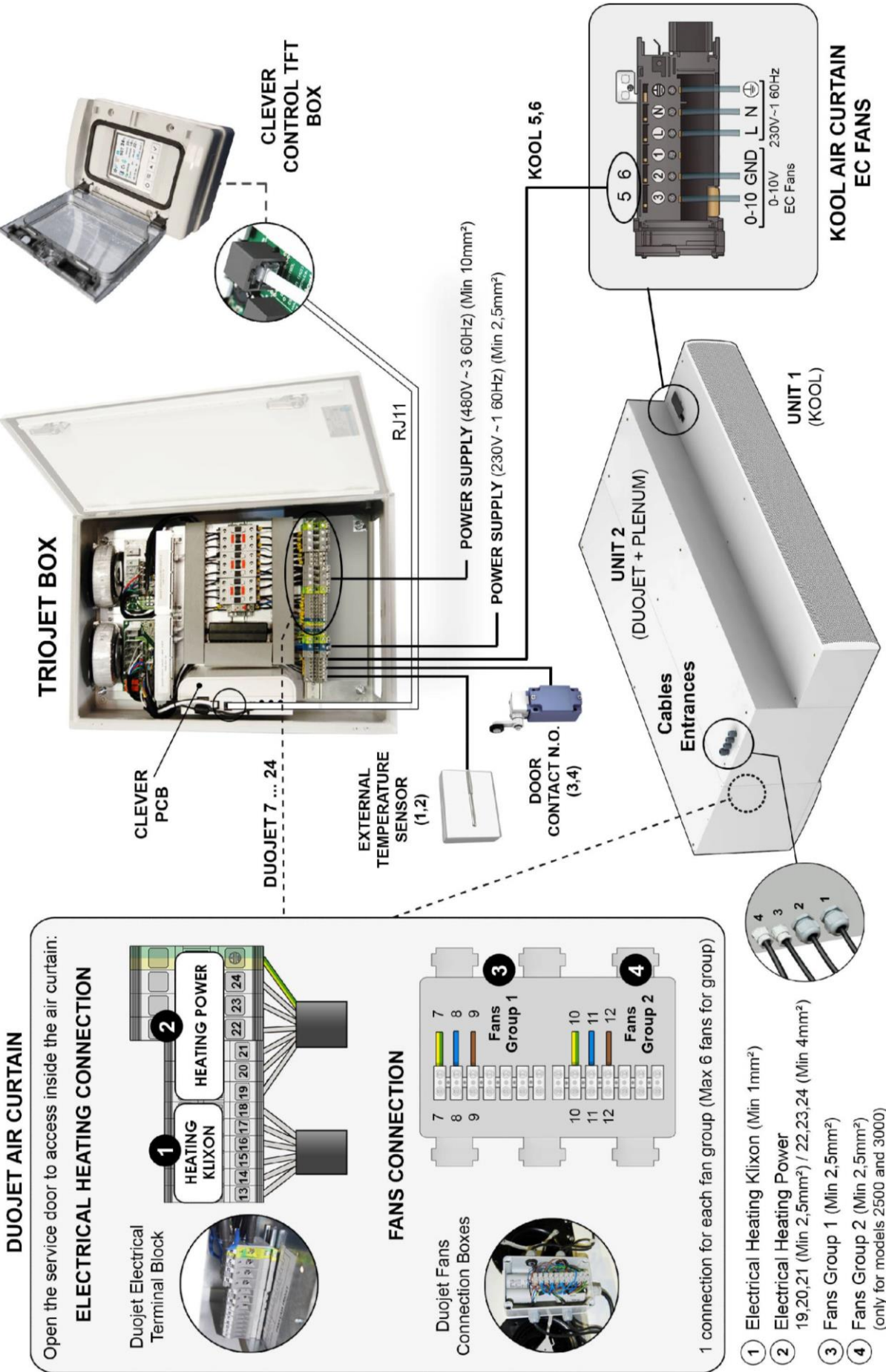
*Important information.*

**AIRDOM05401-R12 (11/01/17)**

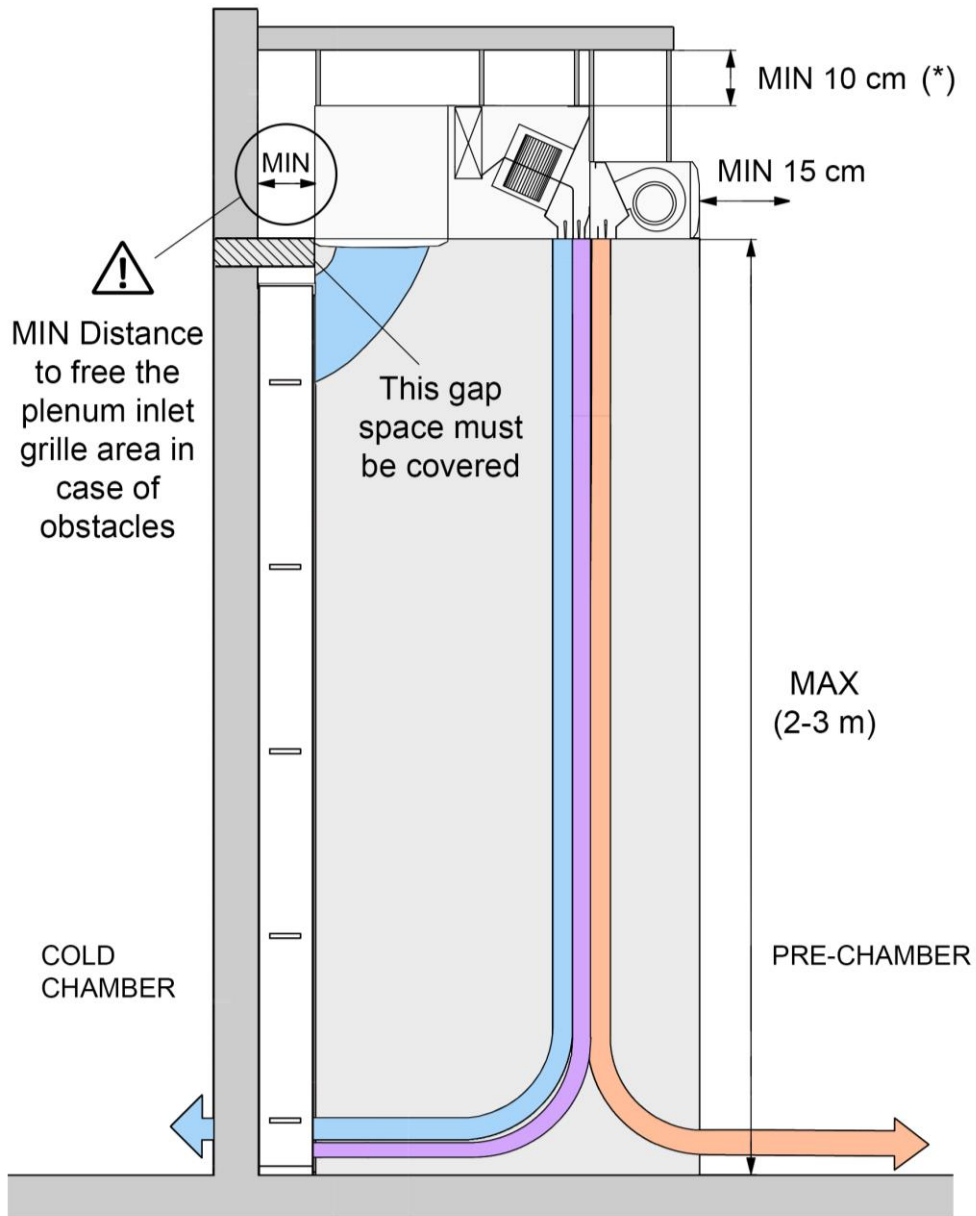
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# CONNECTION DIAGRAM



## INSTALLATION



MAX. Maximum recommended height, MIN. Minimum recommended distance  
 (\*) standard units. Under request this distance can be reduced to 1cm when connections are placed inside and water pipes lateral  
 Minimum recommended distance between the inlet grille and any obstacle is of 150mm.

	<b><i>Installation work, connection, disconnection, electrical wiring, mechanical maintenance and service must be done by qualified persons observing these instructions and in accordance with all applicable norms and standards. If the unit is operated with additional controller, please consider its specific instructions.</i></b>
	<b><i>There is no need to open the service door to connect the air curtain. All connections (power supply, control, water pipes when existing) and fixations are external. They are placed on top or lateral of the units. See how to open service door at repairs section.</i></b>
	<b><i>For safety, the air curtains never have to be stopped by disconnecting from the main supply, always through the controller and wait for 10 minutes at least to disconnect the main supply. In case we do not follow these instructions, the internal parts of the air curtain can be damaged.</i></b>

