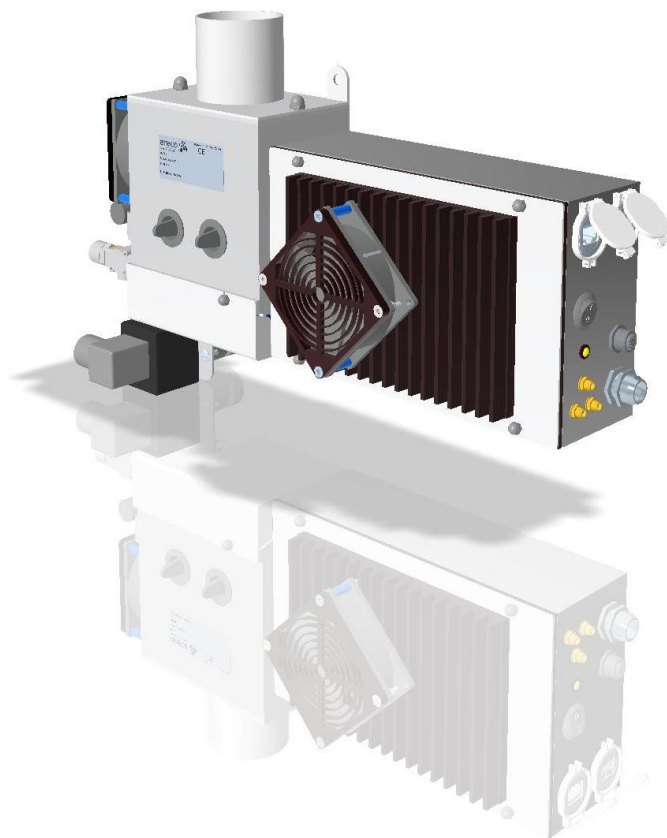


USER MANUAL FOR HUMIDITY GENERATORS OD V8

READ AND SAVE THESE INSTRUCTIONS



Versions

Version	Nature of the change	Author	Verifier	Date
1.0	Initial version	RTA	FRI	13/04/22

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1. SAFETY INSTRUCTIONS**WARNING AND PRECAUTIONS**

- The appliance is not to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children being supervised not to play with the appliance.
- Use the appliance only with the power supply unit provided
- Because of the risk of fire, electric shock or injury to persons using or in contact with the equipment. The machine, boxes and cords must be placed in a location where they cannot disturb the environment.
- Caution : Risk of electric shock Disconnect the unit from the source of electrical supply prior to beginning any servicing or cleaning operations.
- Overfilling the appliance, removing the heating element or electrical components, or cleaning without disconnecting the power cord may result in electric shock.
- Do not connect to a duct or plenum.
- The unit and the water filtration must be installed with adequate backflow protection to comply with applicable federal, state, and local codes.
- Equipment should be placed in such a way that it is not likely to be upset
- Disassembly or reassembly must be carried out by qualified personnel.
- The cleaning of equipment must be carried out by qualified personnel. Under no circumstances should an unqualified person carry out these operations and operators should not use other methods or products.

2. TECHNICAL

2.1. MECHANICAL CHARACTERISTICS

- Materials:
Humidifier: Stainless (steel 304L)
Power supply box (ABS)
Control Box (ABS)
- Dimensions (Inch) Length x Width x Height
Humidifier only : 20x9x6
Humidifier with Hose, cable, and broadcast output : 24x12x6
Power supply box : 11x 8x3
Control Box : 8x4x2
- Machine weight : 12 lbs
Power supply weight : 4.4 lbs
Control box weight : 1.5 lbs

2.2. HUMIDIFICATION CHARACTERISTICS

- Generation frequency : 1.66 MHz (95% of droplets are less than 5µm)
- T° of operation (°F) : +33.8 to 86°F (If negative temperature, contact us).
- Flow rate (gal/h) at 77°F (Without outlet tube and external ventilation) : Up to 0.8.
- Maximum water temperature in operation
 - 86°F During operation
 - 158°F during the decontamination cycle.
- Flow rate control and settings :
Standard : Settings with control box (Knobs for adjusting the operation cycle ratio, fogging power and ventilation speed).
Optional : Settings smartphone, computer, or touch pad.
- Humidity control (optional) :
By mechanical humidity controller
By PID regulation with analogue humidity sensor
- Temperature Control : Real-time control of temperature by sensor.

2.3. HYDRAULIC CHARACTERISTICS

- Draining the device : Automatic by NO with pinching of Ø 15/64 in tube draining on stopping and by cycles. Solenoid valve NO (Constantly open when the device is turned off)."
- Filling tank : Automatic by stainless solenoid valve 5/64 in, 14.5PSI (1.2MPa). Inlet tube 1/4" John Guest quick-disconnect fitting.
- Tank capacity (Gal) : 0.13.
- Water circuit : Stainless steel or food quality plastic (Polypropylene, silicon)
- Filtration : Osmosis membrane (74Gal/days)
- Disinfection : Decontamination by automatic thermal shock (1/day) and rinsing requirement of the order dated 23 June 1978 on fixed installations intended for water supplies in public places.

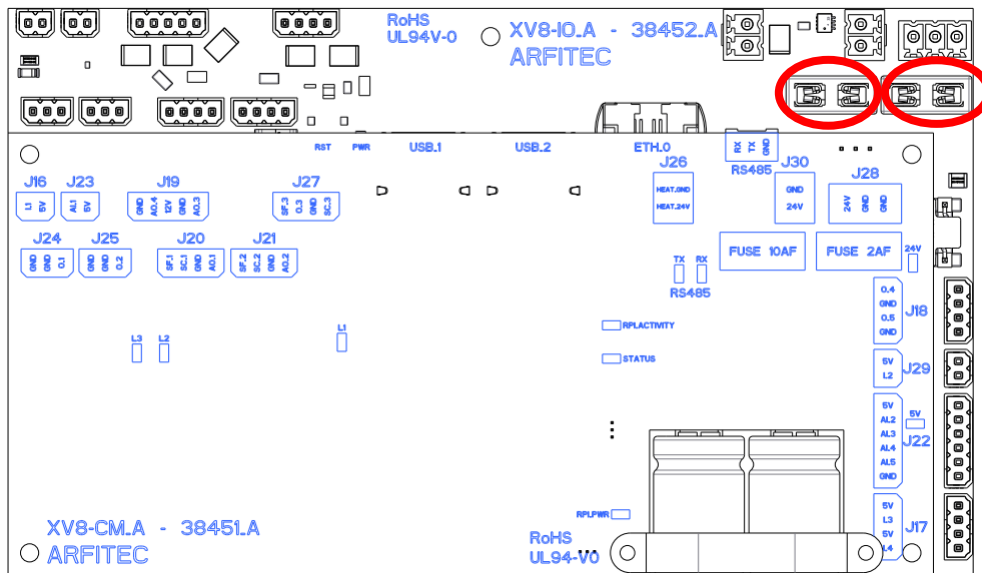
2.4. ELECTRICAL CHARACTERISTICS

- Power Supply :
Input : 100-240v – 50/60Hz
Output : 20-24Vdc
Max power : 240w
- Electrical box Voltage (V) : Between 22Vdc and 22.5Vdc
- Electrical protection (By fuse) :
Heating resistance : 10A (Reference Areco : 38532)
Electronic board for In/Out : 2A (Reference Areco : 38533)

