SERVICE MANUAL

SPIKA MS SERIES

ICE CUBE MAKERS **– MODULAR MODELS**

- ✓ SPIKA MS 700 (22”)
- ✓ SPIKA MS 1000 (30”)
- ✓ SPIKA MS 1800 (48”)

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.

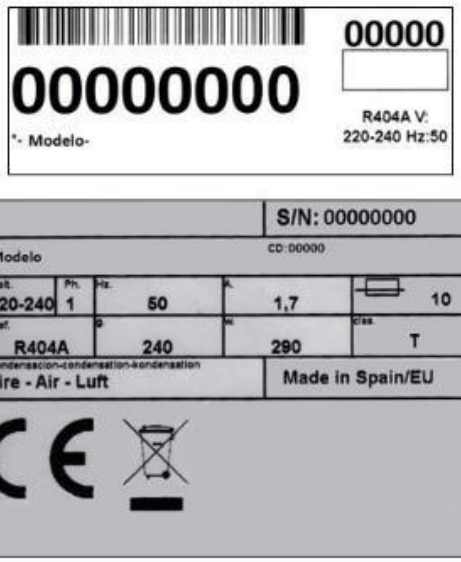
This machine is not intended to be used outdoors nor exposed to the rain. It is mandatory to ground the equipment to avoid possible electric shock on individuals or damages to the equipment.

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:

Packing
On the outside, it contains a label with the serial number.

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

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 41ºF (5ºCF) and 109.4ºF (43ºC). 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 MS 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. Levelling 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.

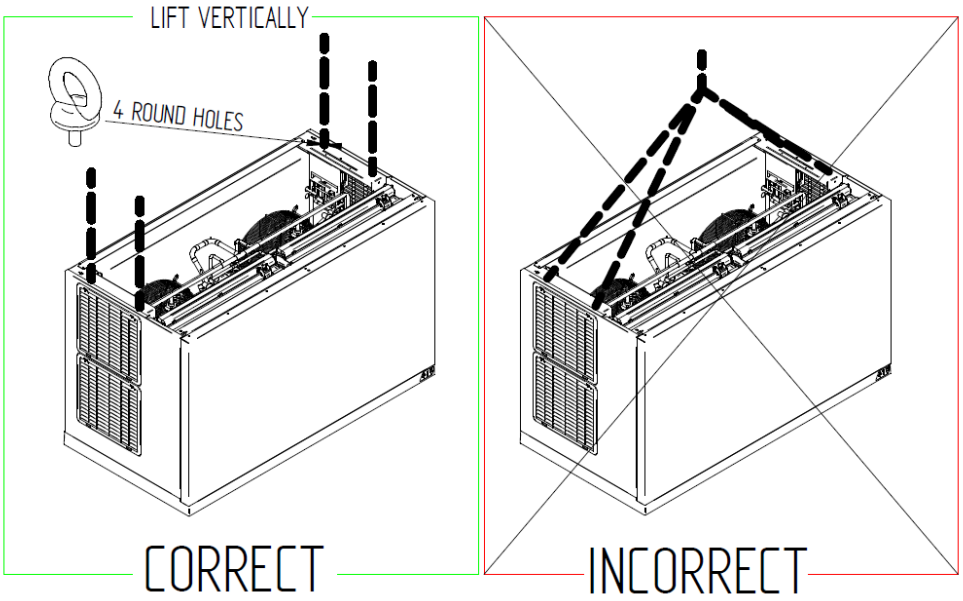
Spika MS should be installed on top of bins, following the instructions contained in this manual.

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

2.3. Installation of modular equipment on top of bins

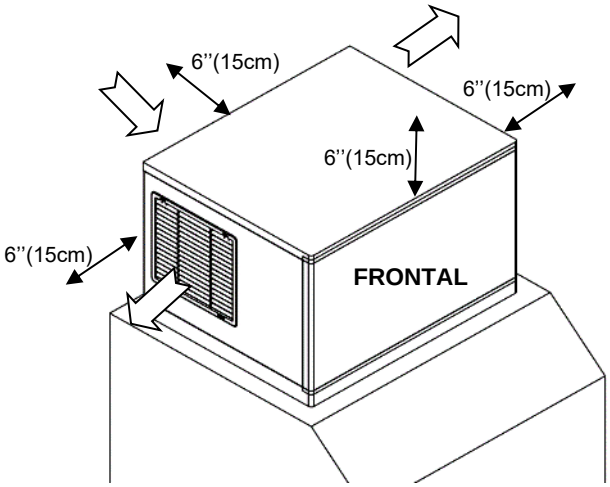
MS should be installed on top of bins, following the instructions contained in this manual. The resistance and stability of the container-machine/s assembly should be verified as well as the fastening elements. Follow bin manufacturer instructions

(ONLY FOR MS1800) **Please note** the correct way to lift the MS 1800



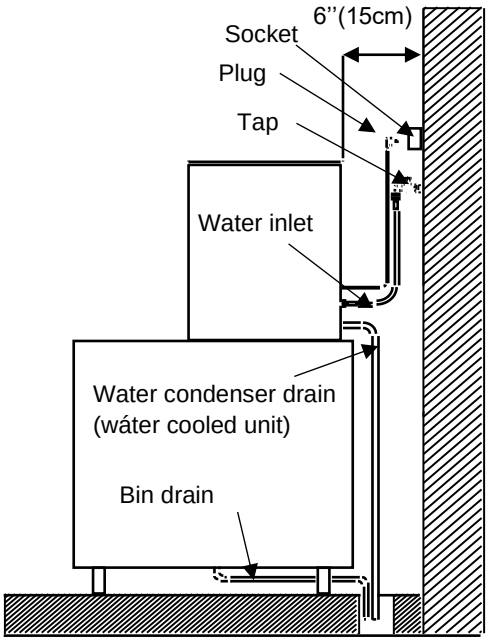
2.4. Minimum distance to obstacles

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



CONNECTION DIAGRAM

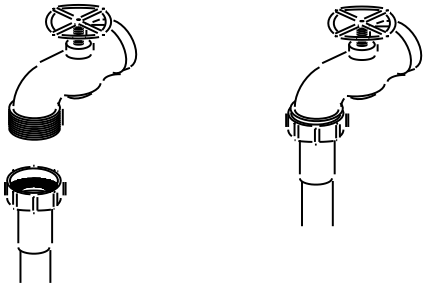
The location must allow enough clearance for water drain and electrical connections in the rear of the ice machine.



2.5. Water supply connection

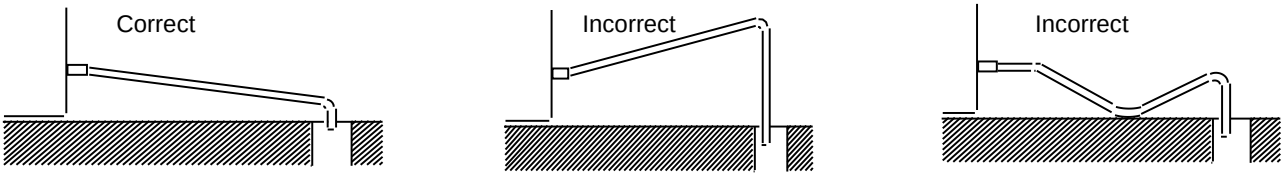
The quality of the water supplied to the ice machine will have an impact on the time between cleanings and ultimately on the life of the product (mainly in water cooled units). It also will have a remarkable influence on the appearance, hardness and flavor of the ice. Local water conditions may require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

