RBM	**KILMA DEHUMIDIFIER DEW 26-S**	MI1999.B_07 ITA July 2021

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

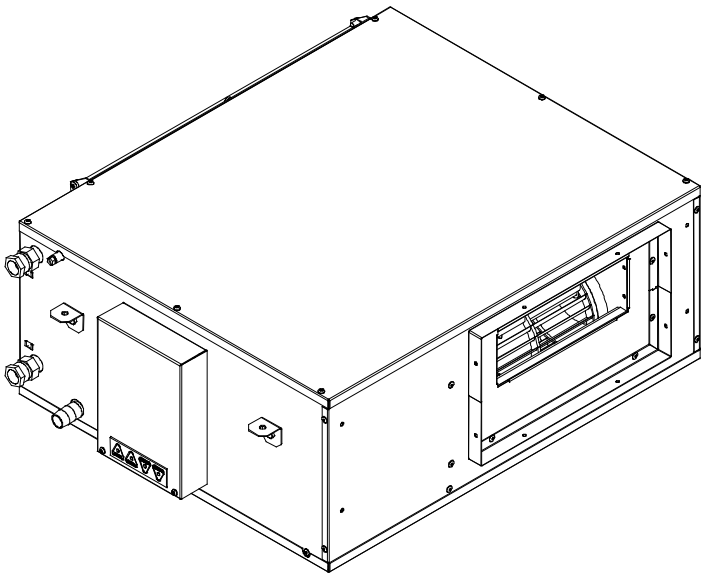
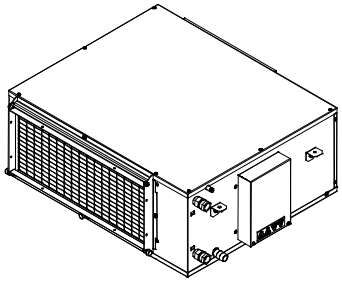


Figure 1: Ducted isothermal dehumidifier for false ceiling code ***1999.26.02***

SUMMARY **page**

GENERAL INFORMATION



Package Contents

The dehumidifier is packed in cardboard box containing:

- 1 DEW 26-S machine;
- 1 operation and maintenance manual.

Packaging dimensions: 59x70x29h cm
Weight: kg 30

Transport and storage

IMPORTANT: The package must be transported on pallets and handled by mechanical means; handling at the construction site must be done with means appropriate to the weight and volume of the package, avoiding dents and falls: a fall of the package from a few centimeters in height can damage its contents. The package should never be tipped or overturned; if this happens, it should be returned to the correct horizontal position for at least 3 hours before installation.
Store packages horizontally and not upside down; up to 5 boxes can be stacked on top of each other.
Permissible environmental conditions: temperature -10°C ÷ 50°C, relative humidity less than 90%.

SAFETY NOTES

- The machine contains flammable refrigerant gas under pressure. In case of gas leakage from one or more machines ventilate the room.
- In case of fire, the gas contained in the machines may cause violent flames.
- Contact with the fan discharge port may cause injury.
- Electrical connections must be made by competent and licensed personnel in accordance with the law.
- Defects in piping, hydraulic connections and shut-off valves can give rise to dripping or splashing water resulting in property damage and dangerous situations when electricity is present.

DESCRIPTION OF OPERATION

The **DEW 26-S** dehumidifier is a refrigeration cycle machine designed as a system component.
Cooling systems use chilled water at temperatures between 15 and 20°C, which is sufficient to bring rooms to the desired temperature but not adequate to carry out dehumidification. To bring down the latter would require water at 7°C, the production of which by the chiller occurs at significantly lower yield than water at 15 to 20°C.
Water-cooled refrigeration cycle dehumidifiers make it possible to maintain the air humidity in rooms at optimal values (55-65%) with the following advantages over other systems:

- they use the available chilled water from the radiant panel system;
- they allow the air to be treated without changing its temperature and thus without negatively interfering with the operation of the radiant panels and their control system.

In Fig. 1 the operation, called neutral air, is schematized.
Air, filtered through the filter section (1), undergoes precooling through the chilled water exchanger (2) from the radiant system manifold (8).
The use of chilled water to precool the air is critical to the efficiency of the process, because in this way the electrical power commitment of the refrigeration compressor (4) can be made minimal.

