



# Instruction manual



**Ice maker air cooling ice cube dice 78  
kg / 24 h  
N 70 A**

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2026-01-25

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## 1. DECLARATION OF CONFORMITY

Decree of the Ministry of Health of the Czech Republic no. 38/2001 Coll. of 19 January 2001 Regulation (EC) No 1907/2006 - Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation of the European Parliament and Council Regulation (EC) no. 1935/2004 of 27 October 2004

The products meet the requirements of §26 of Act No.258/2000 as amended. The products meet the requirements of RoHS Directive 2015/863/EU, 10/2011, 517/2014, 2015/1094, 2015/1095.

Attention, the manufacturer gives up any responsibility in case of direct and indirect damage that is relate to poor installation, incorrect intervention or adjustments, insufficient maintenance, incorrect by using and which are eventually caused by other causes that the points referred to in the conditions sales. This appliance is intended only for professional use and must be operated by qualified by persons. Parts that have been secured by the manufacturer or authorized worker after the setting rebuild.

## 2. TECHNICAL DATA

The label with technical data is located on the side or back panel of the device. Please read the wiring diagram and all the following information in the attached manual before installation.

Net Width [mm]	Net Depth [mm]	Net Height [mm]	Net Weight [kg]	Power electric [kW]	Loading
535	894	894	48.00	1.007	230 V / 1N - 50 Hz

## 3. LOCATION ELECTRIC

For the correct operation and placement of the appliance, it is necessary to observe the following all prescribed standards for the given market. Unpack the device and check that the device has not been damaged during transport. Place the device on a horizontal surface (maximum unevenness up to 2°). Small unevenness can be leveled with adjustable feet. If the device will be placed in such a way that it will be in contact with the walls of the furniture, these must withstand a temperature of up to 60°C. Installation, adjustment, commissioning must be performed by a qualified person who is authorized to perform such operations, according to applicable standards. The device can be installed separately or in series with devices of our production. A minimum distance of 10 cm from flammable materials must be observed. In this case, it is necessary to secure the appropriate modifications to ensure the thermal insulation of the combustible parts. The appliance must only be installed on a non-flammable surface or against a non-flammable wall. **Parts of the appliance provided by the manufacturer. or his representative, the worker performing the installation may not rebuild the product.**

## 4. SAFETY MEASURES FOR FIRE PROTECTION

- the appliance may only be operated by adults
- the appliance may be used safely in accordance with applicable market standards:

Fire protection in spaces with special risk or danger

Protection against the effects of heat

- the appliance must be placed so that it stands or hangs firmly on a non-combustible surface

Objects of flammable substances must not be placed on the appliance at a distance less than a safe distance from it (the smallest distance between the appliance and flammable substances is 10 cm).

Table: degree of flammability of building materials included in st. flammability of substances and products

Degree of flammability	Building materials
A - non-flammable	granite, sandstone, concrete, brick, ceramic tiles, plaster
B - Not easily flammable	Acumin, Heraclitus, Lihnos, Itaver
C1 - highly flammable	wood, hardwood, plywood, hard paper, umakart
C2 - moderately flammable	chipboards, solodur, cork boards, rubber, flooring
C3 - Highly flammable	wood fiber boards, polystyrene, polyurethane, PVC

- information on the degree of flammability of common building materials is given in the table above. Appliances must be installed in a safe manner. During installation, the relevant design, safety and hygiene regulations must also be respected:
- fire safety of local appliances and heat sources
- fire protection in areas with special risk or danger
- protection against the effects of heat

## 5. INSTALLATION

**Important:** The manufacturer does not provide any warranty for defects arising as a result of incorrect use, failure to follow the instructions contained in the attached user manual and mishandling of appliances. Installation, modification and repair of appliances for large kitchens, as well as their dismantling due to possible damage to the gas supply, can only be carried out on the basis of a maintenance contract, this contract can be concluded with an authorized dealer, while technical regulations and standards and regulations must be observed regarding installation, electrical supply, gas connection and work safety. Technical instructions for installation and adjustment, for use by specialized technicians ONLY. The instructions that follow refer to a technician qualified for installation to carry out all operations in the most correct manner and according to the applicable standards. Any activity related to regulation etc. must only be performed with the device disconnected from the network. If it is necessary to keep the appliance under voltage, the utmost care must be taken. The type of appliance for extraction is declared on the nameplate, it is an A1 appliance.

