



SERVICE MANUAL

SPIKA SERIES



ICE CUBE MAKERS - UNDERCOUNTER MODELS

- ✓ SPIKA NG 60
- ✓ SPIKA NG 90
- ✓ SPIKA NG 110
- ✓ SPIKA NG 140

ICE CUBE MAKERS - MODULAR MODELS

- ✓ SPIKA MS 220
- ✓ SPIKA MS 410
- ✓ SPIKA MS 400/600 22"

HOW TO USE THIS MANUAL CORRECTLY

DESCRIPTION OF THE CONTENT

This manual has been created to provide the installation technician with information for the machine's correct installation and effective maintenance.

The document also contains a section that describes the cause of potential incidents as well as detailed information for resolving them.

This manual should be stored in a safe place so it may be used to resolve matters related to the machine's operation throughout its service life.

RECEPTION AND INSTALLATION

The installation technician who handles the reception and installation may refer to the first part of this document for important information on how to properly connect the machine to the mains, water mains and drainage, as well as the conditioning factors and limitations. This manual also contains comprehensive information about installing multiple stacked devices.

OPERATION

This document has been prepared so anyone may easily understand the machine's operating principles and quickly view each status. The manual also serves as a valuable guide about the menus and explains in detail each of the messages that appear on the display in a technical annex located at the end.

SPECIFICATIONS AND ADJUSTMENTS

The manual's user can consult technical information regarding the machine's parameters, production ranges, pressure switch adjustments, electrical or water consumption, and refrigerant charges.

MAINTENANCE AND CLEANING

In order for this document to serve as a comprehensive guide for the installer, a section has been included with periodic maintenance and cleaning instructions as well as a detailed explanation of how to clean each element. It is essential to refer to this manual in order to guarantee the machine's optimal service life.

INCIDENT RESOLUTION

The document includes a technical support table to help users resolve common issues. It serves as a guide for diagnosing issues and provides the most probable solutions.

QUALITY PARAMETERS AND CUSTOMER SERVICE

This machine has been manufactured according to rigorous quality standards. If any incidents arise, please contact the company that installed the machine or the Customer Service department of the manufacturer:

P.I. Sector 13. Avda. dels Hostalers, 2
46394 Ribarroja del Turia. Valencia. Spain

0034961667639/ Hours: 8:00 a.m. to 7:00 p.m.

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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. Warnings

- This device must be installed by a specialist technician.
- Any modification necessary to the electrical installation for the perfect connection of the machine must be carried out exclusively by professionally qualified and authorised staff.
- To guarantee the efficient and correct operation of this device, it is essential to follow the manufacturer's instructions, particularly with regard to maintenance and cleaning operations, which in most cases should be carried out by qualified staff.
- Actions by unqualified persons, apart from being dangerous, can cause serious faults. In case of a fault, contact the distributor who sold it to you. We recommend that you always demand original spare parts.
- Any use of the ice-cube-maker other than for producing ice, using drinking water, is considered inappropriate.
- Modifying or attempting to modify this device, apart from voiding the warranty, is extremely dangerous.
- The machine should not be used in the open air or exposed to the rain. Connect to the drinking water mains.
- The machine should be connected using the cable supplied. It is not designed to be connected to a fixed pipe.
- Always disconnect the machine from the mains before carrying out any cleaning or maintenance work.
- The electrical plug must be in an accessible place.
- We recommend the use of filtration in case of low water quality.
- Carry out unloading and recovery of materials or waste according to your national regulations on the matter.
- This device is not designed for use by persons (including children) with impaired physical, sensory or mental capacities, or who lack experience or knowledge, except if they have had supervision or instruction in the use of the device from a person responsible for their safety. Children should be supervised to ensure that they do not play with the device.

1.2. Reception of the machine

Inspect the exterior of the packaging. If it is broken or damaged, complain to the haulier.

To checky whether the machine is damaged, UNPACK IT IN THE PRESENCE OF THE HAULIER and make a record on the reception document, or on a separate document, of any damage that the machine may have suffered. Since 1 May 1998, it has complied with European regulations on the management of Packaging and Packaging Waste.

Always record the machine and model number. This number is marked in three places:

Packaging

There is an external label with the factory number.

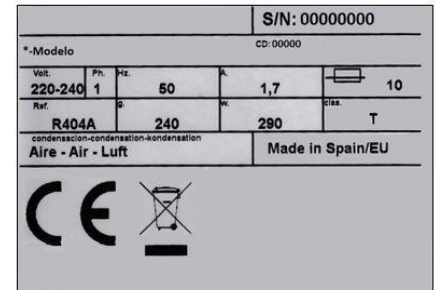


Exterior of the machine

On the back, on a label that is identical to the front.

Name plate

Check that the installation kit is complete inside the machine. It consists of: ¾ gas connection, two filter joints, anchor bolts and the manual.



CAUTION: THE PACKAGING ITEMS (PLASTIC BAGS, CARDBOARD BOXES AND WOODEN PALLETS) MUST NOT BE LEFT WITHIN REACH OF CHILDREN AS THEY ARE A POTENTIAL SOURCE OF DANGER

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 5°C (41°F) and 43°C (109.4°F). 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 (undercounter) 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 to install 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. Levelling of the ice maker

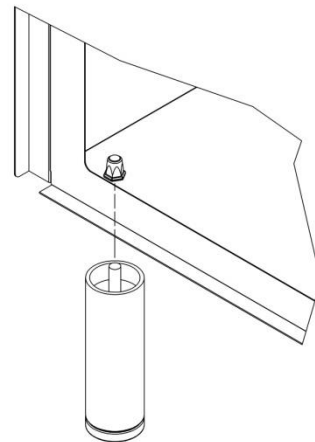
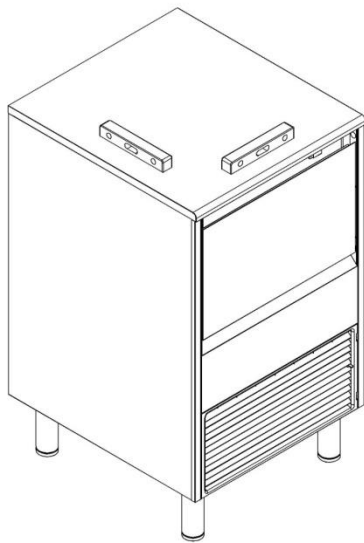
Use a level on top of ice machine in order to ensure the equipment is perfectly leveled.

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.



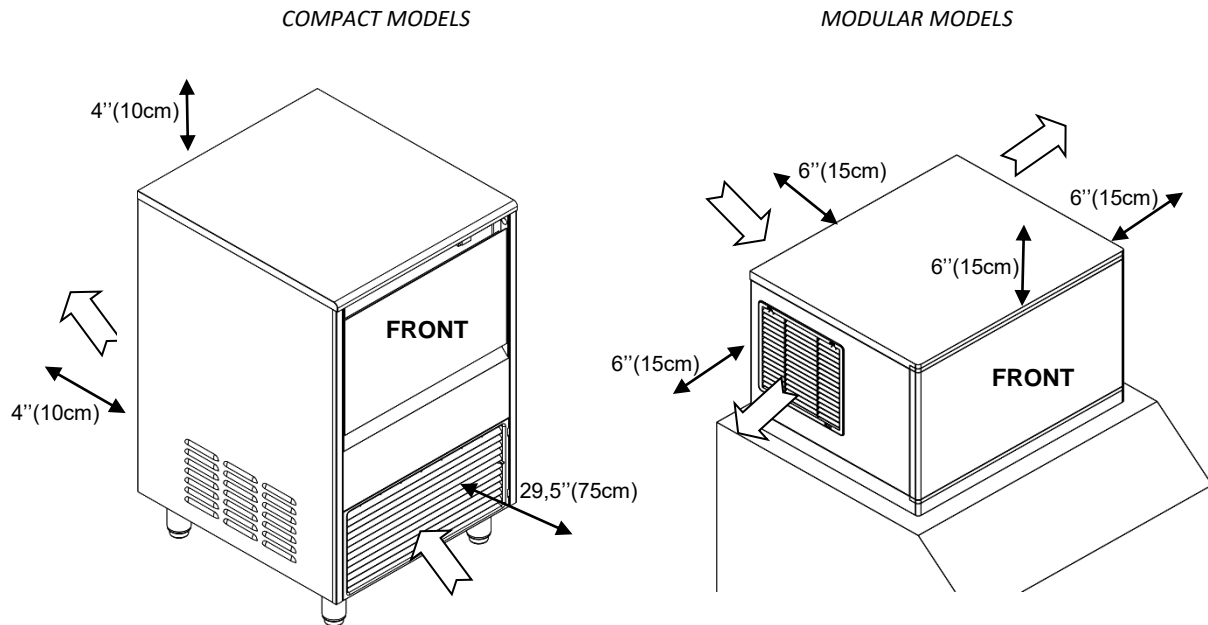
2.3. Installation of modular equipments on top of bins

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.

