EMICON
HIGH-TECH AIR CONDITIONING AND REFRIGERATION

CE

OPERATION AND MAINTENANCE MANUAL

PRECISION AIR CONDITIONING UNIT
WATER COOLED

UV “MILLENNIUM”

CONTENTS

The manufacturer reserves the right to modify this manual without any notice.

1 - INTRODUCTION

1.1 Manual content

This handbook, written originally in Italian, was completed in compliance with the " Machinery Directive p 1.7.4. and the harmonized standard UNI EN 292/2. It contains all the necessary information for carrying out transportation, installation, start up, operating, adjustments, maintenance and disposal of the Air Conditioning Machines series UV "Millennium".
In case of doubt about the correct understanding of these instructions, please contact the manufacturer in order to get accurate explanation.

1.2 Safety marks

Following safety marks are employed in this manual to draw attention to all useful information in order to avoid dangerous situation which can be unsafe and harmful for people, can damage equipment and environment besides breaking the machine.
.

It means operation and behavior not allowed.

It means danger or risk to people, things or environment.

It means an electrical danger.

It means a warning about important functions or useful information.
It is necessary to pay the maximum attention to text paragraphs marked with this symbol.

1.3 Referring standards

The machines of the 'UV' series are designed and manufactured in compliance with the relevant European Directives and satisfy the essential safety requirements as set out in the Directive 89/392 CE, and further amendments, as also attested by the CE mark, which is found on each unit.
The requirements of these air conditioning machines are certified by the manufacturer, who has signed, attached to this manual, the CE Declaration of Conformity.

1.4 Warranty

The manufacturer warrants the Air Conditioning Machines according to what stated on his general sales terms or according to what else explicitly agreed. The manufacturer warranty is void in cases where the guidance of this manual has not been carefully respected.
The manufacturer liability does not cover any damages to people, animals, properties or environment caused by incorrect installation, maintenance errors or misuse of the machine.
It is considered "misuse" of the machine any use not allowed in this operation and maintenance manual.

1.5 Readers of the Manual

This operation and maintenance manual, included all its attachments, is supplied with the described unit. This manual must be kept by the owner of the unit in a proper place. To this end, a plastic bag has been placed on the rear of the upper cover in order to store the manual together with the machine and have it always available for checking instructions.
In case the manual is lost or deteriorate, a new copy must be requested directly to the manufacturer.

2 - MAIN SAFETY RULES

2.1 Main warnings

It is necessary to pay maximum attention and read carefully this handbook before performing any operation on the unit. Only qualified and trained technicians must perform any operations on the machine.

- Do not touch the machine if with bare feet or with humid or wet parts of the body.
- Do not perform any cleaning operation before the main switch is "OFF" and power line disconnected.
- Do not spread, leave unattended or to the reach of children all package parts (cardboard, plastic bag, staples, etc.), they may be source of dangers.

2.2 Allowed use

The machine has been designed and manufactured for air conditioning of technology centers and therefore it must be used only for this purpose, according to its performing features. All different uses are not allowed and disclaim the manufacturer from any liability for damages caused to environment, people, animals, proprieties, etc.

2.3 Forbidden use

The followings are absolutely forbidden use of the machine:

- other use than that described in paragraph 2.2;
- exposed to rainfall;
- in spaces with high risk of fire or explosion;
- in environment or atmosphere highly corrosive.

Any installation or maintenance operation must be carried out in compliance with local technical standards.

2.4 Dangerous areas

The machine is completely closed by case panels in order to avoid any accidental contact with its dangerous parts.

Only qualified and trained personnel is allowed to remove the covering panels because inside the units there are parts with high risk of electric shock, areas with high temperature and working mechanical components. Moreover, the cooling circuit is charged with pressure gas which must not be released in the atmosphere.

3 - GENERAL DESCRIPTION

3.1 Unit description

The precision air conditioning water cooled units, UV Millennium series, have been designed for use and installation in technology centers, in data processing centers, in telephone companies and in every building where special thermic and humidity conditions are required.

The machines are suitable for internal installation.

All units undergo a complete operating test.

All models are available in different configuration according to air intake and discharge:

U: air intake from the front and upflow;
V: air intake from the bottom and upflow;
B: air intake from the back and upflow;
D: air intake from the top and downflow.

The different unit models of the UV. Millennium series are marked with initials, which interpreting key is shown in the scheme on page 5.