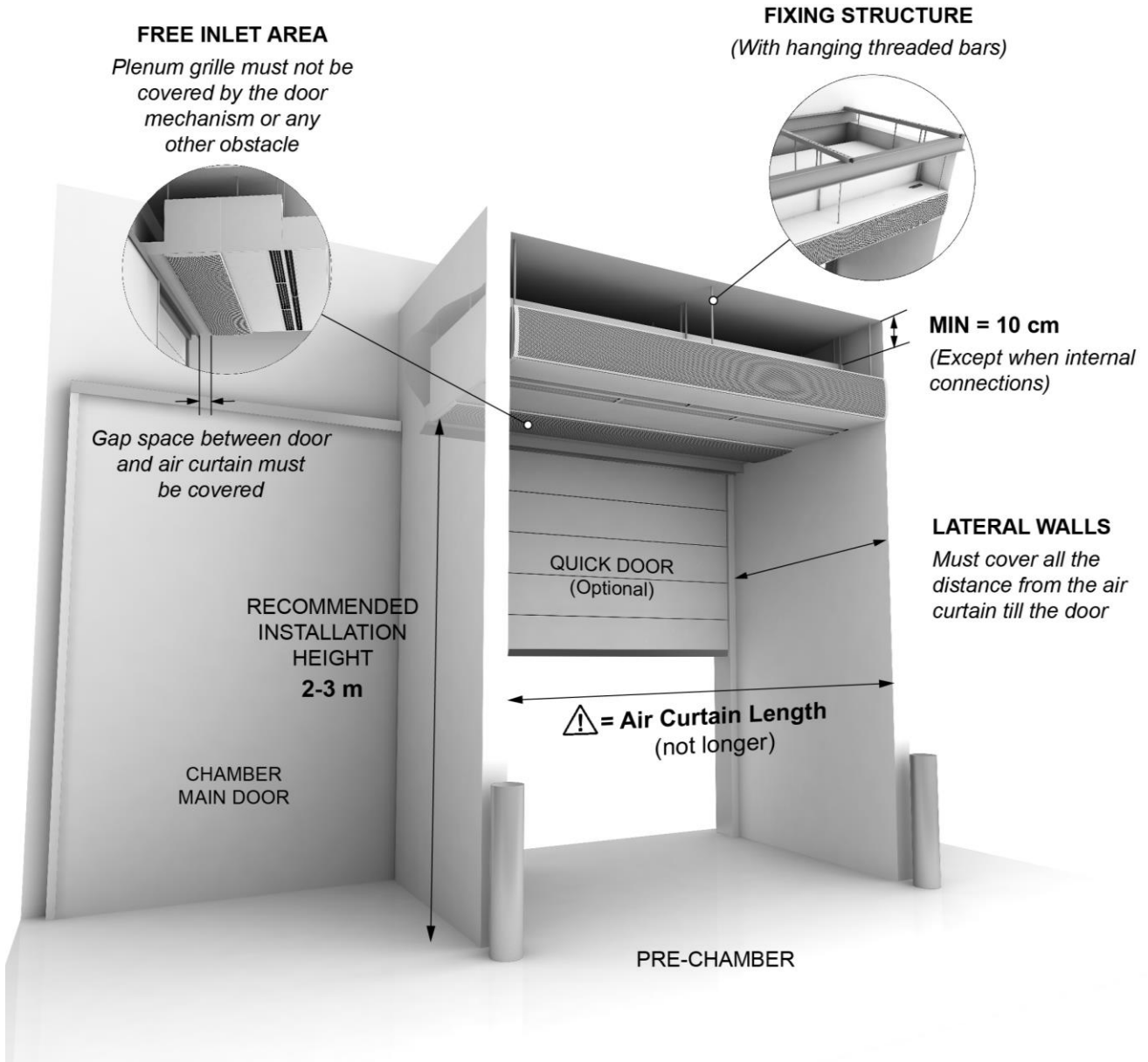
## Installation structure

Next, a structure example shown to mount a curtain Triojet system:



### Very important:

- The side walls of the structure must be fully covered, from the air curtain to the door.
- The distance between walls must be equal to the length of the air curtain.
- The plenum of Duojet can be directly mounted right next to cold chamber door if does not interfere with the mechanism of the door and the suction air is not blocked. Otherwise the gap space between the air curtain and the cold chamber door must be covered, to prevent the air making a wrong circuit.
- Fastening with structure and threaded rods provided by another (non Airtecnicos).





Gap space between the air curtain and the cold chamber door must be covered.



Fastening with structure and threaded rods provided by another (non Airtecnic).