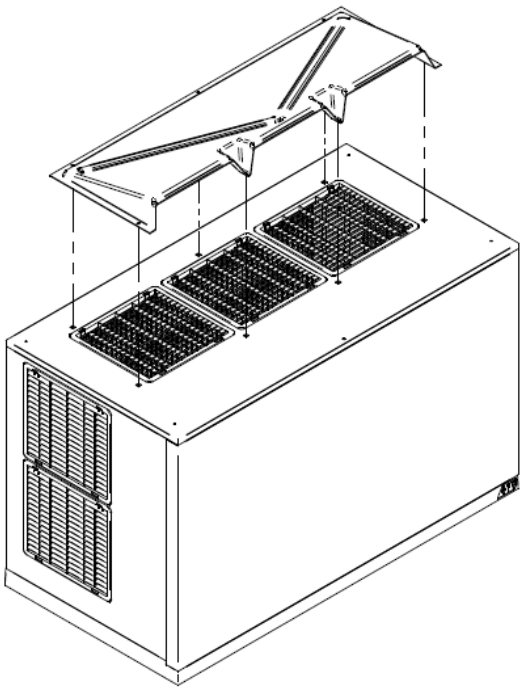
It is mandatory to ground the equipment. To avoid possible electric shock on individuals or damages to the equipment, the machine should be grounded pursuant local and/or national regulations as the case may be. The manufacturer shall be held harmless in case of damages arising due to the lack of the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

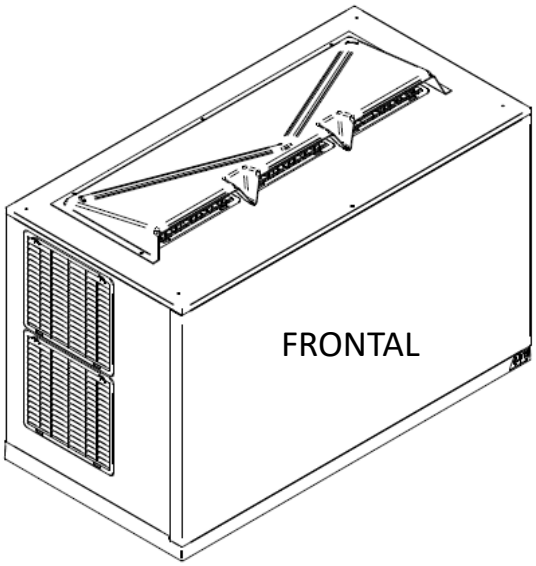
fuses. Voltage is indicated in the nameplate and on the technical specifications section of this manual. Variation on voltage above the 10% stated on the nameplate could result on damages or prevent the machine start-up.

MODELS	VOLT FREQUENCE FASE	TOTAL AMPL (A)	FUSE (A)	CABLE	NEMA
SPIKA MS 700-1	115V / 60Hz / 1F	14.5	25	3AWG14	-
SPIKA MS 700-2	208-230V / 60Hz / 1F	9	16	3AWG16	-
SPIKA MS 1000-2	208-230V / 60Hz / 1F	10	15	3AWG16	-
SPIKA MS 1800-2	208-230V / 60Hz / 1F	13.5	25	3AWG14	-

2.8. Aeration ramp assembly (only MS48” models)

The MS 48" models have an aeration ramp to guide the air leaving the machine, this ramp is included with the machine, but it is not mounted. The ramp is mounted on the top of the machine as in the picture:





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?

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

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.- 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 and also the thickness sensor moves freely.

4.- Connect the machine to the power supply.

5.- Push the blue switch found on the back of the machine and then set the ice-wash switch to the position I.

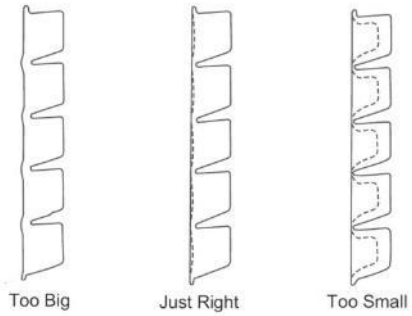
6.- Verify that there are no vibrations or frictions on the elements.

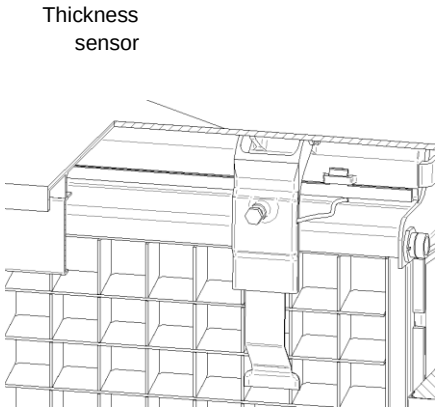
7.- Verify that the water fall to the evaporator is occurring uniformly and all ice cubes are properly watered.

8.- Replace the front panel in its place.

9.- Verify that after the final cycle, the frost on the aspiration pipe is at 0.78 in (20 mm) of the compressor.

10.- 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.





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

4. SEQUENCE OF OPERATION - MS22"/MS30"

Initial Start-up: The pump and the drain electro valve are energized for 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 while 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 for 45 seconds to empty the water tray and SERVICE MANUAL SPIKA SERIES 14 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.

4.1. 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 (5”) 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 5”, 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).

4.2. Production

Following outputs are activated:

- Compressor (C).

- Pump (B). It is activated with delay time of 30”.

- Water inlet valve (EW). It is kept active during 30”, if the water level (NW) is not reached the water valve (EW) will keep open (even after 30”) 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 10”). At this stage, the operation launching phase starts.

*LE1 on.

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

4.3. 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 20”

- Water inlet valve (EW) is activated when 20” are 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 30” → when the MC signal stops, the production phase will start.

2) MC is active during a time more than 30” → 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.

4.2 Harvest with delay time of hot gas valve and wast water valve

When the Switch-6 is ON, in the harvest cycle the hot gas delay time (30") and the purge time (10") that replaces the previous purge time of 20" shall be taken into account during the take-off phase.

- Compressor (C). It is still in operation.

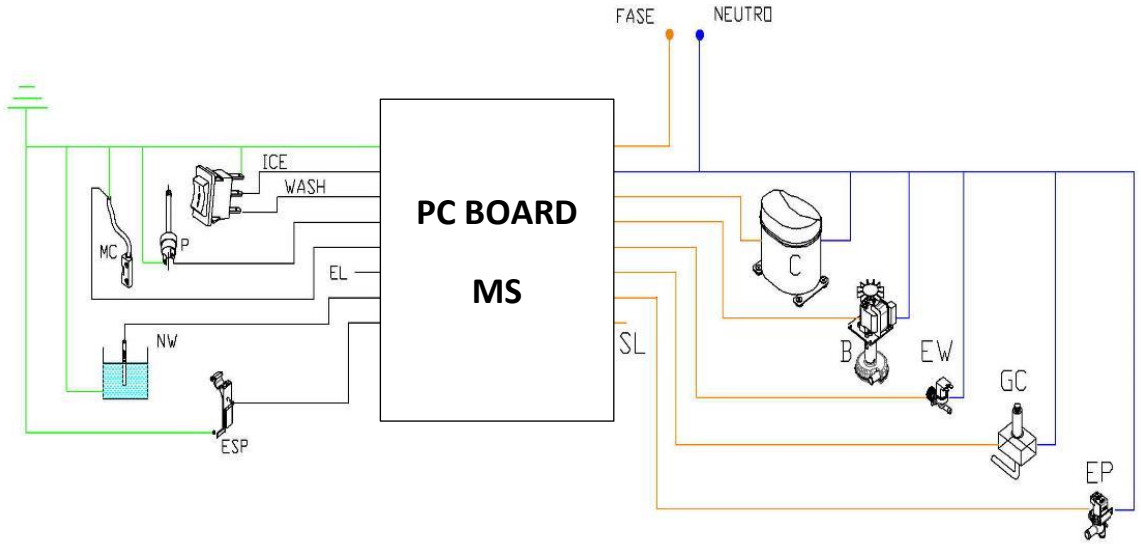
- Pump (B) and wast water valve (EP) are active during 10” instead of 20”.

