



## SERVICE MANUAL

### SPIKA SERIES



#### ICE CUBE MAKERS - UNDERCOUNTER MODELS

- ✓ SPIKA NG 125
- ✓ SPIKA NG 175
- ✓ SPIKA NG 215
- ✓ SPIKA NG 285

#### ICE CUBE MAKERS - MODULAR MODELS

- ✓ SPIKA MS 500
- ✓ SPIKA MS 700
- ✓ SPIKA MS 1000

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## 1. INTRODUCTION

Thank you for purchasing a 'Spika Series' Ice Cube Maker by ITV. You have purchased one of the most reliable ice-making products on the market today.

Carefully read the instructions contained in this manual since they provide important information relative to safety during installation, use, and maintenance.

### 1.1. Warning

The installation of this equipment should be done by a qualified technician.

The socket should always be placed on an accessible location.

Always disconnect the power supply from the machine before any cleaning or maintenance service.

Any change needed on the electrical installation for the appropriate connection of the machine, should be exclusively performed by qualified and certified professional personnel only.

Any use of the ice maker not intended to produce ice, using potable water, is considered inappropriate.

It is extremely dangerous to modify or intend to modify this machine, and will void warranty.

This machine should not be used by children or handicapped without the proper supervision and monitoring.

This machine is not intended to be used outdoors nor exposed to the rain.

It is mandatory to ground the equipment to avoid possible electric shock on individuals or damages to the equipment. The machine should be grounded pursuant local and/or national regulations as the case may be. The manufacturer shall be held harmless in case of damages arising due to the lack of the ground installation.

In order to assure the proper operation and efficiency of this equipment, it is of paramount importance to follow the recommendations of the manufacturer, especially those related to cleaning and maintenance operations, which should be performed by qualified personnel only.

**CAUTION:** The intervention of non-qualified personnel, besides of being dangerous, could result in serious malfunctioning. In case of damages, contact your distributor. We recommend always using original spare parts.

## 1.2. Reception of the machine

Inspect the outside packing. In case of damages, make the corresponding claim to the carrier. To confirm the existence of damages, unpack the machine in the presence of the carrier and state any damage on the equipment on the reception document or freight document.

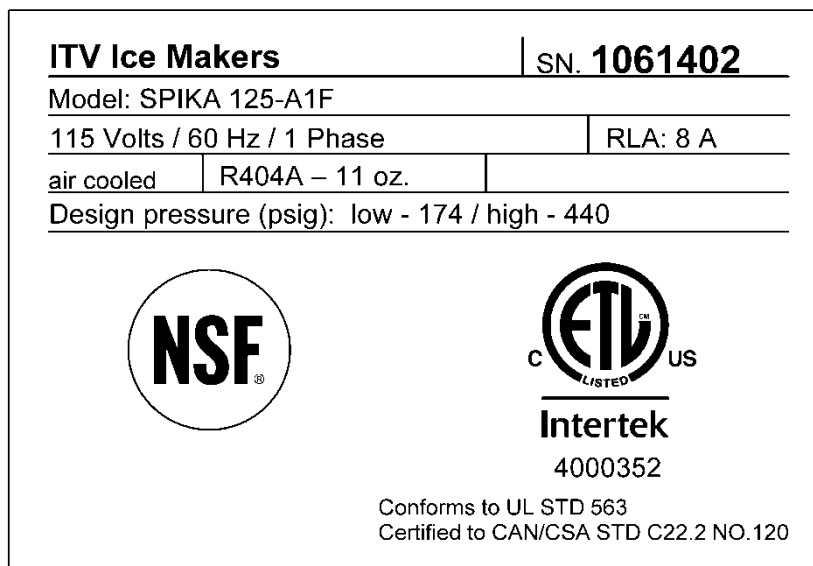
Always state the machine number and model. This number is printed on three locations:

(1) Packing: On the outside, it contains a label with the serial number.



(2) Exterior of the unit: On the back panel of the unit, there is a label with the same characteristics as the previous one.

(3) Nameplate: On the back of the machine.



Check that in interior of the machine the installation kit is complete and includes:

- Scoop, drain hose, four legs and manual.
- Warranty and serial number.

**CAUTION:** All packing elements (plastic bags, carton boxes and wood pallets) should be kept outside the reach of children, as they are a source of potential hazard.

## 2. INSTALLATION

### 2.1. Placing of the ice maker

This ice maker is not designed for outdoor operation. The icemaker should not be located next to ovens, grills or other high heat producing equipment.

The SPIKA machines are designed to operate at room temperature between 41°F (5°C) and 109.4°F (43°C). There may be some difficulties in ice slab removal under the minimum temperatures. Above the maximum temperature, the life of the compressor is shortened and the production is substantially lower.

The air cooled SPIKA NG (under counter) ice makers take the air through the front section, and drive it off through the lateral, back and also front louvers due to their new oblique condenser structure and placement. Do not place anything on the top of ice maker or facing the front grille. In case the front grille is either total or partially obstructed, or due to its placement it receives hot air from another device, we recommend, in case it is not possible to change the location, to install a water-cooled machine.

The air cooled SPIKA MS (modular) ice makers take the air through the back section and drive it off through the two lateral louvers. In the case it is not possible to respect the minimum distances recommended (see the picture in point 3.3) for these machines we recommend installing a water-cooled unit.

The location must allow enough clearance for water, drain and electrical connections in the rear of the ice machine. It is important that the water inlet piping does not pass near sources of heat so as not to lose ice production.

### 2.2. Leveling of the ice maker

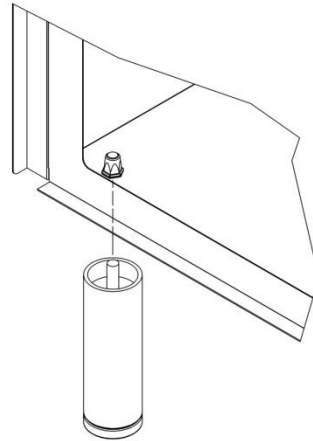
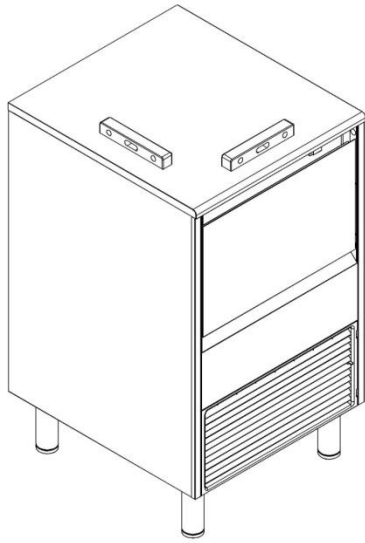
Use a level on top of ice machine to ensure the equipment is perfectly leveled.

Screw the leveling legs onto the bottom of the ice machine as far as possible.

Move the machine into its final position.

Use a level on top of the ice machine. Adjust each leg as necessary to level the ice machine from front to back and side to side.

**ATTENTION:** There is an optional 3 ½" (=90mm) high casters kit that can be used in substitution of the standard legs. These wheels are supplied with the corresponding installation instructions.



### 2.3. Installation of modular equipment on top of bins

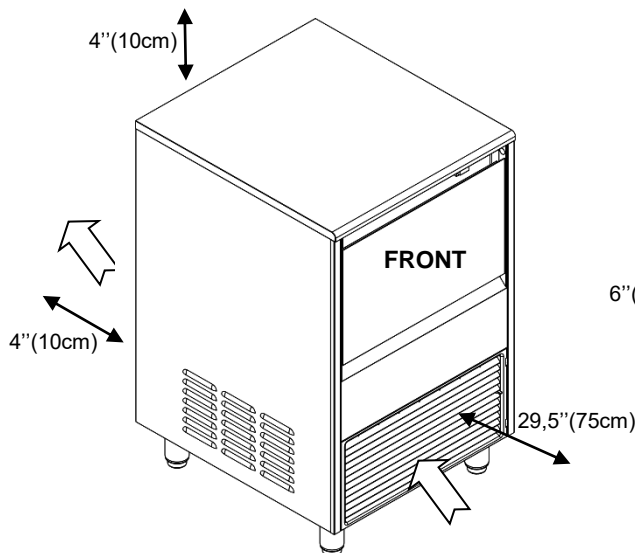
Modular ice makers should be installed on top of bins, following the instructions contained in this manual.

The resistance and stability of the container-machine/s assembly should be verified as well as the fastening elements. Follow bin manufacturer instructions.

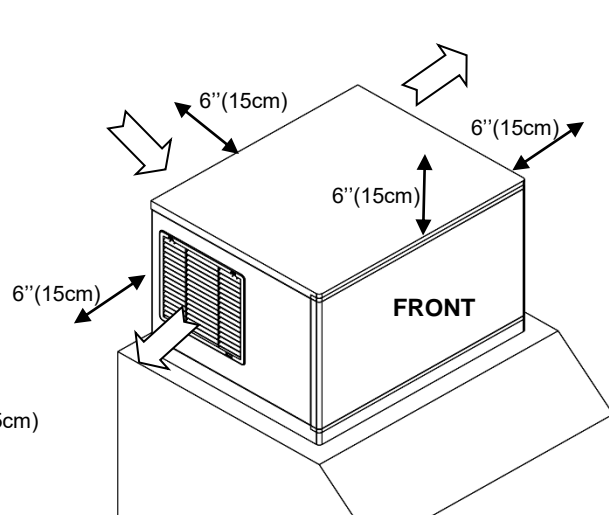
### 2.4. Minimum distance to obstacles

Please see below the recommended minimum distances for proper operation and efficient service.

*COMPACT MODELS*



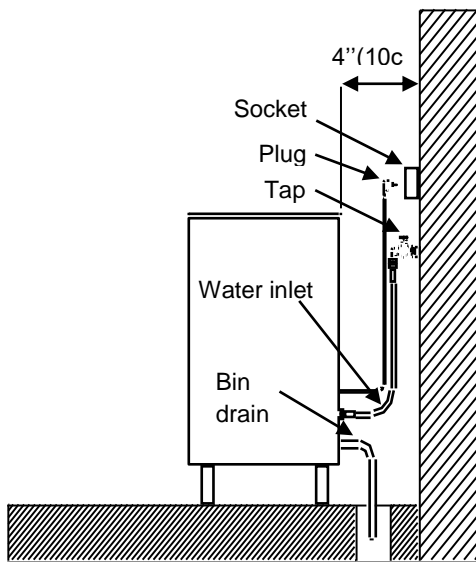
*MODULAR MODELS*



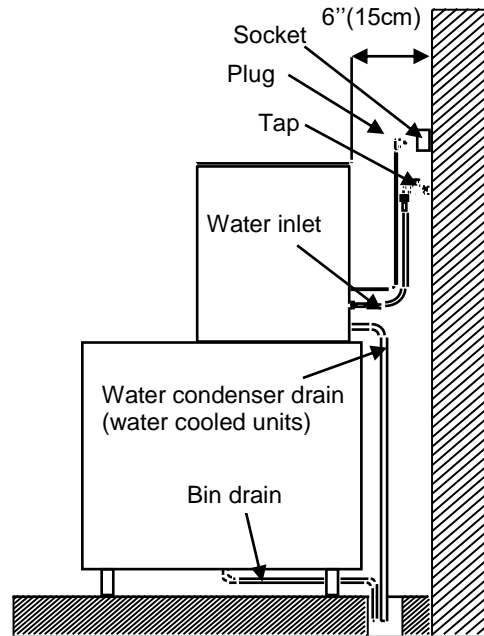
**CONNECTION DIAGRAM:**

The location must allow enough clearance for water drain and electrical connections in the rear of the ice machine.