## 6. WATER CONNECTION

Water connection is done using G1/2 threaded hoses. The water supply must be fitted with separate closures that are freely accessible and within reach of the device. The device includes return valves. The water for filling the duplicator space must be softened - a maximum of 5 ° the French scale of water hardness. The water pressure must be in the range of 50-300 kPa.

## 7. CONNECTING THE ELECTRICAL CABLE TO THE NETWORK

Installation of the electrical supply - this supply must be separately secured. Ato with the corresponding circuit breaker of rated current depending on the power input of the installed device. Check the power consumption of the device on the production label on the back panel (or side) of the device. The connected ground wire must be longer than the other wires. Connect the device directly to the network, it is necessary to insert a switch between the device and the device with a minimum distance of 3 mm between the individual contacts, which corresponds to the applicable standards and load. The earth supply (yellow-green) must not be interrupted by this switch. Connect the device to the mains if the socket has adequate protection. In any case, the supply cable must be located so that it does not reach a temperature of 50 degrees higher than the environment at any point. Before the appliance is connected to the network, it is necessary to first make sure that:

- the supply circuit breaker and the internal distribution can withstand the current load of the appliance (see matrix label)
- the distribution board is equipped with effective grounding according to the standards of the relevant market and the conditions given by law
- the socket or switch in the supply is easily accessible from the appliance
- the electrical supply to the device must be made of oil-resistant material

**We disclaim any responsibility in the event that these standards are not respected and in the event of a violation of the above principles. Before first use, you must clean the device, see chapter "cleaning and maintenance". The appliance must be grounded using a screw with a grounding mark.**

- Do not insert the plug of the power supply into the electrical outlet. sockets and do not pull out the zel. sockets with wet hands and pulling on the power cord!
- Do not use extension cords or multiple sockets.

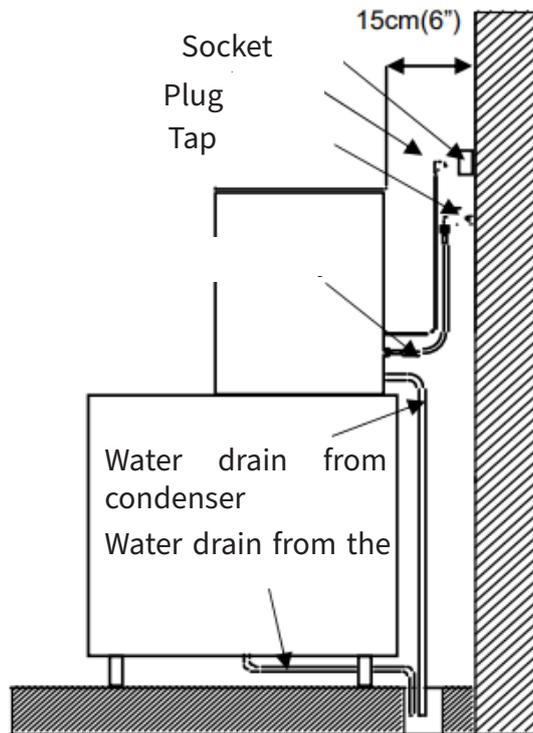
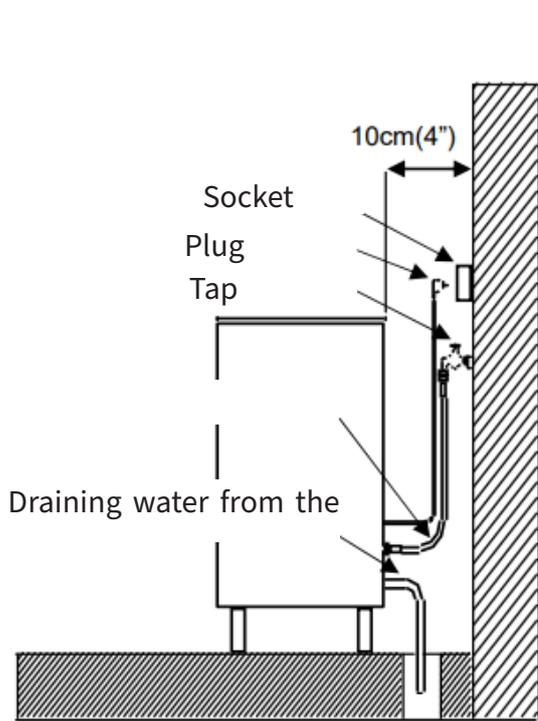
- **The mains connection point must have a maximum of the following impedance:  $Z_{MAX} = 0.042 + j 0.026 \Omega$  for the phase conductors and  $0.028 + j 0.017 \Omega$  for the neutral conductor.**