- Water inlet valve (EW) is activated when 10” are over (when the pump is stopped)

- Hot gas valve (GC). It has an allotted delay time (30") in which:

• If switch 6 OFF: the GC valve is activated the instant take-off begins (when the EP bleed valve is activated);
• If switch 6 ON: the GC valve is activated after 30 seconds from the start of takeoff.

4.4. MS22”/30” control board



Digital outputs

Symbol	Description	Amp. relé
C	compressor (Relay / contactor)	5
B	pump	5
EW	Wáter 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 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 and purge time	

Analogic 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	Conector + jumper para indicar máquina inferior

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

4.5. 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.

4.6. 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, the machine will stop. Signalling should be indicated since the first failure occurs. If the second retry attempt is ok, the signalling 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 OFF, time alarms are not to be followed →L2 led doesn't work.

4.7. 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 180", 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 5" before starting the compressor.

* Signalling: Flashing in the four LEDs. L1 on. Buzzer on.

4.8. Long operation

If the operation launching time is longer than 180" (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.

* Signalling: Flashing in LE0. L1 on. Buzzer on.

4.9. Cycle timeout

If the production cycle time is more than 1h (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.

* Signalling: Flashing in LE1. L1 on. Buzzer on.

4.10. Short production cycle

If during two consecutive cycles the production cycle time is less than 2 minutes, the machine will stop.

* Signalling: Flashing in LE2. L1 on. Buzzer on.

4.11. 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 (180").

Two possibilities:

- Dip-switch 4 OFF → Machine stops and when a time of 3600" has passed it starts the unit if the switch 3 is in Ice position (I). If it is in clean position (II) the cleaning will start again. If in 180" the water level probe (NW) does not detect water, the unit will stop until a reset. * Signalling: Flashing in LE3.

- Dip-switch 4 ON → To be used in places with low water pressure. After 180" 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 signalling will turn off (LE1+LE2 alternative blinking), and it will continue as follow:

- Initial start up with SW4 ON
    - o After 2 minutes with no water detection, LE1+LE2 will flash indicating alarm.
    - o Inlet water valve (EW) will keep on, and the water level probe (NW) will remain active.
    - o The compressor (C), hot gas valve (GC), water pump (B), and drain purge (EP) remain off.
    - o When the water is detected, fabrication will start, and the LE1+LE2 alarm will stop.
- Fabrication after a start up with SW4 ON
    - o The compressor (C), hot gas valve (GC), water pump (B), and drain purge (EP) remain off.
    - o Inlet water valve (EW) will keep on, and the water level probe (NW) will remain active.
    - o 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 5" before the compressor, then the compressor (C) starts, and after 30" the water pump (B) starts. The drain valve (EP) will remain closed.
    - o As the normal fabrication phase (SW4 OFF), during 30", 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 30") until the water level probe (NW) detects the water.
    - o If after 30" no water is detected, and the time 180" has passed, the unit will not stop, the water inlet valve will close and the unit will keep going into fabrication mode.

o As the normal fabrication phase (SW4 OFF), this phase will be active until the thickness sensor probe will give a signal (maintained during 10”). Then the unit will go into harvest.

*NOTE: The minimum time for the compressor to be off is 360”, in case that the water is detected before a 360” since the compressor has turned off, the hot gas valve (GC) and the compressor (C) will not turn on again until 360” has passed by.

4.12. Suction temperatura probe

Green LED: it will light when the temperature is lower than 14°F (-10°C).
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 > 60” with a temperature lower than 14°F (-10°C) the alarm will turn on.
After an alarm occurs, the unit will stop immediately, a reset is need it. LE0+LE1 alternate flashing.

5. SEQUENCE OF OPERATION – MS48”

Initial Start-up: The pump and the drain electro valve are energized for 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 while 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 for 45 seconds to empty the water tray and SERVICE MANUAL SPIKA SERIES 14 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

When the board turn ON, the external display show on a sequence of L1, L2 and L3 for advice that the machine is ON and the LEDs are working correctly.

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 (5”) 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 5”, and then the production phase starts.

*Signalling: LE1 on.

Please note:

- If at this stage one (or both) of the two curtains (MC and/or MC2) is open, the indicated machine status is switched to full storage (full);
- Once start the production process MC and MC2 status has no consequences.

5.2. Production

Following outputs are activated:

- Compressor (C).

- Pump (B). It is activated with delay time of 30”.

- Water inlet valve (EW). It is kept active during 30seconds, if the water level (NW) is not reached the water valve (EW) will keep open (even after 30”) 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 10”). At this stage, the initial start-up phase starts.

*Signalling: LE1 on.

Please note: during this time the opening of the curtains (MC and/or MC2) has no consequences.

5.3. 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 20”

- Water inlet valve (EW) is activated when the 20” are over (when the pump is stopped)

*Signalling: LE1 on.

The harvest ends when the ice sheet falls and the curtains micro contact (MC and MC2) are activated.

Four possibilities:

1) MC and MC2 are active in a time less than 30” → when the last MC signal stops, the production phase will start.

2) MC or MC2 is active in a time more than 30” → machine will be stopped due to full storage (all outputs are switched off / LE3 continuously switched on and L3 continuously on). When both curtains (MC and MC2) are closed again, the initial start-up phase will be re-initiated.

3) If in the harvest moment one of the two curtains (or both) is open (MC or MC2) → it realizes the normal harvest process and still with GC open for 3 minutes without waiting for the curtains signal and then is stopped due to full storage (LE3 and L3). When the curtains MC and MC2 are closed again, the initial start-up phase will be re-initiated.

4) If one of the two curtains (MC or MC2) don’t open in 3 minutes → turn on the alarm for too long harvest and the machine is stopped. (L1 fix and LE0 int).

5.4. Harvest with delay time of hot gas valve and drain water valve

When the Switch-6 is ON, in the harvest cycle the hot gas delay time (40") and the purge time (20").

- Compressor (C). It is still in operation.

- Pump (B) and drain water valve (EP) are active during 20”.

- Water inlet valve (EW) is activated when 20” are over (when the pump is stopped)

- Hot gas valve (GC). It has an allotted delay time (30") in which:

• If switch 6 OFF: the GC valve is activated the instant take-off begins (when the EP bleed valve is activated);
• If switch 6 ON: the GC valve is activated after 40 seconds from the start of takeoff.

The hot gas valve turns off when the harvest cycle end and start the production process (when the ice sheets fall and the curtains turn ON).

*Signalling: LE1 on.