*UNDERCOUNTER MODELS*



*MODULAR MODELS*



**2.5. Water supply connection**

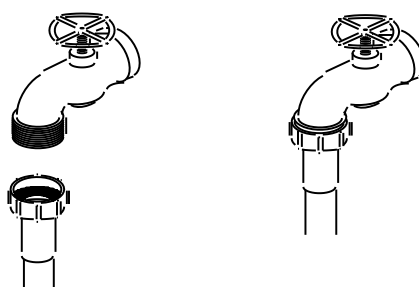
The quality of the water supplied to the ice machine will have an impact on the time between cleanings and ultimately on the life of the product (mainly in water cooled units). It also will have a remarkable influence on the appearance, hardness and flavor of the ice.

Local water conditions may require treatment of the water to inhibit scale formation, improve taste and clarity. If you are installing a water filter system, refer to the installation instructions supplied with the filter system.

Use a flexible food grade hose.

Pressure should be between 14 and 85 psig (1 and 6 bar). If pressure overpasses such values, install a pressure regulator.

**ATTENTION:** The machine shall be plumbed (with adequate backflow protection) according to applicable Federal State and local regulations.

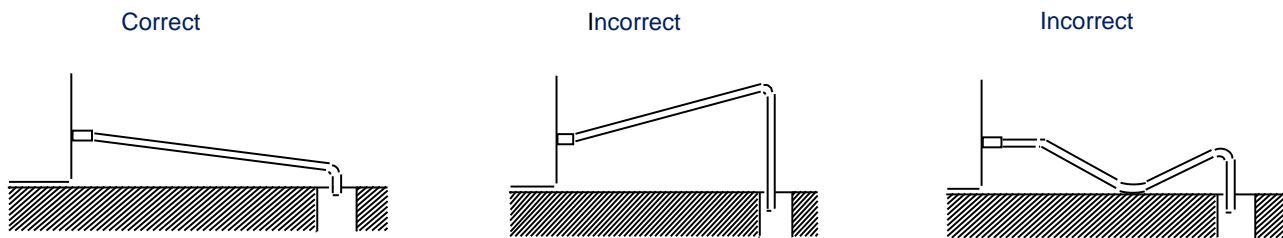




## 2.6. Drain connection

Drainage should be located lower to the machine level, at 5.9" (150mm) minimum.

It is convenient that the drain hose is 1,18" (30mm) inside diameter and with a minimum gradient of 0.36" / ft (3cm/metre), see figure.



## 2.7. Electrical connection

It is mandatory to ground the equipment. To avoid possible electric shock on individuals or damages to the equipment, the machine should be grounded pursuant local and/or national regulations as the case may be.

The manufacturer shall be held harmless in case of damages arising due to the lack of the ground installation.

In case the supply cable is damaged, it should be replaced by a cable of special assembly to be furnished by the manufacturer or after-sales service. Such replacement should be performed by qualified technical service only.

The machine should be placed in such a way as to allow a minimum space between the back and the wall to allow an easy access and without risks to the cable plug.

Safeguard the socket. It is convenient to install adequate switches and fuses.

Voltage is indicated in the nameplate and on the technical specifications section of this manual. Variation on voltage above the 10% stated on the nameplate could result on damages or prevent the machine start-up.

MODELS	VOLTAGE FREQUENCY PHASE	AMPS TOTAL	FUSE	CABLE	NEMA
		(A)	(A)		
SPIKA NG 125-1	115V / 60Hz / 1F	6	15	3AWG16	5-15P
SPIKA NG 175-1	115V / 60Hz / 1F	5,5	15	3AWG16	5-15P
SPIKA NG 215-1	115V / 60Hz / 1F	6	15	3AWG16	5-15P
SPIKA NG 285-1	115V / 60Hz / 1F	8,7	15	3AWG16	5-15P
SPIKA MS 500-1	115V / 60Hz / 1F	14,5	15	3AWG14	5-20P
SPIKA MS 500-2	208-230V / 60Hz / 1F	9	15	3AWG16	6-15P
SPIKA MS 700-1	208-230V / 60Hz / 1F	14.5	20	3AWG16	6-15P
SPIKA MS 700-2	208-230V / 60Hz / 1F	9	15	3AWG16	6-15P
SPIKA MS 1000-2	208-230V / 60Hz / 1F	10	15	3AWG16	6-15P

### 3. PRIOR CHECKING AND START-UP

#### 3.1. Prior checking

- a) Is the machine leveled?
- b) Voltage and frequency are the same as those on the name plate?
- c) Are the drains connected and operating?
- d) Will the ambient temperature and water temperature remain in the following range?

	ROOM	WATER
MAXIMUM	109°F / 43°C	95°F / 35°C
MINIMUM	41°F / 5°C	41°F / 5°C

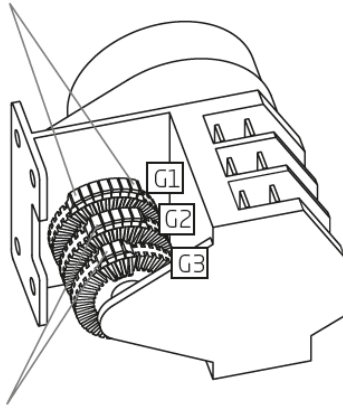
- e) Is water pressure appropriate?

MINIMUM	14 psig (1 bar)
MAXIMUM	85 psig (6 bar)

In case inlet water pressure is higher than 85 psi (6 bar)), install a pressure regulator.

For under counter machines: In case the room temperature exceeds 85°F (29.5°C) or water inlet temperature exceeds 68°F (20°C) the following adjustments should be made to ensure a proper efficiency.

The wheel G1 should have 2 more pins than G2, one by each side of those from the other.



The first pin in G2 and G3 wheels must coincide in their position.

	Air temp >85°F Water temp >68°F			Air temp <85°F Water temp <68°F			
	G1	G2	G3	G1	G2	G3	
SPIKA NG 125	6	4	2	12	10	5	FIBER
SPIKA NG 175	9	7	3	12	10	5	
SPIKA NG 215	9	7	3	12	10	5	
SPIKA NG 285	9	7	3	12	10	5	
SPIKA 125 V2	6	4	2	8	6	5	CDC
SPIKA 175	11	9	5	14	12	8	
SPIKA 215	11	9	5	14	12	9	
SPIKA 285	11	9	5	14	12	10	

Indicating the number of white pins

**REGULATION/CALIBRATION CYCLE AND STOCK THERMOSTATS**

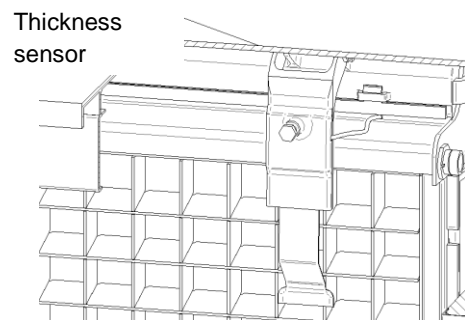
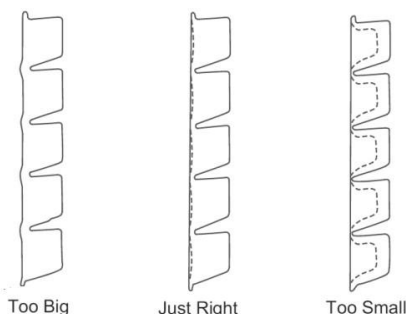
MODEL	REGULATION / CALIBRATION	
	CYCLE THERMOSTAT	STOCK THERMOSTAT
<b>SPIKA</b>		
SPIKA NG 125 W	3.5	5.5
SPIKA NG 125 A	3.5	5.5
SPIKA NG 175 W	3.5	5.5
SPIKA NG 175 A	3.5	5.5
SPIKA NG 215 W	3	5.5
SPIKA NG 215 A	3	5.5
SPIKA NG 285 W	3	5.5
SPIKA NG 285 A	3	5.5

**NOTE:** The thermostat regulation may vary depending on the ambient temperature of water and on the place where the machine has been installed. By default, the factory-set regulation covers a wide range of temperatures.

### 3.2. Start-Up

Once the installation instructions are followed (ventilation, site conditions, temperatures, water quality, etc.), proceed as follows:

- 1.- Open the water inlet. Verify the no existence of leakages.
- 2.- For under counter models open the door and remove the protection elements on the shield. For modular models remove the two locking screws on top of machine, take off the front panel and remove protection elements on the shield and also on the thickness sensor.
- 3.- Verify that the shield moves freely. For modular models verify also the thickness sensor moves freely.
- 4.- Connect the machine to the power supply.
- 5.- For under counter models: push the blue switch on the machine front side. For modular models: push the blue switch found on the back of the machine and then set the ice-wash switch to the position I.
- 6.- Verify that there are no vibrations or frictions on the elements.
- 7.- Verify that the water fall to the evaporator is occurring uniformly and all ice cubes are properly watered.
- 8.- Close door (for under counter models) / Replace the front panel in its place (for modular models).
- 9.- Verify that after the final cycle, the frost on the aspiration pipe is at 0.78 in (20 mm) of the compressor.
- 10.- For modular models: Verify the ice slab with the pictures below. In case the thickness sensor needs to be regulated, rotate the thickness adjustment screw CW to increase bridge thickness. Rotate CCW to decrease bridge thickness. For under counter models adjust the cycle thermostat.



Damages due to the lack of maintenance and cleaning operations are not included on the warranty.

#### **4. SEQUENCE OF OPERATION UNDER COUNTER MODELS (NG)**

**Initial Start-up:** It's recommended that the first time the machine is started (or the water tray has been emptied) it begins with the harvest sequence to ensure the water tray is filled.

**Freeze sequence:** The compressor is energized. The timer G2 de-energizes the hot gas valve, so the evaporator begins to freeze. The timer G2 energizes the water pump so the water circulates from the water tray to the upper distributor, flowing through each cube cell, where it freezes.

**Harvest sequence:** The compressor will continue energized. The timer G2 energizes the hot gas valve during a certain time. The timer G3 at the same time energizes the water inlet valve during a certain time to fill the water tray with the appropriate quantity of water. The ice slab slides off the evaporator and into the bin. After this, the freeze sequence starts again.

When storage bin is full the stock thermostat detects a low temperature and the machine shuts off at the end of the freeze sequence. The ice machine remains off until enough ice has been removed from the storage bin and the stock thermostat doesn't detect this low temperature.

#### **5. SEQUENCE OF OPERATION - MODULAR MODELS (MS)**

**Initial Start-up:** The pump and the drain electro valve are energized during 30 seconds to empty the water tray preventing the scale build-up in water. Then the pump and the drain electro valve are de-energized, and the water inlet valve is energized filling the water tray until the water level sensor detects the water reaches the appropriate level. Then the freeze sequence starts, opening first during 5" the hot gas valve to equilibrate.

**Freeze sequence:** The compressor is energized and the water pump is energized after 30 seconds. The water inlet valve is also energized at the same time that the water pump to replenish water level and then de-energized. The compressor and water pump will continue energized until the thickness sensor detects the thickness of the ice slab is the appropriate. Then the harvest sequence starts.