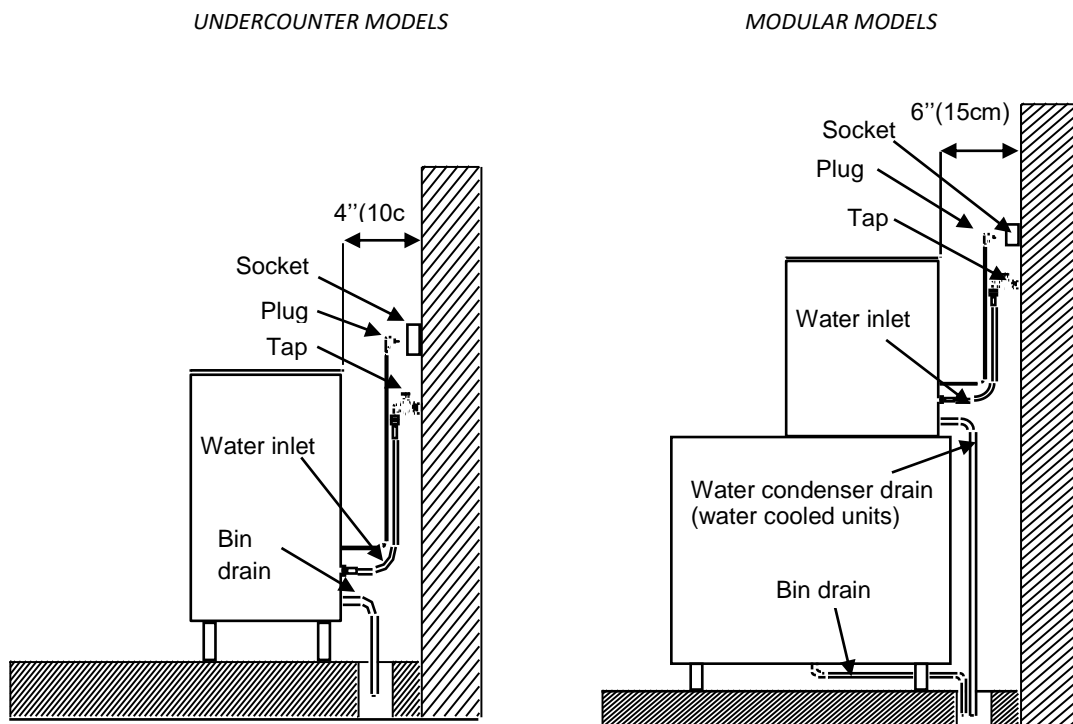
2.4. Minimum distance to obstacles

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



CONNECTION DIAGRAM:

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



2.5. Water supply connection

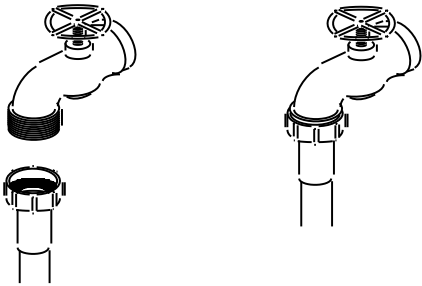
The quality of the water supplied to the ice machine will have an impact on the time between cleanings and ultimately on the life of the product (mainly in water cooled units). It also will have a remarkable influence on the appearance, hardness and flavor of the ice.

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 0.7 and 6 bar (10 and 85 psi). If pressure overpasses such values, install a pressure regulator.

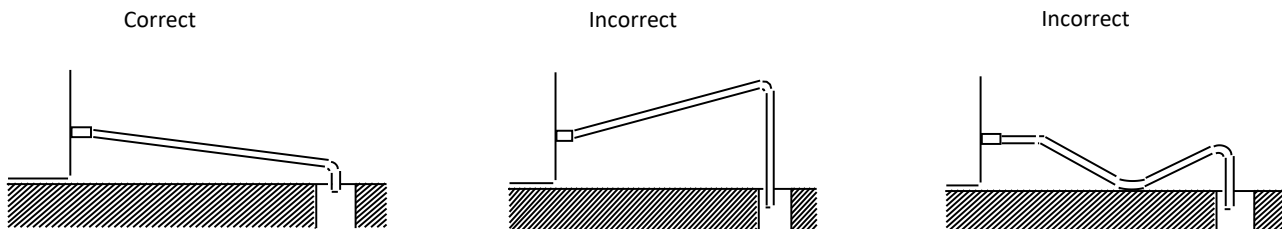
ATTENTION: The machine shall be plumbed (with adequate backflow protection) according to applicable Federal State and local regulations.



2.6. Drain connection

Drainage should be located lower to the machine level, at 150mm (5,9") minimum.

It is convenient that the drain hose is 30mm (1,18") inside diameter and with a minimum gradient of 3cm/metre (0.36" / ft), 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 modular units don't have a cable with them. A qualified technical service must connect the power to the unit.

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.

MODELOS	VOLTAGE FRECUENCIA FASE	AMPS TOTAL	FUSIBLE
		(A)	(A)
SPIKA NG 60	220V / 50Hz / 1F	3	16
SPIKA NG 90	220V / 50Hz / 1F	3,5	16
SPIKA NG 110	220V / 50Hz / 1F	5	16
SPIKA NG 140	220V / 50Hz / 1F	5,5	16
SPIKA MS 220	220V / 50Hz / 1F	7	16
SPIKA MS 410	380V / 50Hz / 3F	4,2	16
SPIKA MS 410	208-230V / 60Hz / 1F	5,8	16
SPIKA MS 400/600	115V / 60Hz / 1F	14.5	20

3. PRIOR CHECKING AND START-UP

3.1. Prior checking

- Is the machine level?
- Are the voltage and frequency as indicated on the plate?
- Are the drains connected and do they work?
- Is it connected to cold water?
- ** If the machine is air condensed, are the air circulation and the temperature of the premises right?

	MAXIMUM	MINIMUM
AMBIENT TEMP.	43°C	5°C
WATER	35°C	5°C

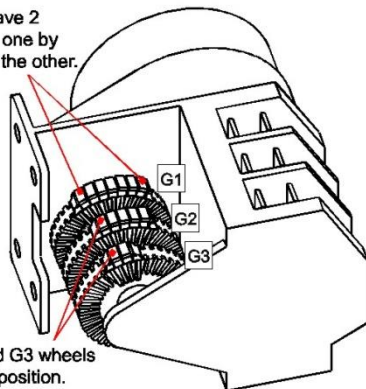
- Is the water pressure correct?

MINIMUM	1 Bar
MAXIMUM	6 Bar

NOTE: If the incoming water pressure is greater than 6 Bar, install a pressure reducer.

CAUTION: CHECK THAT THE VOLTAGE AND FREQUENCY OF THE MAINS ARE THE SAME AS THOSE INDICATED ON THE NAME PLATE.