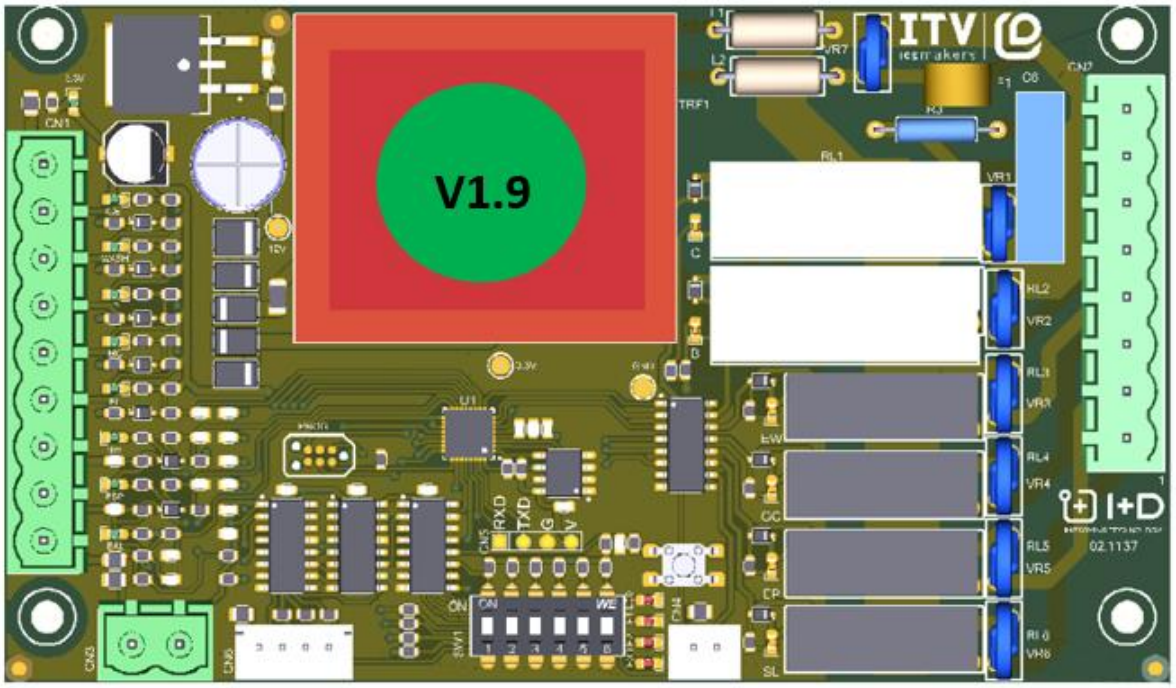
Please note:

- If before the delay time of hot gas valve (40”) MC and MC2 turn on and the ice sheet fall, the delay time of hot gas valve (40”) doesn’t matter because start the production process.
- If before the delay time of hot gas valve (40”) MC or MC2 is open and still open for more than 30”, the delay time of hot gas valve (40”) doesn’t matter because the machine is stopped due to full storage (LE3 and L3).
- If before the delay time of hot gas valve (40”) in the harvest process the water level in reservoir is active, the hot gas valve will be activated.

5.5. Drain every three harvests

- If Switch 3 ON: independent from dip-switch 6 status the machine work like always but after one “normal” harvest it do two harvests without drain. When the ESP signal is ON for 10”, water inlet valve and the hot gas valve turn on and on this way in cycle;
- If Switch 3 OFF: the machine work as always.

5.6. MS48” control board



5.6.1 Digital outputs

Symbol	Description	Amp. relay
C	Compressor (Relay / contactor)	5
B	Pump	5
EW	Wáter inlet valve	5
GC	Hot gas valve	5
EP	Drain valve	5
SL	Free	5
Z	Buzzer (only few models)	

5.6.2 Inputs

- 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 NC1	
MC2	Curtain micro relay contact NC2	
Dip-Switch (ON/OFF)		
1	Firmware change	
2	Service alarm	
3	Purga cada 3 despegues	
4	Water inlet valve e/w timeout	
5	Free	
6	Hot gas valve delay and purge time	

- Analogic inputs:

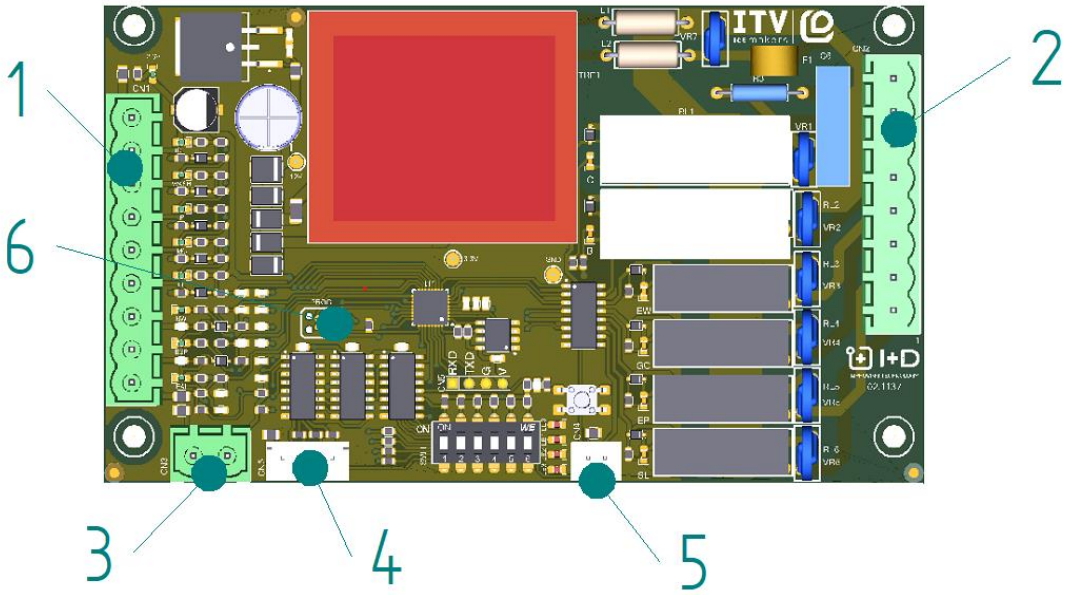
Symbol	Description
ESP	Thickness detection sensor
NW	Water level in reservoir
EAL	NTC 10K suction temperature probe

5.6.3 Connectors

To facilitate the installation and improve the connection of the wiring to the board, we have incorporated connectors.

The connectors that have been installed are:

Ref.	Description	Symbol
1	CONNECTOR DINKLE 5EHDVC-09P	CN1
2	CONNECTOR DINKLE 5EHDVC-08P	CN2
3	CONNECTOR 5EHDVC-02P (for machine stacking)	CN3
4	CONNECTOR B4B-XH-A (display)	CN4
5	CONNECTOR B2B-XH-A (buzzer)	CN5
6	CONNECTOR FOR PROGRAMMATION	CN6



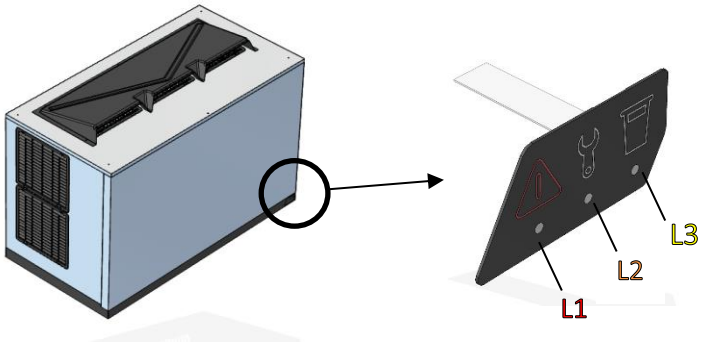
5.6.4 Led signalling

- Internals:

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

- Externals:

MS48” have a display with three leds on the front panel that show the status of the:



Symbol	Description	Volt (V)
L1	Alarm led (Rojo)	3.3
L2	Service/wash led (Naranja)	3.3
L3	Full storage led (Amarillo)	3.3

5.7. Notice

Alarms detect cases of malfunction. They are signalled with the L1 LED on the front of the machine and the alarm can be identified by the LE0-1-2-3 LEDs (in the board) and by the buzzer (only in some models).

In some alarms, a second work attempt is made and if the malfunction is repeated the machine stops. The L1 LED and buzzer are activated on the second attempt.