**Harvest sequence:** The compressor will continue energized. The hot gas valve is energized throughout the harvest phase to divert hot refrigerant gas into the evaporator. The water pump and the drain electro valve are energized during 45 seconds to empty the water tray and

remove mineral deposits. After this (water pump and drain electro valve de-energized) the water inlet valve is energized filling the water tray until the water level sensor detects water reaches the level. The ice slab slides off the evaporator and into the bin. The momentary opening and re-closing of the shield indicates the harvest sequence has finished and goes to the freeze sequence.

## 5.1. Initial Start-up

It is carried out at machine work start in following cases (being all outputs switched off):

- when machine is connected to power supply.
- when the switch is turned to the ICE position
- after a stop due to full storage

During start-up time  $t_4$  the pump (B) and the drain valve (EP) are activated. Subsequently, B and EP are closed and the water inlet valve (EW) is opened until the level sensor (NW) indicates that the storage reservoir is filled with water. At this point, the hot gas valve opens for a time  $t_{20}$ , and then the production phase starts. LE1 on

**Please note:** If at this stage the curtain (MC) is open, the indicated machine status is switched to full storage (full).

## Production

Following outputs are activated:

- Compressor (C).
- Pump (B). It is activated with delay time  $t_{11}$ .
- Water inlet valve (EW). It is kept active during time  $t_8$ , if the water level (NW) is not reached the water valve (EW) will keep open (even after the time  $t_8$ ) until the water level probe (NW) detects water tray full.

This phase is maintained until the thickness detection sensor gives a signal (which is maintained during time  $t_2$ ). At this stage, the operation launching phase starts.

\*LE1 on

**Please note:** during this time the opening of the curtain (MC) has no consequences.

## Harvest

Outputs:

- Compressor (C). It is still in operation.
- Hot gas valve (GC). It is active during the whole operation launching time.
- Pump (B) and wast water valve (EP) are active during time t6
- Water inlet valve (EW) is activated when time t6 is over (when the pump is stopped)

\*LE1 on

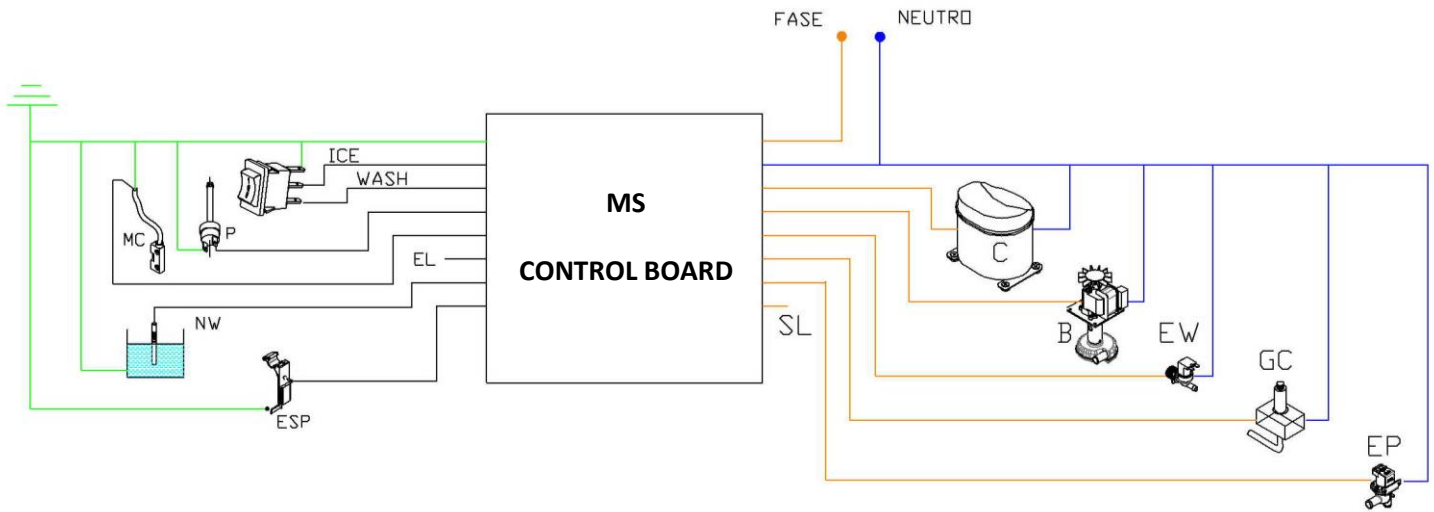
The harvest ends when the ice sheet falls down and the curtain micro contact (MC) is activated.

Two possibilities:

- 1) MC is active during a time less than t3 → when the MC signal stops, the production phase will start.
- 2) MC is active during a time more than t3 → machine will be stopped due to full storage (all outputs are switched off / LED LE3 continuously switched on). When the curtain (MC) is closed again, the initial start-up phase will be re-initiated.

time	description	time
t1	Continuous signal time for water level	5"
t2	Continuous signal time for ice thickness	10"
t3	Open curtain time to activate full storage indication	30"
t4	Start-up timing time	30"
t5	Operation launching maximum time	180"
t6	Draining time during operation launching	20"
t7	Production minimum time	120"
t8	Water inlet valve e/w time during production	30"
t9	Water inlet valve e/w timeout	180"
t10	Production maximum timeout	3600"
t11	Pump start-up delay time	30"
t12	Draining time at cleaning cycle	60"
t13	Retry time due to water inlet valve e/w timeout	3600"
t14	Upper unit change	60"
t15	Maximum time to reset due to security pressure switch	600"
t16	Hot gas delay with SW6 ON	30"
t17	Purge time during harvest with SW6 ON	10"
t18	Time for suction alarm with same temperature	60"
t19	Time delayed for compressor start with SW4 ON	360"
t20	Start compressor time	5"
T1	Minimum temperature in the suction probe (EAL)	-10°C

## 5.2. Control Board



### Digital outputs

SYMBOL	Description	Relays amp
C	compressor (Relay / contactor)	10
B	pump	10
EW	<b>Water inlet valve</b>	5
GC	<b>Hot gas valve.</b>	5
EP	<b>Drain valve</b>	5
SL	<b>Free</b>	5

### Digital inputs

Symbol	Description	
ICE	Ice position switch	Switch for 3 positions: Ice – 0 - wash
WASH	Wash position switch	
P	Safety pressure switch / NC contact	
MC	Curtain micro relay contact NC	
EL	Free	
<b>DIP-switch</b>		
1	Pressure reset jumper	
2	Time alarm valuation jumper	
3	Curtain micro relay contact jumper NC/NO	
4	Water inlet valve e/w timeout	
5	Free Jumper	
6	Hot gas valve delay t16 and purge time t17 ON	



### Analogical inputs

Symbol	Description
ESP	Thickness detection sensor
NW	Water level in reservoir
EAL	NTC 10K suction temperature probe

### Connector for double layer stacking of 2 machines

Symbol	Description
CO1	Connector + jumper for indication of the lower machine

### LED signalling

Symbol	Description
LO 1-6	6 orange LEDs for each output
LI 1- 7	7 green LEDs for each input
LE 1-4	4 red LEDs for status/alarm (flashing) stand by – ice – full - wash

### 5.3. Alarms

They detect operational malfunctions. They are indicated with the flashing status LEDs LE1-4. During some alarms a second operation retry attempt is carried out and if repeated again, the machine will stop. Signaling should be indicated since the first failure occurs. If the second retry attempt is ok, the signaling must be switched off.

In case that a machine stop has been caused by alarm, the resetting is done by disconnecting or by switching over to position 0. If the dip-switch 2 ON, time alarms are not to be followed.

### 5.4. Safety pressure

When the pressure contact (P) is open, instantly, all outputs switch over to off position. When it is closed again, there are two possibilities:

- Dip-switch 1 OFF. Manual reset. The machine remains stopped until reset → Initial start-up.
- Dip-switch 1 ON. Automatic reset. The machine will stop for a time t5, then continue at the position where it was, except during the harvesting phase, that has an initial start. If starts at fabrication, the hot gas valve will open during time t20 before starting the compressor.

\* Signaling: Flashing in the four LEDs.

### 5.5. Long operation

If the operation launching time is longer than  $t_5$  time without activation of the curtain micro contact (MC), the launching is interrupted, switching over to the production cycle. If the same thing happens again at the next launching, the machine will stop.

\* Signaling: Flashing in LE0.

### 5.6. Cycle timeout

If the production cycle time is more than  $t_{10}$  time without receiving any thickness detector signal (ESP), the next launching phase will be started. If the same thing happens again at the next launching, the machine will stop.

\* Signaling: Flashing in LE1.

### 5.7. Short production cycle

If during two consecutive cycles the production cycle time is less than  $t_7$  time, the machine will stop. \* Signaling: Flashing in LE2.

### 5.8. Water filling timeout

When it occurs, the water valve (EW) must be activated, the level sensor (NW) will not be active during a maximum time  $t_9$ .

Two possibilities:

- Dip-switch 4 OFF → Machine stops and when a time  $t_{13}$  has passed it starts the unit if th switch 3 is in Ice position (I). If it is in clean position (II) the cleaning will start again. If in a time  $t_9$  the water level probe (NW) does not detect water, the unit will stop until a reset.

\* Signallng: Flashing in LE3.

- Dip-switch 4 ON → To be used in places with low water pressure. After a time  $t_9$  with no water detection, the unit turns off the compressor C, water pump B, hot gas valve GC and drain valve EP. The inlet water valve EW keeps on, and the water level probe (NW) keeps waiting for the water detection. When the water is detected (water tray filled), the alarm signaling will turn off (LE1+LE2 alternative blinking), and it will continue as follow:

- Initial start up with SW4 ON
  - After a time  $t_9$  with no water detection, LE1+LE2 will flash indicating alarm.
  - Inlet water valve (EW) will keep on, and the water level probe (NW) will remain active.

- The compressor (C), hot gas valve (GC), water pump (B), and drain purge (EP) remain off.
- When the water is detected, fabrication will start, and the LE1+LE2 alarm will stop.
- Fabrication after a start up with SW4 ON
  - The compressor (C), hot gas valve (GC), water pump (B), and drain purge (EP) remain off.
  - Inlet water valve (EW) will keep on, and the water level probe (NW) will remain active.
  - When the water reaches its level and the water level probe (NW) detects it, LE1+LE2 will stop flashing, and the water inlet valve (EW) closes. The hot gas valve (GC) will open for a time t20 before the compressor, then the compressor (C) starts, and after a time t11 the water pump (B) starts. The drain valve (EP) will remain closed.
  - As the normal fabrication phase (SW4 OFF), during a time t8, the water level will be checked with the water probe (NW), if no water is detected, the water inlet valve (EW) will remain open (even after the time t8) until the water level probe (NW) detects the water.
  - If after a time t8 no water is detected, and the time t9 has passed, the unit will not stop, the water inlet valve will close and the unit will keep going into fabrication mode.
  - As the normal fabrication phase (SW4 OFF), this phase will be active until the thickness sensor probe will give a signal (maintained during time t2). Then the unit will go into harvest.

\*NOTE: The minimum time for the compressor to be off is t19, in case that the water is detected before a t19 time since the compressor has turned off, the hot gas valve (GC) and the compressor (C) will not turn on again until the t19 has passed by.