Interpreting key for initials employed to mark the conditioning unit of UV.Millennium series

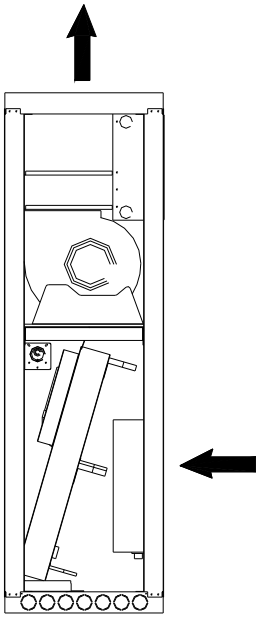
UV = Fan provided unit water cooled

Nominal cooling capacity in kW

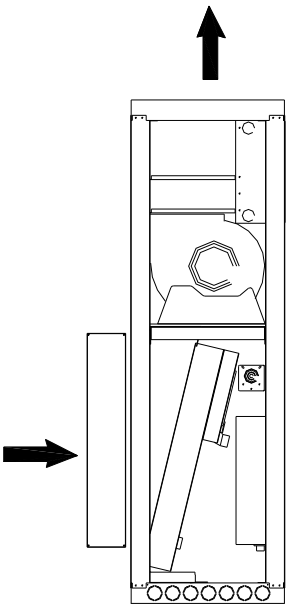
Air direction : **U=** air intake from the front and upflow
V= air intake from the bottom and upflow
B= air intake from the back and upflow
D= air intake from the top and downflow

UV 240 U

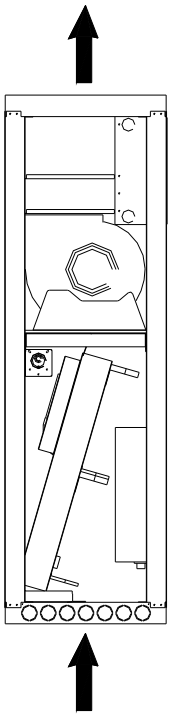
The conditioning units are classified, as shown in the scheme of the previous page, according to the transfer path of the air inside the unit before being discharged into the working space at the desired temperature. Following pictures show the four different configuration, of the air flow system.



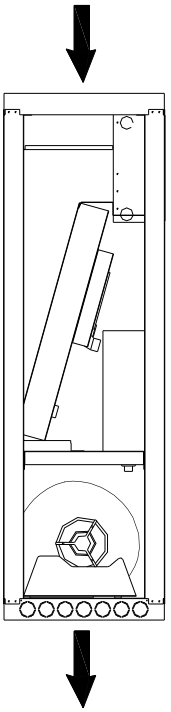
Configuration U: air intake from the front and upflow



Configuration B:air intake from the back and upflow



Configuration V: air intake from the bottom and upflow



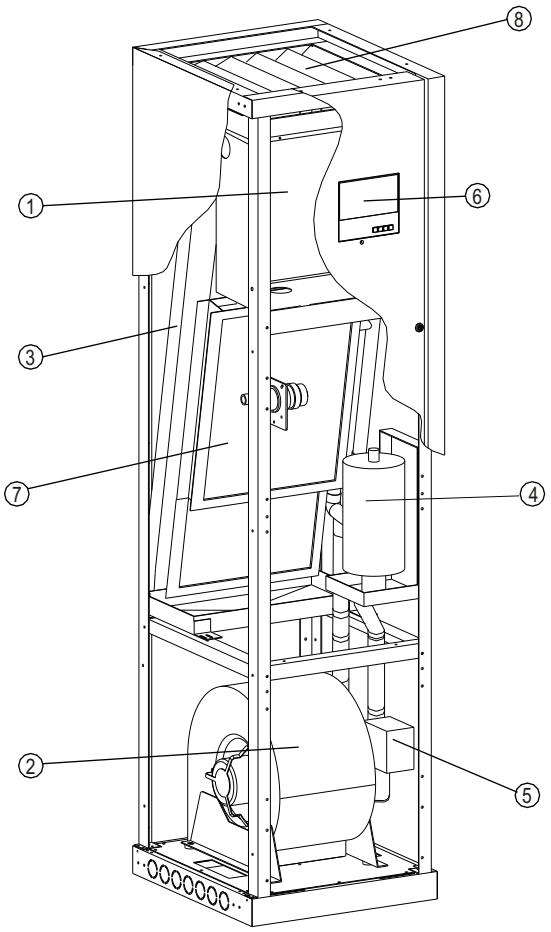
Configuration D: air intake from the top and downflow

3.2 Main Components

The UV Millennium units are made of the following main components:

- The supporting structure frame is made of galvanized steel beams covered with epoxy painted steel plate panels. The panels are also provided with internal polyurethane plate covers to reduce noise.
- Centrifugal fans with engine pre -set to a low number of revolutions.
- Cooling coil with refrigerant water.
- Condensate collecting tank.
- Regenerative air filters with efficiency grade F4.
- The electric board, which comply to CE standard, is provided with main disconnecting switch, amperometric and thermal protection, auxiliary low voltage circuit, connector and control by microprocessor.