The wheel G1 should have 2 more pins than the 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 >30°C			Air temp <30°C		
	Water temp >20°C			Water temp <20°C		
	G1	G2	G3	G1	G2	G3
SPIKA NG 60	2X7	2X5	2X3	2X10	2X8	2X5
SPIKA NG 90	9	7	6	12	10	7
SPIKA NG 110	10	8	6	13	11	7
SPIKA NG 140	10	8	7	13	11	8

*indicating the number of white pins

REGULATION/CALIBRATION CYCLE AND STOCK THERMOSTATS

MODEL	REGULATION / CALIBRATION	
	CYCLE THERMOSTAT	STOCK THERMOSTAT
SPIKA		
SPIKA NG 60 W1H	3,5	5,5
SPIKA NG 60 A1H	3,5	5,5
SPIKA NG 90 W1H	3,5	5,5
SPIKA NG 90 A1H	3,5	5,5
SPIKA NG 110 W1H	3	5,5
SPIKA NG 110 A1H	3	5,5
SPIKA NG 140 W1H	3	5,5
SPIKA NG 140 A1H	3	5,5

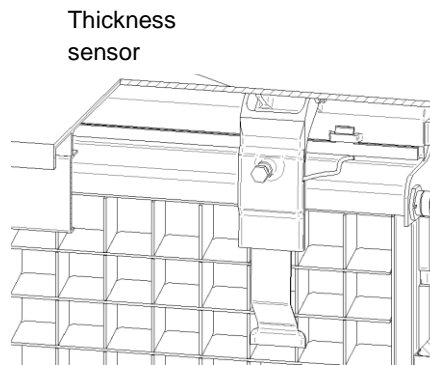
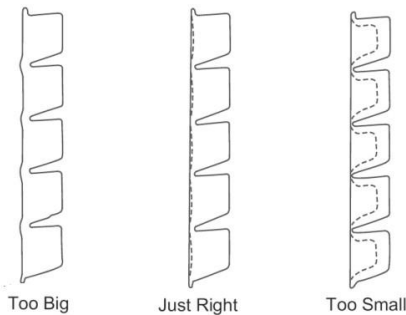
NOTE: The thermostat regulation may vary depending on the ambient temperature of water and on the place where the machine has been installed. By default, the factory-set regulation covers a wide range of temperatures.

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 undercounter 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 undercounter 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 undercounter 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 20 mm (0.78 in) 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 undercounter 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 UNDERCOUNTER 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 electrovalve are energized during 30 seconds to empty the water tray preventing the scale build-up in water. Then the pump and the drain electrovalve 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.

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 production phase starts.

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 , beginning with the start of B.

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.

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

Operation launching

Outputs:

- Compressor (C). It is still in operation.
- Hot gas valve (GC). It is active during the whole operation launching time.
- Pump (B) and waste water valve (EP) are active during time t_6
- Water inlet valve (EW) is activated when time t_6 is over (when the pump is stopped)

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

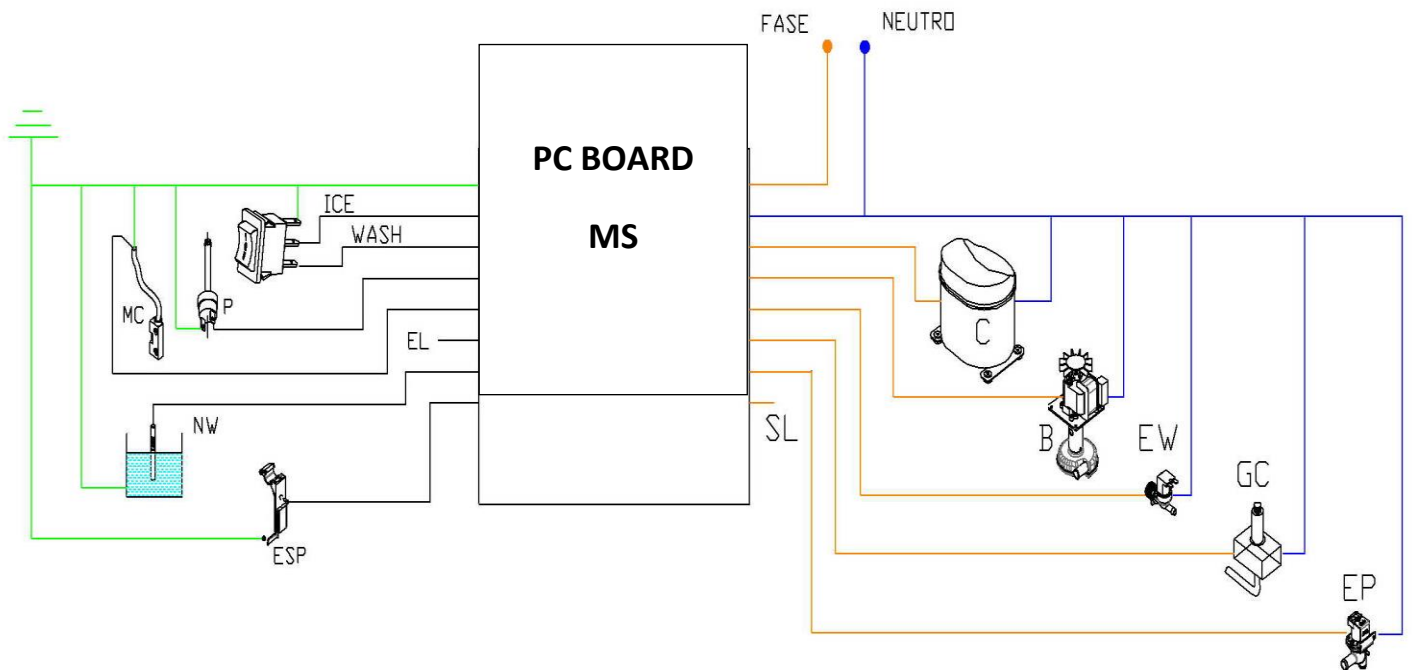
Two possibilities:

- 1) MC is active during a time less than t_3 → when the MC signal stops, the production phase will start.
- 2) MC is active during a time more than t_3 → 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.

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	3.5'
t6	Draining time during operation launching	45"
t7	Production minimum time	5"
t8	Water inlet valve e/w time during production	30"
t9	Water inlet valve e/w timeout	120"
t10	Production maximum timeout	60'
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	60'

5.2. Control Board



Digital outputs

SYMBOL	Description	Relays amp
C	compressor (Relay / contactor)	5
B	pump	5
EW	Water inlet valve	5
GC	Hot gas valve.	5
EP	Drain valve	5
SL	Free	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	
Dip-switch		
1	Pressure reset	
2	Time alarm valuation	
3	Curtain micro relay contact dip-switch NC/NO	
4	Water inlet valve e/w timeout	
5	Free switch	

Analogical inputs

Symbol	Description
ESP	Thickness detection sensor
NW	Water level in reservoir

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 LED1-4.

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 is closed, 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 continue at the position where it was.

* Signaling: Flashing in the four LEDs.

5.5. Long operation

If the operation launching time is longer than t5 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 LEO.

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 until reset.
- Dip-switch 4 on → Machine stops and once time t_{13} has passed, the startup is re-initiated. .

* Signaling: Flashing in LE3.

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 dip-switch with the indication:

- Dip-Switch 5 on → upper machine
- Dip-Switch 5 off → 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.

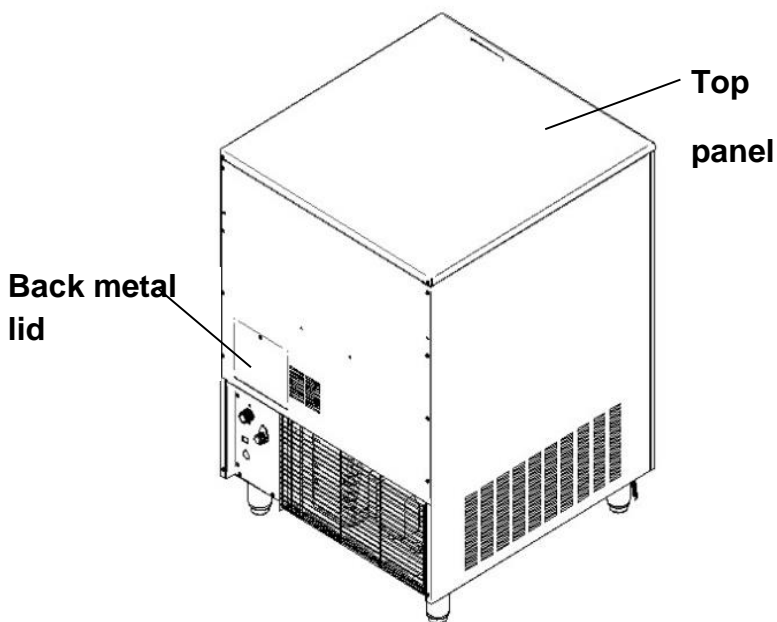
WARNING: Unit should always be disconnected during maintenance/cleaning procedures.