### Suction temperature probe

Green LED: it will light when the temperature is lower than T1.

If the probe is broken or not connected: the green light will flash. The unit will not use the probe, works as usual.

The probe will work during harvesting. Since the pump (B) starts until the hot gas valve (GC) opens. In case that after a time > t18 with a temperature lower than T1 the alarm will turn on.

After an alarm occurs, the unit will stop immediately, a reset is need it. LE0+LE1 alternate flashing.

## 5.9. Machine stacking

It is possible to install two modular machines stacked one above the other with the ITV MS stacking kit (part number 6586).

The switchboard must have a connector permitting to connect the boards of both machines with a single cable and also a jumper with the indication:

- Closed jumper → upper machine
- Open jumper → lower machine

The lower machine works in the same way as if operating alone.

The upper machine operates normally except when the lower machine is stopped due to full storage (full), at this moment, the upper machine will also stop and pass over to the same status (full).

When the curtain of the lower machine is closed again, it re-initiates the start-up sequence, likewise the upper machine, but with a 1' delay.

## **6. MAINTENANCE AND CLEANING PROCEDURES**

It is the User's responsibility to keep the ice machine and ice storage bin in a sanitary condition. Ice machines also require occasional cleaning of their water systems with a specifically designed chemical. This chemical dissolves mineral build up that forms during the ice making process.

Sanitize the ice storage bin as frequently as local health codes require, and every time the ice machine is cleaned and sanitized.

The ice machine's water system should be cleaned and sanitized at least twice a year.

**CAUTION:** Do not mix Ice Machine Cleaner and Sanitizer solutions together.

**WARNING:** Wear rubber gloves and safety goggles when handling Ice Machine Cleaner or Sanitizer.

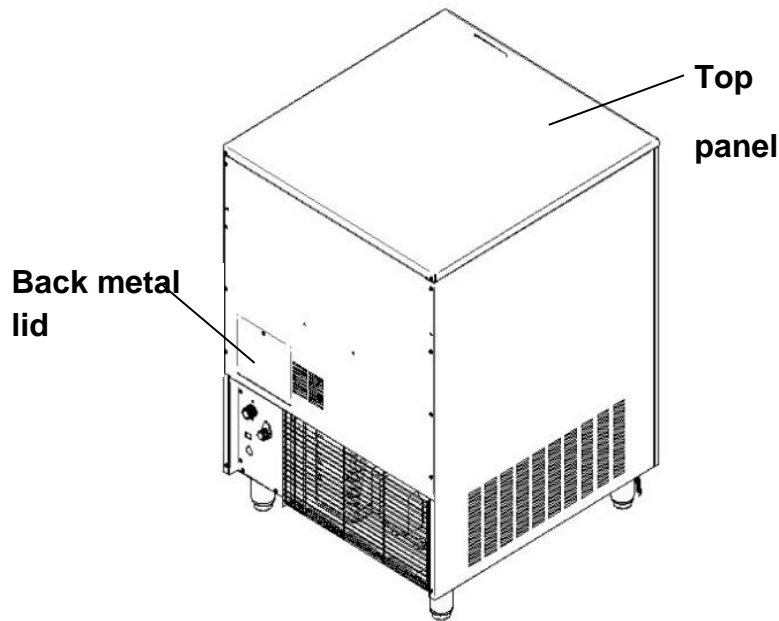
**WARNING:** Unit should always be disconnected during maintenance/cleaning procedures.

### **6.1. Cleaning water distribution system for under counter models (NG)**

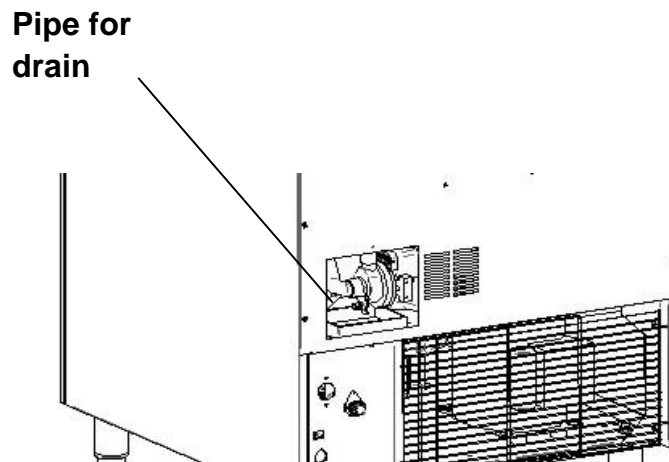
- a) Set the switch to the OFF position after ice falls from the evaporator at the end of a harvest cycle, or set the switch to the OFF position and allow the ice to melt off the evaporator.

**CAUTION:** Never use anything to force ice from the evaporator.

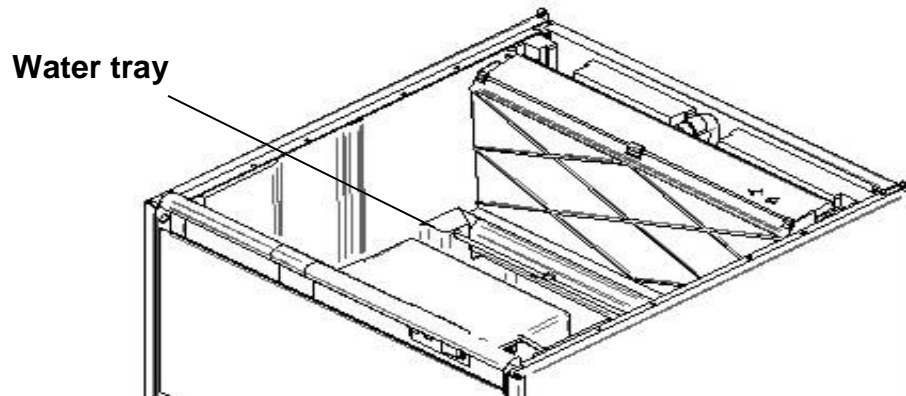
- b) Remove all ice from the bin.



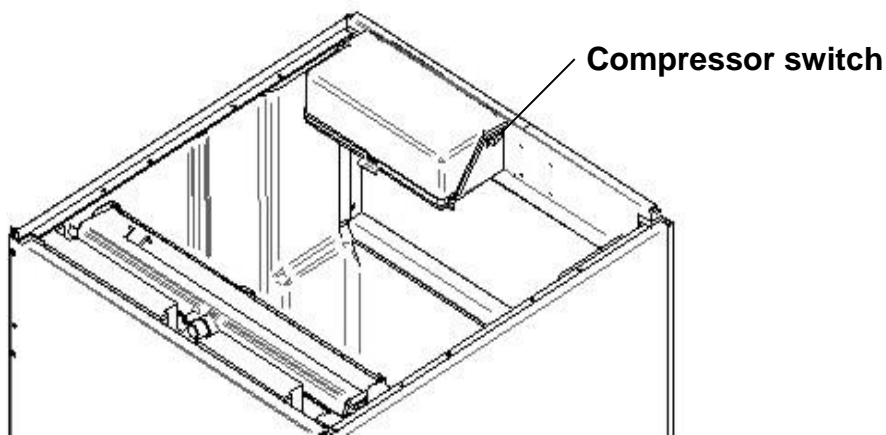
- c) Remove the back metal lid and the top panel (if it need be to make easier the cleaning operations).
- d) Remove the auxiliary pipe for drain operations near the pump and empty the water tray. Return it to their original position to avoid water spill.



- e) Prepare a solution of an appropriate product for the cleaning of ice machines (lime). Do not use hydrochloric acid. We recommend the use of any NSF approved scale removal product prepared according to the manufacturer's instructions.
- f) Fill water tray with the solution

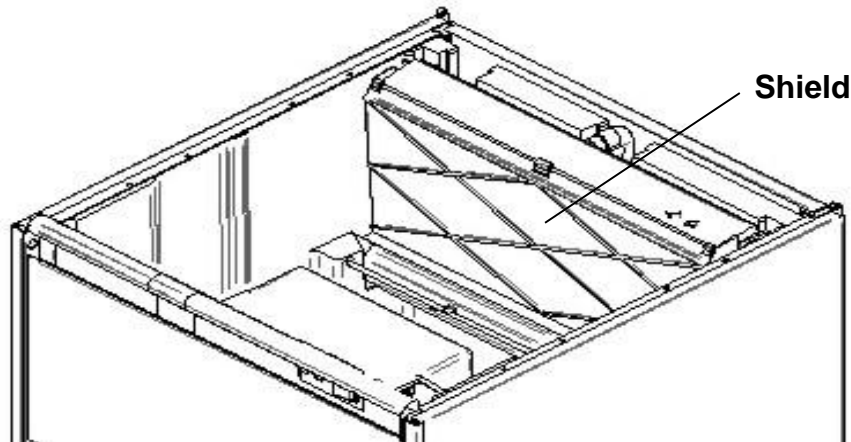


- g) Compressor switch (see figure below) to position 0, and switch on machine in order to run water pump. Let solution stand for 30-40 minutes and then switch off the machine.



- h) Disconnect power.  
 i) Remove the auxiliary pipe to drain and purge out the ice machine scale remover and residue. Replace it.  
 j) Mix enough cleaning solution (as in point e) to clean parts and interior food zone surfaces.

- k) Remove shield.



- l) Clean all surfaces of the shield with the cleaner solution using a brush (not a wire brush) or cloth. Rinse all areas with water.
- m) Clean all the interior surfaces of the freezing compartment (including storage bin) with the cleaner solution using a brush or cloth. Rinse all areas with water.
- n) Mix a solution of sanitizer using sodium hypochlorite food equipment sanitizer to form a solution with 100 - 200 ppm free chlorine yield. Below an example to calculate the proper quantity of sanitizer to add to the water, for a household bleach 12,5%:

$$\text{bleach to add} \Rightarrow \frac{15}{\% \text{dis}} = \frac{15}{12.5} = 1.2 \text{ gr/L} \rightarrow *0.133 = 0.16 \text{ oz/gal}$$

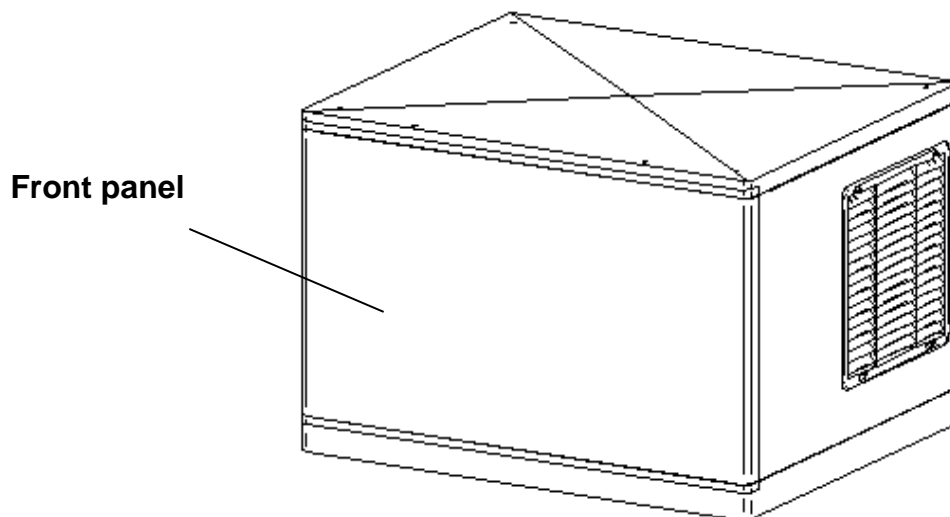
- o) Sanitize all surfaces of the shield applying liberally the sanitizer solution using a cloth or sponge.
- p) Sanitize all the interior surfaces of the freezing compartment (including the storage bin) applying liberally sanitizer solution, using a cloth or sponge.
- q) Return shield to its position.
- r) Connect power and water supplies.
- s) Fill water reservoir with the sanitizer solution.
- t) Switch on machine in order to run water pump. Let solution stand for 20 minutes and switch off.
- u) Remove the auxiliary pipe to drain and purge out the sanitizer solution and residue. Replace it. Fill the water reservoir with water and switch on the machine to allow water to circulate for 5 minutes and then stop the machine. Repeat this operation two more times to rinse thoroughly.
- v) Remove the auxiliary hose to drain the water. Replace it and fill the tray with water to ensure the pump works properly.