CONNECT

Position the appliance so that it has sufficient space for water, drain and electrical connections to the rear of the appliance.

MODULAR MODELS

COMPACT MODELS

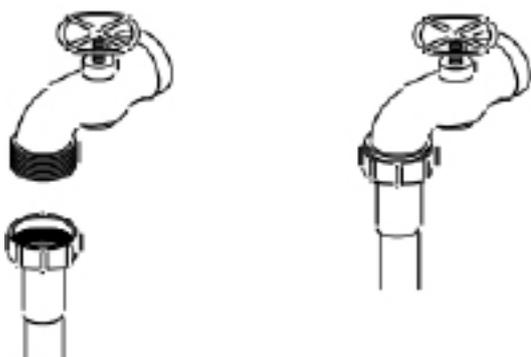


CONNECTION TO THE WATER SUPPLY

The quality of the water has an impact on the cleaning cycle and the lifetime of the device (especially for condensing devices). It also has a significant effect on the appearance, hardness and taste of the ice.

Water properties can be improved by treating the water against limescale, to improve the taste and transparency of the ice. If installing a water filtration system, follow the instructions for the filtration system.

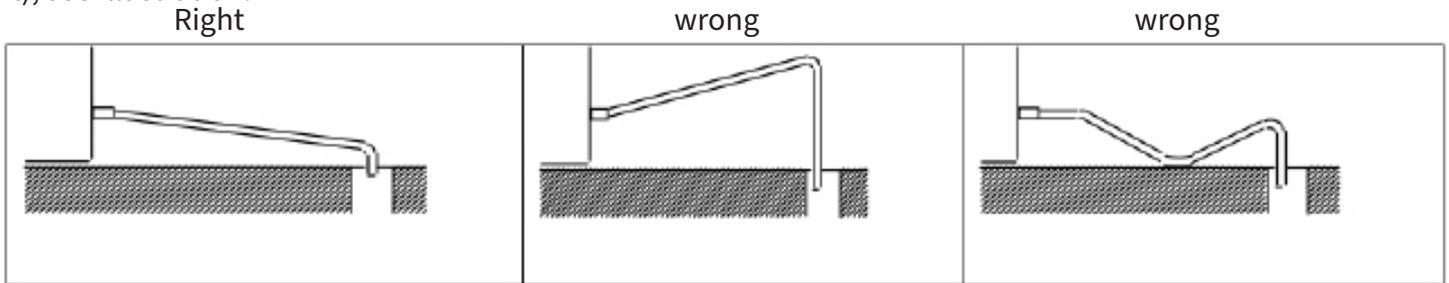
The water supply pressure should be between 0.7 and 6 bar (10 y 85 psi). If the pressure exceeds these values,



## WATER DRAIN CONNECTION

The drain should be positioned lower than the appliance itself, at least 150mm (5.9").

The drainage ball should be less than 30 mm (1.18") in diameter and have a minimum slope of 3 cm/m (0.36"/ft), see illustration.



## ELECTRICAL CONNECTION

The apparatus should be compulsorily earthed to prevent possible electrical discharges to persons and damage to the apparatus. In addition to the national regulations prescribed by law, other local connection conditions must be observed.

The manufacturer is not responsible for damage caused by improper grounding of the electrical installation.

If the power cable has been damaged, it must be replaced with a cable or spare parts supplied by the manufacturer or customer service. This replacement should be performed by a qualified customer service technician.

The appliance must be positioned so that space is left between the rear of the appliance and the wall for convenient and safe access to the mains plug.

Ensure proximity to a suitable socket. Proper installation of the circuit breaker and adequate fuses is required.

The voltage is indicated on the rating plate and in the technical documentation in this manual. A variation of more than 10% in the specified voltage may cause malfunctions or prevent the unit from starting.