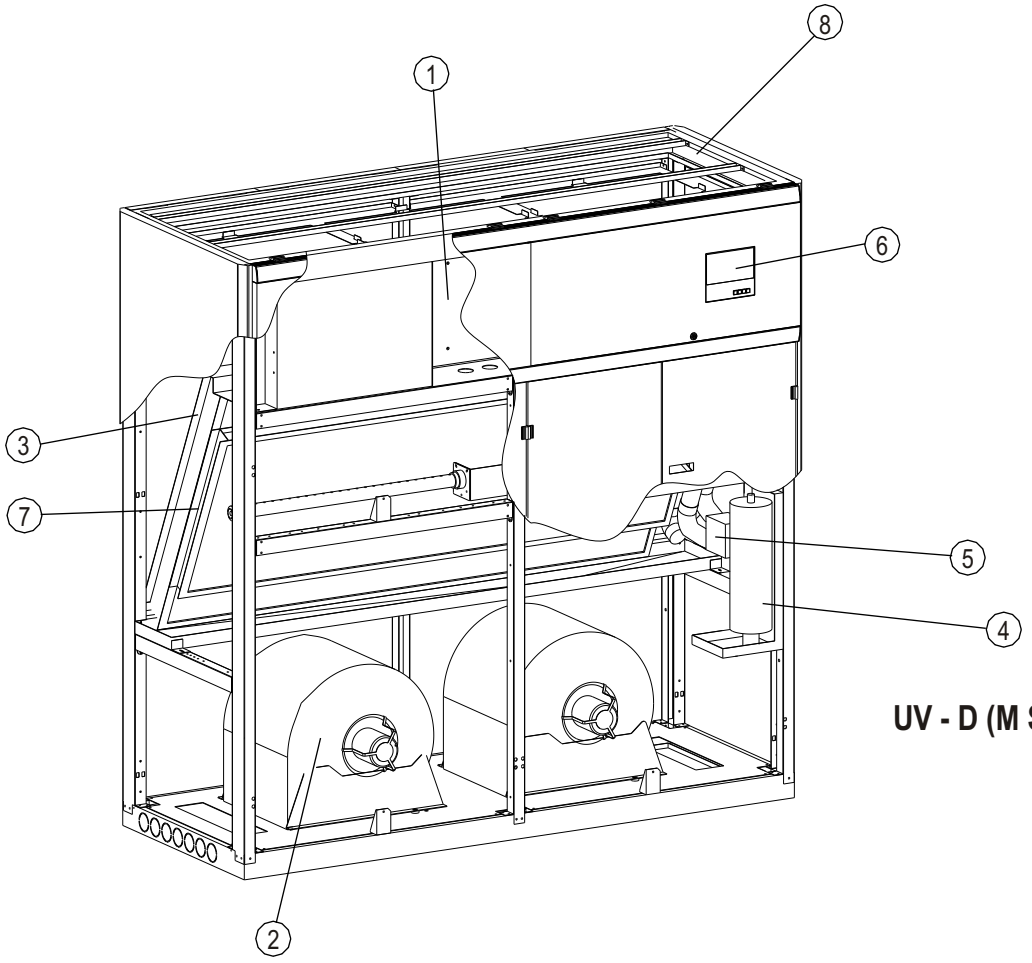
UV - D (L Series)



Picture 1

Legend

1) Electric board
2) Fan
3) Refrigerant water coil
4) Humidifer (optional)
5 Three way valve
6) Microprocessor display
7) Heating coil battery (optional)
8) Air filters