- w) Switch on compressor switch (I position)
- x) Return the back metal lid and the top panel to their position.
- y) Switch on machine and discard the first two harvests.

## 6.2. Cleaning water distribution system for modular models (MS)

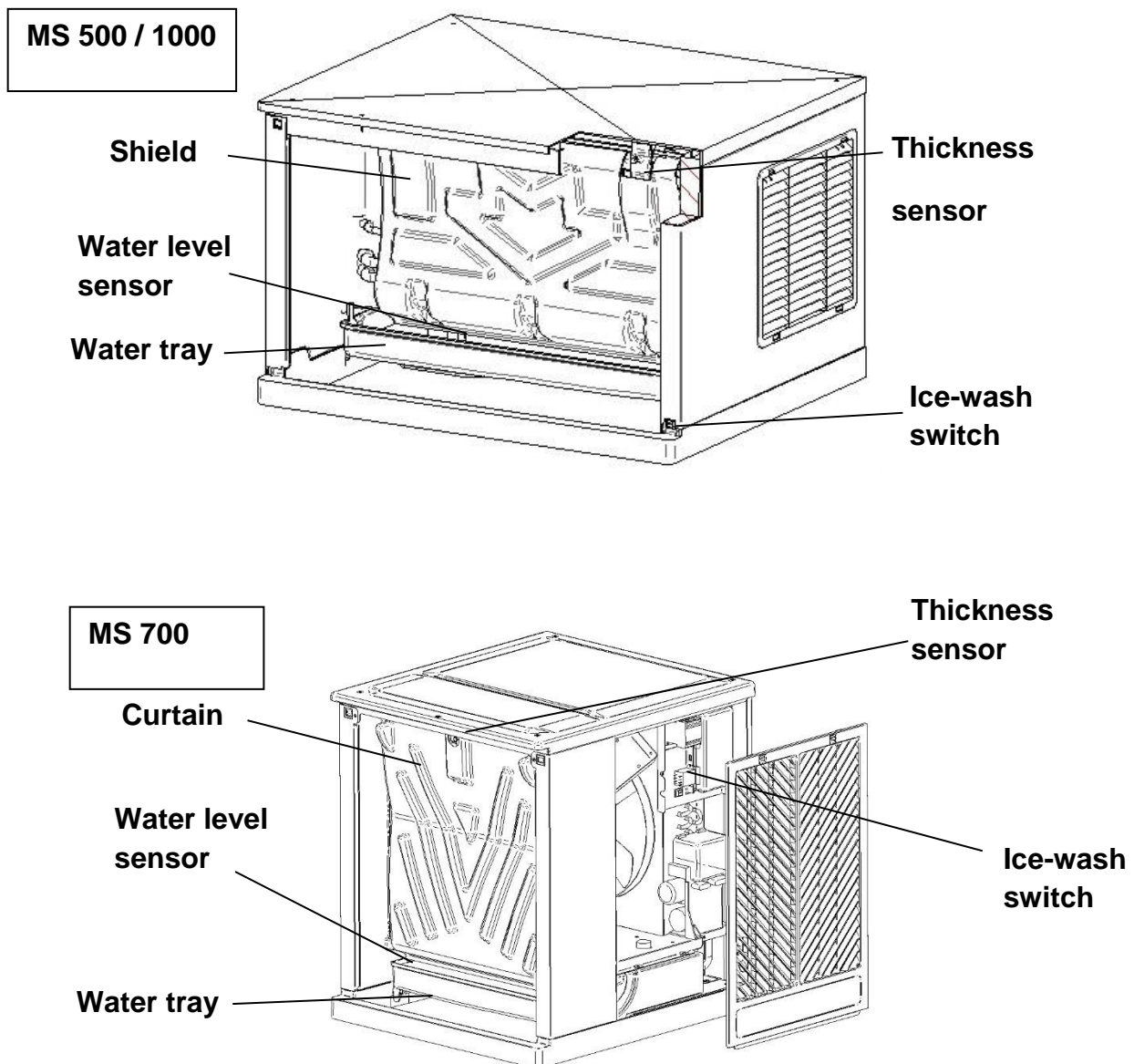
- 1) Remove the front panel.
- 2) Set Ice-wash switch to the OFF position (position 0) after ice falls from the evaporator at the end of a harvest cycle, or set the ice-wash switch to the OFF position and allow the ice to melt off the evaporator.

**CAUTION:** Never use anything to force ice from the evaporator. Damage may result.

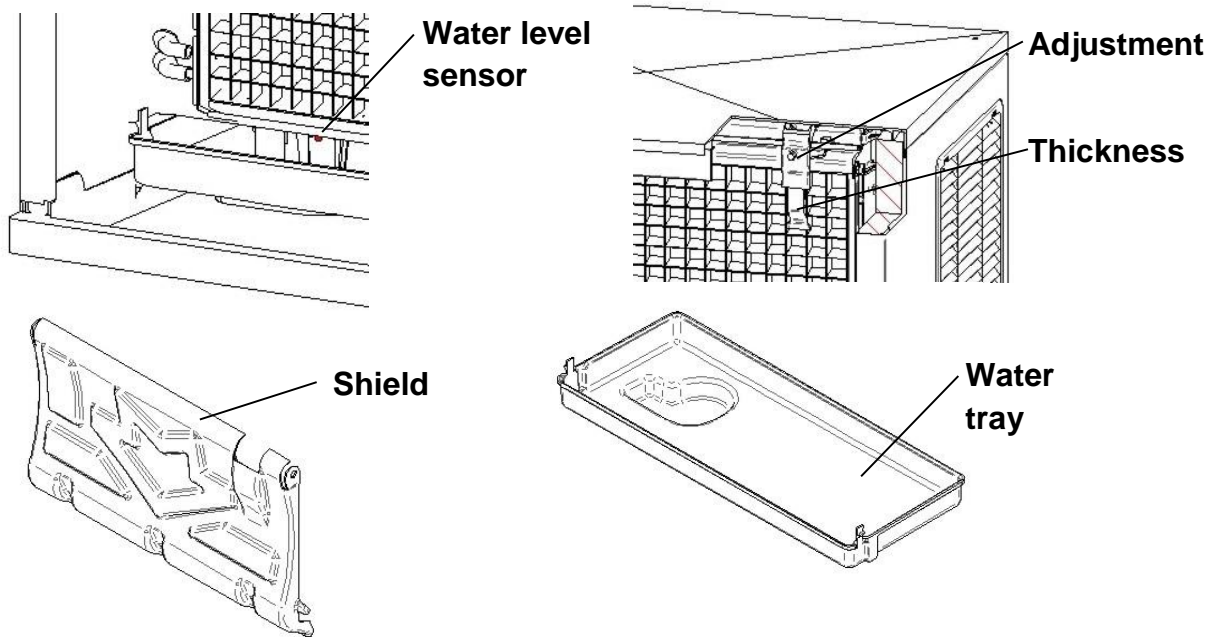


- 3) Prepare a solution of an appropriate product for the cleaning of ice machines (lime). Do not use hydrochloric acid. We recommend the use of any NSF approved scale removal product. In modular machines the water bucket is filled automatically so we recommend to prepare a previous solution (for example 0.15 gal, according to the manufacturer's instructions with the total quantity of product needed for the water tray 0.8 gal for MS 500 and 1.6 gal for MS 1000 and 0.9 gal for MS 700).  
 To start a cleaning cycle, move the ice-wash switch to the WASH position (position II). The machine will drain the reservoir and refill it. Pour the scale remover solution into the reserve.





- 4) Allow the solution to circulate in the water system for 30-40 minutes and then set the ice-wash switch to the OFF position.
- 5) To purge out the ice machine scale remover and residue move the ice-wash switch to the WASH (the machine will drain the reservoir and refill it) and then set the ice-wash switch to the OFF position.
- 6) Disconnect power and close water supply.
- 7) Mix a cleaning solution.
- 8) Remove shield and water tray.
- 9) Clean the metal surfaces of the thickness sensor, water level sensor, the adjustment screw, the shield and the water tray with the cleaner solution using a brush (not a wire brush) or cloth.



- 10) Clean the interior surfaces of the freezing compartment (including walls, plastic parts of the evaporator, distributor...) and the front panel with the cleaner solution using a brush or cloth.
- 11) Mix a solution of sanitizer using approved sodium hypochlorite food equipment sanitizer to form a solution with 100 to 200 ppm free chlorine yield. Below an example to calculate the proper quantity of sanitizer to add to the water, for household bleach 12.5%:

$$\text{bleach to add} \Rightarrow \frac{15}{\% \text{dis}} = \frac{15}{12.5} = 1.2 \text{ gr/L} \rightarrow *0.133 = 0.16 \text{ oz/gal}$$

- 12) Sanitize all surfaces of the ice thickness sensor, water level sensor, shield and water tray applying liberally the sanitizer solution using a cloth or sponge.
- 13) Sanitize the interior surfaces of the freezing compartment (including walls, plastic parts of the evaporator, distributor...) and the front panel applying liberally the sanitizer solution using a cloth or sponge.
- 14) Return the water tray and shield to their normal positions.
- 15) Connect power and water supplies.
- 16) To start a sanitation cleaning cycle, move the ice-wash switch to the WASH position. The machine will drain the reservoir and refill it. Pour the sanitizer into the water reservoir to get a solution as in the point 12 (the volume in the water tray is 0.8 gal for MS 500 and 1.6 gal for MS 1000 and 0.9 gal for MS 700).
- 17) Allow the solution to circulate in the water system for 20 minutes and then set the ice-wash switch to the OFF position.
- 18) To purge out the sanitizer solution and residue move the ice-wash switch to the WASH

position (drain and refill) and allow the water to circulate for 5 minutes and then move the switch to the OFF position (drain). Repeat this operation two more times to rinse thoroughly.

19) Return the panel to their position.

20) Set the ice-wash switch to the ON position (position I) and discard the first two harvests.