MODELS	TENSION PHASE EFFECT	AMPÉR	LINK
N 60	220V / 50Hz / 1Ph	3 A	16 A
N 215	220V / 50Hz / 1Ph	7 A	16 A

## 8. INSTRUCTIONS FOR USE

### COMMISSIONING

#### BEFORE THE SLEEPING

Is the device balanced?

Are the voltages and frequencies the same as on the rating plate?

Are the drains connected and working?

Is the room temperature and water temperature between the following values?

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

Is the water pressure correct?

MINIMUM	10 psi (0.7 bar)
MAXIMUM	85 psi (6 bar)

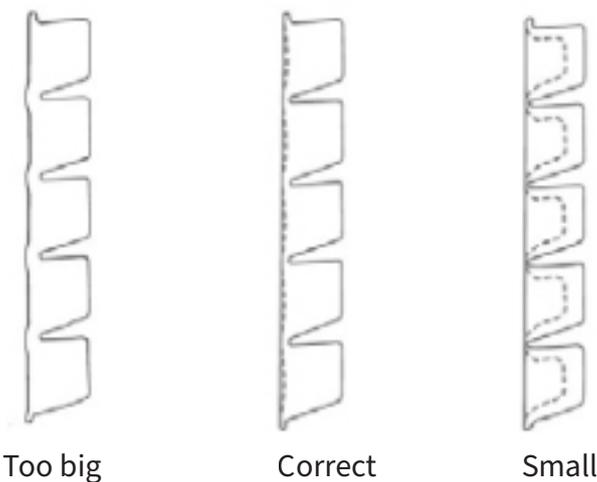
NOTE: If the water supply pressure is greater than 85 psi (6 bar), install a pressure regulator.

For compact models: if the temperature exceeds 85°F (29.5°C (29°F) and influent water exceeds 20°C (68°F), the following steps should be taken to ensure proper performance.

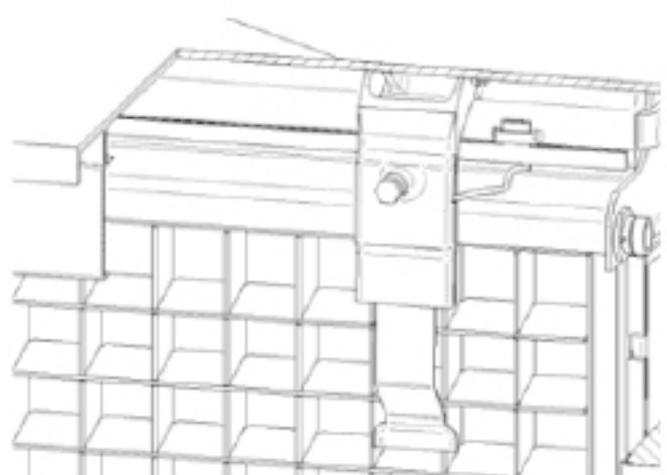
### CONSUMPTION

If we have followed the installation instructions (ventilation, location, temperatures, water quality, etc.), proceed as follows:

1. Open the water cap. Check for water leaks.
2. For compact models, open the door and remove the protective elements from the screen. For modular models, remove the two safety screws at the top of the instrument, remove the front panel and remove the protective elements from the aperture and the thickness detector.
3. Check that the screen is free to move. For modular models, also verify that the ice thickness detector is freely movable.
4. Connect the device to the power supply.
5. For compact models: switch on the appliance using the blue button on the front of the appliance. For modular models: switch on the appliance using the blue button on the back of the appliance and set the action switch (ice-cleaning) to position I.
6. Ensure that there is no vibration or friction of parts.
7. Ensure that the water flow into the evaporator is uniform and that all cubes are adequately soaked.
8. Close the door (for compact models)/put the front panel in place (for modular models).



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Damage caused by lack of maintenance and cleanliness is not included in the warranty period.

First commissioning:

It is recommended to start with the first start-up with the tapping off phase to ensure that the water reservoir is full.

Cooling phase: the compressor is working. The G2 wheel deactivates the hot gas valve and the evaporator starts cooling. The G2 wheel activates the water pump and water flows from the reservoir to the top dispenser, passing through each bay where it freezes.