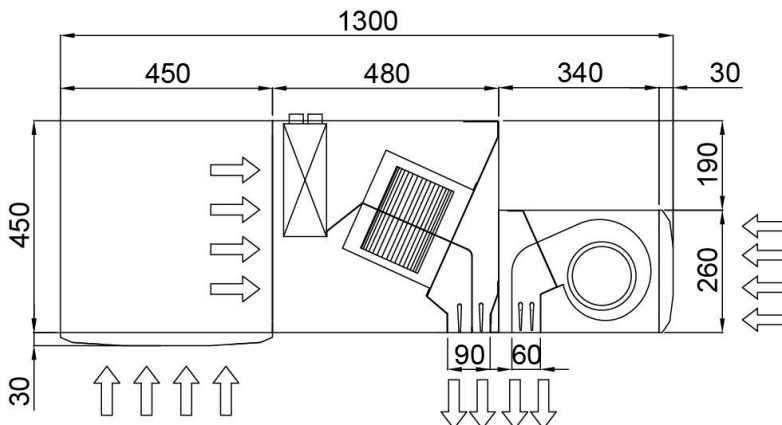
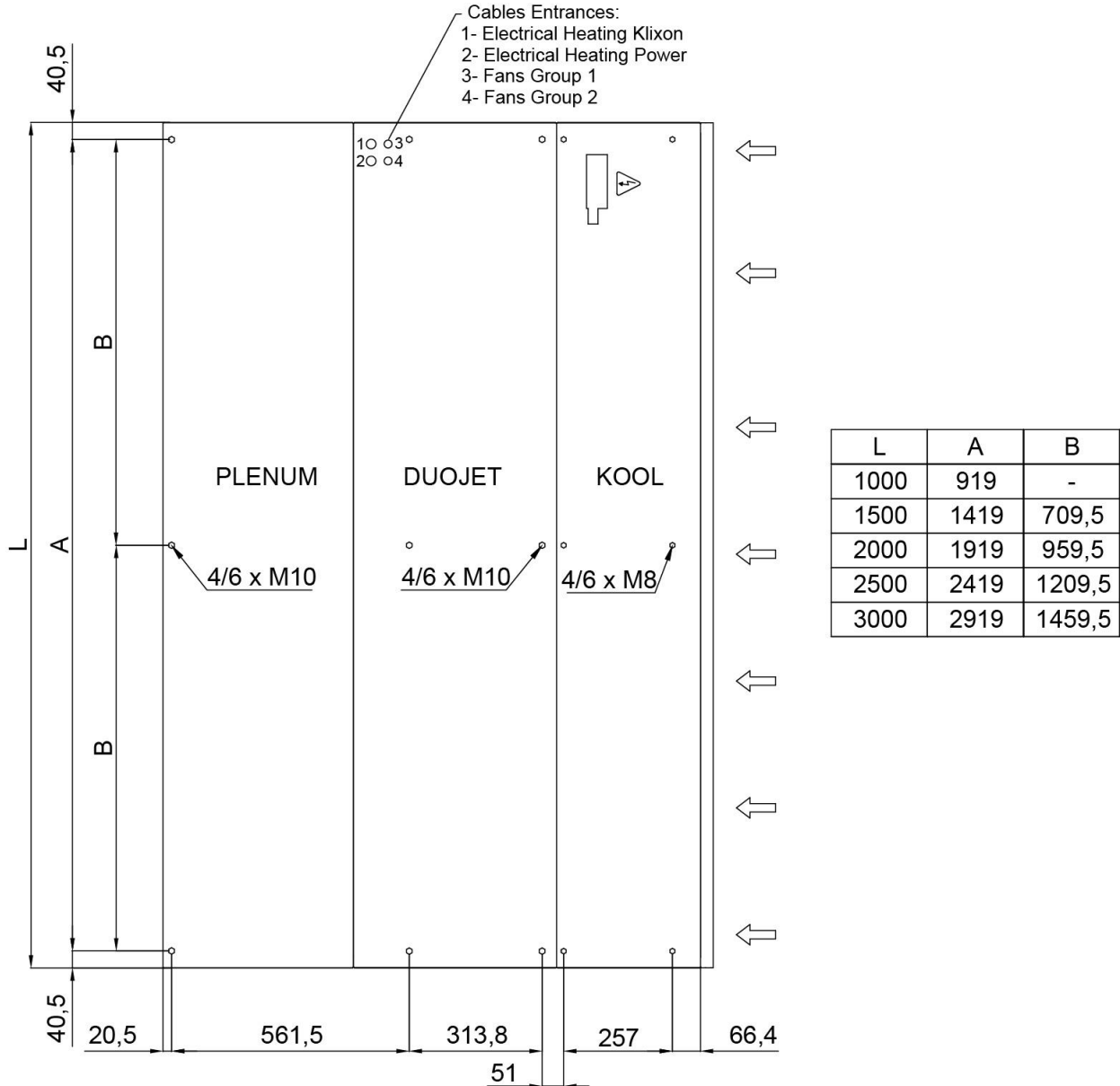
## Fixing

Units are provided with several external suspension points, depending on the weight and length (see exact situation of the points at the air curtains characteristics page).

Generally air curtains work horizontally but also can be installed vertically using feet (accessories section).

The anchor should be managed according to the weights of each unit shown on the technical data page. The installation can be made through threaded rods, tensors or other supports. See available supports in the accessories section.

See requirements at structure installation.



## Connections

### Kool air curtain

To connect the power supply 230Vx1 of the Kool there is a black connection box outside the air curtain (on top right).

You should also connect the 0-10V signal to EC fans from Triojet system box.

### Duojet air curtain

You need to connect power supply from the control box Triojet system inside the curtain (as shown in the connection diagram).

You should also connect from Triojet system box:

Fans Group 1 (AC type).

Fans Group 2 (only 2500 and 3000) (AC type).

Electrical heating regulation.

### Triojet system box

It has the following connections:

- Power supply 400Vx3
- TFT Clever control
- Outside temperature sensor
- Door contact
- To Kool:
  - 0-10V signal to EC fans
- To Duojet:
  - Fans Group 1 (AC type)
  - Fans Group 2 (only 2500 and 3000) (AC type)
  - Electrical heating klixons
  - Electrical heating regulation

Inside the Triojet system box there are 1 or 2 PCBs to manage the AC fans of the Duojet air curtain. Both are connected via RJ45 special cable and have a fuse. 1 or 2 transformers regulate the speed by changing the voltage.

## Electrical elements

The electrical element has 9 resistances in bar form that combined among them, give us 3 heating stages. The control is made by 2 contactors of 3 and 6 bars respectively.

All electrical elements are protected electrically and electronically against overheating (see “operating instructions” section).

The electric controllers have the option to install an external thermostat that turns on/off the heating in order to control the temperature.

During the first uses scent can be emitted but it disappears in a few days.

## STORAGE AND TRANSPORT



**Attention! Heavy load.**

**Do not step under hanging load during the transport or assembly.**

Store in a dry place and weather protected in its original packaging. In case the packing is open, cover the air curtain to protect it from dust. Do not step or put heavy load over the package to avoid damages to the material. Store temperatures are between -20°C and +40°C.

When carrying material, make sure it is not damaged by the forklift (fork penetration in the packaging). Please see the packaging instructions.