Fuses must be replaced by qualified personnel.

For replacement, no tools are required, just remove the fuse from its location and replace it with a new one.

The value is written on the top of the fuse.



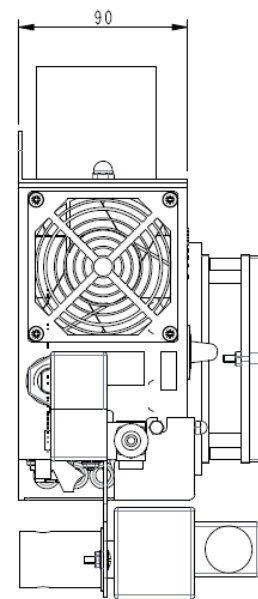
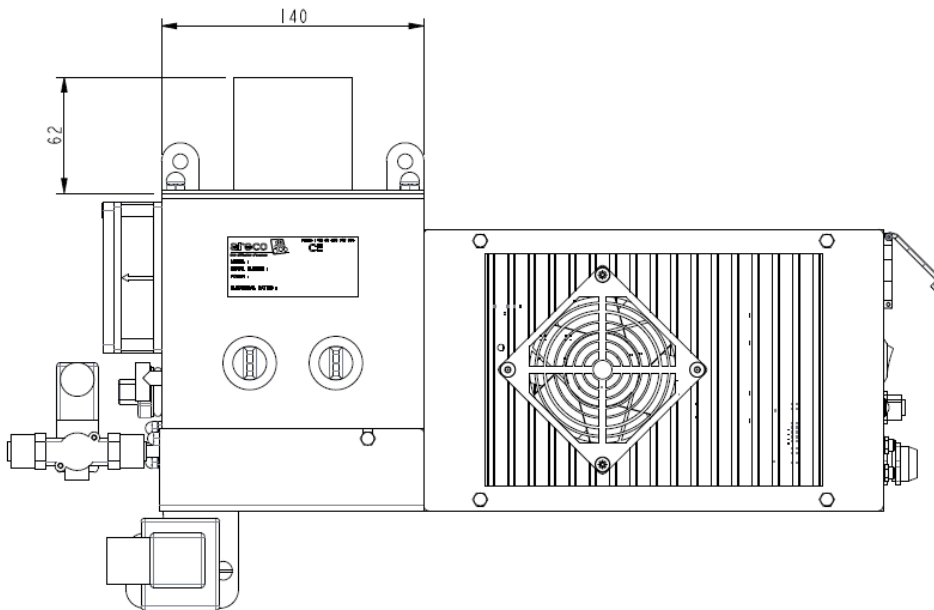
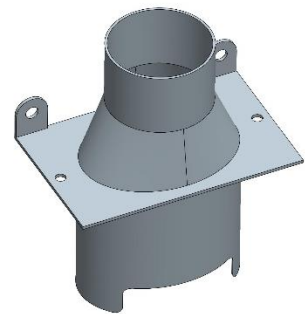
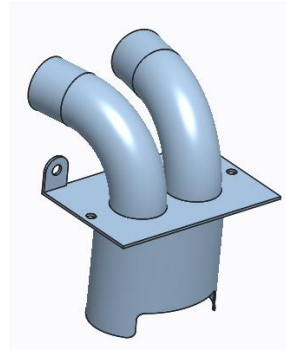
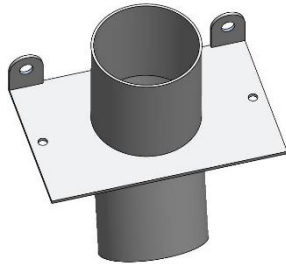
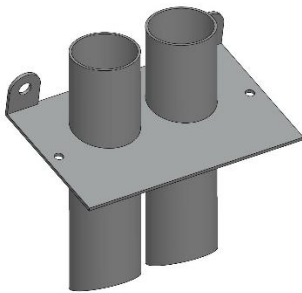
- Machine power (W) : 150
- Consumption in operation (Wh) :
On standby, outside operation times : 30
Fog system with knob and ratio cycle at 100 % : 115
Heating : 150

2.5. SOFTWARE DATA

- I/O management : Via Electronic card
- Operating errors:
Water loss
Generation failure
Non-effective draining
Water temperature too high
Heating cycle operation
- Parameter control :
Control box
Smartphone / Touch pad / App
Control box

2.6. AIR DATA

- Ventilation : One electronic cooling fan and one fog extraction fan (ventilation speed adjustment is possible)
- Extraction options :
 - 2 Stainless tubes Ø1.57 In
 - 1 Stainless tube Ø2.48 In
 - 2 Stainless steel elbow Ø1.57 In
 - Elliptical Ø2.48 In