When the alarm stop occurs, the reset is done by disconnection.

5.7.1 Notice legend

Notice	L1	L2	L3	LE0	LE1	LE2	LE3	Buzzer
Safety pressure switch	FIX			INT	INT	INT	INT	1 and 3 beeps sequence
Harvest >3”	FIX			INT				Fixed
Ice time >60’	FIX				INT			1 beep sequence
Ice time <2’	FIX					INT		2 beeps sequence
Water inlet > 3’ (SW ON)	FIX						INT	1 and 2 beeps sequence
Water inlet > 3’ (SW OFF)	FIX				INT	INT		
Service		FIX						
Wash cycle		*						
Full storage			FIX					
Ice process				FIX				

INT = Led intermittent

FIX = Led ON

“ * ” = L2 led still intermittent on all the wash process but only when it is time to put the wash product, in this time L2 still intermittent but with more velocity. Once the entire wash process end, L2 change from intermittent to ON until the change of the 3 positions switch.

5.7.2 Alarms history

It is possible consulting the alarms history (only the last 3 alarms) with the LEDs in the board, LE0, LE1, LE2 and LE3.

Activation: when MS48” is power OFF, touch the button in the board and at the same time change the 3 positions switch to I. The machine still in standby and in this moment the LEDs NW, ESP and EAL are intermittent for notify that is showing the alarms history.

Signalling: releasing the button, NW led still on, it signified that is showing the last alarm occurred in the machine, LE0-LE1-LE2-LE3 show on the type of alarm. The same button change from visualise the last alarm to visualise the penultimate alarm, and it is the same, LE0-LE1-LE2-LE3 show on which type of alarm and the ESP led show on that these LEDs are referred to the second last alarm. With the same button for the third time, it is the same but with EAL led and LE0-LE1-LE2-LE3 are showing on the third last alarm occurred.

Reset of alarms: Once pressing the button of the electrical board for more than 5’ (only in the case that are showing the alarms) the alarms are resetting and are deleted all the alarms history. At the end of this process LE0 led is ON and the machine change to standby mode.

Automatic deactivation: after 10’ viewing the alarms without touch the button, the machine goes to standby mode.

*Signalling: LE0 on.

Manual deactivation: with current disconnection from the board.

The stopped for Full storage is not considered as alarm, for this, it doesn’t figure in the alarm’s history.

5.7.3 Service signal

MS48” have an internal counter that count the time of power ON of the machine. At 6 months of power ON it have two possibilities:

- If switch 2 ON: L2 led will be active at 6 months of power on.
- If switch 2 ON: L2 led doesn’t work.

For the reset of the service signal have to press for 20” the board button and change at the same time the 3 positions switch from 0 to Wash and again from Wash to 0. If L2 led blink for three times, this signify that the alarm’s history has been resettled.

5.8. Safety pressure switch

When the pressure contact (P) is open, instantly, all outputs switch over to off position.

When it is closed again the machine will stop for 3 minutes, then continue at the position where it was, except during the harvest phase, that starts with an initial start. If starts at fabrication, the hot gas valve will open during 5" before starting the compressor.

* Signalling: Flashing in the four LEDs. L1 on. Buzzer on.

5.9. Long operation

If the operation launching time is longer than 3' without activation of the curtains micro contact (MC and MC2), the launching is interrupted, switching over to the production cycle. If the same thing happens again at the next launching, the machine will stop.

* Signalling: Flashing in LE0. L1 ON. Buzzer ON.

5.10. Cycle timeout

If the production cycle time is more than 1 hour 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.

* Signalling: Flashing in LE1. L1 ON. Buzzer on.

5.11. Short production cycle

If during two consecutive cycles the production cycle time is less than 2 minutes, the machine will stop.

* Signalling: Flashing in LE2. L1 on. Buzzer on.

5.12. 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 (3').

Two possibilities:

- Dip-switch 4 OFF → Machine stops and when a time of 1 hour has passed it starts the unit if the switch 3 is in Ice position (I). If it is in clean position (II) the cleaning will start again. If in 3 minutes the water level probe (NW) does not detect water, the unit will stop until a reset. * Signalling: Flashing in LE3. LE1 on.

- Dip-switch 4 ON → To be used in places with low water pressure. After 3 minutes 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 signalling will turn off (LE1+LE2 alternative blinking), and it will continue as follow:

- Initial start up with SW4 ON
    - o After 3 minutes with no water detection, LE1+LE2 will flash indicating alarm.
    - o Inlet water valve (EW) will keep on, and the water level probe (NW) will remain active.
    - o The compressor (C), hot gas valve (GC), water pump (B), and drain purge (EP) remain off.
    - o When the water is detected, fabrication will start, and the LE1+LE2 alarm will stop.
- Fabrication after a start up with SW4 ON
    - o The compressor (C), hot gas valve (GC), water pump (B), and drain purge (EP) remain off.
    - o Inlet water valve (EW) will keep on, and the water level probe (NW) will remain active.
    - o 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 5" before the compressor, then the compressor (C) starts, and after 30" the water pump (B) starts. The drain valve (EP) will remain closed.
    - o As the normal fabrication phase (SW4 OFF), during 30", 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 30") until the water level probe (NW) detects the water.
    - o If after 30" no water is detected, and 3 minutes has passed, the unit will not stop, the water inlet valve will close and the unit will keep going into fabrication mode.
    - o As the normal fabrication phase (SW4 OFF), this phase will be active until the thickness sensor probe will give a signal (maintained during 10"). Then the unit will go into harvest.

*NOTE: The minimum time for the compressor to be off is 6 minutes, in case that the water is detected before this 6 minute since the compressor has turned off, the hot gas valve (GC) and the compressor (C) will not turn on again until the 6 minutes has passed by.

5.13. Suction temperature probe (only few models)

Green LED: it will light when the temperature is lower than 14°F (-10°C).
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 > 60" with a temperature lower than 14°F (-10°C) the alarm will turn on.

After an alarm occurs, the unit will stop immediately, a reset is need it.

*Signalling: LE0+LE1 flashing.

6. MAINTENANCE AND CLEANING PROCEDURE

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 dissolve mineral builds 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.

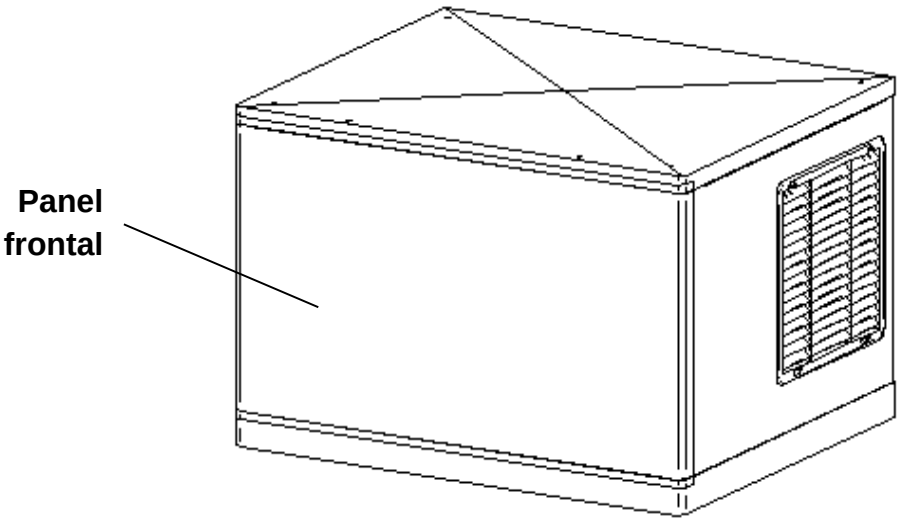
WARNING: Unit should always be disconnected during maintenance/cleaning procedures.