6.1. Cleaning water distribution system for undercounter 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.

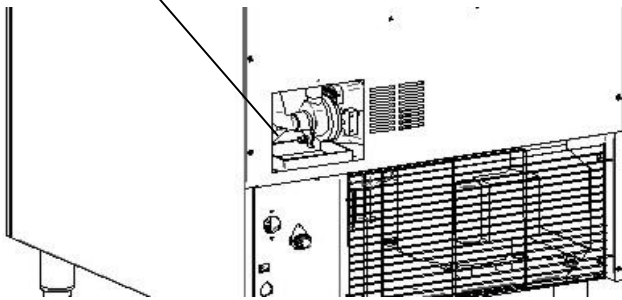
- b) Remove all ice from the bin.



- c) Remove the back metal lid and the top panel (if it need be to make easier the cleaning operations).

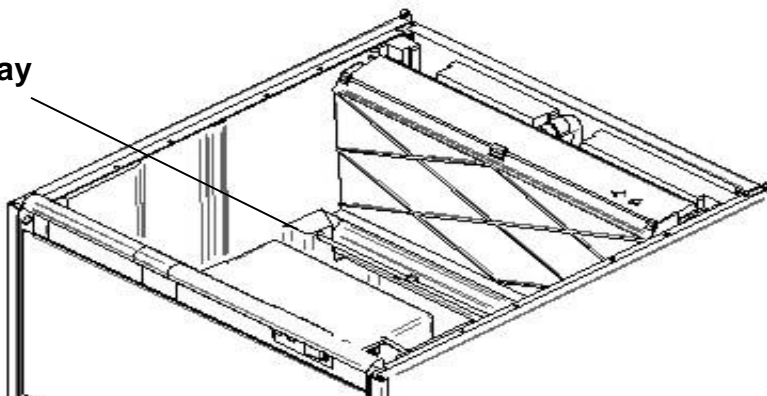
- d) Remove the auxiliary pipe for drain operations near the pump and empty the water tray. Return it to their original position to avoid water spill.

Pipe for drain

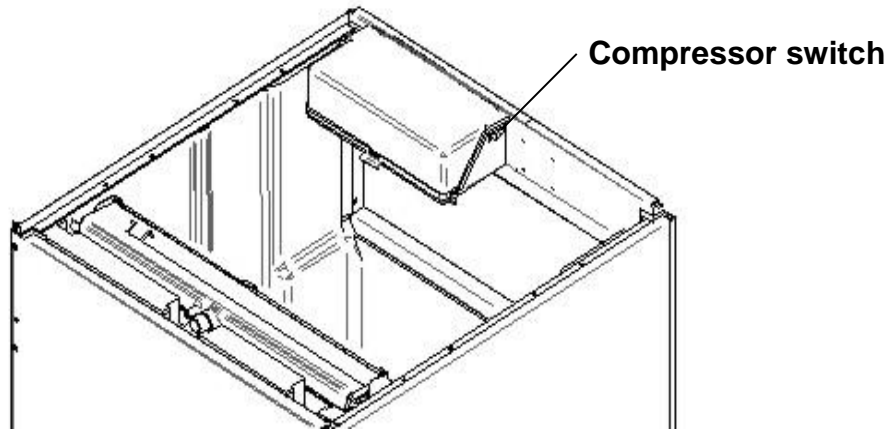


- e) Prepare a solution of an appropriate product for the cleaning of ice machines (lime). Do not use hydrochloric acid. We recommend the use of any NSF approved scale removal product prepared according to the manufacturer's instructions.
- f) Fill water tray with the solution

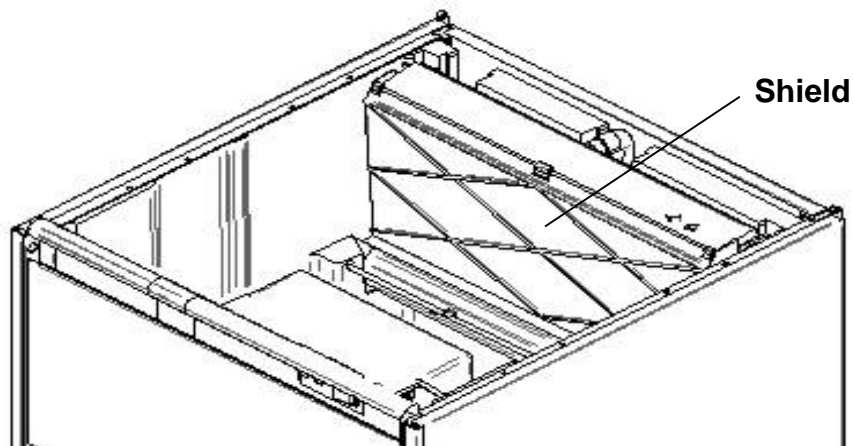
Water tray



- 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%:

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

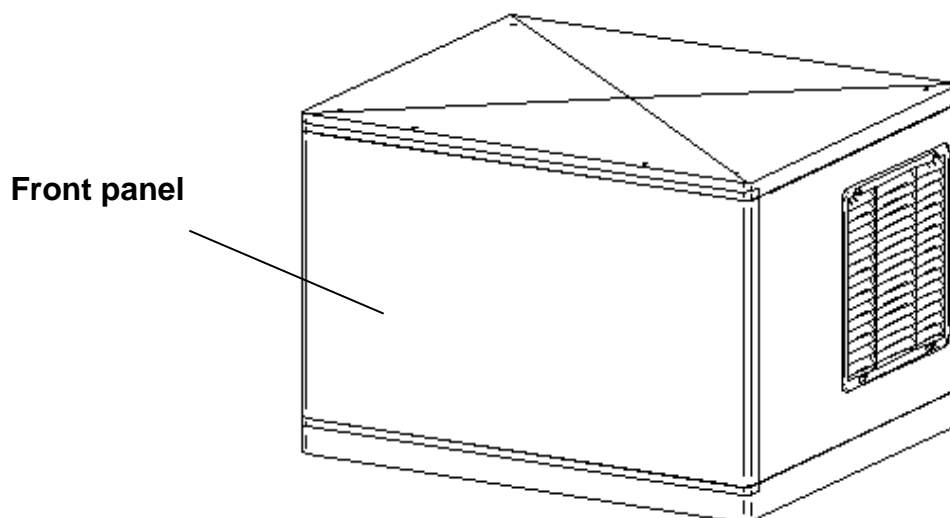
- o) Sanitize all surfaces of the shield applying liberally the sanitizer solution using a cloth or sponge.

- 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)