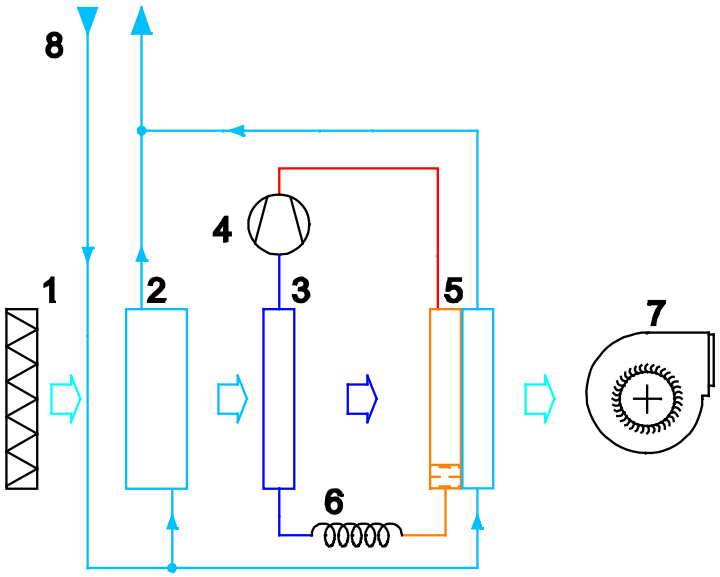


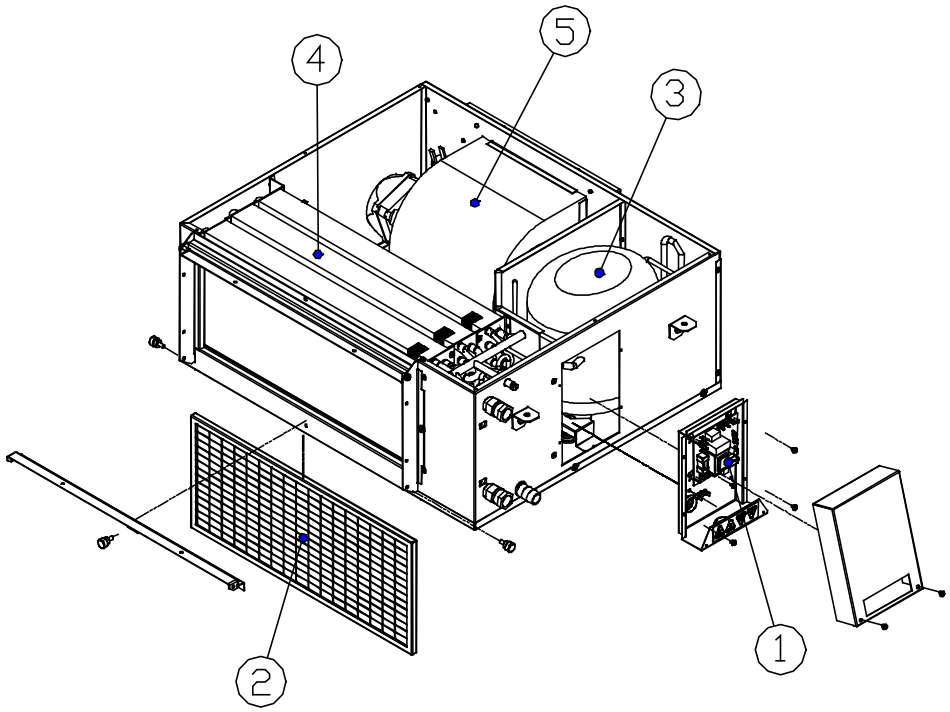
Fig. 1 Schematic diagram of the DEW 26-S dehumidifier

The air is then dehumidified by passing sequentially through the finned coils of a refrigerant circuit: in the first coil (3) there is actual dehumidification, and in the second (5) there is postheating, carried out through the heat developed by the refrigerant circuit. The coil (5) has a second rank, called **"**post-treatment" rank, located immediately downstream of the condenser of the refrigerant circuit and has the function of reducing the temperature of the air expelled from the machine to a value not higher than the inlet temperature.

MAIN COMPONENTS DESCRIPTION

STRUCTURE: made of galvanized sheet metal panels, lined internally with sound-absorbing mat of open-cell polyurethane foam.

