



NEB 6500

Adiabatic humidifier

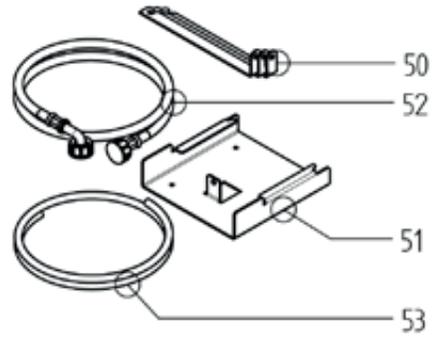
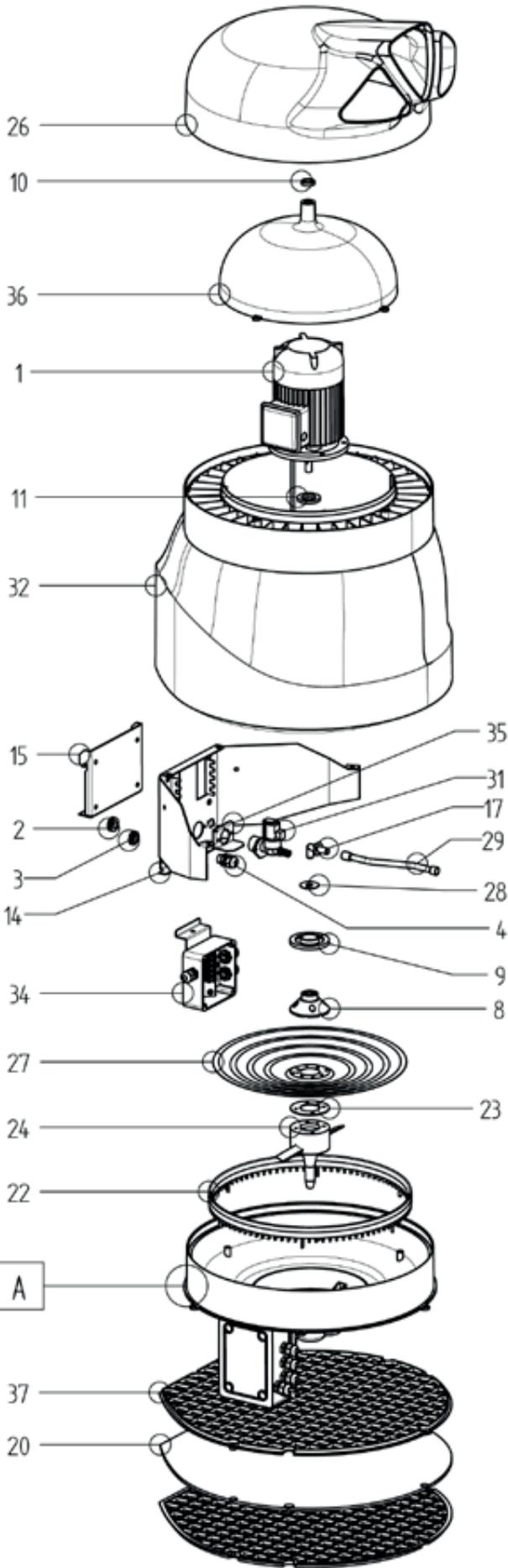
F3025 - NEB 6500