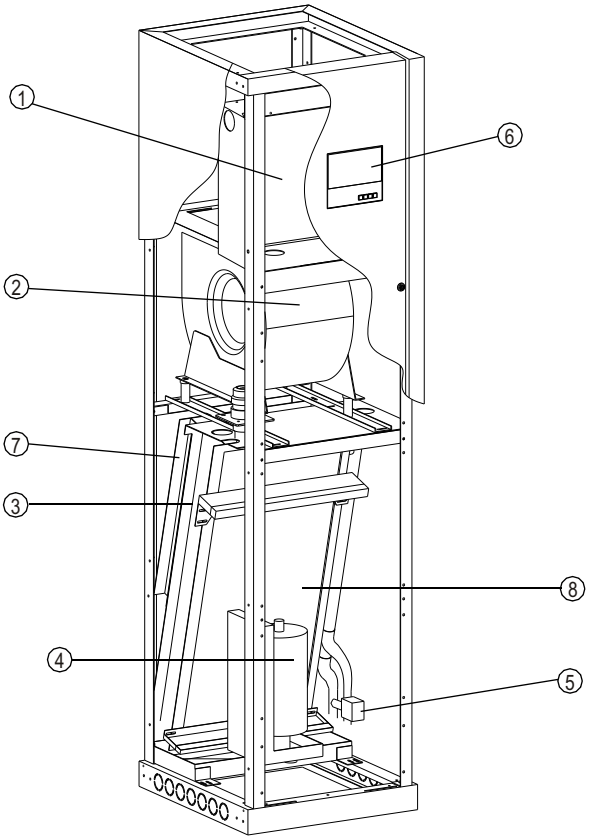


UV - D (M Series)

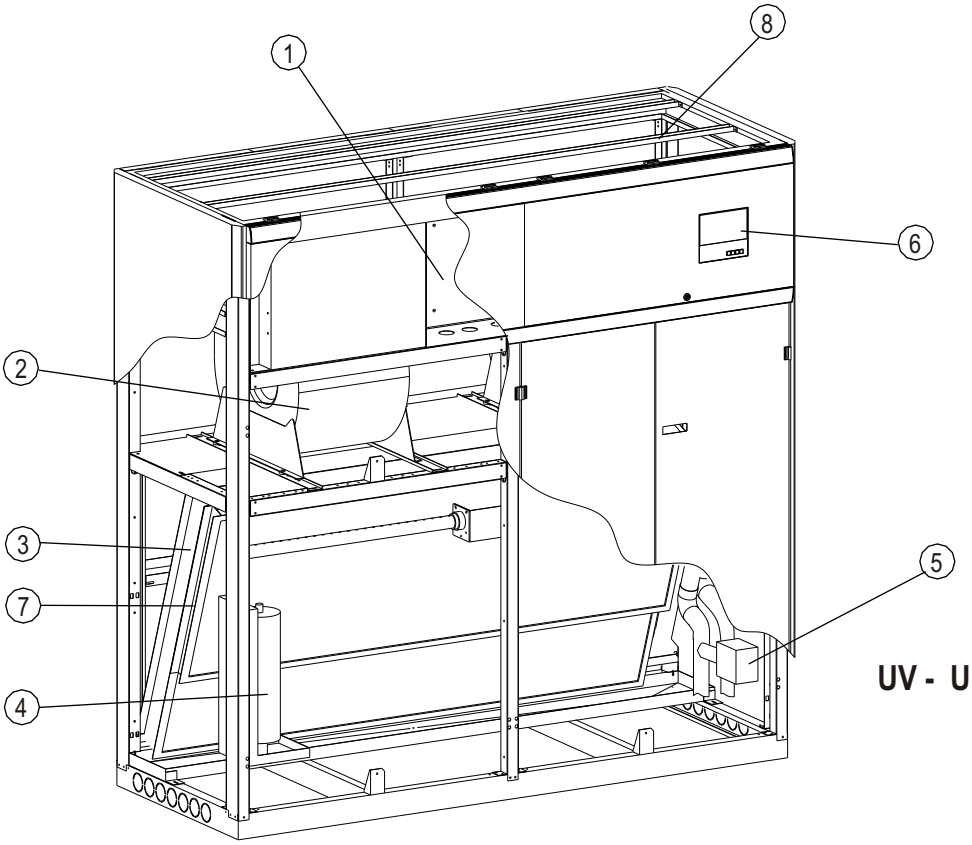
UV - U (L Series)

Legend

1) Electric board
2) Fan
3) Refrigerant water coil
4) Humidifer (optional)
5 Three way valve
6) Microprocessor display
7) Heating coil battery (optional)
8) Air filters