FILTER SECTION: galvanized sheet metal filter structure, filter type G3 removable from all sides of the machine.
REFRIGERANT CIRCUIT: in copper tubes, finned aluminum coils with copper tubes, 10 cc reciprocating piston refrigeration compressor; moisture filter, **HYDRAULIC CIRCUIT**: in copper tubes, with aluminum finned coil and copper tubes for air pretreatment and post-treatment.
Galvanized sheet metal machine frame contains the finned coil unit for air treatment, refrigerant circuit for dehumidification, intake air filter, condensate collecting tray, supply fan, electric control and management panel.
FAN: centrifugal with forward-facing blades, double intake with directly coupled motor, 3-speed; operating speed is configurable by choosing the wires to be connected to the power supply.



1) Electrical cabinet compartment
2) Intake air filter
3) Refrigerant compressor
4) Finned battery
5) Fan

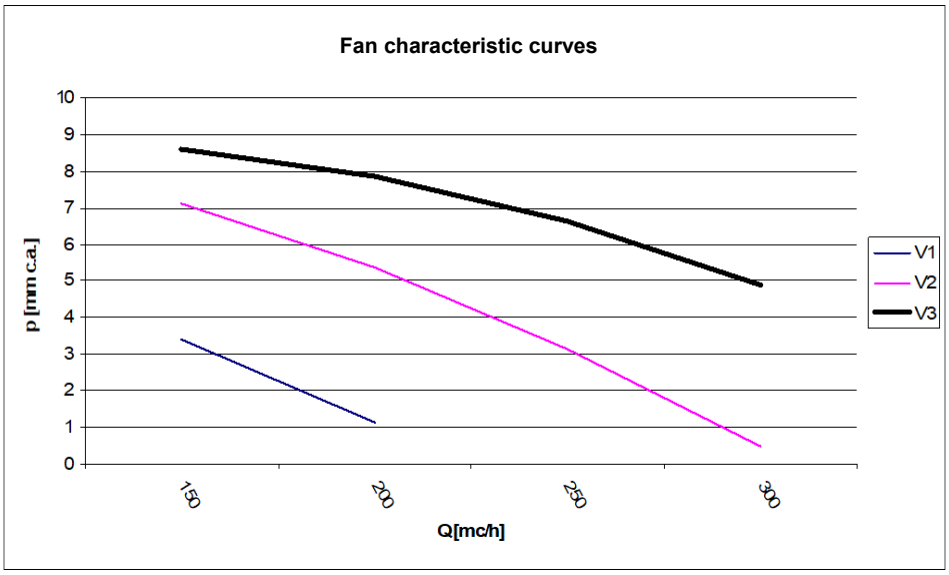
TECHNICAL DATA

Refrigerant compressor	Hermetic, single-cylinder reciprocating
Refrigerant gas	R290 - 84g
Power supply	230/1/50 (V/ph/Hz)
Pre-cooling coil	Copper pipes (2 rows) and aluminum fins with "hydrophilic" treatment
Evaporating coil	Copper tubes and aluminum fins with hydrophilic treatment
Post-heating coil	Copper tubes and aluminum fins
Water connections	2 x ½" GAS female
Fan	Double suction, 3-speed centrifugal pump
Air filter	with synthetic fiber filter material - class G3 (EN 779:2002).
Operating range	15°C to 30°C
Security	Inlet water temperature control, evaporator, condenser, led and alarm signaling relays

Characteristic data

Air flow rate	m^3/h	200
Available head (factory configuration)	Pa	15
Maximum electrical power absorbed	W	260
Electric power absorbed by fan	W	30
Total water flow rate	l/h	240
Water circuit pressure drop	kPa	11
Weight	Kg	29

Flow rate/prevalence curves for each fan speed.