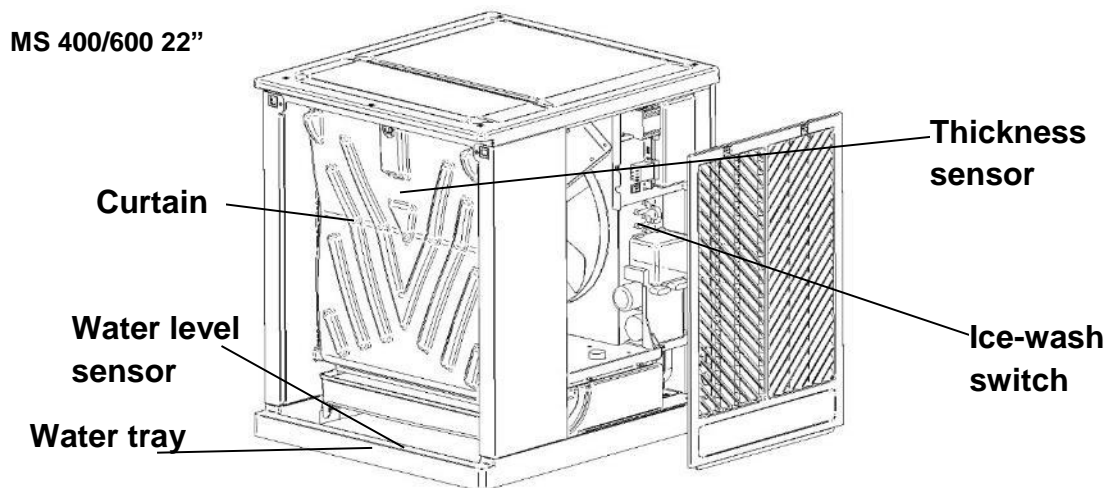
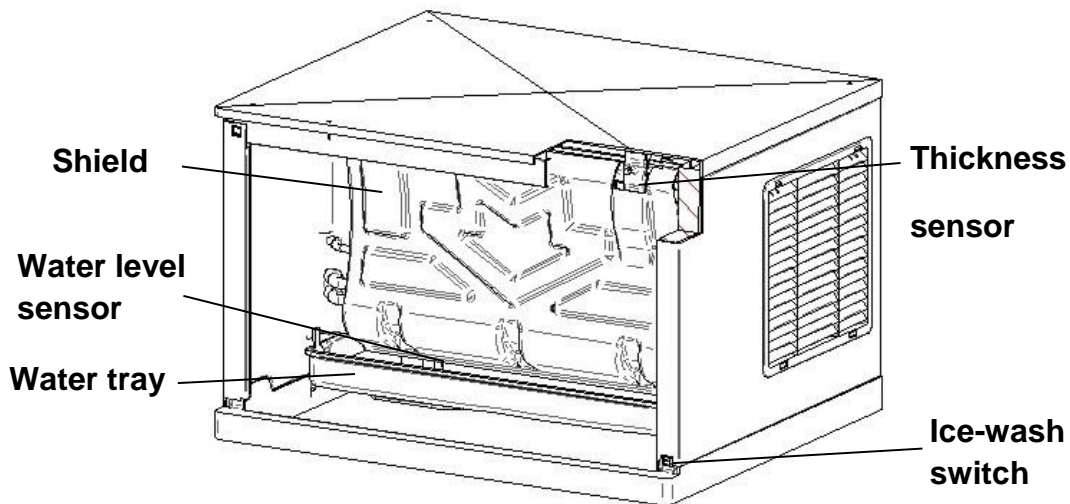
- 1) Remove the front panel.
- 2) Set Ice-wash switch to the OFF position (position 0) after ice falls from the evaporator at the end of a harvest cycle, or set the ice-wash switch to the OFF position and allow the ice to melt off the evaporator.

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

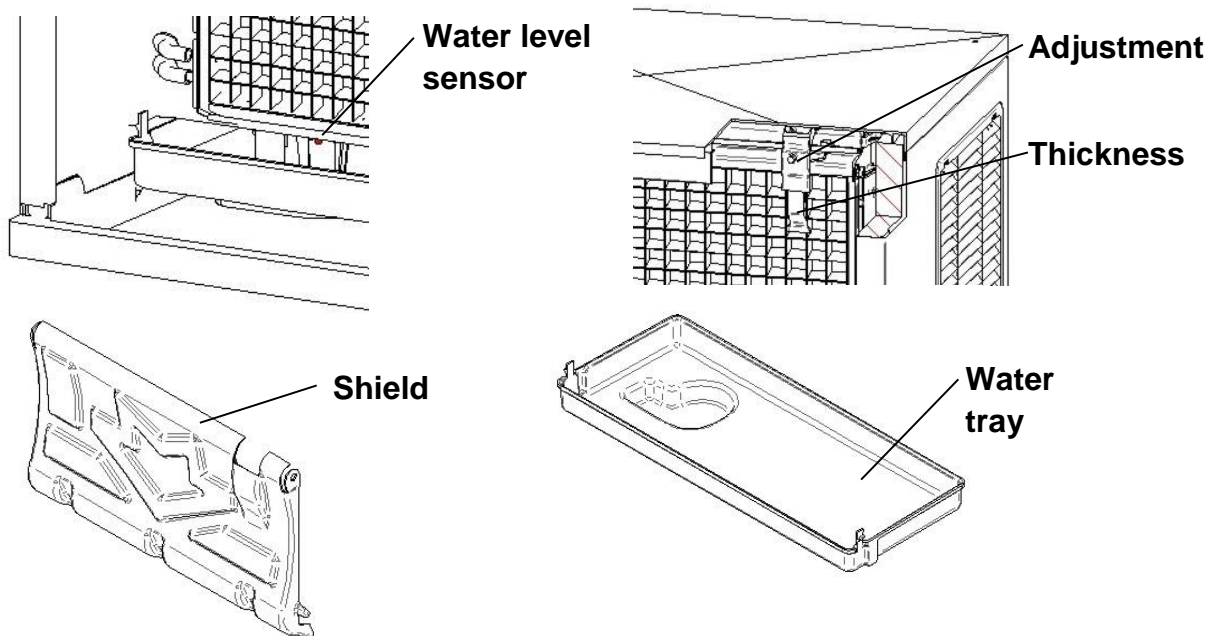


- 3) Prepare a solution of an appropriate product for the cleaning of ice machines (lime). Do not use hydrochloric acid. We recommend the use of any NSF approved scale removal product. In modular machines the water bucket is filled automatically so we recommend to prepare a previous solution (for example 1,89 liters(0,15 Gal)) according to the manufacturer's instructions with the total quantity of product needed for the water tray: 3 liters (0,8 gal) for MS 440 and 6 liters (1,6 gal) for MS 880 and 4,1 liters for MS 400/600 (0,9 gal).

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 t 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%:

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

- 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 approximately 3 liters(0.8 gal) for MS 440) and 6 liters (1.6 gal) for MS 880 and 4,1 liters for MS 400/600 (0,9 gal)).
- 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.

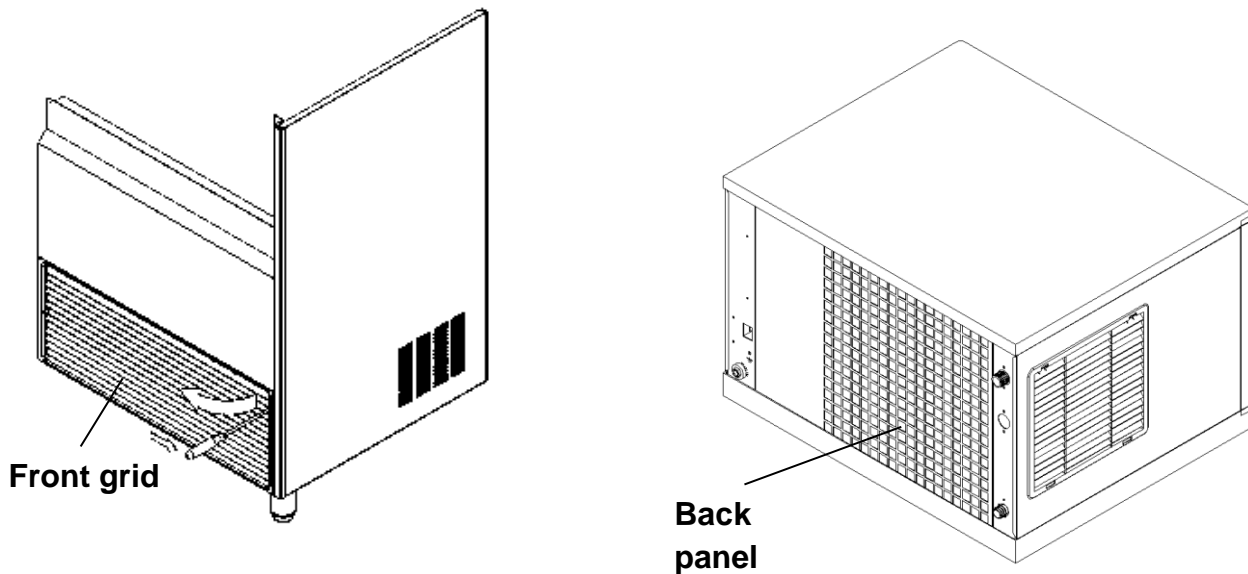
6.3. Cleaning the bins (for undercounter models)

- 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 undercounter 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.