6.1. Cleaning water distribution system for MS22" y MS30"

1) Remove the front panel.

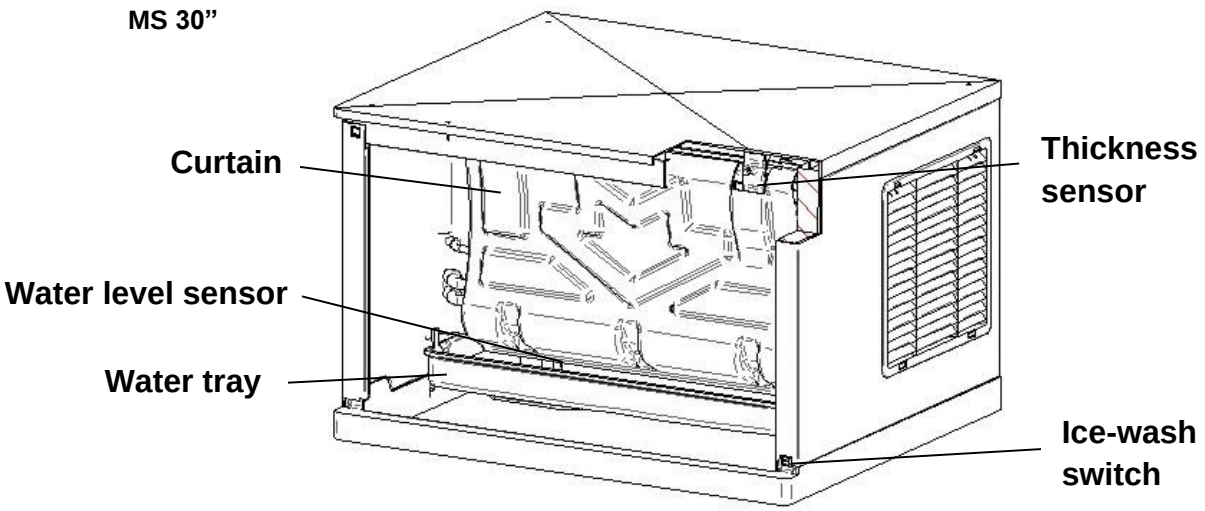
2) Set Ice-wash switch to the OFF position (position 0) after ice falls from the evaporator at the end of a harvest cycle or set the ice-wash switch to the OFF position and allow the ice to melt off the evaporator.

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

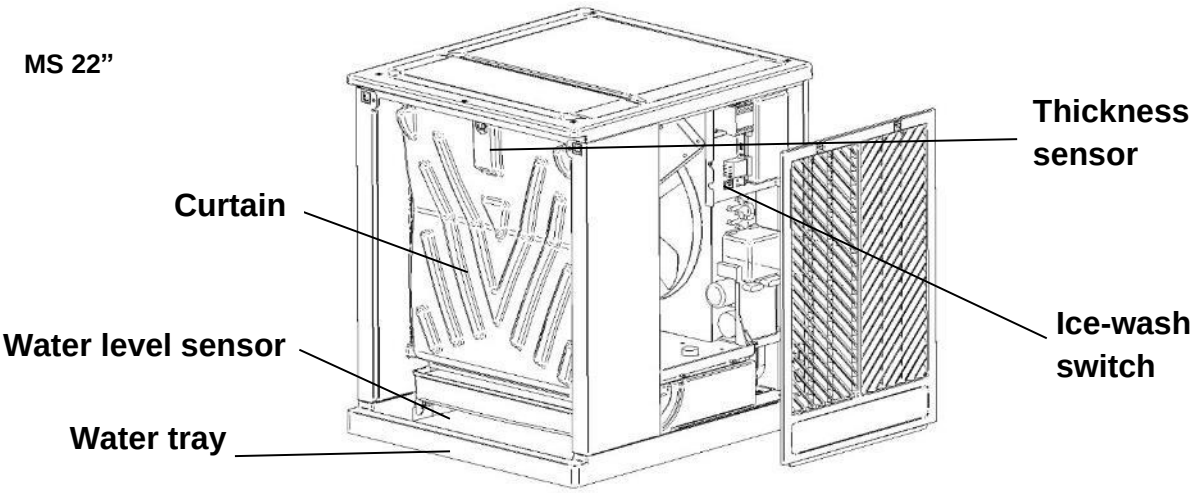


3) Prepare a solution of an appropriate product for the cleaning of ice machines (lime). Do not use hydrochloric acid. We recommend the use of any NSF approved scale removal product. In modular machines the water bucket is filled automatically so we recommend preparing a previous solution (for example 0.15 gal, according to the manufacturer's instructions with the total quantity of product needed for the water tray 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.



MS 22”



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.

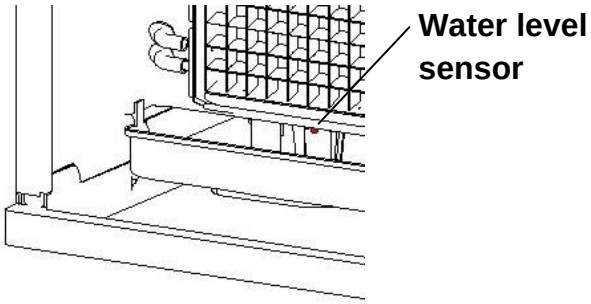
5) To purge out the ice machine scale remover and residue move the ice-wash switch to the WASH (the machine will drain the reservoir and refill it) and then set the ice-wash switch to the OFF position.

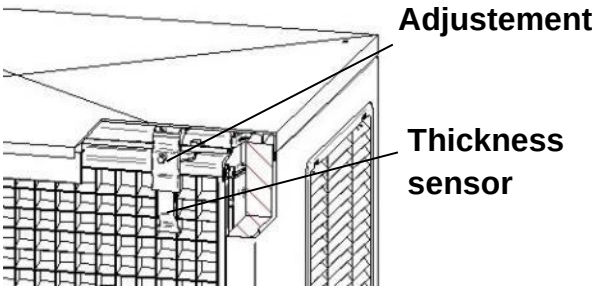
6) Disconnect power and close water supply.

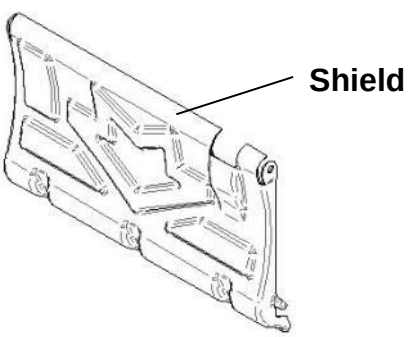
7) Mix a cleaning solution.

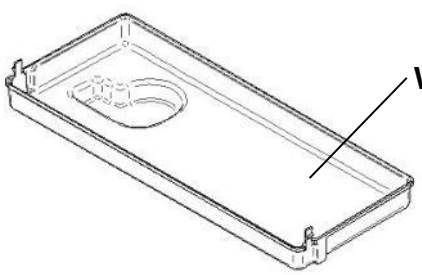
8) Remove shield and water tray.

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%:

Bleach to add → 15/(%dis) = 15/12.5 = 1.2gr/l → *0.133= 0.16 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 11 (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 icewash 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.