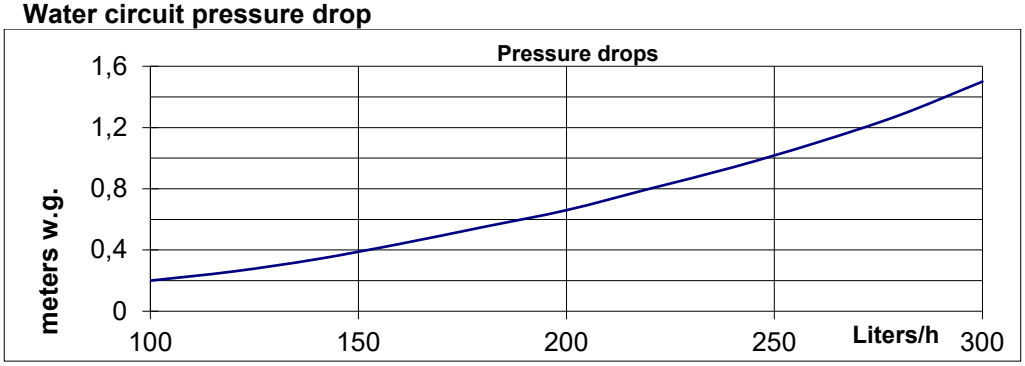


Acoustical data*

Sound power level db(A) according to ISO 3747	Speed 1	Speed 2	Speed 3
Ventilation	39,6	41,4	46,2
Dehumidification	46	47,5	49,2

(*) Note: The equivalent sound pressure level depends on the room where the machine is installed, the presence or absence of duct and/or plenum. Generally the value is 7-10db(A) lower than the sound power level and with duct and/or plenum it is further reduced.

Water circuit pressure drop



PERFORMANCES

	room: 24°C - 55%UR					
	dehumidification - air flow rate 200 m³/h					
t	a	b	c	d	e	f
12	1439	979	460	15,9	709	237
15	1296	904	392	13,5	651	249
18	1179	834	345	11,9	604	251

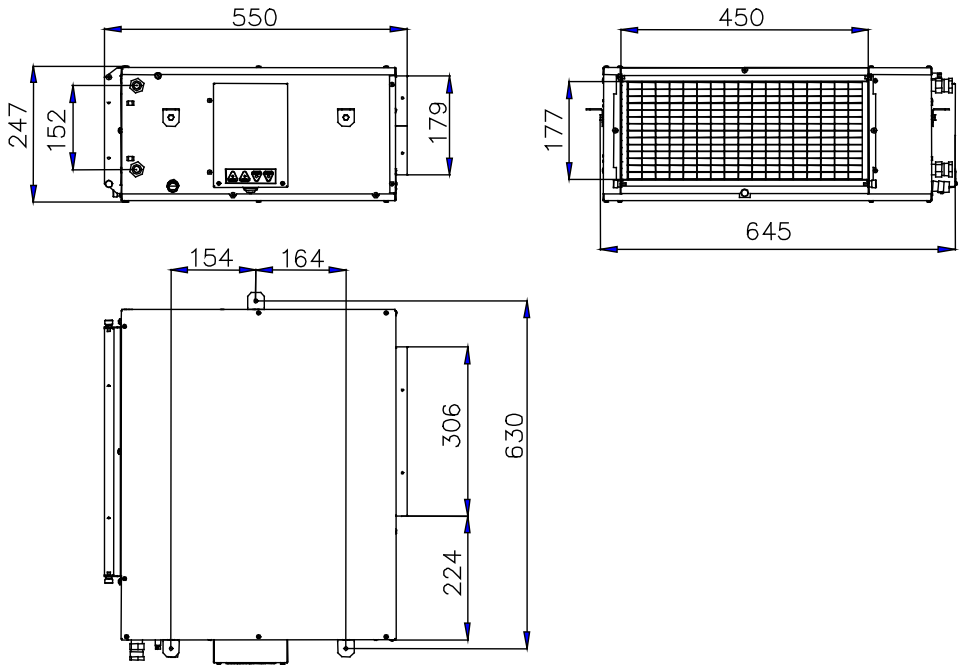
	ambient: 24°C - 65%UR					
	dehumidification - air flow rate 200 m³/h					
t	a	b	c	d	e	f
12	1566	899	667	23,0	932	249
15	1372	817	555	19,2	819	252
18	1259	764	495	17,1	760	253

	ambient: 26°C - 55%UR					
	dehumidification - air flow rate 200 m³/h					
t	a	b	c	d	e	f
12	1626	1042	584	20,1	849	249
15	1425	958	467	16,1	732	251
18	1305	888	417	14,4	683	254