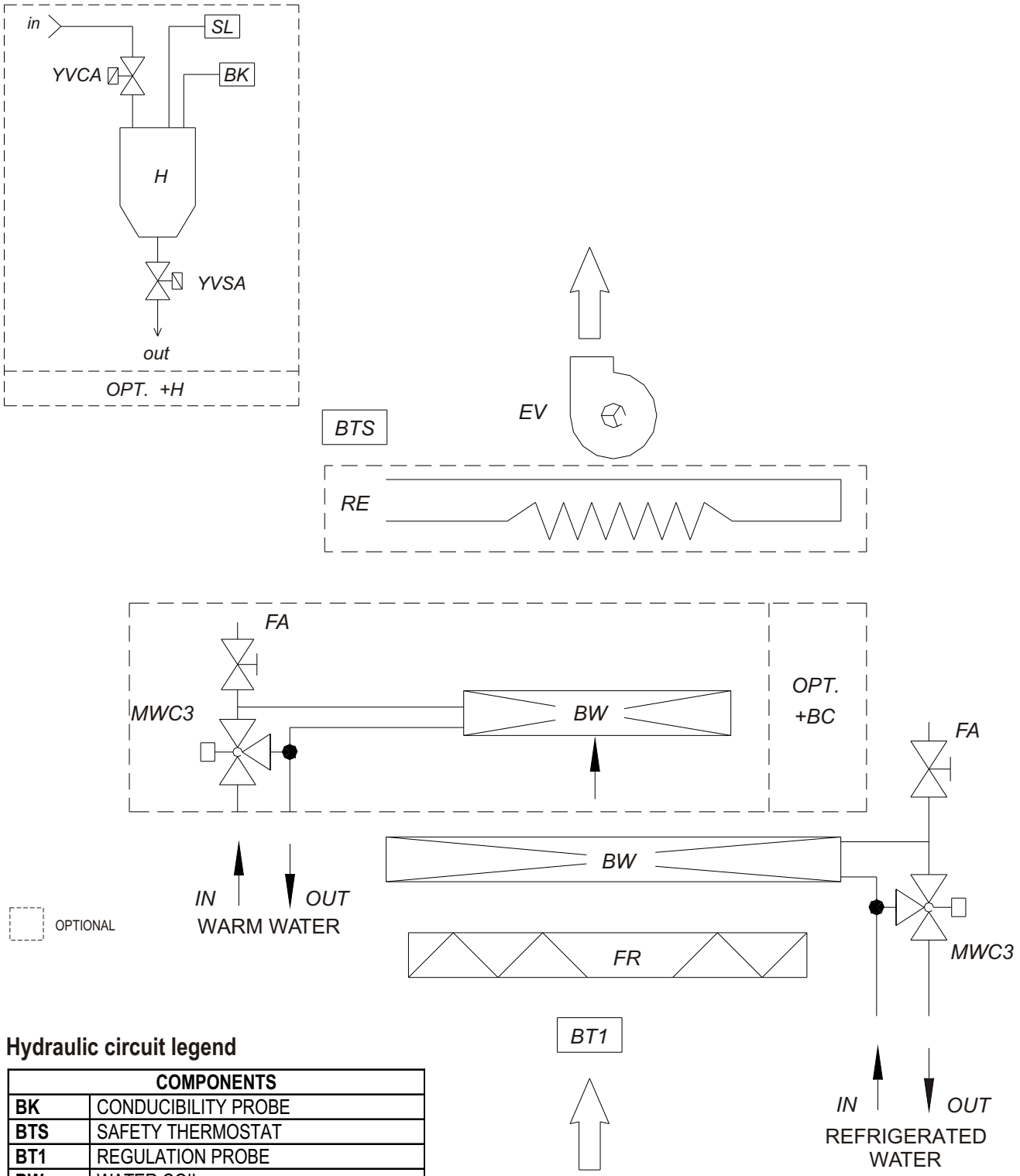


Picture 2



UV - U (M Series)