## WORKING INSTRUCTIONS



**For safety, the air curtains never have to be stopped by disconnecting from the main supply, always through the controller and wait for 10 minutes at least to disconnect the main supply. In case we do not follow these instructions, the internal parts of the air curtain can be damaged.**

### Control PCBoard characteristics

It adjusts the fan speed through the input voltage variation of the set of fans. The transformer has 5 output voltages: 120, 140, 170, 200 and 230 Volts.

### Controller's common characteristics

Triojet system has a regulation external box to control the air curtain and other box with the Clever TFT.

#### Regulation external box:

Elements:

- 2 PCBs and 2 transformers to regulate the AC fans
- Clever PCB to control the Triojet system air curtain
- Clever transformer
- Terminal blocks (power supply and regulated lines)



#### Clever TFT box:



**If you need some more information to use or to programme the controller, you should consult the Clever control installation and functioning manual.**

## WIRING DIAGRAMS

Following wiring diagrams are enclosed:

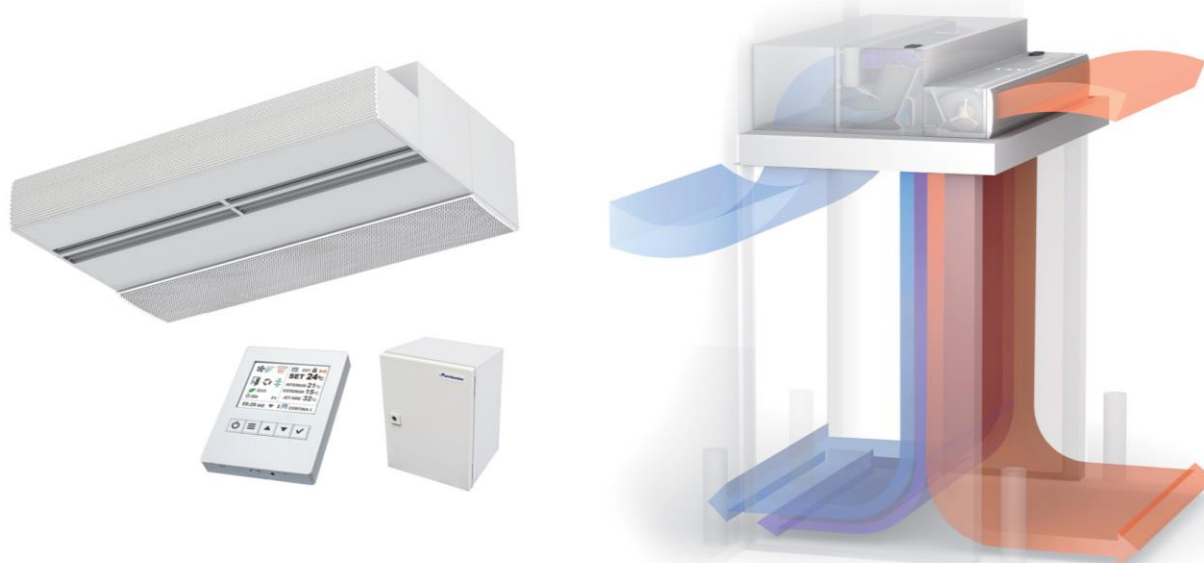
- TRIOJET SYSTEM box with internal connections. Diagram: AIRDOE09985
- TRIOJET SYSTEM air curtain Duojet + Kool (AC fans + electrical heating + EC fans). Diagram: AIRDOE09986

In case you need to connect the equipment to a BMS/PLC, the corresponding wiring diagrams will be supplied.

**TRIOJET SYSTEM | Air Curtains Combination System With Multijets**  
**For Large Cold Stores And Freezers**



Characteristics

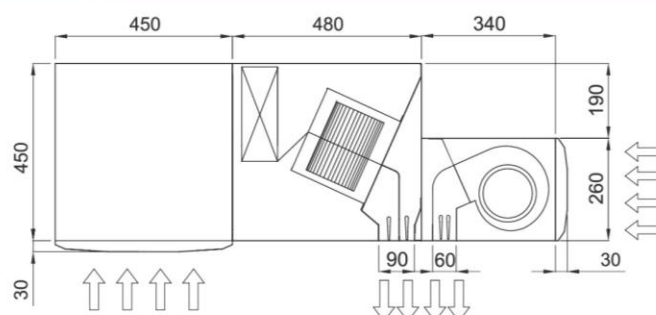


- Specially designed to be installed on doors of industrial cold stores and freezers with big temperature differences.
- Reduces mist, snow and ice decreasing risk of accidents.
- System composed by two air curtains: Special Duojet air curtain with plenum and Kool air curtain. The result is a combination system of 3 jets at different temperatures and different speeds.
- High efficiency barrier against big amount of thermal losses due to a big temperature difference (shorter payback).
- Structure support with lateral walls to cover 100% of the opening with 3 jets should be provided by others.
- Self-supporting casing construction made of galvanized steel plate, finished in structural epoxy-polyester painting white colour RAL9016 as standard. Other colours or stainless steel are available on request.
- Large perforated inlet grille avoiding intensive maintenance.
- Anodized aluminium outlet vanes, airfoil shaped, adjustable from 0 to 15° each side.
- Duojet with IP55 AC centrifugal fans and Kool with EC fans (both double inlet, external rotor motors and built-in thermal protection contact). All provided with 5-speed selection, very low noise level.
- Includes electrical shielded element of 3 power stages with integrated regulation.
- Triojet is automatically fully controlled by Clever Control. Electronics and controller protected inside IP65 boxes. Plug & Play connections.
- Ready for BMS connection via Modbus RTU.