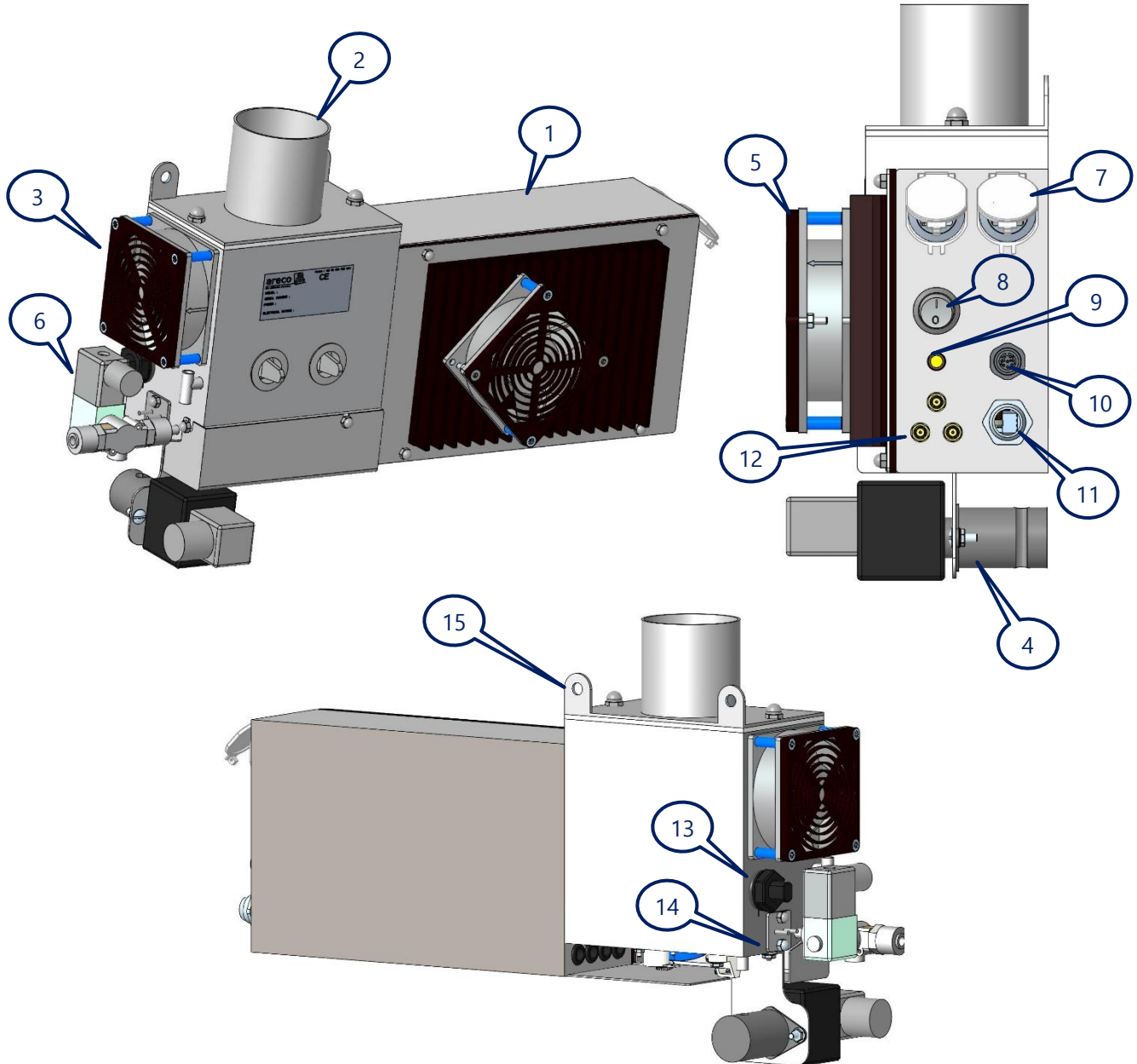
*Dimensions in millimeters

2.7. OTHER CHARACTERISTICS

- Operating temperature : 33.8°F to 95°F
- Storage temperature : -4°F to 158°F

3. DESCRIPTION OF MATERIAL

3.1. OVERVIEW



Item	Designation	Item	Designation
1	Electrical box	9	Operating LED
2	Extraction	10	Control box
3	Diffusion fan	11	Cable gland
4	Drain solenoid valve	12	Antenna connectors
5	Cooling fan	13	Horizontal float
6	Filling solenoid valve	14	Heating resistance
7	RJ45/USB connectors	15	Fixing legs
8	Operating switch		

4. INSTALLATION

Import: Use demineralized water. The hydrometric titer (TH) or hardness of the water must be less than 7°f. ARFITEC provides with its humidifiers a high-performance filtration (see chapter on filtration).

4.1. RESERVATIONS

- 3x 100-240V - 50/60Hz
 - Power supply
 - UV Filter
 - Lift pump power supply (optional)
- 1 cold water supply (T° < 18°) with a pressure equal to: 4bars<P>6bars (If the pressure is less than 4 bar, the filtration option with blower must be integrated into the installation).
- 1 PVC exhaust Ø40 with siphon under the installation. (If evacuation is not available, the option with lifting pump must be integrated into the installation).
- 1 electrical outlet 220/50Hz (Option lifting pump or evaporation tank).

4.2. POWER UNIT

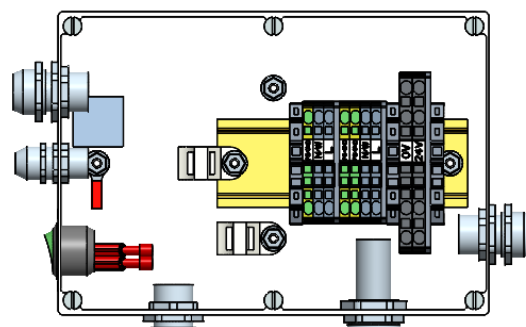


Use Coper conductor only

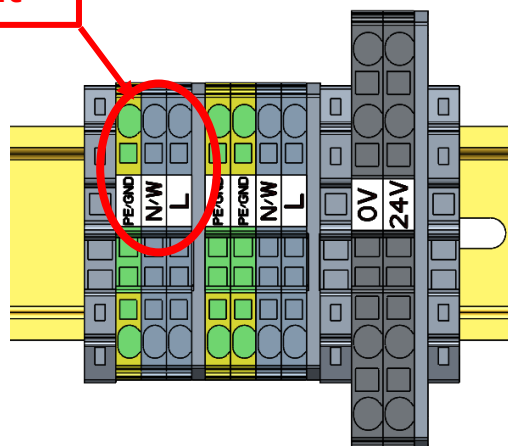
Warning: Potential risk of electric shock, disconnect the appliance from the electric supply before removing the cover of power supply box.

Place the product and connected cord so that the product is not likely to be upset.