3.2.1 Hydraulic circuit



Hydraulic circuit legend

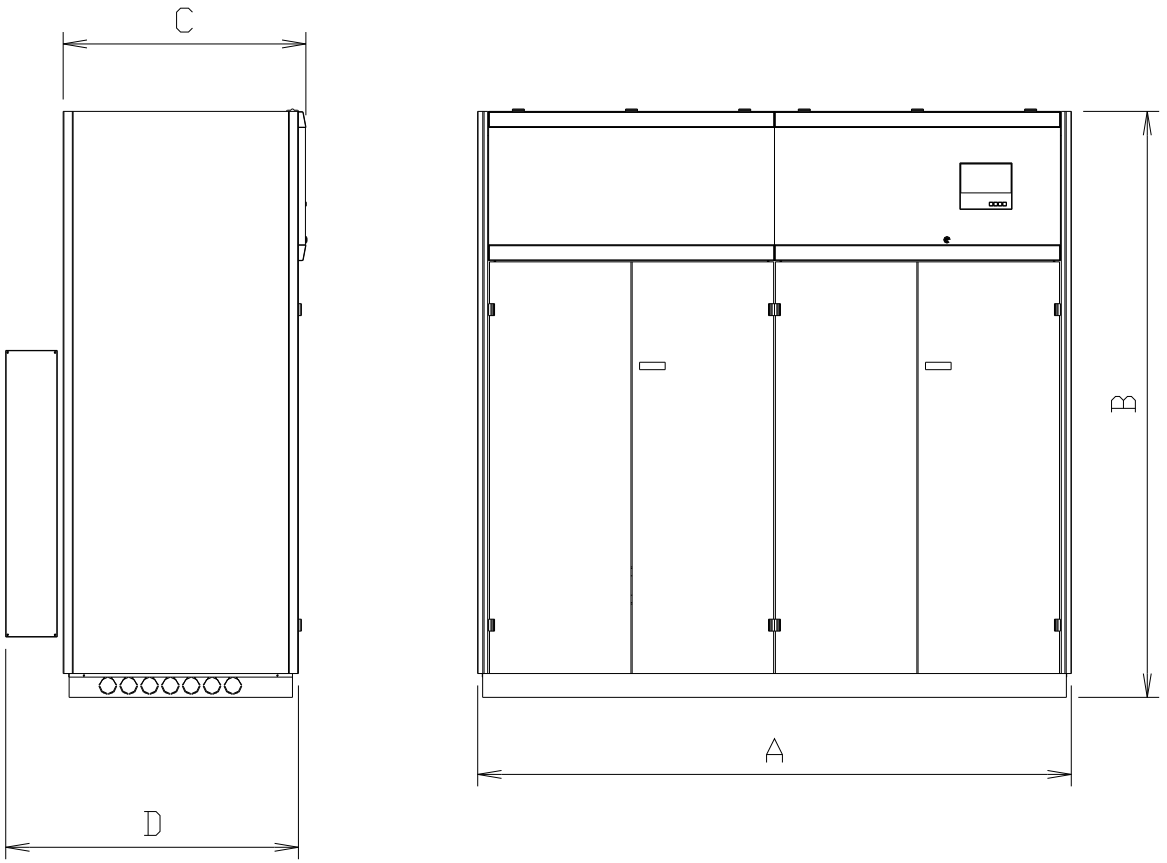
COMPONENTS	
BK	CONDUCIBILITY PROBE
BTS	SAFETY THERMOSTAT
BT1	REGULATION PROBE
BW	WATER COIL
EV	FAN
FA	RELIEF VALVE
FR	AIR FILTER
H	HUMIDIFIER
MWC3	THREE WAYS VALVE
RE	HEATING ELEMENTS
SL	LEVEL SENSOR
YVCA	HUMIDIFIER INLET VALVE
YVSA	HUMIDIFIER DRAIN VALVE

3.3 Specification

The main technical features of the units are shown in the attachments.

3.4 Dimensions

The **table 1** shows the dimensions of the different models of air conditioning machine referring to **Picture 3**.
The **table 2** shows the unit models available for each steel frame series.



Picture 3

TABLE 1

STEEL FRAME SIZE		L1	L2	L3	M1	M2	M3	M4	M5	M6
	A	490	640	940	1230	1530	1730	1990	2390	2950
	B	1800			1975	1995				
U/V/D version	C	565			665		815			
B version	D	615			815		965			

TABLE 2

STEEL FRAME	L1	L2	L3	M1	M2	M3	M4	M5	M6
MODELS	60 80	120	170	190 240 280	320 380	470	550	640 740	800 870 1000

3.5 Accessories

Each unit can be equipped with a wide range of optional accessories, they can be chosen from the price list of the manufacturer.

AA: Flooding probe, sensitive to the water present on the floor.

AE: Power supply different from the nominal power**.** Particularly 230V 3-phase for all machine sizes and single phase only for L1. Operating frequence 50/60 Hz.

AF: Clogged filters alarm is made of a differential pressure switch, sensitive to the dirt of the filters, which activates an alarm signal through the control board.

AL: Smoke alarm is made of a sensor, which detects the presence of smoke inside the unit activating an alarm signal through the control board.

AM: Sound attenuator sets on the air supply. These are made of drilled galvanized plates containing noise-absorbing material. They are housed inside the machines or they are installed in the plenum depending on the machine size. These sets are not available for D version.

AR: Sound attenuator sets on the return air inlet. These are made of drilled galvanized plates containing noise-absorbing material. They are housed inside the machines or they are installed in the plenum depending on the machine size. These sets are not available for D version.