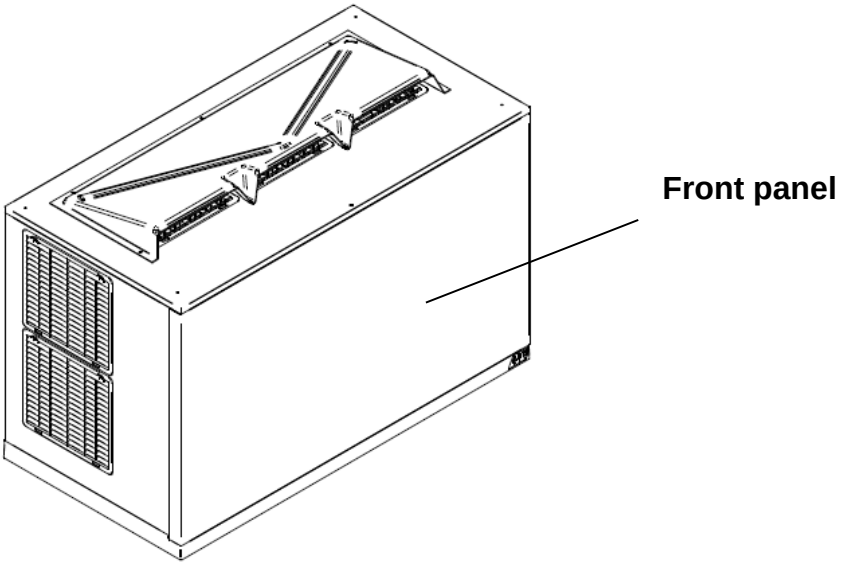
20)Set the ice-wash switch to the ON position (position I) and discard the first two harvests.

6.2. Cleaning water distribution system for MS48”

1) Remove the front panel.

2) Set Ice-wash switch to the OFF position (0 position) 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.



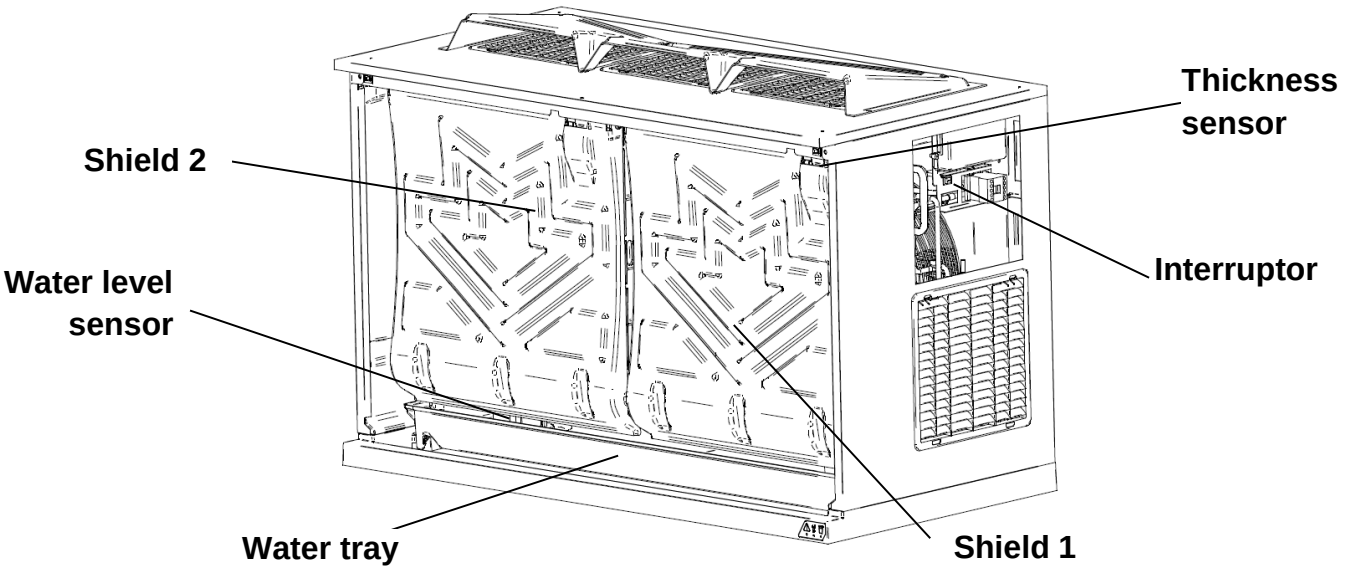
3) Prepare a solution of an appropriate product for the cleaning of ice machines (lime). Do not use hydrochloric acid. We recommend the use of any NSF approved scale removal product. Mix a solution of sanitizer using approved sodium hypochlorite food equipment sanitizer to form a solution with 100 to 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%:

Bleach to add → 15/(%dis) = 15/12.5 = 1.2gr/l → *0.133= 0.16 oz/gal

We recommend preparing a previous solution. For the wash of the MS48" we recommend use 2.6 gal of product.

4) To start a cleaning cycle, move the ice-wash switch to the position II. The L2 led will flash and the machine will drain the reservoir and refill it. Pour the scale remover solution into the reserve.

MS 1800 48”



5) The technician only has to put the product in the water tray in the correct moment. Once moved the switch to II positions the machine will start to drain the reservoir and still to drain for 90”.

**L2 intermittent.*

6) After this part of process, the L2 led will be intermittent but with more velocity, in this moment we have 5 minutes to put the product in the water tray. The technician has to put the product into the water bin and wait the end of the wash cycle. From this point the process is completely automatic.

**L2 fast intermittent.*

7) After these 5 minutes the product start to circulate in the machine for 30 minutes and then it makes 3 rinses cycles for washing the machine form the product.

**L2 intermittent.*

8) Once ended this process, L2 led turn on fixed, the wash cycle it is over. In this moment it is possible change the switch to I position and so start with ice production.

**L2 fixed.*

Please note

In wash cycle, in case of:

- The current goes out;
- The switch change to 0 or I position;
- Sock disconnection,

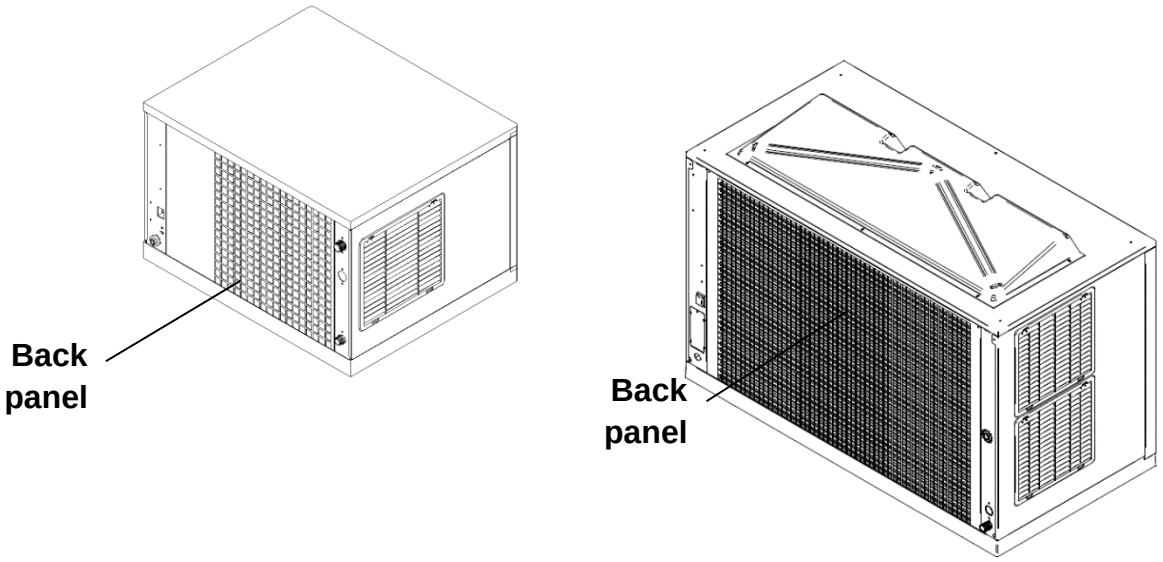
MS48" starts with a 3 rinses cycle. So, if the machine doesn't end the wash cycle can't start to produce ice, it after do a 3 rinses cycle. During 3 rinses process → L2 intermittent.