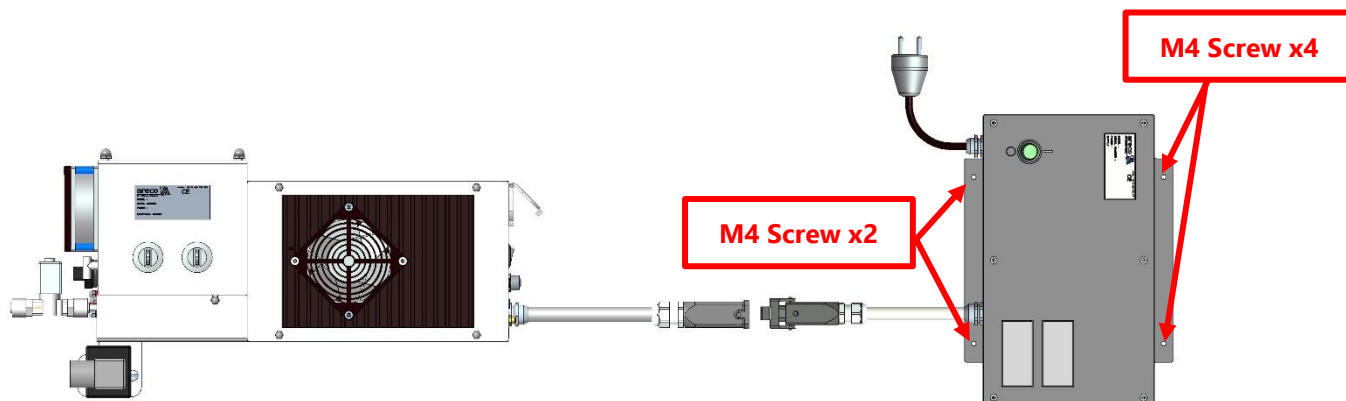
- Open the power supply box
- Plug the electric cord in power supply box like the picture below.



Connect here

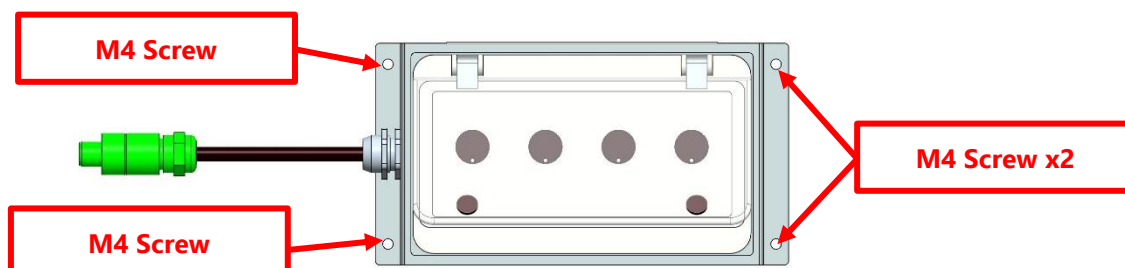
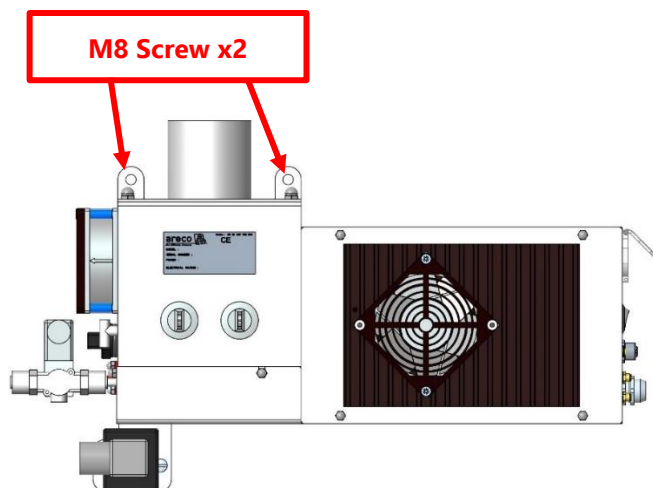


- Fixing the power supply box on a solid plate with 4 x M4 screw
- Connect the Male plug (machine) to the female plug (power supply).
- Lock the clips of the female parts on the male parts.



4.3. INSTRUCTIONS

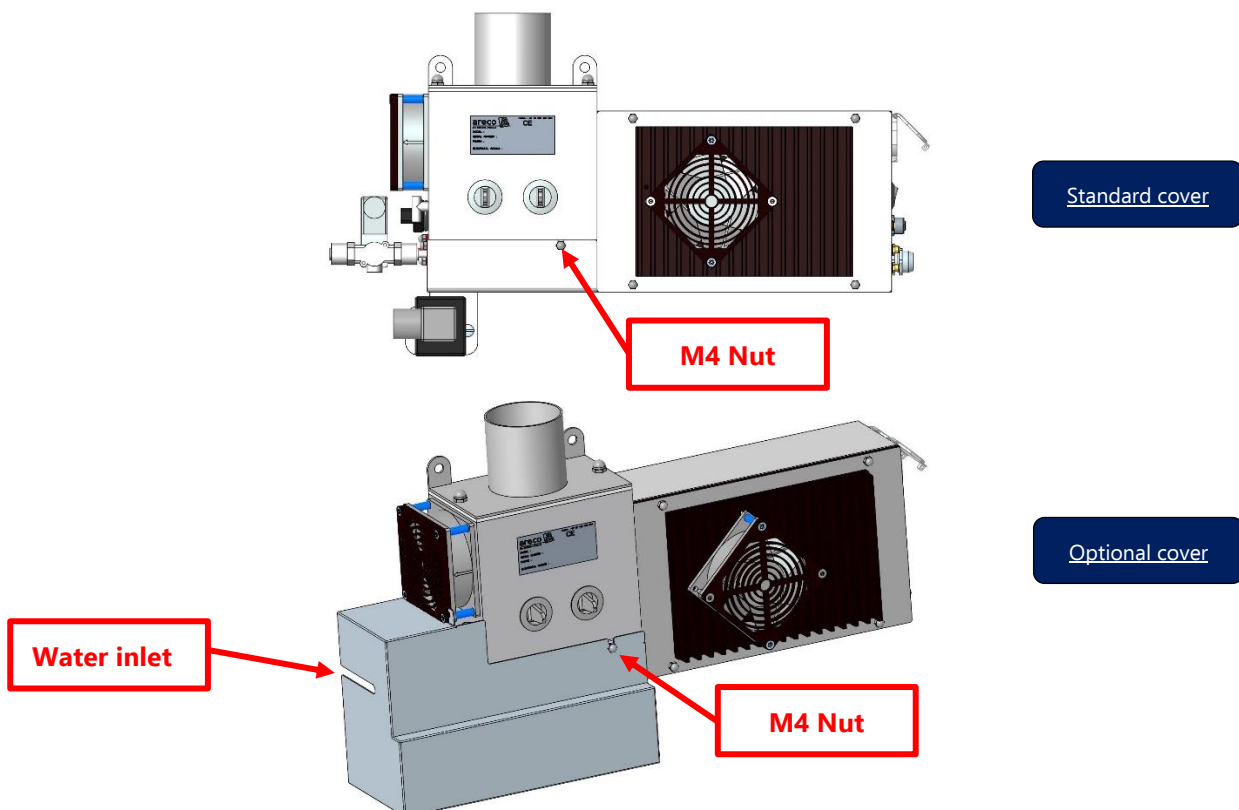
- The machine must be placed on a support or directly on the cabinet with a maximum inclination of +/- 1° horizontally and vertically.
- The control box must be placed in an area easily accessible by the customer, to ensure that the system is adjusted.
- In order to comply with the machine protection rating (IP), follow the following fastening instructions:
 - Fixing the machine on a solid plate
 - Use of the fixing holes provided on the machine and the control box.
 - Fastening with M4 screw for the control box and M8 screw for the machine