Specifications

Model	Airflow m <sup>3</sup> /h	Fans Power 230V-50Hz kW	Fans Current 230V-50Hz A	Electrical Heating Capacity 400Vx3-50Hz kW	Noise Level (5 m) dB(A)	Weight kg
TRIOJET 1000	5900	1,08	5,75	3/6/9	62	125
TRIOJET 1500	8400	1,58	8,30	4/8/12	63	182
TRIOJET 2000	11800	2,16	11,50	6/12/18	64	234
TRIOJET 2500	14300	2,66	14,05	6/12/18	65	275
TRIOJET 3000	16800	3,17	16,60	8/16/24	66	314

Dimensions



## MAINTENANCE INSTRUCTIONS

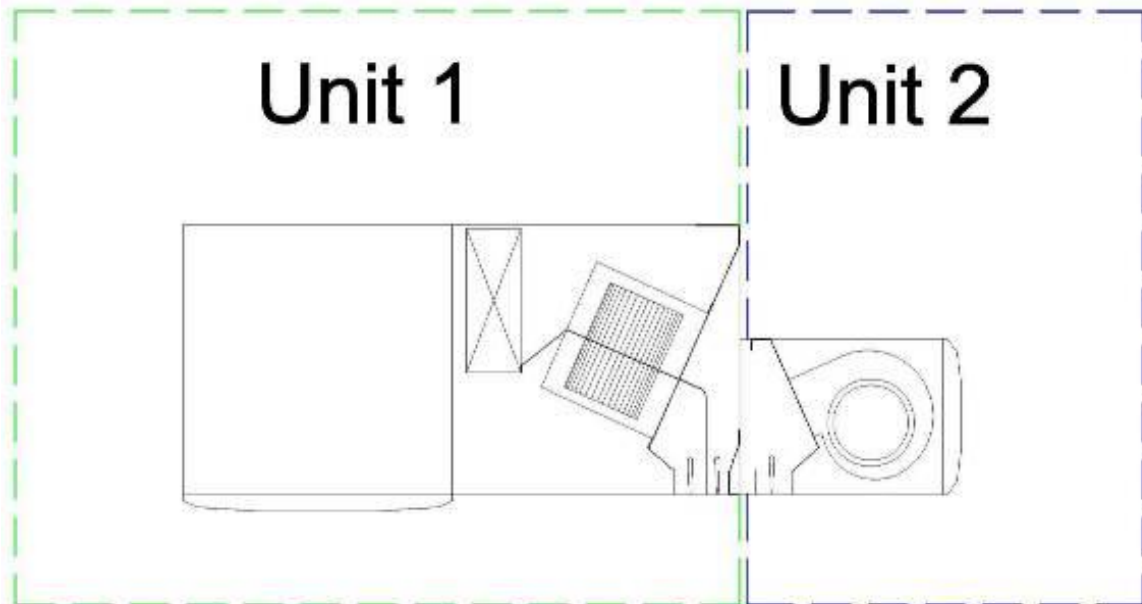
	<b><i>For safety, before any cleaning, disconnect power supply using the controller.</i></b>
	<b><i>It is forbidden to open the service door (risk of electrical discharge and being trapped in fans). Service and maintenance should be done only by introduced and qualified workers.</i></b>
	<b><i>Do not use water or steam for cleaning the internal parts and components of the air curtain.</i></b>

Air curtains don't need any kind of maintenance except the cleaning of the casing and the inlet grille.

The casing of the air curtain should be cleaned with a wet cloth and non-aggressive detergent. Do not use caustic soap or acids.

The inlet grille prevents the settling of dust and strange objects in the internal elements. It is recommended to check periodically that the inlet grille is free of any object that could interfere the air entrance (plastic bags, papers, etc.).

### ***TRIOJET SYSTEM: Combination system with 2 air curtains***



Unit 1: Inlet plenum + Duojet air curtain

Unit 2: Kool

## REPAIRS AND REPLACEMENTS



**Installation and electrical connections must be done by qualified workers and following these instructions.**



**Before any repairs are undertaken, please:**



- **Inform people that there is work in progress.**
- **Disconnect the power supply and protect the thermal magnet (so nobody can restart it accidentally).**
- **Make sure there is no tension in the air curtain.**
- **Make sure the fans are stationary.**
- **Use only original spare parts.**

**UNIT 1:** To open the service door, follow these steps:

1. With a screwdriver and holding the door, remove all the screws that fix the door.



2. Open the door carefully. In case of an air curtain with **plenum or inlet/outlet kits** follow the same steps.



**UNIT 2:** To **open the service door**, follow these steps:

1. Insert a flat screwdriver between the casing and the grille and push the grille out. The grille is closed by pressure through pivots. It has a safety cable to avoid accidental falls.



2. **OPTIONAL:** Remove the security screw of the service door.