F3026 - NEB 6500 R



READ AND SAVE THESE INSTRUCTIONS

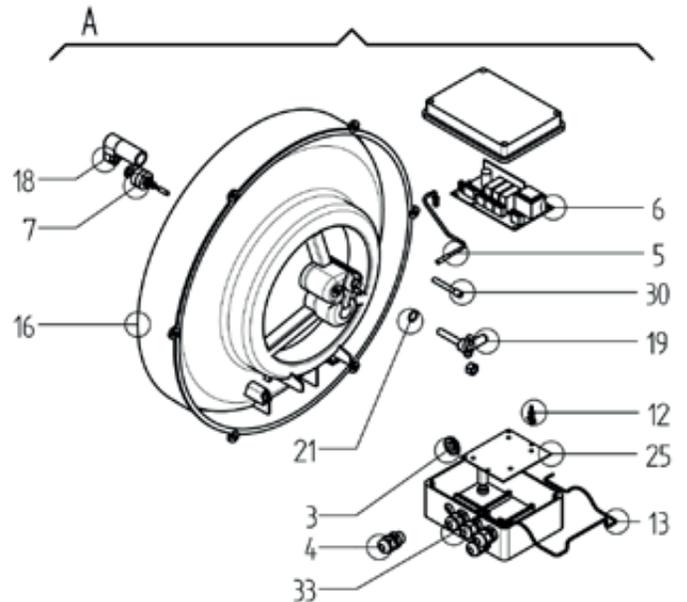


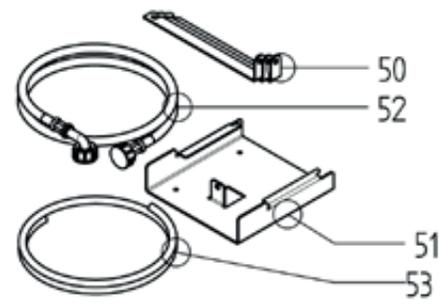
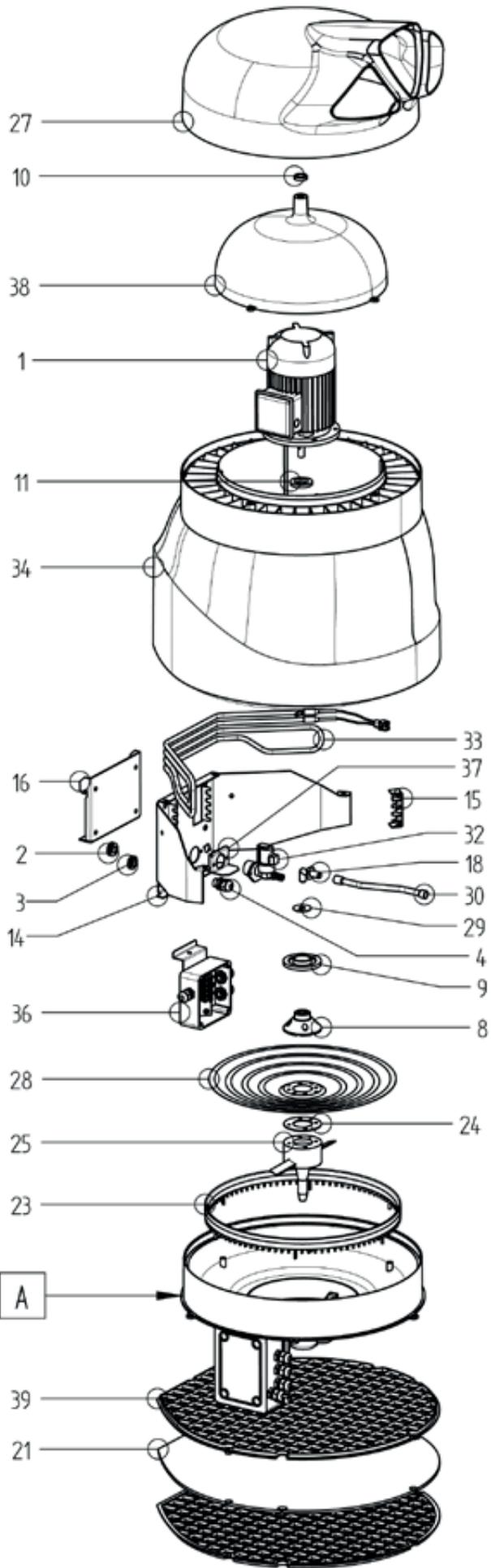


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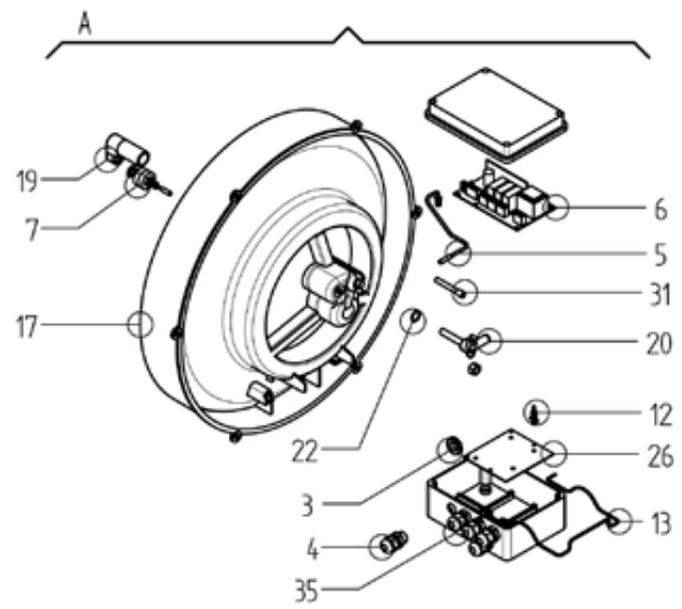


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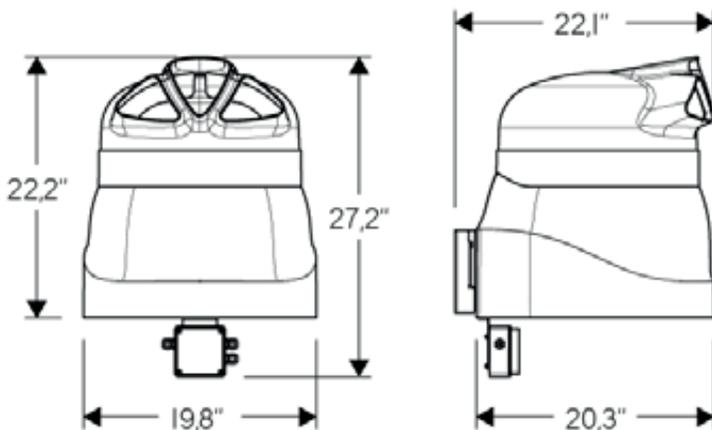
1 TECHNICAL FEATURES

1.1 Main features

	NEB 6500	NEB 6500 R
Atomizing capacity	3.3 - 15.8 lbs/hour	3.3 - 15.8 lbs/hour
Electric power supply	120 V, 60 Hz	120 V, 60 Hz
Rated Current	3.0 A	3.8 A, 70 W
Air Flow	164.8 cfm	164.8 cfm
Water Supply Pressure	14.5 - 145 psi	14.5 - 145 psi
Supply Tank Water Content	0.12 lbs	0.12 lbs
Protection Rating	IPX4	
Operating Temperature	+33.8 °F ... +95 °F	+28.4 °F ... +95 °F
Operating humidity	0 ... 100% R.H. n.c.	0...100% R.H. n.c.