6.3. Cleaning the condenser

AIR CONDENSER

1) Disconnect machine and close water faucet.

2) 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.

6.4. 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 soft clean cloth. A commercial grade stainless steel cleaner/polish can be used as necessary.

6.5. Water leakage checking

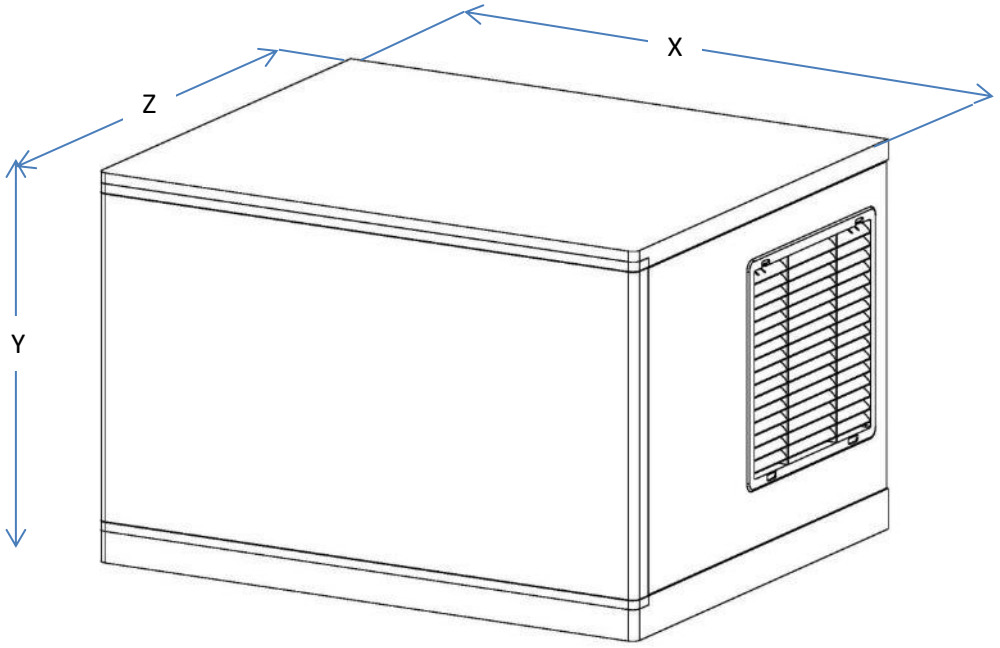
This must be done whenever maintenance is carried out on the machine: check all water connexions, braces, tubes and hoses in order to eliminate leaks and prevent breakages and flooding.

7. TECHNICAL SPECIFICATIONS

7.1. Dimensiones, voltaje

Nota: La tabla de cargas de refrigerante es orientativa, cada máquina lleva en la placa de características la carga exacta instalada el día de fabricación.

SPIKA MS



SPIKA MODULAR								
	MODELS (USA)	COOLING	MACHINE DIMENSIONS (inch)			PACKAGING DIMENSIONS (inch)		
			Width X	Depth Z	Height Y	Width X	Depth Z	Height Y
SPIKA MS700	SPIKA MS 700-A1H	Air	22	24,45	25,95	25,6	27,96	32,29
	SPIKA MS 700-A1F	Air	22	24,45	25,95	25,6	27.96	32,29
	SPIKA MS 700-A2H	Air	22	24,45	25,95	25,6	27.96	32,29
SPIKA MS1000	SPIKA MS 1000-A2F	Air	30	24,4	29,92	34,41	25	32,92
	SPIKA MS 1000-W2F	Water	30	24,4	29,92	34,41	25	32,92
	SPIKA MS 1000-AF TRIPHASYC	Air	30	24,4	29,92	34,41	25	32,92
	SPIKA MS 1000-WF TRIPHASYC	Water	30	24,4	29,92	34,41	25	32,92
SPIKA MS1800	SPIKA MS1800-A2H	Air	48	24,4	30	51	27	34
	SPIKA MS1800-A2F	Air	48	24,4	30	51	27	34

7.2. Production tables

SPIKA MS 700-A2H Lb/24h

	WATER ºF			
AIR F	50	60	70	86
50	745	705	683	679
68	**668**	683	661	657
90	672	628	613	602
109	557	507	498	480

SPIKA MS 700-A2F Lb/24h

	WATER ºF			
AIR F	50	60	70	86
50	723	714	705	604
68	**703**	699	697	593
90	695	690	686	584
109	675	668	666	567

SPIKA MS 700-A1H Lb/24h

	WATER ºF			
AIR F	50	60	70	80
50	745	705	683	679
70	**727**	683	661	657
90	672	628	613	602
100	551	507	498	480

SPIKA MS 700-A1F Lb/24h

	WATER ºF			
AIR F	50	60	70	80
50	707	703	647	567
70	**676**	678	625	546
90	613	602	527	483
100	472	462	416	378

SPIKA MS 1000-A3F Lb/24h

	WATER ºF			
AIR F	50	60	70	86
50	986	890	792	707
68	**957**	862	766	683
90	919	825	730	652
109	875	787	698	623

SPIKA MS 1000-W3F Lb/24h

	WATER ºF			
AIR F	50	60	70	86
50	991	969	946	924
68	**962**	937	915	892
90	924	901	872	849
109	879	856	834	810

SPIKA MS 1000-A2F Lb/24h

	WATER ºF			
AIR F	50	60	70	80
50	986	890	792	707
70	**970**	862	766	683
90	919	825	730	652
100	875	787	698	623

SPIKA MS 1000-W2F Lb/24h

	WATER ºF			
AIR F	50	60	70	86
50	991	969	946	924
68	**974**	937	915	892
90	924	901	872	849
109	879	856	834	810

SPIKA MS 1800-A2H Lb/24h

	WATER ºF			
AIR F	50	60	70	80
50	1830	1796	1741	1609
70	**1820**	1752	1697	1543
90	1631	1565	1516	1322
100	1488	1410	1344	1150

SPIKA MS 1800-A2F Lb/24h

	WATER ºF			
AIR F	50	60	70	80
50	1873	1818	1763	1631
70	**1811**	1752	1697	1543
90	1631	1565	1499	1322
100	1488	1410	1344	1611

8. USER TROUBLESHOOTING GUIDE

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
All the electrical parts work but not compressor. (water doesn´t freeze)	Front switch position WASH.	Move to ICE
No water in tray	Not incoming water	Check water supply
	Inlet strain at water valve blocked	Check and clean
Not enoug 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)
ONLY MS48		
Switch in I position but the machine still working as wash cycle.	The wash cycle is not over.	Wait for the rinses to run out and then the machine wil start his normal work.
For further problems call aftersales service		

9. WIRING DIAGRAMS

9.1. SPIKA MS 700

https://itvice.com/cd/docs/spika/itvice_ms700_elec_esen.pdf

9.2. SPIKA MS 1000

https://itvice.com/cd/docs/spika/itvice_ms1000_elec_esen.pdf

9.3. SPIKA MS 1000 3Ph

https://itvice.com/cd/docs/spika/itvice_ms10003ph_elec_esen.pdf

9.4. SPIKA MS 1800

https://itvice.com/cd/docs/spika/itvice_ms1800_elec_esen.pdf

OTHER TECHNICAL INFORMATION