3. Insert a screwdriver and press down next to the pivots to open de service door.

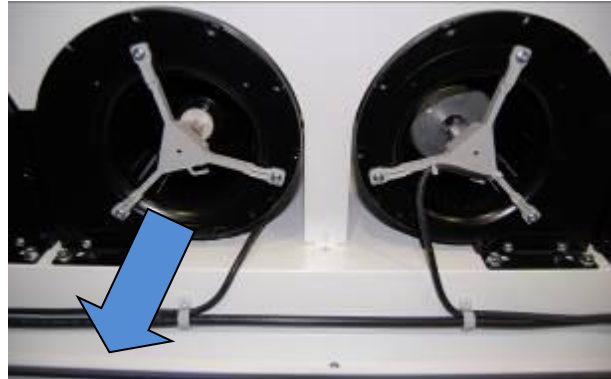
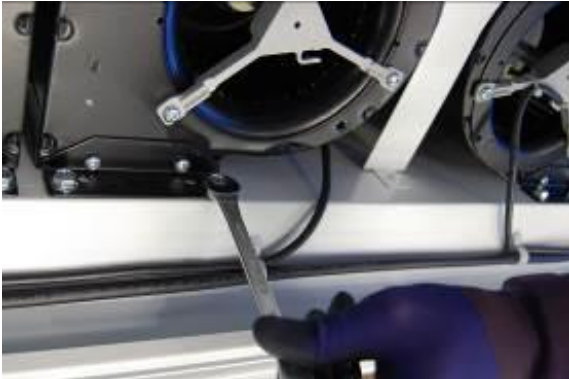


### ***Fan replacement***

Before replacing the fan, inform people that there is work in progress, stop the air curtain through the controller and disconnect main supply. Make sure that the unit is without tension and the fans are stationary.

Unplug the fan from the cable tree. Remove the fan by loosening the fixing screws and assemble the new fan following the process in reverse order.

#### **UNIT 1:**



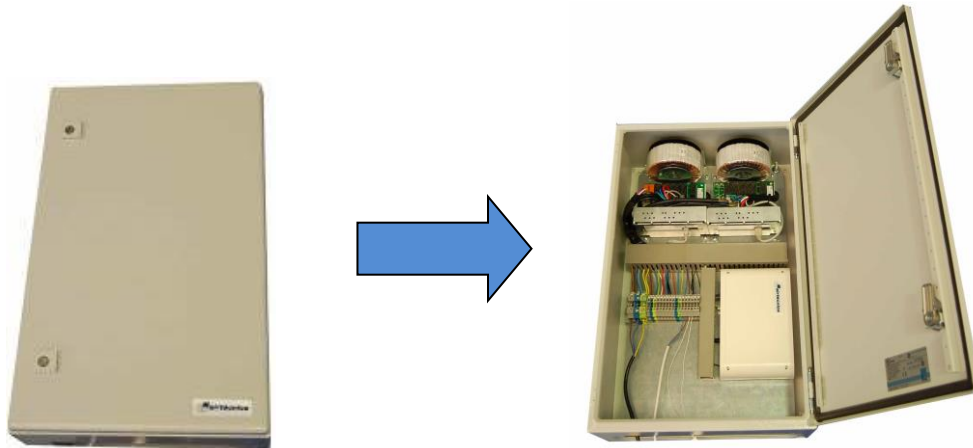
#### **UNIT 2:**



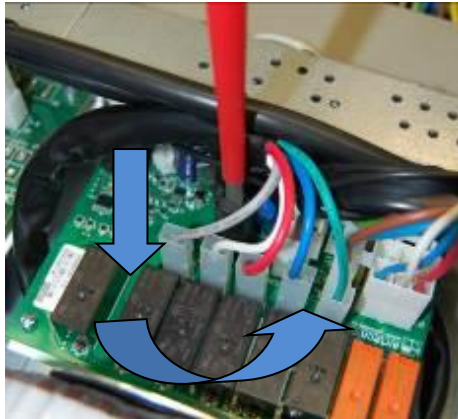
## Fuse and PCB (plate) replacement

Before the replacement, inform people that there is work in progress.  
Disconnect main supply, make sure that the unit is without tension and that the fans are stationary.

**Fuse replacement:** Open the door of the regulation box of the air curtain.



Remove the fuse holder by hand pushing and turning anti-clockwise and replace it.



**PCB replacement:** Open the service door from the regulation box of the air curtain and simply unscrew the power plate by the support to remove it and make the necessary repairs.



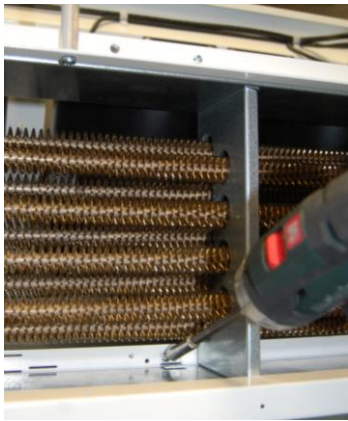
## Electrical element replacement

Before change of coil or heater, inform people that there is work in progress, stop the air curtain through the controller and disconnect main supply. Make sure that the unit is without tension and the fans are stationary. Before removing the screws that fix the heater, we have to:

**Electrical element:** Disconnect all the cables from the electrical element inside the air curtain.



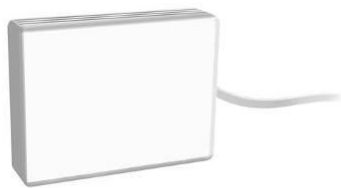
When we have the heater ready, we proceed to remove the fixation screws to disassemble the coil or heater and assemble the new heater following the same process in reverse order.