Tab. 1 - Main features

1.2 Dimensions and weights

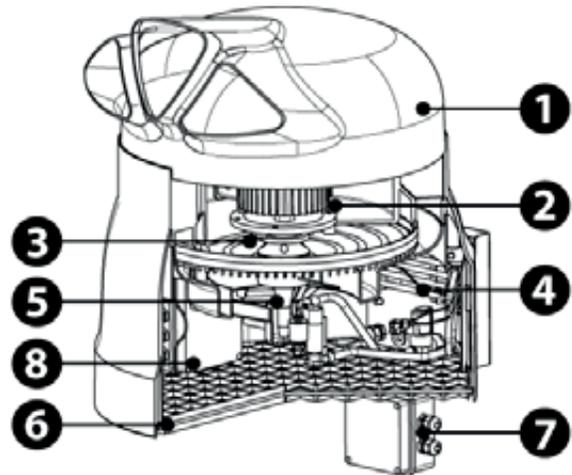


Pic. 1 - Dimensions

	NEB 6500	NEB 6500 R
Weight	38.8 lbs	43.2 lbs

Tab. 2 - Weights

1.3 Description of the components



Pic. 2 - Main components

1	Air diffuser	5	Suction cone
2	Electric motor	6	Air filter
3	Rotating disk	7	External junction box
4	Heating resistance (only 6500 R)	8	Internal junction box

Tab. 3 - Main components

2 INTRODUCTION

The NEB 6500 is an air humidifier and operates on the principle of water atomizing by centrifugation. The machine must be fed with tap or demineralized water. The NEB 6500 operation is controlled by a circuit board that runs the normal machine operations and also the regular automatic washing cycles of the supply tank to prevent stagnant water from depositing inside the machine, preventing the growth of bacteria that is dangerous to human health.

The machine can operate down to a temperature of +33.8 °F. The anti-freeze device allows NEB 6500 R to operate down to a temperature of 28.4 °F.

2.1 General safety rules

ATTENTION! Please read these instructions carefully! To reduce the risk of fire, electrical shock or injury:

- » READ this entire manual before installation or maintenance.
- » Turn machine off.
- » DISCONNECT all electrical power completely.
- » The machine must be connected to a power supply via

the control panel and in compliance with all local and federal regulations.

- » Always DISCONNECT the electrical power supply at the main cutoff switch on the main control panel. Verify the unit has no power with a voltage tester.
- » Make sure no tools or extra parts have been left in the machine prior to reinstallation and powering up the unit.
- » Installation and maintenance of the machine must be done by expert and qualified personnel, capable of carrying out the work according to the instructions found in this manual.
- » This machine has been designed to humidify the air; it is not advisable to use the machine for anything other than humidity control.
- » Any use other than that described in this manual is to be considered improper, potentially damaging and dangerous.
- » Carefully keep these instructions for future reference.

This humidifier is NOT intended for people, children included, with limited physical or mental capabilities or without enough experience concerning the use of it. Keep it away from children and animals.

3 INSTALLATION

3.1 Materials supplied

The following materials are supplied with the machine. Check that all the materials listed below are in the pack before starting work.

- » N.1 humidifier mod. NEB 6500 or NEB 6500 R.
- » N.1 installation manual.
- » N.4 expansion plug with screws.
- » N.1 brackets for wall mounting.
- » N.3 brackets for hanging installation.
- » N.1 screw M6×20 EX6 with washer.
- » N.1 Water supply pipe 59" long, with connectors G $\frac{3}{4}$.
- » N.1 water drain pipe 59" long and 0.39" i.d..
- » N.2 cable ties.

3.2 Preliminary operations

To make the NEB 6500 operative you need:

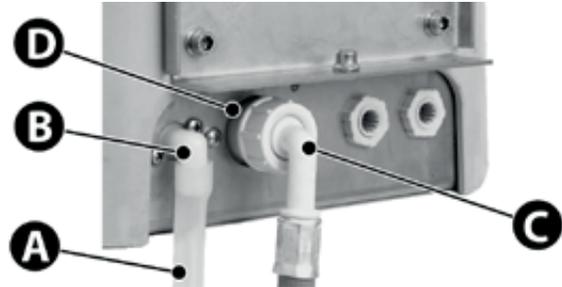
- An electrical control box with a 120 V circuit for power with a ground connection and protection devices.