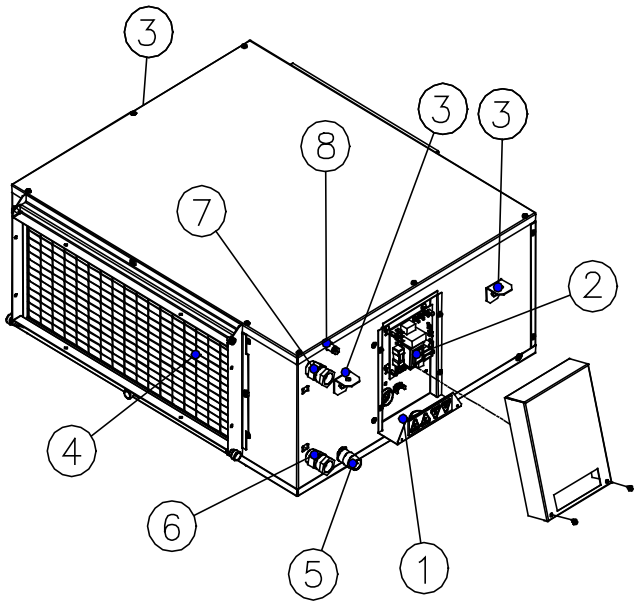
	ambient: 26°C - 65%UR					
	dehumidification - air flow rate 200 m³/h					
t	a	b	c	d	e	f
12	1769	956	813	28,1	1086	252
15	1558	871	687	23,7	959	254
18	1354	792	562	19,4	835	257

t:	water supply temperature	°C (design temperature in gray)
a:	total cooling power	W
b:	sensible cooling power	W
c:	latent cooling power	W
d:	dehumidification capacity	l/day
e:	power required to the water chiller	W
f:	electrical power input	W

DIMENSIONS



LINKS



1. Access electrical connections
2. Electrical panel board
3. Attachment bracket (hole D6 mm)
4. Intake air filter
5. Condensate drain (D=14 mm)
6. Water inlet (1/2 "F)
7. Water outlet (1/2 "F)
8. Vent

INSTALLATION REQUIREMENTS

Before installing the machine, it is necessary to prepare:

- the flow and return pipes for cooling water with two shut-off valves for sectioning and, if necessary, adjusting the flow rate;
- flow rate and pressure of the cooling water: see chart on page 5
- the drain for condensed water;
- the electrical cables for the power supply, the PE protective conductor (grounding conductor) and the operation consent signals.

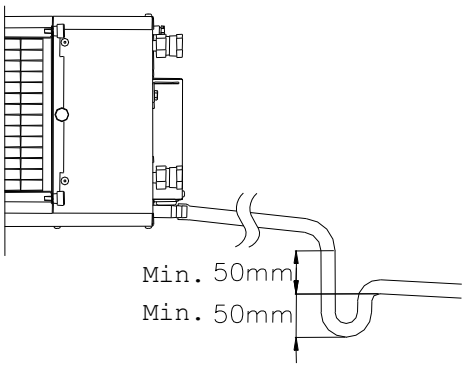
The machine should be installed in a horizontal position, either hanging by the appropriate brackets or resting on the lower hood. Installation should be carried out inside buildings.

For the proper installation of the unit, current standards, building codes, and the requirements of fire regulations must be observed.

A clearance of at least 60 cm must be left on the side of the plumbing and electrical connections and accessibility must be ensured for future maintenance, repair, and possible removal of the unit.

Notes for condensate drainage:

- the condensate drain must have a slope appropriate to the size and length of the pipe;
- a siphon, and only one, should be provided to prevent the suction of air from the drain pipe.