### **6.3. Cleaning the bins (for undercounter models)**

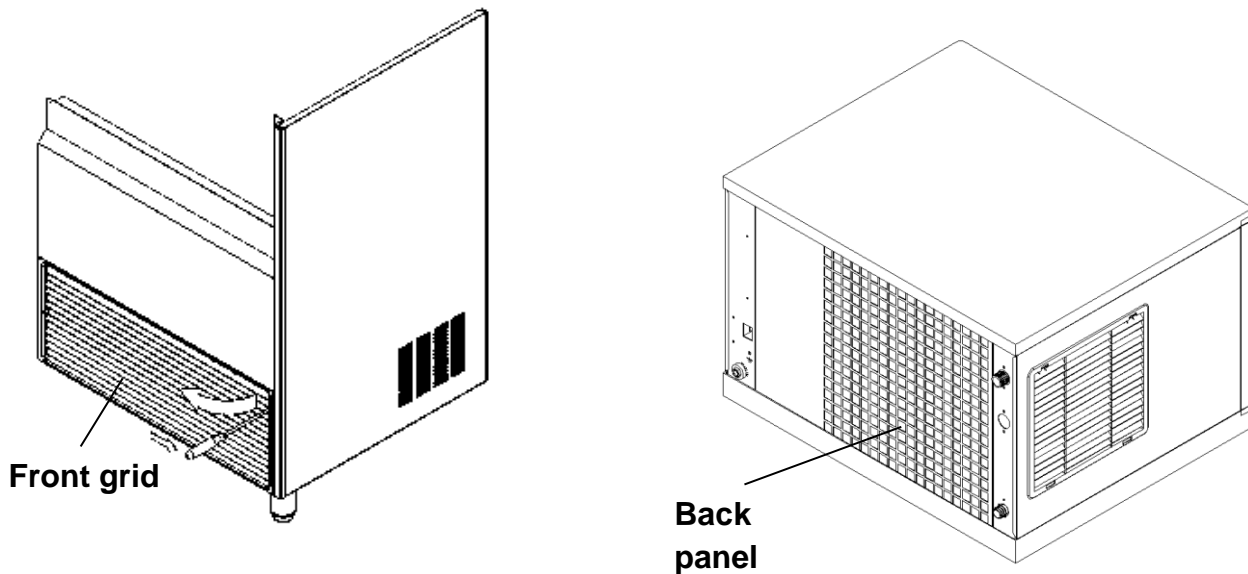
- 1) Disconnect the machine, close water faucet and empty storage bin of ice
- 2) Use the cleaner/water solution to clean all surfaces of the bin. Use a nylon brush or cloth. Then rinse all areas thoroughly with clean water.
- 3) Use the sanitizer/water solution to sanitize all surfaces of the bin. Use a nylon brush or cloth.
- 4) Rinse with plenty of water, dry, run the machine and open water faucet.

### **6.4. Cleaning the condenser**

#### ***AIR CONDENSER***

- 1) Disconnect machine and close water faucet.
- 2) For under counter models remove the front grid by pressing the two clips placed at right side (see figure).

For modular models remove the back panel (see figure).



- 3) Clean condenser using a vacuum cleaner, soft brush or low pressure air. Clean from top to bottom, not side to side. Be careful not to bend the condenser fins.

## WATER CONDENSER

The water condenser may require cleaning due to scale build-up. The cleaning procedures require special pumps and cleaning solutions. They must be performed by qualified maintenance or service personnel.

### 6.5. External cleaning of the machine

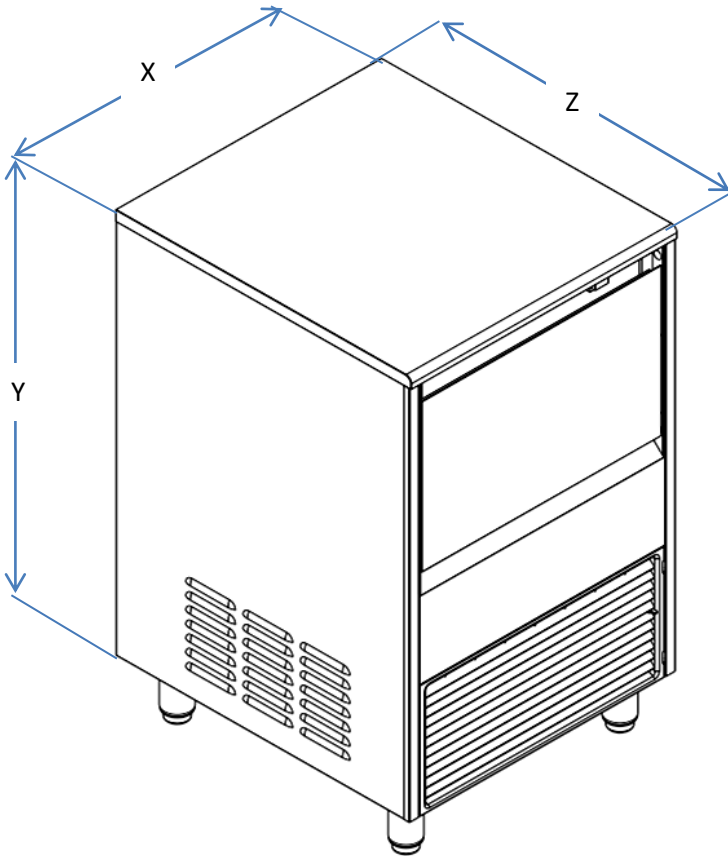
Clean the area around the ice machine as often as necessary to maintain cleanliness. Sponge any dust and dirt off the outside of the ice machine with mild soap and water. Wipe dry with a clean soft cloth. A commercial grade stainless steel cleaner/polish can be used as necessary.

### 6.6. Water leakage checking

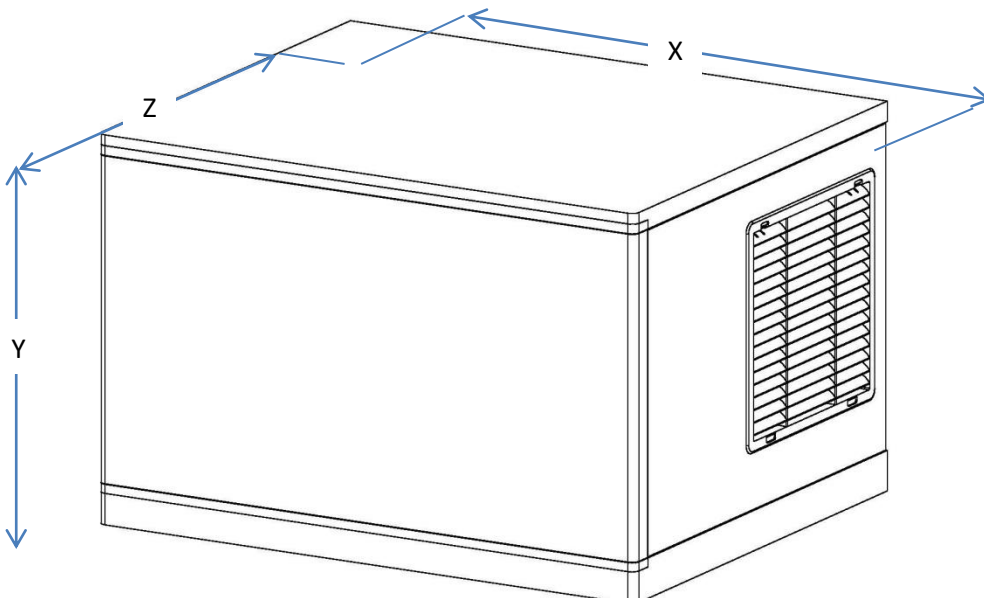
This must be done whenever maintenance is carried out on the machine: check all water connexions, braces, tubes and hoses in order to eliminate leaks and prevent breakages and flooding.

## 7. TECHNICAL SPECIFICATIONS

### SPIKA NG UNDERCOUNTER



### SPIKA MODULAR



### 7.1. Dimensions, voltage

<b>SPIKA NG</b>								
	MODELS (USA)	COOLING	machine dimensions			pakaging dimensions		
			(inch)			(inch)		
			Width X	Depth Z	Height Y	Width X	Depth Z	Height Y
SPIKA NG 125	SPIKA NG 125-A1F	Air	21,1	23,4	31,3	24,4	26,0	36,2
	SPIKA NG 125-A1H	Air	21,1	23,4	31,3	24,4	26,0	36,2
	SPIKA NG 125-W1F	Water	21,1	23,4	31,3	24,4	26,0	36,2
	SPIKA NG 125-W1H	Water	21,1	23,4	31,3	24,4	26,0	36,2
SPIKA NG 175	SPIKA NG 175-A1F	Air	26,0	27,6	33,0	29,3	30,3	38,2
	SPIKA NG 175-A1H	Air	26,0	27,6	33,0	29,3	30,3	38,2
	SPIKA NG 175-W1F	Water	26,0	27,6	33,0	29,3	30,3	38,2
	SPIKA NG 175-W1H	Water	26,0	27,6	33,0	29,3	30,3	38,2
SPIKA NG 215	SPIKA NG 215-A1F	Air	26,0	27,6	33,0	29,3	30,3	38,2
	SPIKA NG 215-A1H	Air	26,0	27,6	33,0	29,3	30,3	38,2
	SPIKA NG 215-W1F	Water	26,0	27,6	33,0	29,3	30,3	38,2
	SPIKA NG 215-W1H	Water	26,0	27,6	33,0	29,3	30,3	38,2
SPIKA NG 285	SPIKA NG 285-A1F	Air	30,0	30,0	33,0	32,9	32,9	38,2
	SPIKA NG 285-A1H	Air	30,0	30,0	33,0	32,9	32,9	38,2
	SPIKA NG 285-W1F	Water	30,0	30,0	33,0	32,9	32,9	38,2
	SPIKA NG 285-W1H	Water	30,0	30,0	33,0	32,9	32,9	38,2

SPIKA NG								
	MODELS (USA)	VOLTAGE FREQUENCY PHASE	CUBE	POWER INPUT	RLA	FUSE	R404A	
			cubic inch	W	A	A	oz	(gr)
SPIKA NG 125	SPIKA NG 125-A1F	115V / 60Hz / 1Ph	1	460	6	15	11	320
	SPIKA NG 125-A1H	115V / 60Hz / 1Ph	1/2	460	6	15	11	320
	SPIKA NG 125-W1F	115V / 60Hz / 1Ph	1	460	5,5	15	9	250
	SPIKA NG 125-W1H	115V / 60Hz / 1Ph	1/2	460	5,5	15	9	250
SPIKA NG 175	SPIKA NG 175-A1F	115V / 60Hz / 1Ph	1	550	5,5	15	18	520
	SPIKA NG 175-A1H	115V / 60Hz / 1Ph	1/2	550	5,5	15	18	520
	SPIKA NG 175-W1F	115V / 60Hz / 1Ph	1	550	5	15	15	420
	SPIKA NG 175-W1H	115V / 60Hz / 1Ph	1/2	550	5	15	15	420
SPIKA NG 215	SPIKA NG 215-A1F	115V / 60Hz / 1Ph	1	640	6	15	23	650
	SPIKA NG 215-A1H	115V / 60Hz / 1Ph	1/2	620	6	15	23	650
	SPIKA NG 215-W1F	115V / 60Hz / 1Ph	1	640	5,5	15	19	520
	SPIKA NG 215-W1H	115V / 60Hz / 1Ph	1/2	620	5,5	15	19	520
SPIKA NG 285	SPIKA NG 285-A1F	115V / 60Hz / 1Ph	1	780	8,7	15	29	830
	SPIKA NG 285-A1H	115V / 60Hz / 1Ph	1/2	780	8,7	15	29	830
	SPIKA NG 285-W1F	115V / 60Hz / 1Ph	1	780	8	15	23	660
	SPIKA NG 285-W1H	115V / 60Hz / 1Ph	1/2	780	8	15	23	660