Installation must comply with the safety requirements of the local regulations in force.

- Water supply connection.
- Water drain connection.

It is advisable to carry out the operations listed below before starting the actual installation.

First, connect the hydraulic inputs under the rear bracket as shown in Pic. 3 .



Pic. 3 - Main hydraulic connections

Refer to Pic. 3 and:

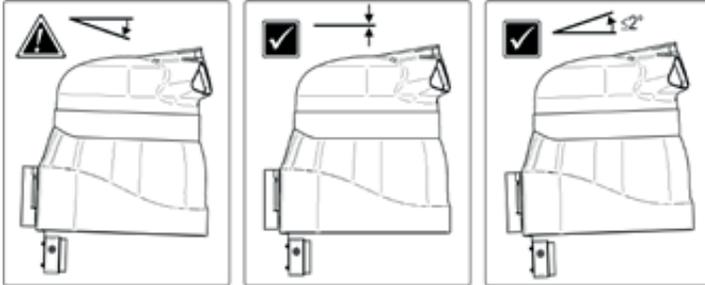
- » Connect the supplied pipe, going to the water discharge drain A, to the discharge elbow bend B.
- » Connect the extremity C of the water-loading pipe, supplied, to the supply solenoid valve D.

NOTE: the above operations can also be performed out with the machine already installed.

The water connection to the water load line must be made with a set of brand new gaskets: any old gasket cannot be reused and must be replaced.

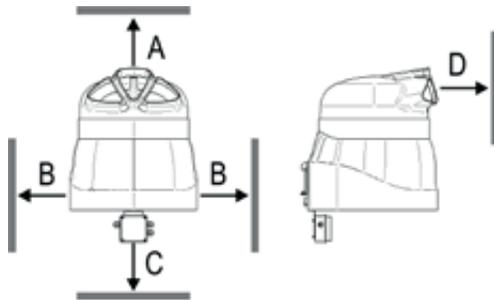
4 POSITIONING

The NEB 6500 must be installed in a horizontal position, with the air filter turned downwards, off the ground. Any other position will compromise the proper operation of the machine.



Pic. 4 - Inclination

To allow maintenance to be carried out when necessary and also for the correct operation of the machine, the minimum advised distances must be respected when positioning the humidifier. Depending on the type of installation that will be adopted, choose the most opportune position for humidifying the room.



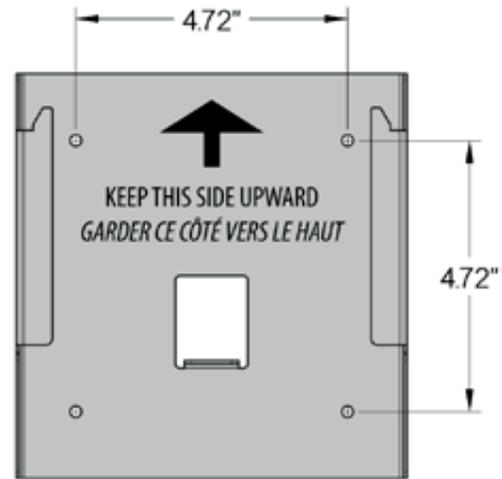
Pic. 5 - Minimum distances

	A	B	C	D
Distance [inches]	≥40	≥20	≥60	≥120

Tab. 4 - Minimum distances

4.1 Wall installation

To install the humidifier on the wall, use the bracket and the four screws with screw anchors supplied with it. The bracket can be used as a template to mark the holes on the wall. Respect the distances, as indicated in par. “4 Positioning”, and make sure that the bracket is level before drilling the holes.

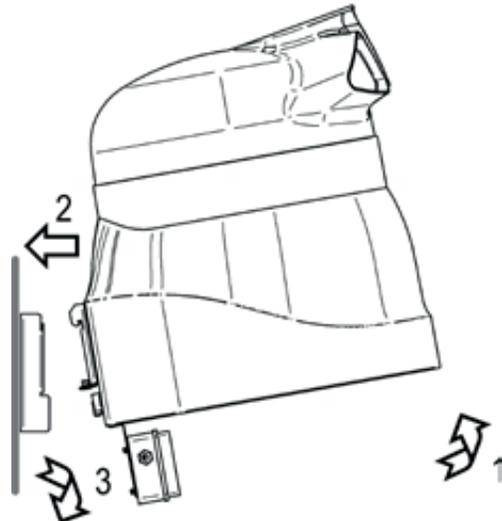


Pic. 6 - Wall mounting bracket

Make sure that the wall can support the machine under operating conditions and that the screws are the right ones for that type of wall.

- » Drill four 5/16” holes, 1.75 inches deep, in the wall as shown in Pic. 6.
- » Clean out the inside of the holes.
- » Insert the four screw anchors while keeping the two expansion wings in a vertical plane.
- » Fasten the bracket.

The bracket must be fitted as in Pic. 6.



Pic. 7 - Three steps for wall mounting positioning.