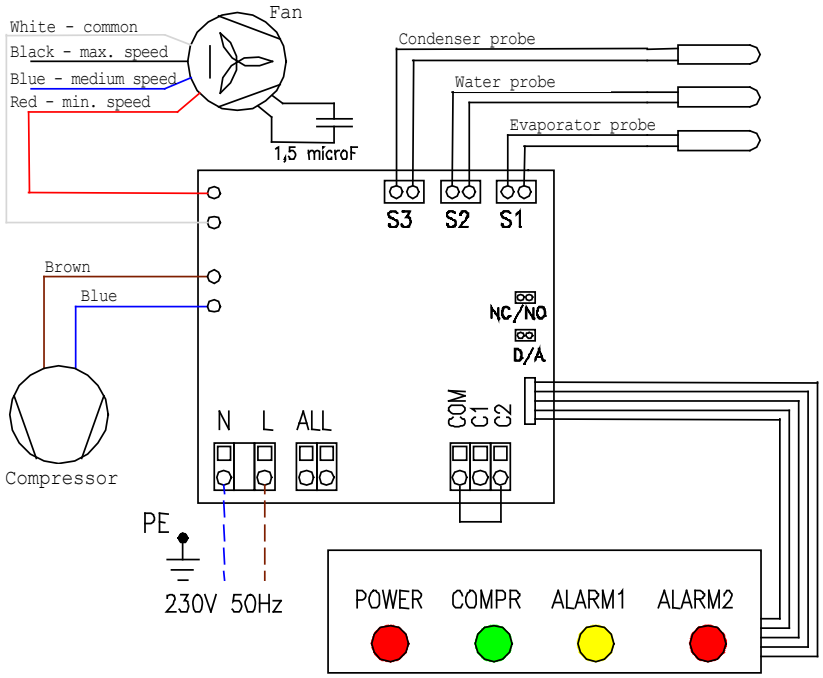


ELECTRICAL CONNECTIONS

CONDUCTOR SECTION

The electrical supply line and disconnecting devices must be determined by persons qualified in electrical design; however, the cable must have a minimum cross-section of 3x1.5mm^2, F + N + PE.
For operating consents: the cable must have a minimum cross section of 0.5mm^2.

Electrical diagram



Legend

All: alarm relay contacts, 250V AC - 8A capacity;
COM - C1: dry contact for ventilation consent;
COM - C2: dry contact for dehumidification consent.

The machine is supplied with the fan connection on the minimum speed (red wire). Depending on the type of system and piping pressure drops, it is possible to increase the fan speed by connecting, instead of the red wire, the blue wire (medium speed) or the black wire (maximum speed); the white wire should never be disconnected. The capacitor (1.5 microF) is located next to the motor on the fan.

Management of the alarm relay

The alarm relay is normally open; in case of an abnormality, the contact closes. It is possible to make the contact normally closed by removing the jumper named NC/NO on the circuit board printed circuit board.

OPERATION CONSENTS

Machine operation is via two digital inputs (dry contact).

- **Ventilation consensus**: contact between terminals COM-C1, by closing the contact only the fan can be operated to force air movement.
- **Dehumidification consent**: contact between terminals COM-C2. The machine stops its operation when the contact between the two terminals opens.

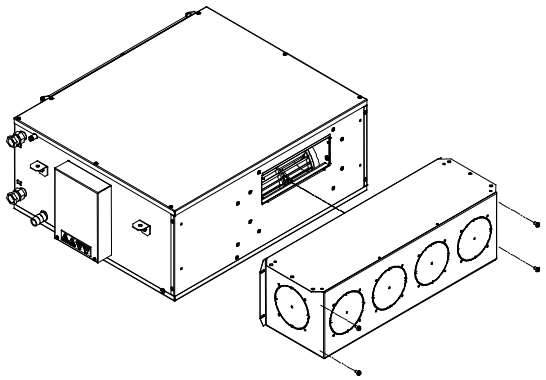
WORKING RANGE

The dehumidifier is designed to operate at an ambient temperature between 15°C and 32°C. If the ambient air sucked in or the water in the cooling circuit has conditions other than those expected, it may happen that the evaporator of the cooling circuit is outside the allowed temperature limits; in this case, the compressor stops and the display indicates an abnormality. In case of frost formation on the evaporator refrigeration compressor pauses to allow the frost formed on the evaporator to melt (defrost). In this case, the green led of the compressor flashes until there are correct temperature conditions.

ACCESSORIES

As optional accessories are available:

- supply plenum **(code 2291.26.02)**, insulated, equipped with 6 pre-drilled holes (4 front and 1 on each side) to which the appropriate collars for connection with a DN100 pipeline can be attached. Included with the plenum are 4 connection collars. The plenum can be attached to the ceiling independently, so it can support the weight of the ducts in case of maintenance to the dehumidifier.