- The device drains by gravity, we recommend a minimum height of 50mm between the outlet of the drain and the input of the siphon. The overflow is also to be connected to the siphon. Depending on the configuration of the machine, it is possible that the evacuation of drain water is carried out by an evaporation tank or lifting pump (option).
- In the case of the use of a water circuit not dedicated specifically to the device, performing a break between the emptying of the machine is the emptying to avoid any contamination.
- Do not place any obstacles within 1 meter of the fog outlets.
- Do not place the machine over conductors or electrical appliances.
- Do not use demineralized water oxidizable materials in the area or device is likely to nebulize.
- Preferably, place an elbow on the diffusion outlet holes to guide the fog. A flexible tube can also be a solution, knowing that there will be a loss of flow depending on the length, diameter, surface condition of the hose (Prefer a smooth surface avoiding tight elbows) as well as the flow of the fan.
FYI: The flow rate does not increase with the ventilation speed.
- It is necessary to connect a tube Ø63mm or Ø40mm to the stainless-steel diffusion outlet. Glue the tips using a removable and food seal.
- It is possible to connect a longer tube length to bring the fog over a greater distance (flow loss of 5%/meter). To limit these losses, prefer smooth tubes.
- Provide an inverse slope over all the piping to avoid the flow of losses through the diffusion holes (for hygienic reasons, it is preferable to provide for the evacuation of the return water by a siphon system).
- With the standard fan, it is not recommended to use a tube length greater than 12m. (An option is available at Areco to add a fan).

4.4. PROTECTION COVER

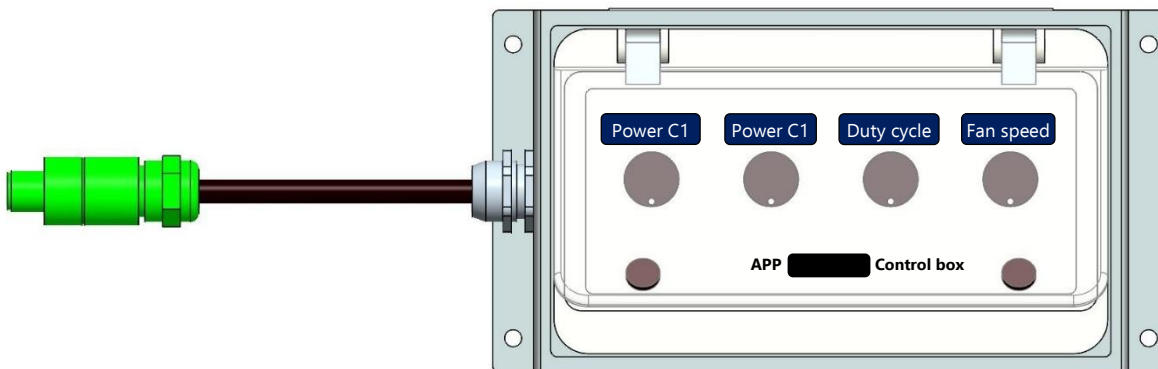
- There are 2 models of protection cover (standard and optional model)
- Before starting up, check the presence of protective cover.



5. CONTROL MODE

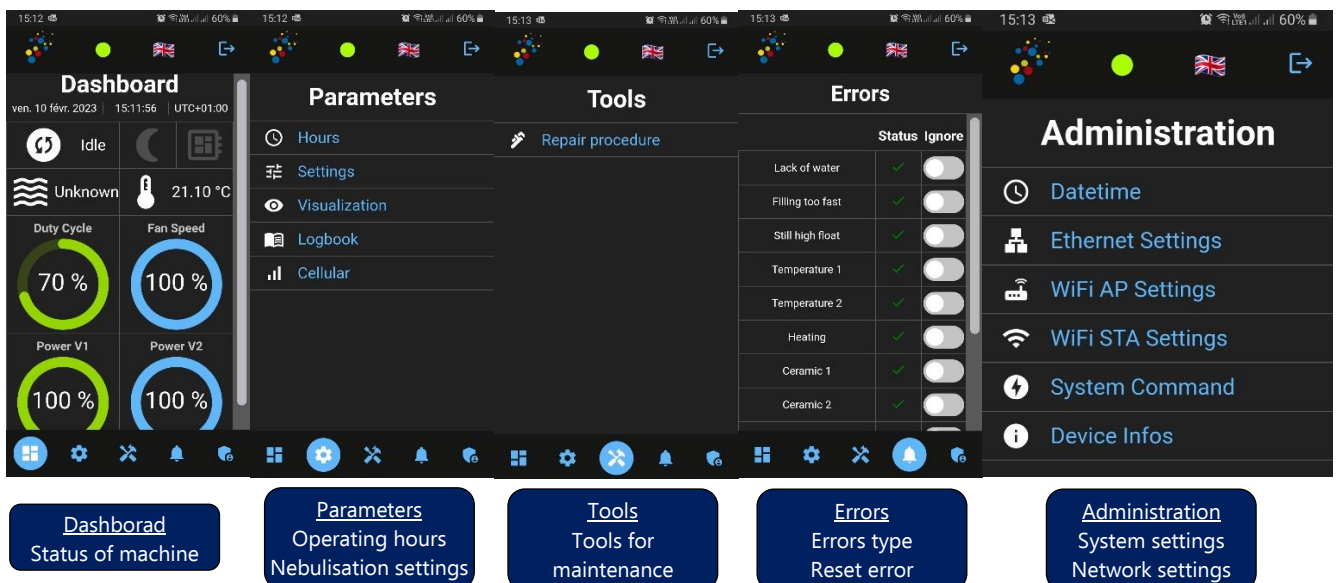
5.1. CONTROL BOX

- For make settings with application, (Smartphone, touch pad), on control box switch the button on « APP »
- For make settings with control box and deactivate the remote control (App), switch the button on « Control box »