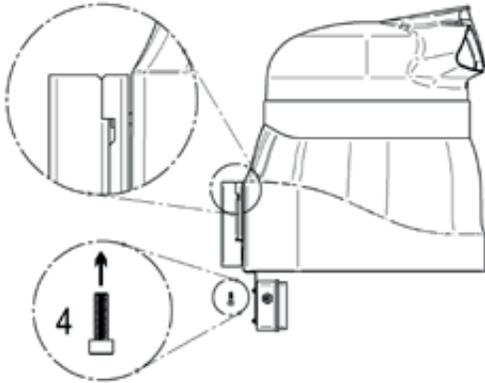
Once the bracket has been fixed to the wall with the four screws, carry out the following operations, as indicated in Pic. 7:

1. Lift the machine and tilt it slightly towards the wall.
2. Move the machine until the brackets fit into place prop-

erly.

- Let the machine rotate, while guiding it, to the horizontal position: at this point the brackets should be perfectly coupled and interlocked.

Check that the two brackets are correctly coupled on both sides before leaving the humidifier (see detail on Pic. 8).



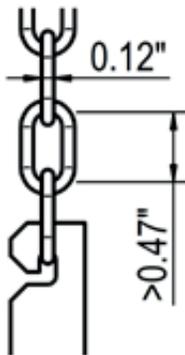
Pic. 8 - Rear bracket safety screw.

- Insert the safety screw supplied that joins the two brackets and that prevents the machine from getting dislodged accidentally (see Pic. 8).

4.2 Hanging installation

Hanging installation is done with the supplied brackets. Three supporting chains, from which to hang the machine, must be prepared as follows:

The chains must hang down as straight as possible and be attached to hooks that can withstand the weight of the machine (see "Tab. 2 - Weights")

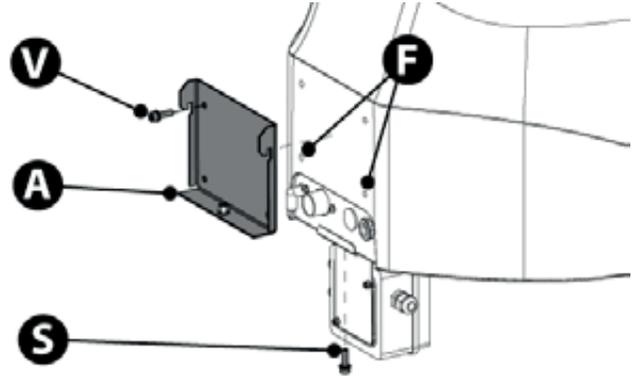


Pic. 9 - Hanging chain sample

Use metal chains, preferably steel chains: chain material should not be affected by humidity. Respect the minimum distances indicated in Pic. 5.

Disassemble the rear bracket **A**, for wall installation, as

shown in Pic. 10, by unscrewing the four screws **V**. Then remove the screw **S** that fixes the external junction box.

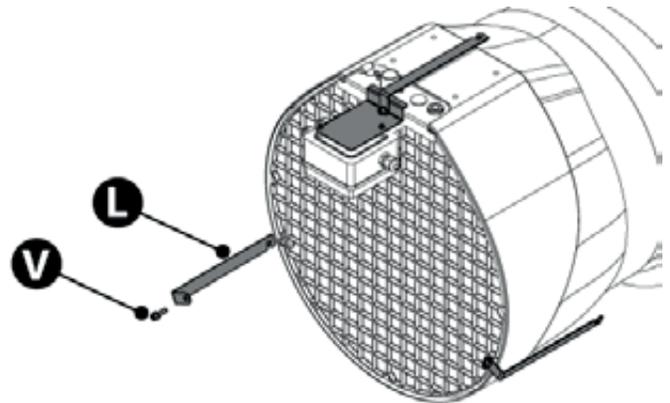


Pic. 10 - Wall mounting bracket removal

Now five (5) screws should be available (4 screws removed from the plate **A**, and one safety lock screw supplied) each with its own washer.

*The bracket **A** that has just been disassembled, must be kept for future installation.*

Refit two screws **V** into the holes **F** indicated in Pic. 10. Use three screws **V** to fasten the brackets **L**, for hanging installation as shown in Pic. 11.



Pic. 11 - Assembling the three hanging brackets

Hook the machine to the chains and at the same time check that it is in a horizontal position.

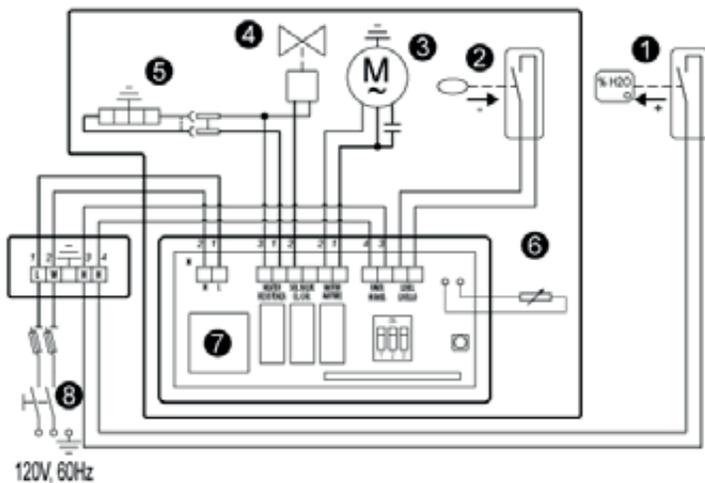
The brackets are set to allow the removal of the filter so that normal maintenance operations can be performed without having to unhook the machine from the supporting chains.