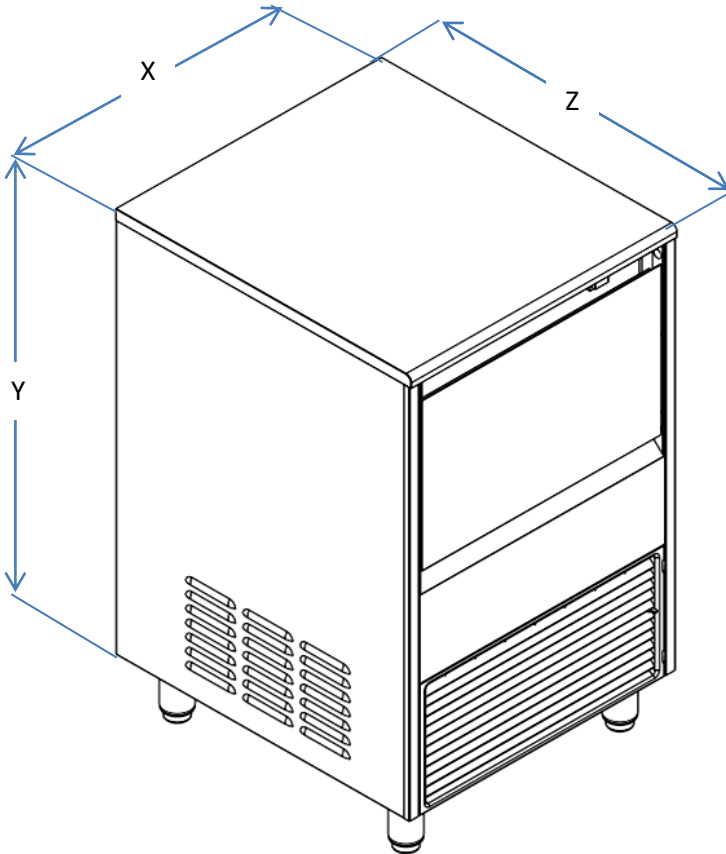
6.6. Water leakage checking

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

7.1. Dimensions, voltage

SPIKA NG UNDERCOUNTER

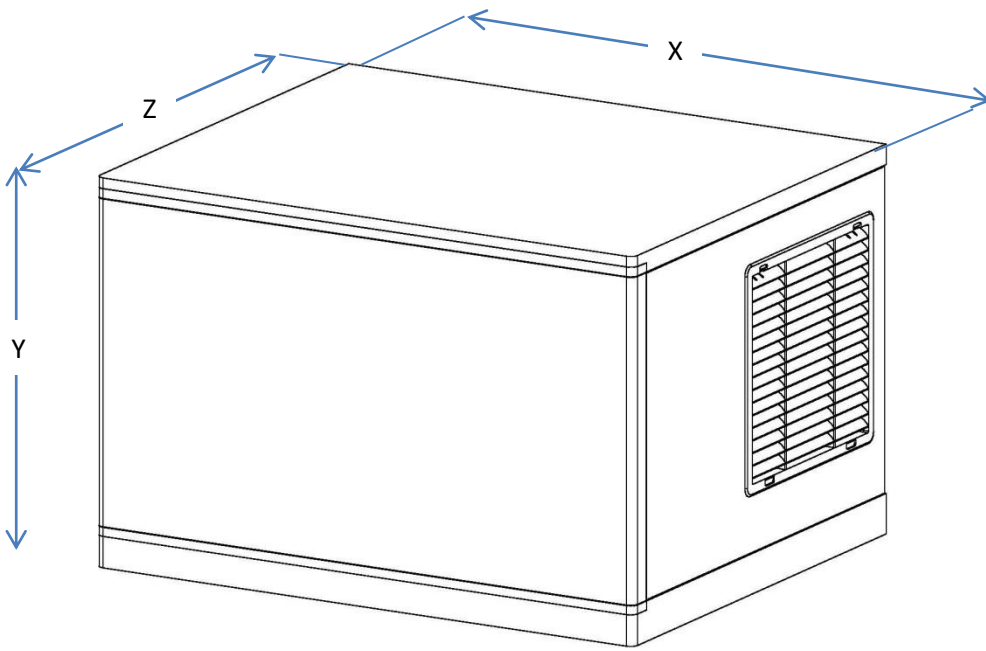


MODEL		VOLTAGE	CUBE	VOLTAGE	RLA	FUSE	R404A
		FREQUENCY	cubic inch	W	A	A	(gr)
		PHASES					
SPIKA NG 60	SPIKA NG 60-A1H	220V / 50Hz / 1Ph	1/2	431	2,7	10	280
	SPIKA NG 60-W1H	220V / 50Hz / 1Ph	1/2	340	2,3	10	240
	SPIKA NG 60-A1F	220V / 50Hz / 1Ph	1	431	2,7	10	280
	SPIKA NG 60-W1F	220V / 50Hz / 1Ph	1	340	2,3	10	240
SPIKA NG 90	SPIKA NG 90-A1H	220V / 50Hz / 1Ph	1/2	530	3,4	10	520
	SPIKA NG 90-W1H	220V / 50Hz / 1Ph	1/2	430	3,1	10	440
	SPIKA NG 90-A1F	220V / 50Hz / 1Ph	1	430	3,1	10	440
	SPIKA NG 90-W1F	220V / 50Hz / 1Ph	1	430	3,1	10	440
SPIKA NG 110	SPIKA NG 110-A1H	220V / 50Hz / 1Ph	1/2	790	5	16	650
	SPIKA NG 110-W1H	220V / 50Hz / 1Ph	1/2	660	4,4	16	450
	SPIKA NG 110-A1F	220V / 50Hz / 1Ph	1	750	5	16	650
	SPIKA NG 110-W1F	220V / 50Hz / 1Ph	1	660	4,4	16	450
SPIKA NG 140	SPIKA NG 140-A1F	220V / 50Hz / 1Ph	1	780	8,7	15	830
	SPIKA NG 140-WF	220V / 50Hz / 1Ph	1	780	8	15	660
	SPIKA NG 140-A1H	220V / 50Hz / 1Ph	1/2	780	8,7	15	830
	SPIKA NG 140-W1H	220V / 50Hz / 1Ph	1/2	780	8	15	660

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.

MODEL	COOLING	Machine dimensions			Packaging dimensions			WEIGHT kg
		mm			mm			
		Width X	Depth Z	Height Y	Width X	Depth Z	Height Y	
SPIKA NG 60-A1H	AIR	535	595	795	620	660	919	52
SPIKA NG 60-W1H	WATER	535	595	795	620	660	919	52
SPIKA NG 60-A1F	AIR	535	595	795	620	660	919	52
SPIKA NG 60-W1F	WATER	535	595	795	620	660	919	52
SPIKA NG 90-A1F	AIR	660	700	838	744	770	970	68
SPIKA NG 90-A1H	AIR	660	700	838	744	770	970	68
SPIKA NG 90-W1H	WATER	660	700	838	744	770	970	68
SPIKA NG 90-W1F	WATER	660	700	838	744	770	970	68
SPIKA NG 110-A1H	AIR	660	700	838	744	770	970	71
SPIKA NG 110-W1H	WATER	660	700	838	744	770	970	71
SPIKA NG 110-A1F	AIR	660	700	838	744	770	970	71
SPIKA NG 110-W1F	WATER	660	700	838	744	770	970	71
SPIKA NG 140-A1F	AIR	762	762	838	836	836	970	85
SPIKA NG 140-W1F	WATER	762	762	838	836	836	970	85
SPIKA NG 140-A1H	AIR	762	762	838	836	836	970	85
SPIKA NG 140-W1H	WATER	762	762	838	836	836	970	85