5.2. APPLICATION

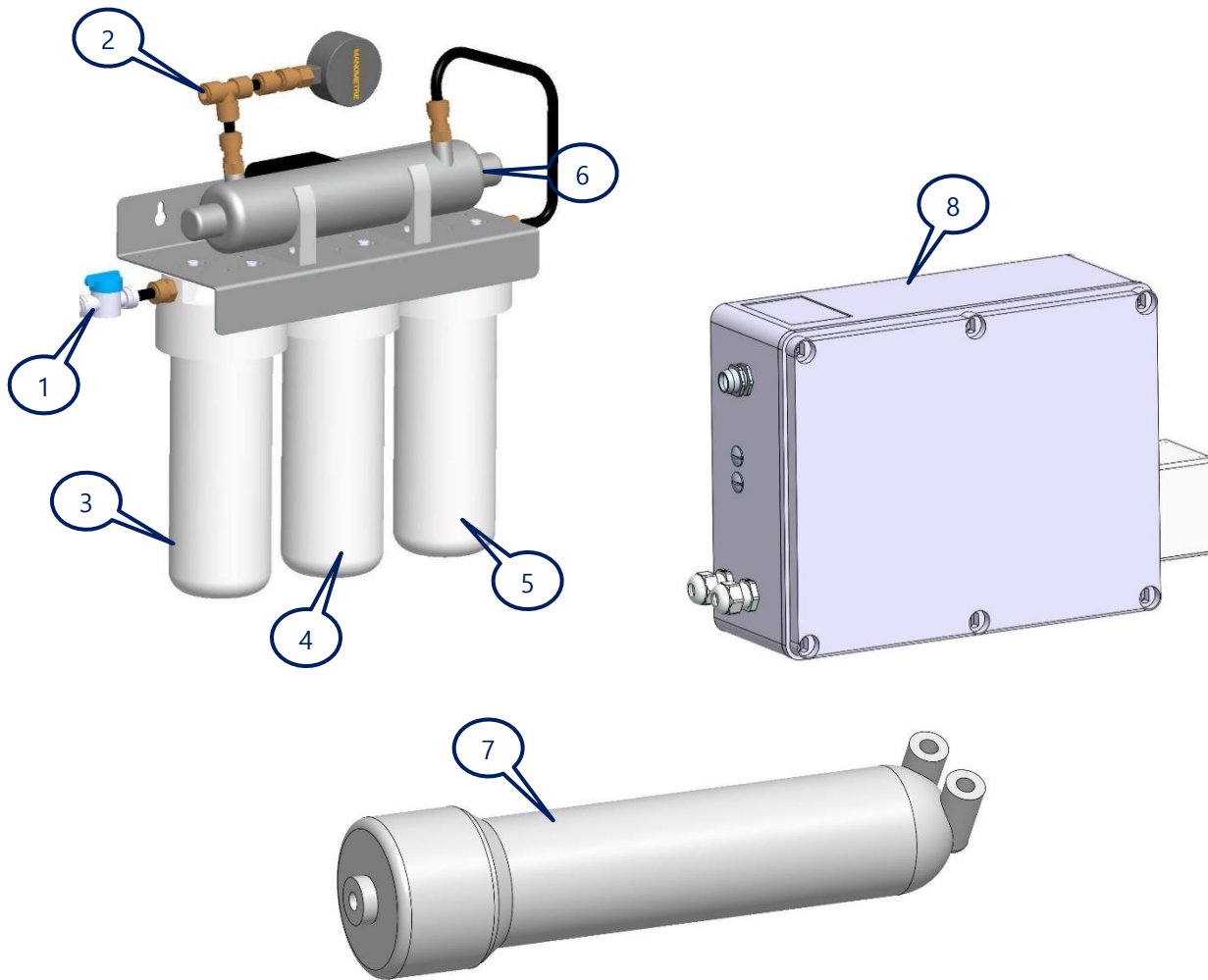
- On control box, put the button on position « APP » to make the adjustments with application.
- Connect a tablet, phone, or computer to the machine's Wi-Fi network (the name of Wi-Fi network is the machine's serial number)
- To access on application, enter the following address on the internet browser (192.168.2.254 is the factory address, it can be different depending on the case)
- For Id and password. The staff in charge of maintenance know them. If you are client or another service, you must make a request to access the application.
- In application, there are 5 tabs with different parameters and settings



5.3. FILTRATION

- Areco filtration offers 4 filters (25 μ , 5 μ & activated carbon), 1 UV filter and 1 osmosis membrane. Possibility to add a blower in case of insufficient pressure.

Depending on the version of filtration, the water supply can be made by the other side, in this case, the position of the filters is also reversed to respect the order 25 μ , 5 μ , activated carbon.



Item	Designation
1	Water inlet valve
2	Manometer
3	Filter 25 μ
4	Filter 5 μ
5	Activated carbon filter
6	UV filter
7	Osmosis membrane (On machine or on filtration depending on machine range)
8	Supercharger

6. CLEANING AND MAINTENANCE

- Regularly clean the environment around the machine (floors, benches, furniture...).
- Check the proper functioning of the UV lamp on the filtration.
- Check the setting of the nebulization parameters.
- Perform a visual inspection every week.

➤ The following checks and handling must be carried out by persons with knowledge of the chemical risks.
In the event of an incident, ARECO declines all responsibility.
In case of degradation of the equipment, ARECO does not take care of the repairs.
This maintenance is taken care of if you subscribe to a maintenance contract.

- In addition to the checks every 6 months, clean the device:
 - Cut the nebulization (Setting to 0% of the power potentiometer).
 - Circulate a cleaning solution and then a disinfectant solution, product diluted to 1% (phosphonitric acid, acetic acid, hydrochloric acid, bleach, hydrogen peroxide).
 - Put the necessary dose by the release of diffusion of the fog.
 - Leave the device for 10 minutes without nebulization.
 - Rinse by successive fillings and drains. Draining is caused by stopping the device by the 0/1 button, wait about 3 minutes for the complete drain before restarting the device. Repeat the operation 3 or 4 times to ensure that there is no more disinfectant product.
 - Restart nebulization by modifying the nebulization power.
- If rinsing is not enough, the device will not immediately resume its optimal flow.
- Visually check the level of nebulization. If an hour after cleaning the performance has not returned to normal, stop the device and provide for the replacement of the ceramics.