<b>SPIKA MODULAR</b>								
	MODELS  (USA)	COOLING	MACHINE DIMENSIONS			PACKAGING DIMENSIONS		
			(inch)			(inch)		
			Width X	Depth Z	Height Y	Width X	Depth Z	Height Y
SPIKA MS 500	SPIKA MS 440-A1F	Air	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-A1H	Air	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-W1F	Water	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-W1H	Water	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-A2F	Air	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-A2H	Air	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-W2F	Water	30	24,4	19,7	32,9	25	24,6
	SPIKA MS 440-W2H	Water	30	24,4	19,7	32,9	25	24,6
SPIKA MS 1000	SPIKA MS 880-A2F	Air	30	24,4	29,9	32,9	25	34,4
	SPIKA MS 880-A2H	Air	30	24,4	29,9	32,9	25	34,4
	SPIKA MS 880-W2F	Water	30	24,4	29,9	32,9	25	34,4
	SPIKA MS 880-W2H	Water	30	24,4	29,9	32,9	25	34,4



<b>SPIKA MODULAR</b>								
	MODELS  (USA)	VOLTAGE  FREQUENCY  PHASE	CUBE	POWER  INPUT	RLA	FUSE	R404A	
			cubic inch	W	A	A	oz	(gr)
SPIKA MS 500	SPIKA MS 500-A1F	115V / 60Hz / 1Ph	1	840	14,5	15	25	700
	SPIKA MS 500-A1H	115V / 60Hz / 1Ph	1/2	840	14,5	15	25	700
	SPIKA MS 500-W1F	115V / 60Hz / 1Ph	1	840	14,5	15	25	700
	SPIKA MS 500-W1H	115V / 60Hz / 1Ph	1/2	840	14,5	15	25	700
	SPIKA MS 500-A2F	208-230V / 60Hz / 1Ph	1	840	9	15	25	700
	SPIKA MS 500-A2H	208-230V / 60Hz / 1Ph	1/2	840	9	15	25	700
	SPIKA MS 500-W2F	208-230V / 60Hz / 1Ph	1	840	9	15	25	700
	SPIKA MS 500-W2H	208-230V / 60Hz / 1Ph	1/2	840	9	15	25	700
SPIKA MS 1000	SPIKA MS 1000-A2F	208-230V / 60Hz / 1Ph	1	1540	10	15	51	1450
	SPIKA MS 1000-A2H	208-230V / 60Hz / 1Ph	1/2	1540	10	15	51	1450
	SPIKA MS 1000-W2F	208-230V / 60Hz / 1Ph	1	1540	10	15	51	1450
	SPIKA MS 1000-W2H	208-230V / 60Hz / 1Ph	1/2	1540	10	15	51	1450

**Note:** The refrigerant charge chart is only for guidance; information about the exact charge installed at day of manufacture is provided on the name plate of each machine.

## 7.2. Production Charts

SPIKA 125 A1F Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	141	132	123	112
70	130	121	114	105
90	108	101	94	85
100	83	74	66	60

SPIKA 125 A1H Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	143	134	127	119
70	132	123	116	110
90	110	101	95	88
100	92	81	74	70

SPIKA 175 A1F Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	209	198	191	182
70	198	187	178	169
90	165	154	145	136
100	138	130	121	110

SPIKA 175 A1H Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	218	207	196	185
70	211	200	189	178
90	176	165	154	143
100	147	134	123	112

SPIKA 215 A1F Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	233	220	209	198
70	224	211	198	189
90	198	185	174	163
100	176	160	149	141

SPIKA 215 A1H Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	255	246	238	229
70	242	233	224	213
90	215	207	198	187
100	193	185	171	158

SPIKA 285 A1F Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	341	321	304	286
70	323	304	286	271
90	286	264	246	231
100	264	238	220	202

SPIKA 285 A1H Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	330	319	304	286
70	310	299	286	271
90	275	264	249	231
100	246	233	213	196

SPIKA MS 440/500 A1F Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	462	440	418	396
70	434	407	385	363
90	363	330	308	286
100	319	286	268	244

SPIKA MS 440/500 A1H Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	451	440	418	396
70	418	407	385	363
90	348	330	312	286
100	297	273	246	220

SPIKA MS 880/1000 A2F Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	987	958	925	870
70	954	925	892	826
90	848	793	729	661
100	727	661	595	524

SPIKA MS 880/1000 A2H Lb/24h

	WATER °F			
AIR F	50	60	70	80
50	987	958	925	870
70	967	936	899	837
90	848	793	729	661
100	727	661	573	498

## 8. USER TROUBLESHOOTING GUIDE

### 8.1. Under counter models

PROBLEM	PROBABLE CAUSE	SOLUTION
None of the electrical parts work.	The machine is unplugged.	Plug in the machine and verify socket power
	Bin thermostat open. Ice touching bin tube.	Remove ice from the bin.
	Bin thermostat open. No ice touching bin tube.	Adjust thermostat (electric box under top cover)
All the electrical parts work but not compressor. (water doesn't freeze)	Compressor switch is in the "WASH" position (0).	Switch to "ICE" position (1).
No water in tray	Not incoming water	Check water supply
	Inlet strain at water valve blocked	Check and clean
Bin full and ice touching thermostat tube, but machine doesn't stop	Bin thermostat doesn't open (only operates at harvest time)	Adjust thermostat (electric box under top cover)
Ice slab empty or too thick	Desadjusted cycle time	Adjust thermostat (electric box under top cover)
Difficult to release ice slab at harvest	Unit bad leveled (tilted to back)	Level; down front
	Not enough harvest time	Add more pins to cam timer wheels (as label indications)
Not uniform flow pattern at evaporator	Dirty or scaled distributor	Perform descaling procedure.  Remove and clean distributor (pull from two clips at distributor sides)
Unit run and stops alternatively itself	Safety pressure switch opens	Clean air condenser (behind front grid)
For further problems call aftersales service		

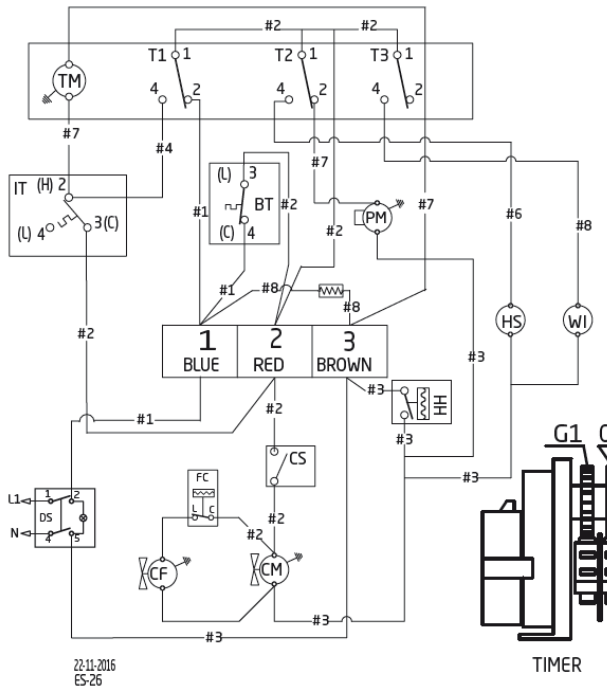
## 8.2. Modular models

PROBLEM	PROBABLE CAUSE	SOLUTION
None of the electrical parts work.	The machine is unplugged.	Plug in the machine and verify socket power
	Rear switch OFF	Switch ON
	Front switch position 0	Move to ICE (behind front panel)
All the electrical parts work but not compressor. (water doesn't freeze)	Front switch position WASH.	Move to ICE (behind front panel)
No water in tray	Not incoming water	Check water supply
	Inlet strain at water valve blocked	Check and clean
Not enough water to end cycle	Water level probe too low	Move up (steel rod beside pump)
	Defective drain valve (check drain leak during ice stage)	Disassemble and clean
	Shield splash leaks	Check shield position
Water overflows tray	Level probe too high or scaled	Adjust / clean
Ice slab empty or too thick	Desadjusted/scaled thickness probe	Adjust / clean
Difficult to release ice slab at harvest	Unit bad leveled (tilted to back)	Level; down front
Not uniform flow pattern at evaporator	Dirty or scaled distributor	Perform descaling procedure. Remove and clean distributor (pull from two clips at distributor sides)
Low production	Dirty condenser	Clean (check also incoming water/air temperature)
Unit stops after few time running	Safety pressure switch opens	Clean air condenser (back)
For further problems call aftersales service		

## 9. WIRING DIAGRAMS

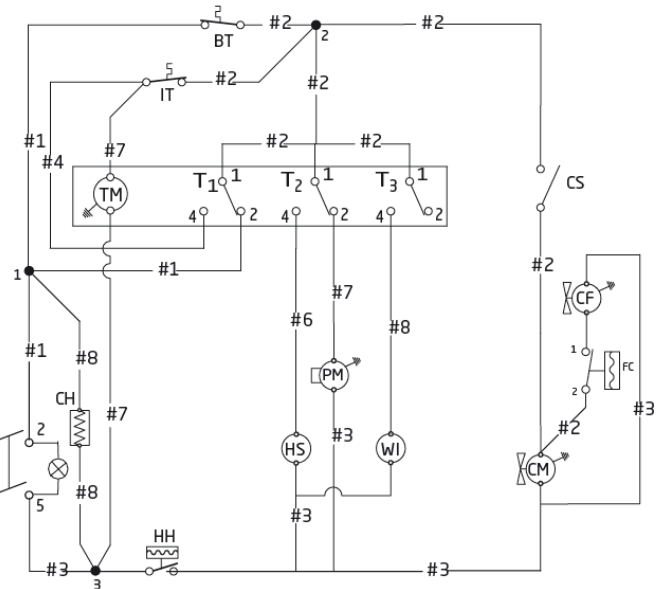
### 9.1. SPIKA NG (under counter models)