SPIKA MODULAR



MODEL		VOLTAGE FREQUENCY PHASES	CUBE	VOLTAGE	RLA	FUSE	R404A
			cubic inch	W	A	A	(gr)
SPIKA MS 220	SPIKA MS 220-A1F	220V / 50Hz / 1Ph	1	1140	5.7	16	550
	SPIKA MS 220-A1H	220V / 50Hz / 1Ph	1/2	1140	5.7	16	550
	SPIKA MS 220-W1F	220V / 50Hz / 1Ph	1	963	4.7	16	700
	SPIKA MS 220-W1H	220V / 50Hz / 1Ph	1	963	4.7	16	700
	SPIKA MS 220-A2F	220V / 60Hz / 1Ph	1	1200	5.7	16	550
	SPIKA MS 220-A2H	220V / 60Hz / 1Ph	1/2	1200	5.7	16	550
	SPIKA MS 220-W2F	220V / 60Hz / 1Ph	1	1020	4.9	10	700
	SPIKA MS 220-W2H	220V / 50Hz / 1Ph	1/2	1020	4.9	10	700
SPIKA MS 410	SPIKA MS 410-A2F	220V / 50Hz / 1Ph	1	1900	8.8	16	900
	SPIKA MS 410-A2H	220V / 50Hz / 1Ph	1/2	1900	8.8	16	900
	SPIKA MS 410-A2F	220V / 60Hz / 1Ph	1	1690	8.31	16	850
	SPIKA MS 410-A2H	220V / 60Hz / 1Ph	1/2	1690	8.31	16	850
	SPIKA MS 410-W2F	220V / 50Hz / 1Ph	1	1800	8.8	16	950
	SPIKA MS 410-W2F	220V / 60Hz / 1Ph	1	1400	7	16	900
	SPIKA MS 410-A3F	380/50-60Hz/ 3 Ph	1	1810	4.2	16	900
	SPIKA MS 410-A3F	208-230/60Hz/3Ph	1	1880	5.8	16	950
	SPIKA MS 410-W3F	380/50-60Hz/ 3 Ph	1	1810	5.7	15	950
	SPIKA MS 410-W3H	380/50-60Hz/ 3 Ph	1/2	1810	5.7	15	950
	SPIKA MS 600-A1H	115V / 60Hz / 1Ph	1	1350	14.5	20	650
	SPIKA MS 600-A1F	115V / 60Hz / 1Ph	1/2	1350	14.5	20	650

MODEL	COOLING	Machine dimensions			Packaging dimensions			WEIGHT kg
		mm			mm			
		Width X	Depth Z	Height Y	Width X	Depth Z	Height Y	
SPIKA MS 220-A1F	AIR	762	620	500	836	635	625	85
SPIKA MS 220-A1H	AIR	762	620	500	836	635	625	85
SPIKA MS 220-W1F	WATER	762	620	500	836	635	625	85
SPIKA MS 220-W1H	WATER	762	620	500	836	635	625	85
SPIKA MS 220-A2F	AIR	762	620	500	836	635	625	85
SPIKA MS 220-A2H	AIR	762	620	500	836	635	625	85
SPIKA MS 220-W2F	WATER	762	620	500	836	635	625	85
SPIKA MS 220-W2H	WATER	762	620	500	836	635	625	85
SPIKA MS 410-A2F	AIR	762	620	760	836	635	874	105
SPIKA MS 410-A2H	AIR	762	620	760	836	635	874	105
SPIKA MS 410-A2F	AIR	762	620	760	836	635	874	105
SPIKA MS 410-A2H	AIR	762	620	760	836	635	874	105
SPIKA MS 410-W2F	WATER	762	620	760	836	635	874	105
SPIKA MS 410-W2F	WATER	762	620	760	836	635	874	105
SPIKA MS 410-A3F	AIR	762	620	760	836	635	874	105
SPIKA MS 410-A3F	AIR	762	620	760	836	635	874	105
SPIKA MS 410-W3F	WATER	762	620	760	836	635	874	105
SPIKA MS 410-W3H	WATER	762	620	760	836	635	874	105
SPIKA MS 600-A1F	AIR	559	621	659				71
SPIKA MS 600-A1H	AIR	559	621	659				71

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 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 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 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 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. Undercounter models

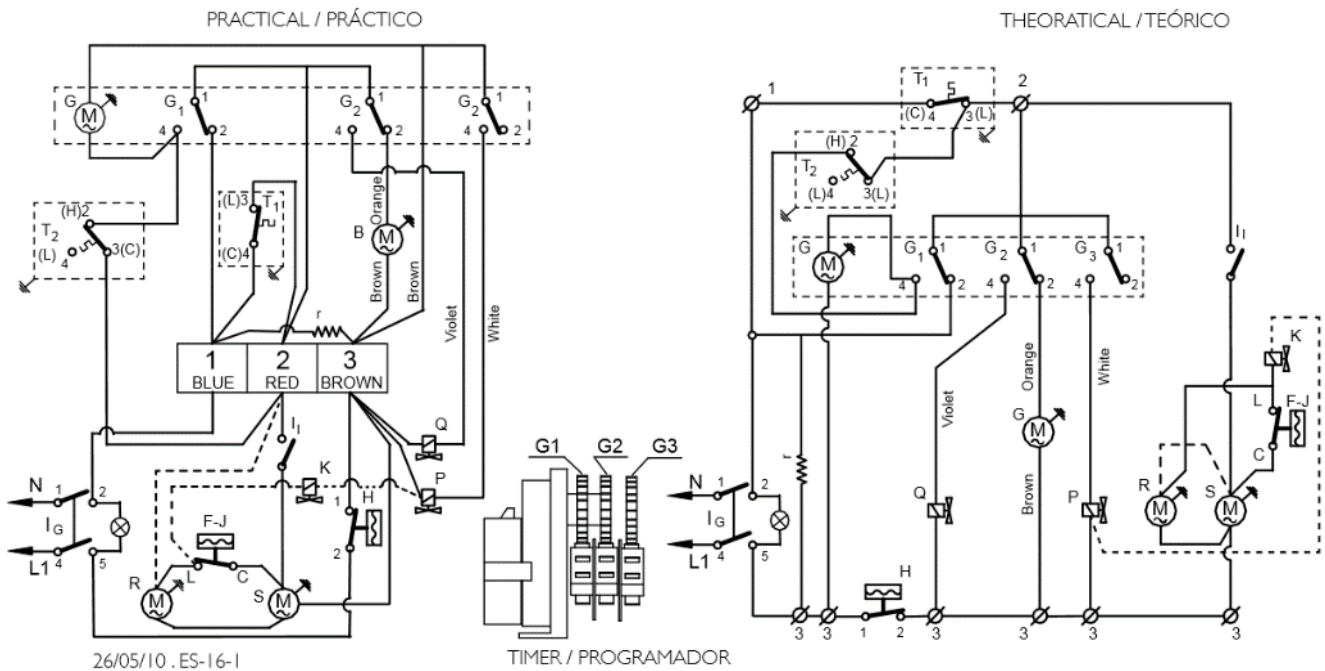
PROBLEM	PROBABLE CAUSE	SOLUTION
None of the electrical parts work.	The machine is unplugged.	Plug in the machine and verify socket power
	Bin thermostat open. Ice touching bin tube.	Remove ice from the bin.
	Bin thermostat open. No ice touching bin tube.	Adjust thermostat (electric box under top cover)
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 presostat 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 presostat opens	Clean air condenser (back)
For further problems call aftersales service		

9. WIRING DIAGRAMS

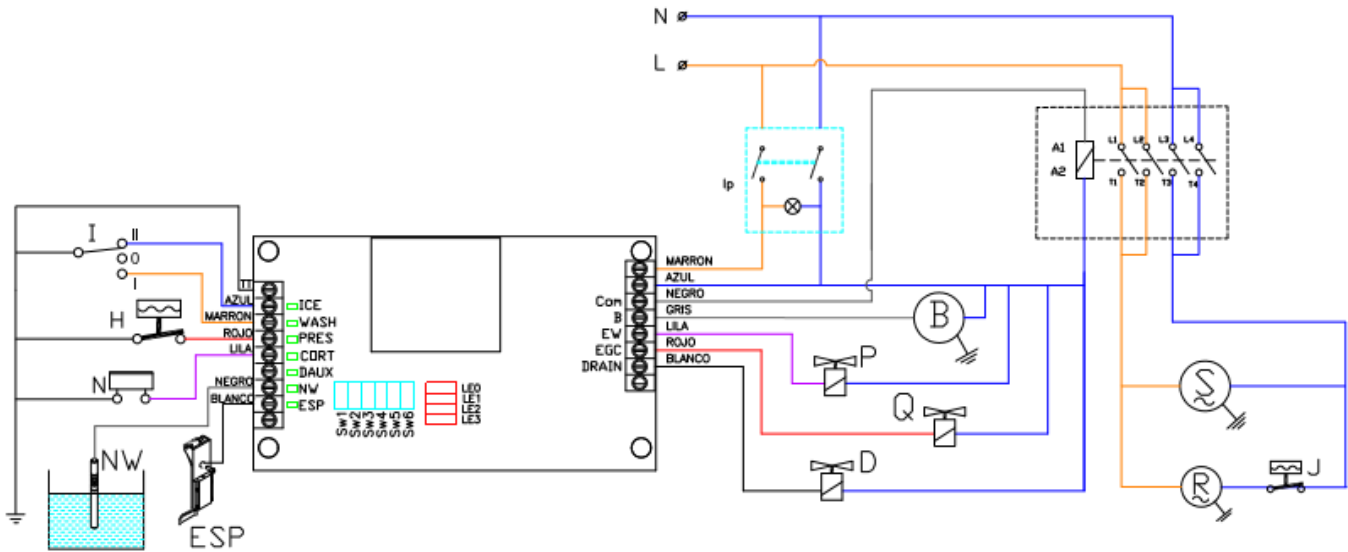
9.1. SPIKA NG (undercounter models)