6.1. FILTRATION MAINTENANCE

Filters should be checked monthly. They are to be replaced when they take on a yellowish appearance.

- Turn the arrival valve into the closed position.
- Wait a few moments for the water pressure to drop, check on the pressure gauge.
- Unscrew the jar containing the 25µm filter, using the key provided.
- Drain the water and discard the used filter.
- Clean the pot with a clean sponge, not forgetting the head of the pot and the O-ring.
- Rinse these different elements thoroughly and then wash your hands.
- Remove the protective plastic from the new filter, change the filter and check the correct positioning of the O-ring.
- Screw the filter pot and shake it by hand, it is not useful to tighten with the key. Proceed in the same way for the 5µm filter and then the activated carbon filter.
- Turn the arrival valve in the open position and check for leaks.

➤ Only regular maintenance of the filtration ensures optimal operation and good hygiene of the machines.



6.2. ANNUAL MAINTENANCE



The following checks and operations should be carried out by personnel who have electrical qualifications. In the event of an incident, ARECO cannot be held responsible. In the event of deterioration of the equipment, ARECO is not liable to undertake any repairs. This servicing is undertaken if you take out a maintenance contract.

- In addition to the previously mentioned checks, remove the protective cover and check the state of the internal piping. Check that there are no deposits or that the tubes are not crushed. If this is the case, replace them with new tubes.
- Check the operation of the fan; it should be clean and rotate with no noise. Its lifetime (MTBF) is 70,000 hours, i.e. about 8 years, but very damp conditions or moisture laden air can deteriorate it rapidly.
- Check the general state inside, test the electrical connections, tighten them (with power off), check the state of the electrical insulation and fuses. Look for any sources of corrosion, especially around the fan and the DIN rail. In normal use these components should not corrode, but if the device was stored in a cellar or damp place with no power, corrosion of these components can be very quick. In this case remind the user of the conditions of use.
- If the device operates for more than 5000 hours, change the piezoelectric elements. These deteriorate gradually and in general it is possible to anticipate their loss by observing a gradual decrease of the flow rate. However, if usage is intensive, in industrial processes, it is often preferable to carry out a preventive change once a year.
- Take water samples and carry out a potability analysis at least twice a year, and whenever a problem is suspected.

Do not hesitate to contact the ARECO services if you are in any doubt or for further information.



If the power supply cable is damaged, it must be replaced by the manufacturer, the after-sales service or personnel with similar qualifications in order to avoid any danger.

7. OPERATION

7.1. PRE-START CHECKS

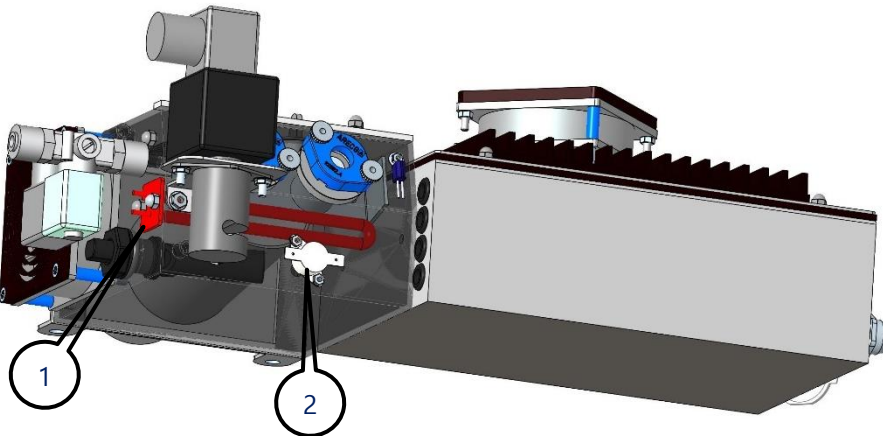
- Check the von connection of the following:
 - Electrical connection between the machine and the power supply between 22v and 23v.
 - Electrical connection between the power supply and an outlet.
 - Electrical connection between the control box and the machine.
 - Electrical connection between the filtration power supply and an outlet.
 - Hydraulic connection between the water supply and the filtration.
 - Hydraulic connection between the filtration and the machine.
 - Connection of the drain to the drain solenoid valve.
 - Connection of the diffusion pipes.

7.2. GETTING STARTED

- Settings:
 - Nebulization power: Adjustment of the quantity/density of fog.
 - Duty cycle: Setting the nebulization time on a 30s basis (default).
Example: if potentiometer at 50% = 15s off – 15s Nebulization.
 - Ventilated speed. : Adjustment of the rotational speed of the fan (acting on the speed of the fog).
- Press the I/O switch on the power supply (position 1).
- Check that the switch on the electrical box is on the on position (1).
- At each start, the machine will drain, if the float detects a water level.
- While waiting for the diffusion tray to be filled, the nebulization will then start according to the settings made. (If nebulization does not start, the machine may be outside the operating time slot, see § next).
- Check for leaks on the installation.