- supply plenum **(code 2292.26.02)**, insulated, equipped with pre-drilled holes (3 front and 1 on each side) to which the appropriate collars can be attached for connection with a DN125 pipe. Included with the plenum are 3 connection collars. The plenum can be attached to the ceiling independently, so it can support the weight of the ducts in case of maintenance to the dehumidifier.

FIRST START-UP

The machine is in operation when the power supply is energized and the dehumidification consent is closed. At each start-up, the fan is started first and after 2 minutes the compressor is started.

Listed below are the essential checks when starting the machine for the first time:

1) Check the tightness of the hydraulic circuit and the absence of drips from the machine;
2) Based on the connected ducting, select the most suitable fan speed for the flow rate required for proper machine operation (200m^3/h).
3) Check that the cooling water flow rate is not less than 4 l/min.

In case the water flow rate cannot be measured, calibration can be carried out in the following way:

- open the chilled water circulation completely;
- start the dehumidifier and wait 15 minutes;
- if you are within the operating limits, the air will come out cooled; it will be possible to make the air temperature rise again by slowly reducing the chilled water flow rate, until the desired conditions are reached.

OPERATION WITHOUT WATER

The dehumidifier can operate without chilled water only under the following conditions:

- the temperature of the intake air must not exceed 22°C;

However, the dehumidifying performance of the machine will be lower, with decreases of up to 40%.

CAUTION: Do not circulate chilled water with the machine stopped for long periods, as condensation may form on the outer surface of the machine.

LED DISPLAY DIAGNOSTICS

Led "POWER" red: if voltage is present, it is on steady;
Led "COMPR" green: indicates consent for dehumidification, if it is on steady, it indicates the compressor is running, if it is on flashing, it indicates the compressor is stopped for pause, waiting after startup or abnormality;
"ALARM1" and "ALARM2" alarm led: see the following table.

◯ = led off;

◐ = led on flashing;

● = led on steady.

led ALARM1 yellow	led ALARM2 red	diagnosis	permanence
◯	◯	No alarm	
◐	◯	Ambient temperature too high or circuit discharged	Permanent alarm
●	◯	Ambient temperature too low	Permanent alarm
◯	◐	Maximum refrigerant pressure lockout	Permanent alarm
◯	●	Discharge water temperature higher than 30°C	Unlocks itself if temperature drops

led ALARM1 yellow	led ALARM2 red	diagnosis
Blinking fast ◐		One of the probes is faulty - 1 blink: evaporator probe - 2 flashes: water probe - 3 blinks: condenser probe
	Blinking fast ◐	One of the probes is disconnected - 1 blink: evaporator probe - 2 flashes: water probe - 3 flashes: condenser probe

⚠ **Note**: In case of a permanent alarm, the compressor stops and does not restart; to reset the alarm, it is necessary to remove and restore power to the electronic board..

MAINTENANCE

The only periodic operation to be done is filter cleaning, to be done at a variable frequency depending on the environment in which the machine is operating. The filter is removable by removing the side of the frame, which in turn is secured with special knobs that can be unscrewed by hand. The filter holder frame allows you to choose the extraction side of the filter; if the already arranged extraction side does not satisfy, simply swap the fixing screws of the desired side with the knobs.

WARNINGS FOR THE PROPER DISPOSAL OF THE PRODUCT

This product falls under the scope of Directive 2012/19/EU on the management of waste electrical and electronic equipment (WEEE).
The appliance should not be disposed of with household waste as it is composed of different materials that can be recycled at the appropriate facilities. Inquire through the municipal authority about the location of ecological platforms suitable to receive the product for disposal.
Upon purchase of equivalent appliance, the distributor is required to take back the product for disposal free of charge.

The product is not potentially hazardous to human health and the environment, but if abandoned in the environment it will negatively impact the ecosystem.
Read the instructions carefully before using the appliance for the first time.
The crossed-out bin symbol on the label on the appliance indicates that it complies with the regulations on waste electrical and electronic equipment. Abandoning the equipment in the environment or disposing of it improperly is punishable by law.

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RBM Spa - Via S.Giuseppe, 1 - 25075 Nave (Brescia) Italy - Tel. 030-2537211 Fax 030-2531798 - info@rbm.eu www.rbm.eu
@rbmspa RBM S.p.A. rbm_spa_ Rbm Italia