COMPONENTS:

B	Motor pump
F	Fan pressure switch
G	Timer
G1	Timer safety cam
G2	Timer circuit cam
G3	Timer valve cam
H	High pressure switch
J	Condensation (water) pressostat
K	Condensation (water) valve
P	Water valve
Q	Hot gas valve
R	Fan motor
S	Compressor
T1	Stock Thermostat
T2	Cycle Thermostat
I _G	ON/OFF switch
II	Cleaning switch
----	For water cooled units

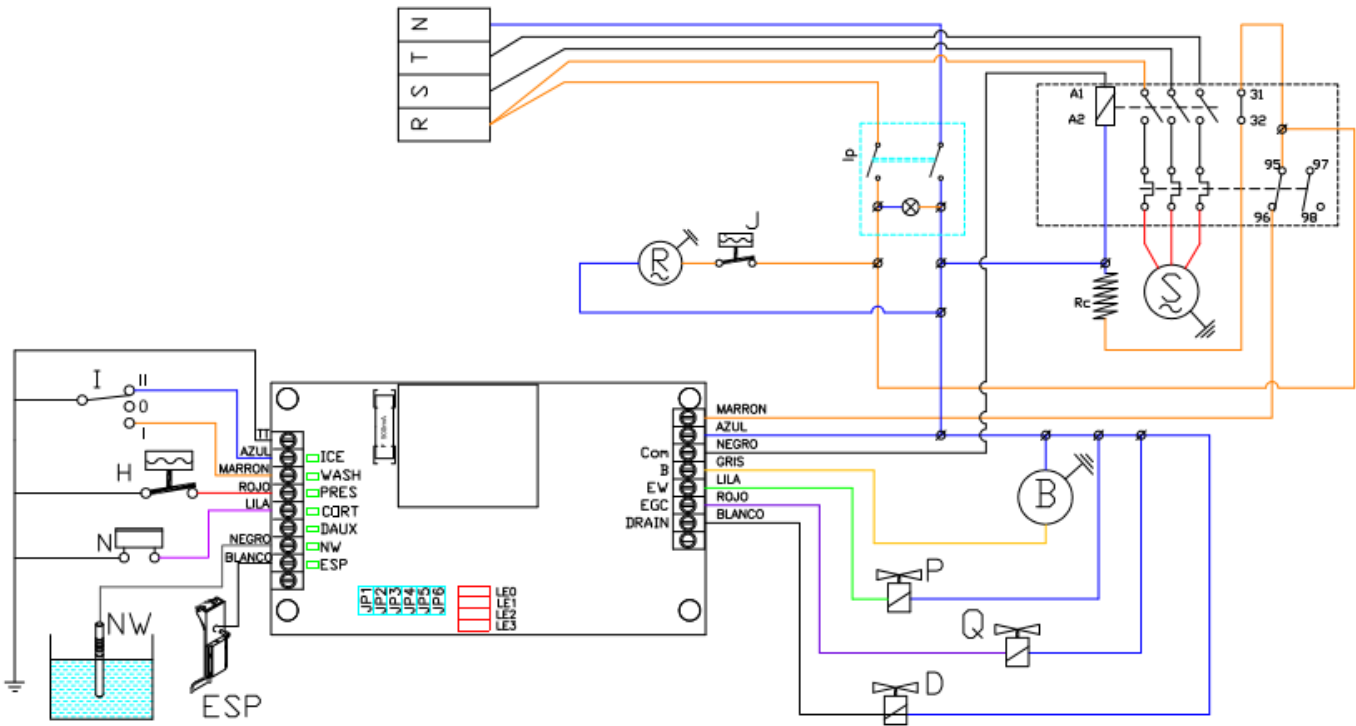
9.2. SPIKA MS single-phase



COMPONENTS

- H High pressure switch
- N Curtain sensor
- I Ice - Wash (3 positions)
- S Compressor.
- R Fan motor
- J Condensation pressure switch (water condenser)
- B Pump
- P Water valve
- Q Hot gas valve.
- D Drain valve
- NW Water level sensor
- ESP Thickness detector
- Ip ON/OFF switch

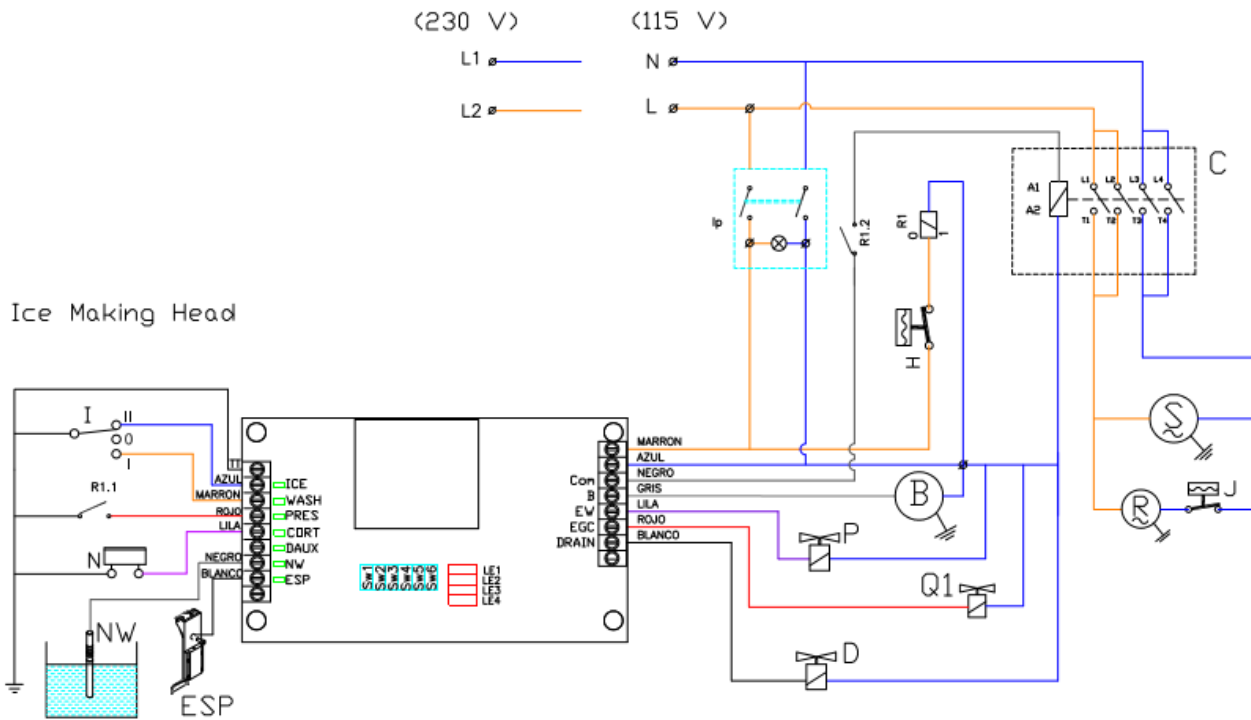
9.3. SPIKA MS three-phase



COMPONENTS

- H High pressure switch
- N Curtain sensor
- I Ice - Wash (3 positions)
- S Compressor.
- R Fan motor
- J Condensation pressure switch (only air)
- B Pump
- P Water valve
- Q Hot gas valve
- D Drain valve
- NW Water level sensor
- ESP Thickness detector

9.4. SPIKA MS 600



COMPONENTS

- H High pressure switch
- N Curtain sensor
- I Ice - Wash (3 positions)
- S Compressor.
- R Fan motor
- J Condensation pressure switch (only air)
- B Pump
- P Water valve
- Q Hot gas valve
- D Drain valve
- NW Water level sensor
- ESP Thickness detector
- Ip On/off switch
- R1 Security relay
- C Contactor