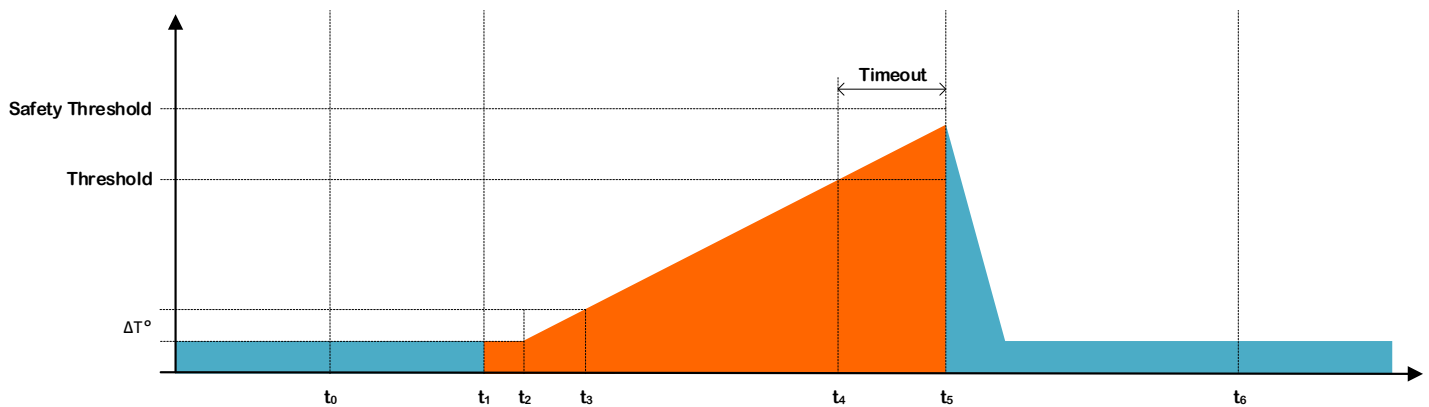
7.3. THERMAL SHOCK

- The thermal shock is provided by a heating resistor located in the diffusion tank. During the heating cycle, the water is brought to a temperature of 70° for 30 minutes. The temperature measurement is carried out by a NTC type probe located on the diffusion tank. Temperature control is managed by the motherboard. In case of malfunction of the heating cycle, a safety safety, cuts the supply of the resistor.



Item	Designation
1	Heating resistance (Red)
2	Safety thermostat

- Operation :



- t_0 : Current time \geq Start time heats up (00:00)
- t_0 to t_1 : Initial emptying
- t_1 to t_2 : Filling, the resistance begins to heat up when the water level is "OK."
- t_2 to t_3 : Control of ΔT°
- t_3 to t_4 : Waiting $T^\circ > 65^\circ\text{C}$ (HEATING_THRESHOLD)
- t_4 to t_5 : Start of the 5min count (HEATING_TIMEOUT) to validate the heating cycle (HEATING_DONE)
- t_5 : HEATING_DONE or Current time \geq End time heats up (01:00)
- t_5 to t_6 : Final emptying then waiting 30min (HEATING_COOLING_TIME); cooling of the tank.

7.4. CONTROLS IN CASE OF MALFUNCTION

- In order to ensure the safety of personnel and equipment, the machine detects possible operating errors. This chapter presents the procedure to be carried out in case of breakdowns.

Checklist:

- Green LED of the 24Vdc power supply must be lit. If not, check that the cable is properly plugged in, that the plug is working, and that the cable is not damaged. If this is the case, proceed to the replacement of it. (In compliance with safety instructions, Areco cannot be held e for responsible).
- Water supply valve at the filtration input of the machine must be in the open position.
- Drainpipe connected a drain.
- Verification of machine settings (Duty cycle, nebulization power, ventilator power) via application, web server or IOT platform.
If control box option, check that the potentiometers are not in position 0.

List of detectable errors:

- **Lack of water:**
The system takes too long to fill up: it is a problem with the water supply to the system that is detected.
- **Float stuck in the top state:**
This error indicates that the system is no longer able to:
 - Determine the water level correctly (Problem with the operation of ceramics).
 - Drain (hygiene problem with the risk of having a clogged evacuation).
- **Filling too fast:**
Causes :
 - Filters clogged and become passers-by.
 - Evacuation problem
- **Float error:**
Stop the machine, the defect certainly comes from the water pollution, in this case:
 - Check that the machine is supplied with water (check the water supply valve at the entrance of the machine).
 - Check the condition of the water filters and change them if necessary.
 - After a minimum of 5 minutes of shutdown, you can restart the machine. If the error persists, call the after-sales service.

- **Drain error:**

This error is a safety for the hygiene of the machine.

- Stop the machine, check that the drainpipes are not pinched. After a minimum of 5 minutes of shutdown, you can restart the machine. If the error persists, call the after-sales service.

- **Temperature error:**

This error is a safety for the hygiene of the machine.

- Turn off and on the machine if the problem persists, call the after-sales service.
- When the water temperature is between 25 ° C and 30 ° C, the device will automatically go into drain mode every hour (duration: 5 minutes).
- Above 30 ° C, the device will automatically stop. The restart of the nebulization will only take place once the temperature has fallen below 30°C.

- **Heat error:**

This error is a safety for the hygiene of the machine, call the after-sales service.

Important: When displaying an error code, call the after-sales service for more advice.

8. STANDARDS AND CERTIFICATIONS

8.1. ROHS DECLARATION OF CONFORMITY



The European Directive 2002/95/EC restricts the use of 6 substances (see list below) for the manufacture of certain types of electrical and electronic equipment.

"RoHS" compliance means that the product does not contain any of the substances listed below in concentrations above the maximum permitted by the Directive.

Substances :

- Lead: Concentration 0.1%
- Mercury: Concentration 0.1%
- Chrome hexvalent : Concentration 0.1%
- Polybromobiphényles (PBB) : Concentration 0.1%
- Polybromodiphényléthers (PBDE) : Concentration 0.1%
- Cadmium : Concentration 0.01%

ARECO machines are RoHS compliant.

8.2. DISPOSAL OF USED PRODUCTS (WEEE)

European legislation, applied in all Member States, requires that electrical and electronic products bearing the mark (right) must be disposed of separately from other household waste.

When disposing of these products, please follow the recommendations of local authorities.

Once discarded, they are recycled appropriately.

This effort will help us reduce waste and its negative consequences.

The mark on electrical and electronic products only applies to the current member states of the European Union.



8.3. STANDARDS

- Conforms with UL 998 : UL Standard for Safety Humidifiers
- Conforms with CSA C22.2 #104 : Standard for Safety for humidifiers
- Conforms with NSF 169 : Special purpose food equipment and devices
- Complies with EN 60335-2-98: Household and similar electrical appliances – Safety – Part 2-98: Particular requirements for humidifiers.
- Complies with the directive of the Ministry of Health for the prevention of legionella in water balloons. Order of 30/11/2005 of the Ministry of Health and Solidarity.
- Complies with the Low Voltage Directive 2006/95.
- Complies with standard NF EN 61000-6-1 and NF EN 61000-6-3 Immunity and emissions for residential environments.
- Complies with the Low Voltage Directive 2006/95.
- Complies with Decree 2017-657 and the Decree of 07/08/2017.

8.4. PATENTS

- FP 94 08 204, 96 00 048
- EP 95 401 602, 8 97 400008.5 , 98 400152.9.
- US and CANADA 5,624,608, 08,778,632 and 2,153,087
- JP 189707,356725
- 0102618 PCT-WP et 0602687 PCT-WP
- 378377-004 and 06: 1323