PICTORAL WIRING DIAGRAM



22-11-2016  
ES-26

SCHEMATIC LADDER DIAGRAM



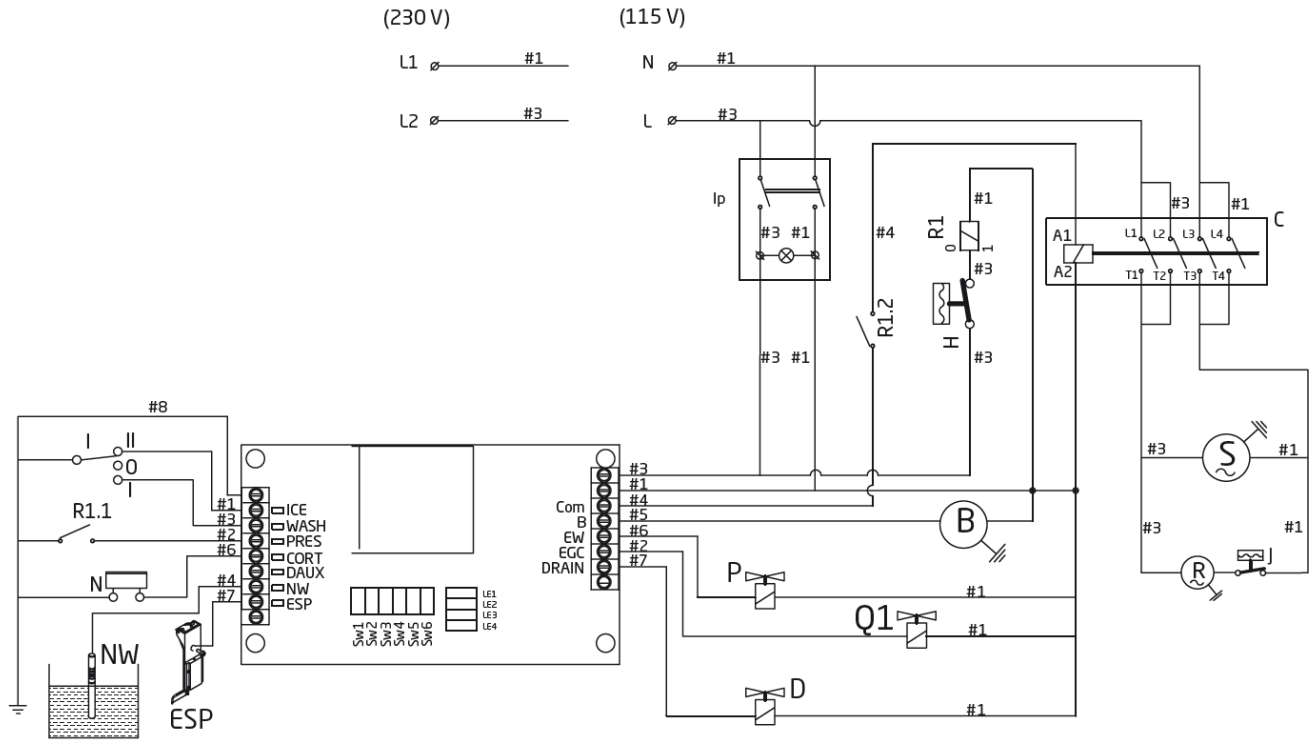
#### COMPONENTS:

- TM Timer motor
- T1 Timer circuit - safety
- T2 Timer circuit - hot gas solenoid
- T3 Timer circuit - water solenoid
- IT Ice Thickness Thermostat
- BT Bin Thermostat
- PM Pump Motor
- CH Condensate Heater
- HS Hot gas solenoid
- WI Water Inlet Solenoid
- CS Cleaning switch
- HH High Head Pressure Switch
- FC Condenser Fan Cycling Switch
- CF Condenser Fan motor
- CM Compressor
- DS Disconnect switch

#### WIRE COLOR CODING:

- # 1 blue / azul / bleu
- # 2 red / rojo / rouge
- # 3 brown / marrón / brun
- # 4 black / negro / noir
- # 5 yellow / amarillo / orange
- # 6 violet / violeta / violet
- # 7 grey / gris / gris
- # 8 white / blanco / blanc

**9.2. SPIKA MS 700**



**WIRE COLOR CODING:**

- # 1 blue / azul / bleu
- # 2 red / rojo / rouge
- # 3 brown / marrón / brun
- # 4 black / negro / noir
- # 5 grey / gris / gris
- # 6 violet / violeta / violet
- # 7 white / blanco / blanc
- # 8 ground / verde-amarillo / vert-orange

**COMPONENTS:**

- H High pressure switch
- N Curtain sensor
- I Ice-wash switch
- S Compressor
- R Fan motor
- J Condensing pressure switch
- B Pump motor
- P Water inlet valve
- Q1 Hot gas valve
- D Drain electrovalve
- NW Water level sensor
- ESP Thickness sensor
- Ip On/off switch
- C Contactor

**DIP-SWITCH (on/off)**

- Sw1 ON Automatic pressure switch trip  
OFF Manual pressure switch trip (\*)
- Sw2 ON Time out alarms inactives  
OFF Timeout alarms actives (\*)
- Sw4 Time water filling >2'  
ON Automatic reset the machine 1H  
OFF Stop the machine with manual reset (\*)
- Sw5 ON Machine slave  
OFF Machine master (\*)

(\*) Factory settings.

**LEDS normal work (cont.)**

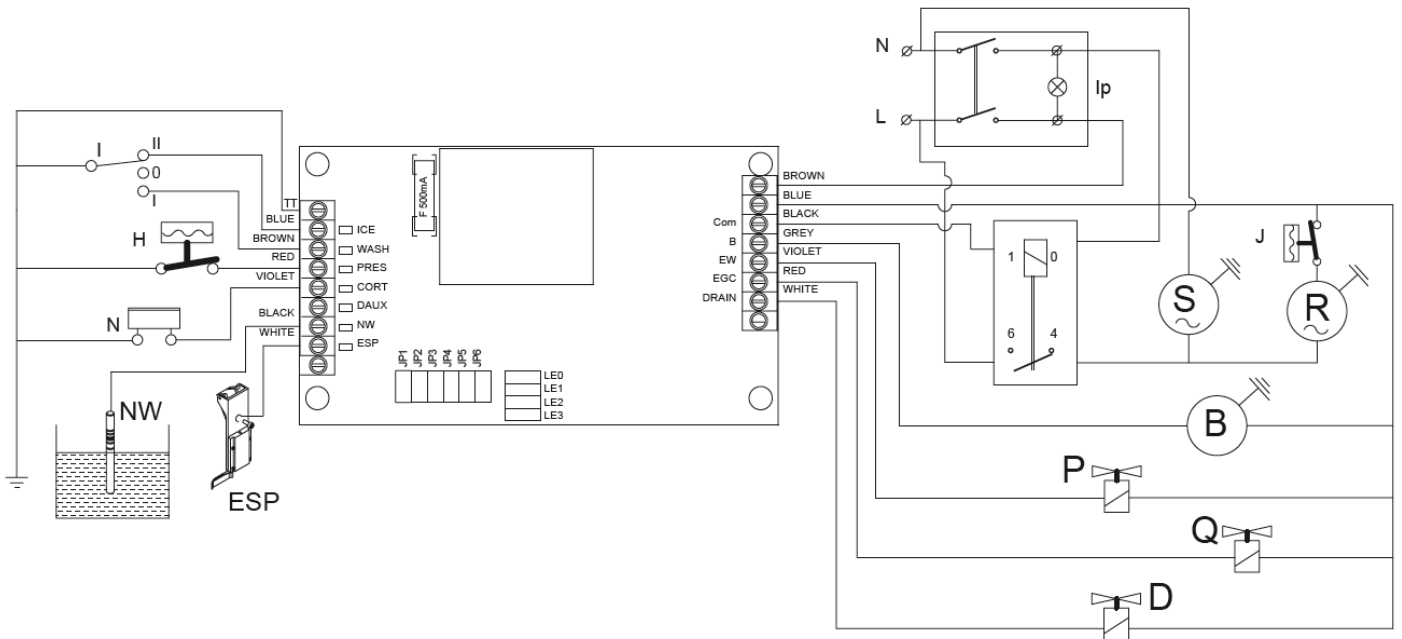
- LE1 Stand by
- LE2 Ice
- LE3 Wash
- LE4 Full bin stop

**LEDS alarms (flashing)**

- LE1 Harvest > 3'
- LE2 Ice time > 60'
- LE3 Ice time < 2'
- LE4 Water filling >3'
- LE1+LE2+LE3+LE4 Safety pressure switch



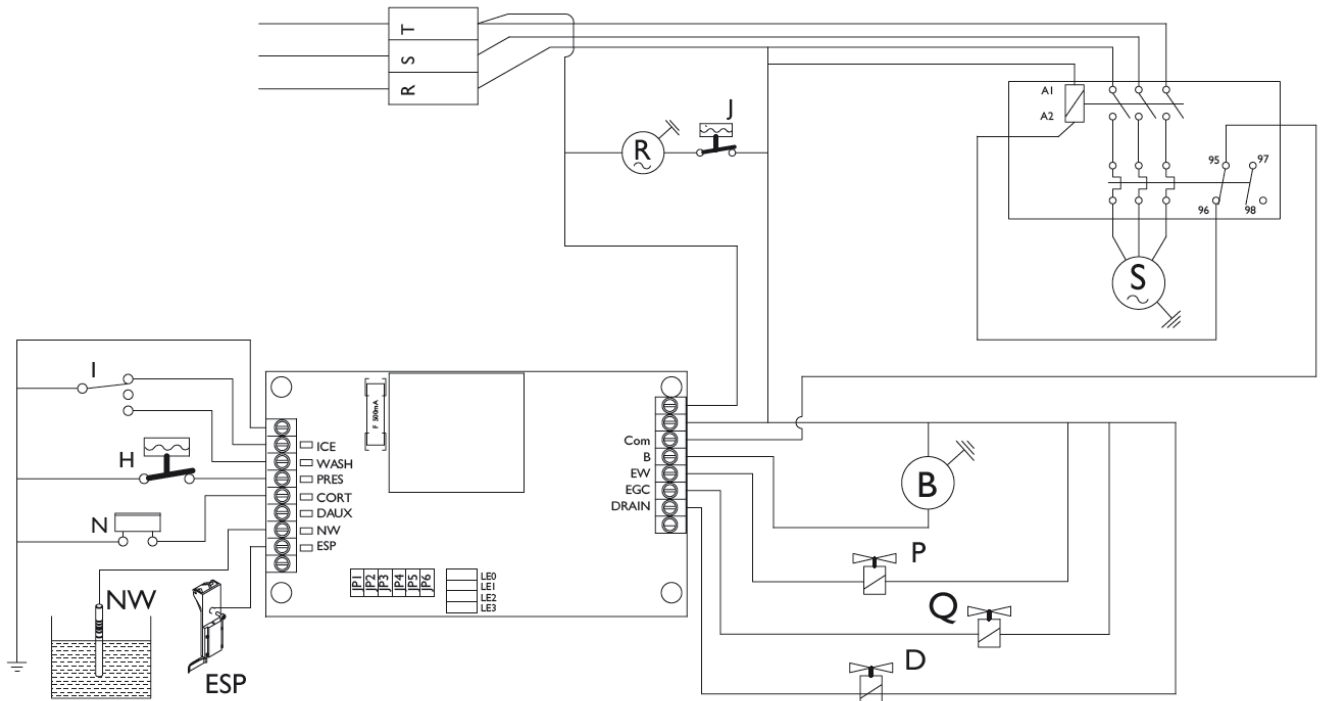
### 9.3. SPIKA MS 500 AND SPIKA MS 1000 A-W ONE PHASE



#### COMPONENTS

H	Safety pressostat
N	Shield switch
I	Ice-wash switch (3 positions)
S	Compressor
R	Fan motor
J	Condensing pressostat (only air).
B	Pump motor
P	Water inlet valve
Q	Hot gas valve
D	Drain electrovalve
NW	Water level sensor
ESP	Thickness sensor
Ip	ON/OFF switch

**9.4. SPIKA MS 1000 THREE PHASES**



COMPONENTS

- H Safety pressostat
- N Shield switch
- I Ice-wash switch (3 positions)
- S Compressor
- R Fan motor
- J Condensing pressostat (only air).
- B Pump motor
- P Water inlet valve
- Q Hot gas valve
- D Drain electrovalve
- NW Water level sensor
- ESP Thickness sensor
- Ip ON/OFF switch