B: Base frame made of welded steel tubes. It is available for any machine models, it is height adjustable between 140 and 580 mm.

BC: Warm water coil with 1 row; it is placed after the cooling coil in order to make the post-heating and/or the heating of the treated air. It is regulated by a special three-way mixing solenoid valve controlled by the microprocessor of the machine.

BH: Base frame equipped with a special conveyor which ease the air flow, reducing to the minimum the pressure losses when the air direction is to the front.

BS: Base frame provided with ON/OFF motorized damper for units of the D version. This device prevents air to return inside stand-by units and working units near by.

F5,F6,F7a: High efficiency air filters. They are pleated filters of 50 or 100 mm thickness, depending to the machine version.

F7b, F8, F9: High efficiency air filters. They are rigid pocket filters of 300 mm thickness.

H: Humidifier, immersed electrode type, for steam production. The controller is of the modulating type.

DH: Operation of the dehumidification function through controlled activation of the cooling battery.

IH: Electronic card connected to the microprocessor in order to allow the connection of the machines to the Carel conversion system. In this way the machine can be completely controlled by a remote place. The system communicate in RS485. For connection to other systems of different type it is available the protocol of controlled parameters.

IE: Wooden cage packaging, available on request for critical transportation in order to assure the best protection to the machine.

IB: Serial interface for communication system RS422; this interface needs also option MP.

KC: Kit of efficiency filters F4 as spare filters.

MD: Wired terminal board for remoting the alarms as free contacts.

MG: Microprocessor with graphic display showing state and memory of the main environment features controlled by the machine. It also shows messages written with character other than alphanumerical.

MN: Power supply 400 V 3-phase without neutral.

MP: Oversize microprocessor.

PB: Micropump for extracting condensate created by the machine.

PL: Plenum with grid for frontal air distribution for unit U/V/B.

PR: External air intake, placed on the side of the unit for treated air renewal.

RE: Heating elements made of finned aluminum installed after the cooling coil in order to perform the after-heat and/or the heating of treated air. They are controlled by the microprocessor of the unit.

ST: Hand adjustable damper setting for the treated air.

SL: Main isolator switch with mechanical lock and with external pad lock arrangement.

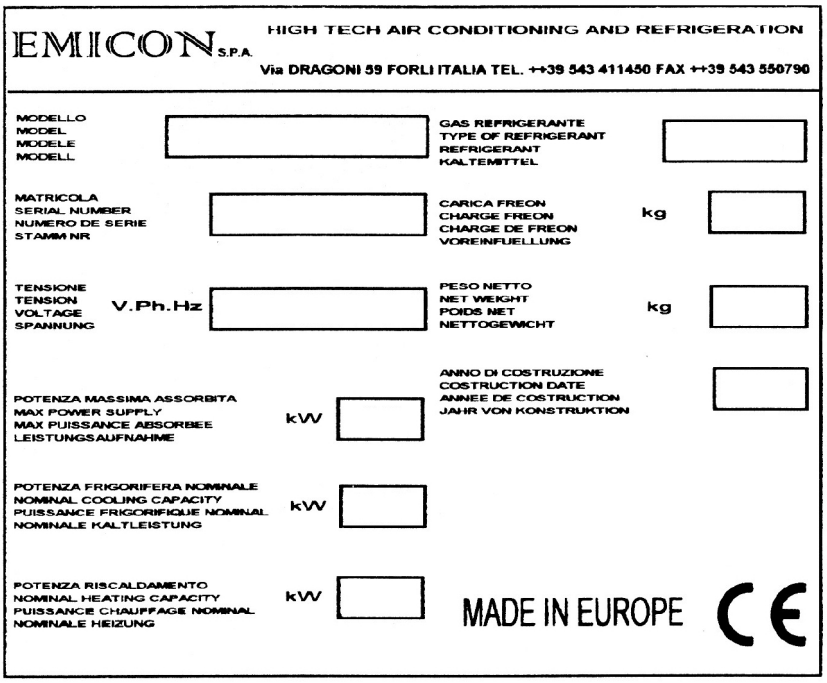
SV: Over pressure gravity damper for U/V/B units which are provided with duct preventing air return inside stand-by units.

1M,2M,3M,4M,5M: Different available values of external delivery head pressure: for all values and combinations available in relation to machine models and to filtering types, refer to the company's catalogue.

4 - INSTALLATION

4.1 Identification tag

The data for the product identification are permanent marked on the tag (**Picture 4**) attached to the packing and inside the unit near the electrical panel.