4.3 Electrical connections

Installation provides for the utilization of an ON/OFF humidistat that controls starting and switching off the humidifier: it is, however, possible to use a simple ON/OFF contact; the only difference is that the machine must be started and stopped manually. This choice however does not in any way influence the installation procedure described below.

Installation must provide a separator switch for the appliance on the electric power supply, as shown in Pic. 12. Installation of a 2.5 amp slow blow fuse is necessary for the start-up of the motor.

4.3.1 Wiring diagram



Pic. 12 - Wiring diagram

1. External humidistat (not supplied).
2. Floating device.
3. Electric motor.
4. Solenoid valve.
5. Heating resistance (only on 6500 R)
6. Temperature probe
7. Electronic board
8. Line protection (not supplied)

4.3.2 Cabling

The flexible lead that is used for the electric connections, must be at least protected by an ordinary PVC sheath and respect 227 IEC 53 standards (CENELEC H05VV-F or H05VVH2-F or better)

With reference to Pic. 13:

- » Remove the cover of the external junction box by un-

screwing the four screws. In the box there are two cable clamps that will be used to pass the power cable **P** and the humidistat cable **H**.

- » Pass the power cable through the cable clamp **P**.
- » Fasten the neutral and phase (live) wires to the terminals **L** and **W** and the ground wire to the ground terminal.



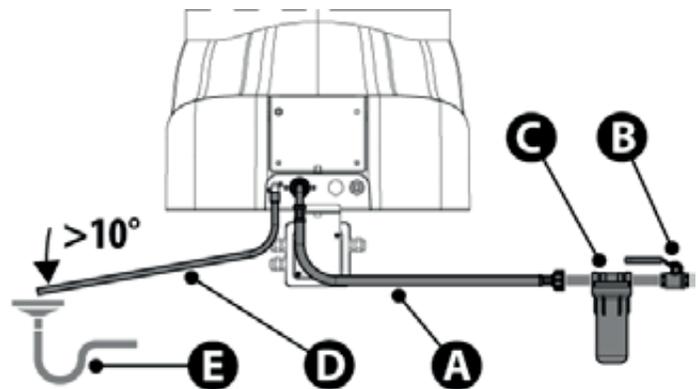
Pic. 13 - External junction box opened.

- » Pass the cable of the humidistat through the cable gland **H** and connect the two wires to the **H-H** terminals. The cable holder is fitted with a special plug that is suggested to keep safe for an eventual future use.
- » Close the junction box.

Do NOT apply any voltage to the H-H contacts. The electronic board checks the status OPENED or CLOSED of the H-H contacts to start and stop the humidifier.

4.4 Hydraulic connections

The installation of the humidifier also needs the water supply and drainage pipes connected. The pipes supplied must be connected to the machine as explained in par. "3.2 Preliminary operations".



Pic. 14 - Hydraulic connections

The supply pipe **A** supplied has a threaded bushing $G\frac{3}{4}$ at both ends: connect the free end (the straight one) directly

to a water tap **B**, or to an extension. It is advisable to install a mechanical filter **C** down-line of the tap **B**, as shown in Pic. 14.

For the water drain use the plastic pipe **D** supplied or one that is similar having a 0.39 inches internal diameter. The pipe must be installed as shown in Pic. 14 with a minimum slope of 10°, to guarantee the correct drainage of the water. A siphon **E** must be on the main drain and not on the drainpipe connected to the machine.

To guarantee regular drainage of the water, make sure that the drainpipe has a slope and is straight, without any bends or constrictions. The end of the drain tube must be "in air" to prevent any back pressure.



Pic. 15 - Details of the end of the drain tube.

WARNING! Any failure in the drainage can cause water dripping from the humidifier.

4.5 Final operations

- » Direct the outlets of the air diffuser. To do this, loosen the screw that holds the diffuser on top of the machine, and turn the diffuser: at the end of the operation block the screw again.
- » Check that the hydraulic connections have been properly installed. Open the water supply tap and check that there are no leaks along the supply circuit

5 OPERATION & CONTROL

5.1 Preliminary checking

Before starting up the humidifier check that:

1. All the connections, both electrical and hydraulic, have been done according to the instructions found in this manual.
2. There are no leaks.
3. The air filter is fitted.
4. The water supply tap is open.
5. The distribution inlets are correctly positioned.

WARNING: prolonged use of the machine without water supply can seriously damage the solenoid valve.

5.2 Starting

To start the humidifier turn on the main switch. The machine will perform a washing cycle lasting about one minute, as described in detail in par. "6.3 The washing/reset cycle". At the end of the cycle, if the humidistat contact is closed, the humidifier starts the motor and water atomization begins.

IMPORTANT: The humidifier will start to atomize the water only if the H-H contact is closed.