## ACCESSORIES



RJ45 Cable 20m and 50m



**External temperature Sensor**

It permits to take the temperature from a place different to the control.

Supports, feet, vibration dampers, etc. depending on the installation requirements.



DECLARATION OF CONFORMITY



Declaration  of conformity / Declaración  de conformidad

Manufacturer **Motors i Ventiladors S.L. (AIRTECNICS)**  
*Fabricante* **Conca de Barberà 6, Pol. Ind. Pla de la Bruguera**  
**08211 Castellar del Vallès (Barcelona) Spain**

We declare, under our sole responsibility, that the product(s)  
*Declaramos, bajo nuestra única responsabilidad, que el/los producto(s)*

**Air Curtains**  
***Cortinas de aire***

with models  
*con los modelos*

**Minibel, Optima, Recessed Optima, Windbox, Recessed Windbox, Smart, Dam, Deco, Kool, Variwind, Rotowind, Invisair, Rund, Zen, Duojet, Triojet System, Max, Recessed Dam, Recessed Compact, Maxwell**

is/are developed, designed and manufactured in accordance with the following directive(s)  
*ha(n) sido desarrollado(s), diseñado(s) y fabricado(s) de acuerdo con la(s) siguiente(s) directiva(s)*

**Low Voltage Directive 2014/35/UE**  
***Directiva Baja Tensión 2014/35/UE***

**Electromagnetic Compatibility Directive 2014/30/UE**  
***Directiva Compatibilidad Electromagnética 2014/30/UE***

**Restriction Certain Hazardous Substances Directive 2011/65/EU (RoHS)**  
***Directiva Restricción Substancias Peligrosas 2011/65/EU***

**Eco-design Energy-related Products Directive 2009/125/EC**  
***Directiva Diseño Ecológico Productos Con Energía 2009/125/CE***

applying the following harmonized standards in particular  
*aplicando las siguientes normas armonizadas en particular*

**LVD:** EN 60335-1:2012 + AC:2014 + A11:2014  
EN 60335-2-30:2010 + A11:2012

**EMC:** EN 61000-6-2:2006  
EN 61000-6-3:2007 + A1:2012  
EN 55014-1:2008 + A1:2009 + A2:2012  
EN 55014-2:2015

**RoHS:** EN 50581:2012

Date / Fecha  
Name / Nombre  
Position / Cargo

**11/01/2017**  
**Jordi Oltra Orta**  
**General Manager / Director General**

**AIRTECNICS**  
MOTORS I VENTILADORS, S.L.  
B58367185 - C/ Conca de Barberà, 6  
08211 Castellar del Vallès  
Tel. 937159988 - Fax 937159989



<b>Model</b> <i>Modelo</i>	WINDBOX M 2000 E				
<b>Airflow</b> <i>Caudal</i>	3600	m3/h			
<b>Blowers</b> <i>Ventiladores</i>	1,88	A	0,424	kW	230 V/50Hz
<b>Heating capacity</b> <i>Calefacción</i>	80/60 °C		60/40 °C		
<b>Water Coil</b> <i>Agua</i>		kW		kW	
<b>Electric Coil</b> <i>Batería Eléctrica</i>	6/12/18	kW	400V~3 50Hz		
<b>Serial Number</b> <i>Número de Serie</i>	2015-07-06 / 61.990				

**Air curtain identification**

Each air curtain is identified by a unique serial number printed in a label located inside the door service. There is also indicated the model and their technical characteristics (flow, fans technical characteristics and power heating).

It is indispensable to have this number to facilitate possible replacements or technical information of the air curtain in question.

If you detect some error in this manual, we'll be pleased to receive your *feedback*, it helps us to improve even more.

Airtècnics reserves the right to modify some of the specifications in this manual.

**GUARANTEE**

Your air curtain is guaranteed for a period of one year from the date of purchase. We will adjust, repair or replace at our discretion from our warehouse any defect, system failure or part found to be defective. The assembly cost out of our warehouse is at buyer expense. The products that, in our eyes, have been inadequately used, incorrectly manipulated, improperly installed, connected to different nominal tensions, modified, repaired by non-authorized workers or that have suffered damages during transport are totally excluded from the guarantee.

*To validate the guarantee it should be correctly filled and enclosed with the invoice that vouches for the buying date. If it is manipulated, it will lose all validity.*

*It is the buyer's responsibility to take the necessary safety measures because in case of a failure or mistake in one of our products, no damages to third parties, sets or installations will occur.*

✂ -----

**Guarantee draft**

**Air curtains data:**

Model: ..... Series number: .....

Invoice date: ..... Invoice number: .....

**Buyer data:**

Name: .....

Address: .....

Country: ..... Phone: ..... Fax: .....

**Seller data:**

Name: .....

Address: .....

Country: ..... Phone: ..... Fax: .....

**Buyer signature and stamp**

**Seller signature and stamp**