Picture 4

⚠ The correct unit identification, by means of the serial number, is essential for the execution of any operations to carry out on the unit. The serial number must be always advised whenever submitting a request of technical service support.

4.2 Receiving and inspection

It is very important to inspect the packing integrity directly upon delivery. In case the packing is found damaged, it is necessary to carry out an accurate inspection of the machine, then describe the state of the received goods writing directly on the consignment note, which must be also countersigned by the driver. Any claims concerning the delivered goods must be sent by fax or registered letter within 8 days from receiving date. It is advisable to unpack the unit only when installation begins and possibly after the unit has been moved to the location where it must be installed.

⛔ It is forbidden to stack units, even if they are packed. In case the machine is stored after receiving, it must not be exposed to weather agents, even if packed.

4.3 Handling

The handling of the unit must be carried out by expert personnel equipped with proper equipment in relation to the weight and dimensions of the machine.
During the handling operation the machine must be always kept upright.

⚠ The weight of some models is unbalanced, check the unit stability before starting to handle it.

For any machine moving, what is shown below (**Picture 5**) must be followed.
In case the fork lift is employed, the forks must be spaced out to the maximum allowed by the pallet size.
In case the machine is moved by means of a crane, possible damages caused by cables and belts must be prevented.

☞ Angle must not be greater than 30°.

Picture 5

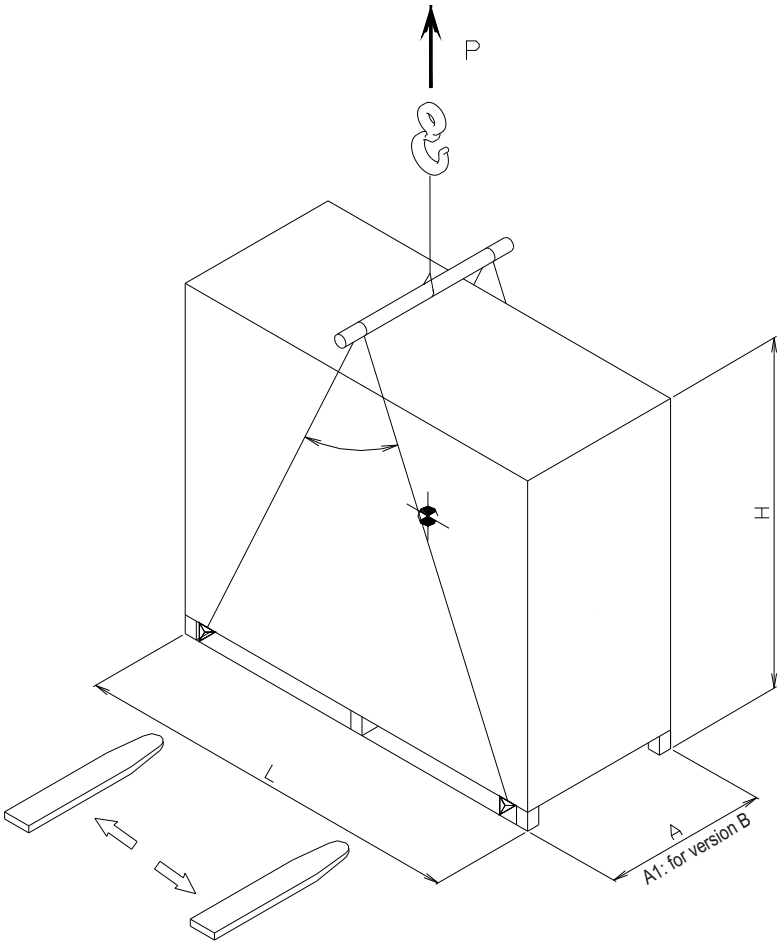


Table 3 shows the overall dimensions of different models packaging included.

The overall dimensions of the units included packing are indicated in the table here below.

TABLE 3

Model	Steel frame	H	L	A	A1
60 – 80	L1	1225	540	610	760
120	L2		690		
170	L3		990		
190 – 240 – 280	M1	2145	1290	710	860
320 – 380	M2		1600		
470	M3		1770	850	1000
550	M4		2030		
640 – 740	M5		2430		
800 – 870 – 1000	M6		3000		

The lifting weight *P* of the unit is the result of the weight as indicated on the data sheet attached to the unit plus the packaging weight as shown in **Table 4** here below.

TABLE 4

Steel frame size	L1	L2	L3	M1	M2	M3	M4	M5	M6
Packing weight (kg)	10	12	15	18	22	24	27	32	40