During operation check if the water is drained regularly. If it should be necessary to adjust its humidification capacity, follow the instructions indicated in par. "6.2 Adjusting the humidification capacity".

WARNING: if the humidifier works in a room with over saturated humidity the air filter can impregnate reducing the air flow. Use an humidistat or a timer to avoid this situation.

5.3 Stopping

To stop the humidifier:

1. Take the humidistat to the minimum % R.H. value so that the corresponding ON/OFF contact is opened.
2. Wait for about one minute to give the machine the time to carry out the washing cycle.
3. Open the main electrical power switch;
4. Close the water supply tap.

WARNING: if the main switch is opened while the machine is atomizing the electronic board will NOT perform the washing cycle and the basin will NOT be emptied.

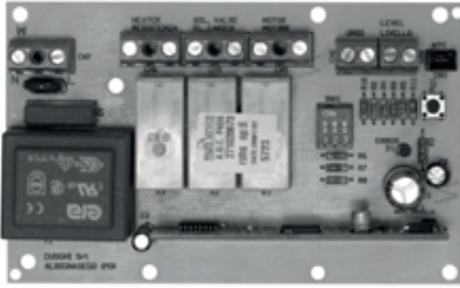
6 ELECTRONIC CONTROL

6.1 The electronic board

The operation of the NEB 6500 is controlled by the electronic card, that has the following functions:

- » Adjustment of the humidification capacity.
- » Starting and stopping of the washing/reset cycle.

The regulation of the capacity is made with dip-switches.



Pic. 16 - The electronic board

6.1.1 Dip switches

The electronic board of Pic. 16 regulates the capacity of the dehumidifier with dip-switches according with Tab. 5.

ON							
1	2	3	Maximum capacity	9.877 lbs/hour			
■	■	■	13.955 lbs/hour	■	■	■	7.407 lbs/hour
■	■	□	13.139 lbs/hour	■	■	■	4.938 lbs/hour
■	■	□	12.324 lbs/hour	■	■	■	2.116 lbs/hour

Tab. 5 - Dip switches

NOTE: the values are indicative. By default the dip switches are set for maximum capacity.

6.2 Adjusting the humidification capacity

Adjustment can be done during the installation phase, or later if, for example, machine operation is to be adapted to the variations of the environmental conditions in the environment where it has been installed. In this case, proceed as follows:

- » Perform the stopping procedure as in par. “5.3 Stopping”.
- » Remove the air filter by unscrewing the three screws that hold it.
- » Remove the electrical connection box by releasing the spring.
- » Open the electric connection box and adjust the position of the dip switches according to its needs.
- » Close the electric connection box and place it back in its position with the spring.
- » Close the machine and make the checks as described in par. “4.5 Final operations”.
- » Start the humidifier again.

6.3 The washing/reset cycle

The electronic card of the NEB 6500 is programmed to carry out a washing/reset cycle each time:

- » The machine is started with the main switch.
- » The humidistat closes the H-H contacts because the necessary %R.H. conditions have been reached.

The scope of this cycle is to prevent water depositing in the machine when it is not in operation, in this way preventing the proliferation of bacteria.

The cycle has a fixed duration, and consists in:

- » Exclusion of the motor, and a 40-second waiting period.
This waiting period gives the motor (and thus the fan/disk unit) the opportunity to stop completely, and give the water in the machine time to collect at the bottom of the basin.
- » Enabling the water loading solenoid valve.
The water enters the basin until the level sensor trips.
- » Wait for the level sensor status change.
The level sensor contact status changes when the water level rises inside the basin.
- » Keeping the water loading solenoid valve enabled for 10 seconds after the level sensor has tripped.
In this way the water level in the basin exceeds that of normal operation and the siphon is primed: this will drain all the water out of the basin.
- » Disabling the loading solenoid valve and waiting for a fixed time.
This time period is needed to make sure that all the water in the basin is drained off.
- » End of the reset cycle.

At the end of the reset cycle the machine waits for the humidistat H-H contact to be closed or, if it is already closed, starts the machine and begins to humidify.

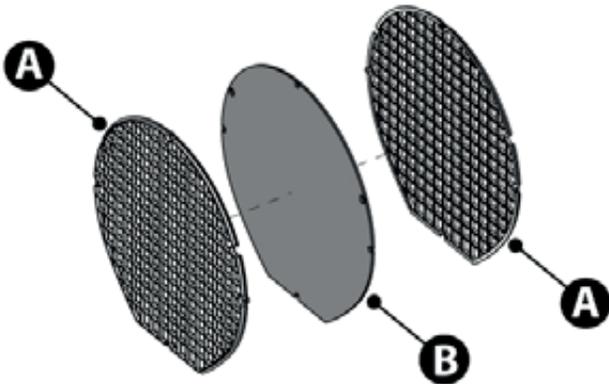
7 MAINTENANCE

The NEB 6500 is designed to guarantee efficient and faultless operation for a long time. It is however, necessary to carry out some simple maintenance operations, how often they are carried out depends on the environmental conditions in which the NEB 6500 operates and on the quality of the water supply.

By using RO water the maintenance frequency is drastically reduced because of the lower quantity of minerals dissolved in it.

ATTENTION: Before carrying out any maintenance stop the humidifier as described in par. "5.3 Stopping" then wait for the machine to come to a perfect standstill. Keep to the general safety rules found in par. "2.1 General safety rules". Before starting the machine again, duly check everything as described in this manual.

7.1 Cleaning the air filter



Pic. 17 - air filter.

The filter must be cleaned periodically, since the accumulation of dirt and dust reduces air delivery and so the efficiency of the machine.

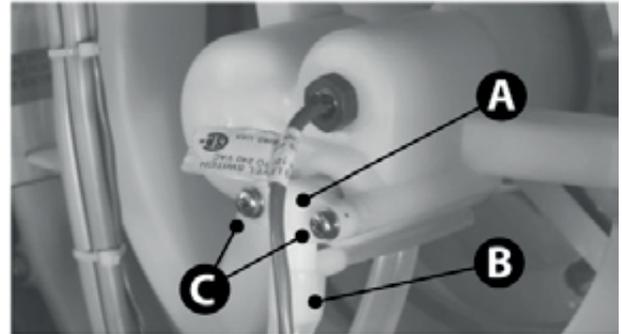
- » Remove the filter by unscrewing the three screws holding it.
- » Separate the two plastic grids **A** from the filter material **B**;
- » Clean the filter **B** with a vacuum cleaner or immerse it in slightly soapy water, and rinse: dry without wringing.

Filter MUST BE COMPLETELY DRY before reinstallation.

ATTENTION: never enable the humidifier without the air filter fitted! The air filter is composed of three pieces that must be assembled in such a way that the filter material **B** is enclosed between the two plastic grids **A** (Pic. 17).

7.2 Drain siphon

It may be necessary to periodically clean the drain siphon **A** Pic. 18: an accumulation of dirt inside it could compromise its operation. For best results check the syphon when cleaning air filter. When it needs cleaning do the following :

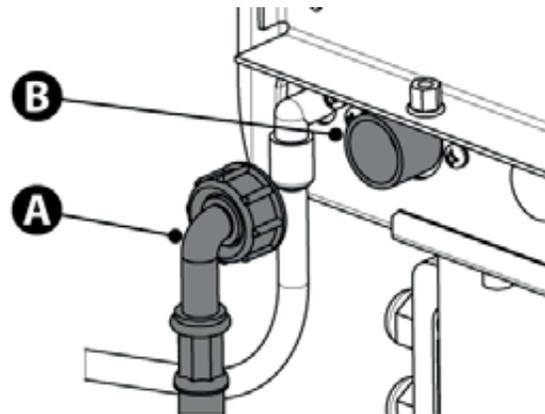


Pic. 18 - The siphon

- » Remove the air filter.
- » Slip out pipe **B** from the siphon **A**.
- » Unscrew the screws **C**.
- » Remove component **A**.
- » Clean both piece **A** and the hole in which it is inserted, then refit everything.

7.3 Feeding solenoid valve.

The drain solenoid valve is fitted with an input filter that must be checked and cleaned periodically.



Pic. 19 - Solenoid valve water filter cleaning

To reach the filter, the pipe connection **A** of the supply pipe must be unscrewed: the filter is found inside the threaded

bushing B of the solenoid valve.

If cleaning becomes too frequent, it is advisable to install a cartridge filter on the machine water supply line (see: par. “4.4 Hydraulic connections”).

7.4 Performing the washing/reset cycle

- » Check that the cycle is done periodically.

To check, carry out the following procedure:

- » Detach the end of the drainpipe not attached to the machine and insert it into a container to collect the water drained off.
- » Stop the humidifier by turning off the control humidistat: this starts the washing cycle.

If the cycle does not go on regularly, the water basin and the siphon must be cleaned.

ATTENTION: The NEB 6500 is an air humidifier, so any other use to which it might be put, and which is not what it was designed for (for example spraying insecticides, disinfectants, essences or any product other than water) may be dangerous or compromise the good operation of the machine.

8 STORING

- » Keep the machine in an environment with a temperature range between 14 °F and 140 °F.
- » When the machine is still packed, keep it upright.
- » Do not put any other heavy things on the box.

8.1 Points to check before and after a long period of inactivity

8.1.1 Before

- » Disconnect the electric connections and close the supply water ON/OFF taps;
- » Cover the machine to protect it from the dust.

8.1.2 After

- » Check the state of the air filter and clean it if necessary.
- » Check that the float switch is operational by moving it, and check that the fan/disk unit turns freely.
- » Make sure that all the connections have been done correctly, according to instructions.
- » See that the washing/reset cycle is tested, as described at par. 7.4 “Performing the washing/reset cycle” of the following manual.

9 DISPOSAL OF THE PRODUCT

The machine is mainly composed of parts in plastic, and some parts in metal; both materials can be recycled. Before disposing of the product it is advisable to separate the plastic parts (cap, fan, foils, etc.) from the metal parts (motor, installation brackets). Remove the electronic card from the electric connection box and see to its disposal according to the regulations in force.

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