Unsticking phase: the compressor is still working. The G2 wheel activates the hot gas valve for a moment. The G3 timer activates the water supply valve at the same time until the water tank is filled to the correct level. The ice slab slides off and falls into the ice bin. After this phase, the cooling phase is repeated.

When the ice bin is full, the thermostat detects a drop in temperature and the ice maker stops at the end of the cooling function. The machine will remain off until sufficient ice has been removed from the ice bin and the thermostat no longer registers a low temperature.

#### FOR MODULAR MODELS:

Initial start-up: the pump and the electromagnetic drain plug are activated for 30 seconds to drain the water reservoir, preventing scale build-up in the water. The pump and the electromagnetic drain plug are then deactivated and the water inflow valve is activated, filling the water reservoir until the level detector stops it. Then the cooling phase starts.

Cooling phase: the compressor is activated and the water pump starts for 30 seconds.

The water inlet valve is activated at the same time as the pump and does not disconnect until the tank is full. The compressor and pump operate until the thickness detector indicates that the thickness of the ice sheet is adequate. Then the unsticking phase begins.

Unsticking phase: the compressor is still working. The hot gas valve is activated for the entire unstripping process, the hot gas flows into the evaporator. The pump and the electromagnetic drain plug are activated for 45 seconds to empty the water tank and prevent scale build-up. After that (pump and electromagnetic drain plug are deactivated) the water inlet valve is activated until the water tank is filled to the correct level. The ice plate is

slips and falls into the ice bin. The transient opening and closing of the screen indicates that the de-airing phase has been completed and the cooling phase will begin.

When the ice bin is full, the aperture will open in more than 30 seconds and the machine will stop.

The unit will remain off until sufficient ice has been removed from the reservoir and the screen can be returned to its original position.

#### MAINTENANCE AND CLEANING INSTRUCTIONS

It is the user's responsibility to maintain the ice machine and ice bin in proper hygienic conditions.

Ice machines also occasionally require the water circuit to be cleaned with a special cleaning agent. This special detergent should dissolve the scale build-up that forms during ice making.

The ice bin should be disinfected as often as necessary to keep it clean, including each time the ice maker is cleaned and disinfected.

The water circuit of the ice maker should be cleaned and disinfected at least 2 times a year.

**WARNING:** Do not combine cleaning and disinfecting agents.

**WARNING:** Wear rubber gloves and goggles for handling cleaning and disinfecting agents.

**WARNING:** During cleaning and maintenance, the appliance must be disconnected from the power supply.

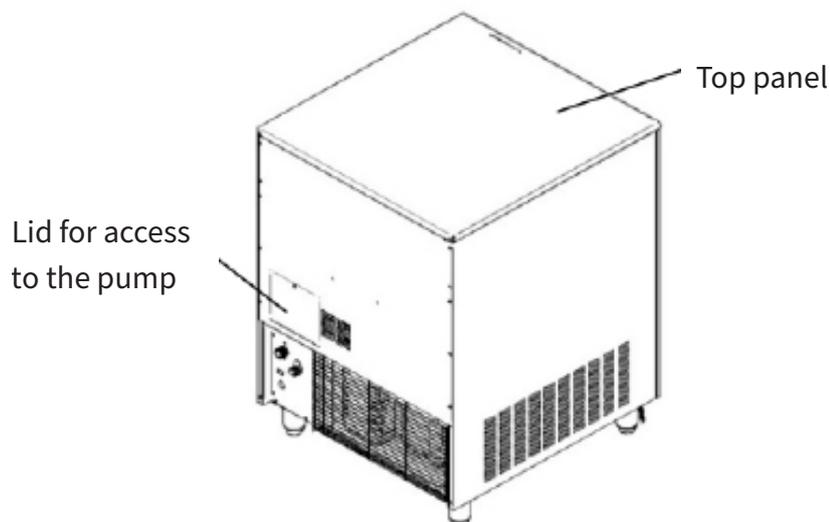
## CLEANING OF THE WATER CIRCUIT

### CLEANING THE WATER CIRCUIT ON COMPACT MODELS

1. Set the main switch to the OFF position after the ice has fallen from the evaporator at the end of the ice peeling phase or set it to the OFF position directly and wait for the ice to melt from the evaporator.

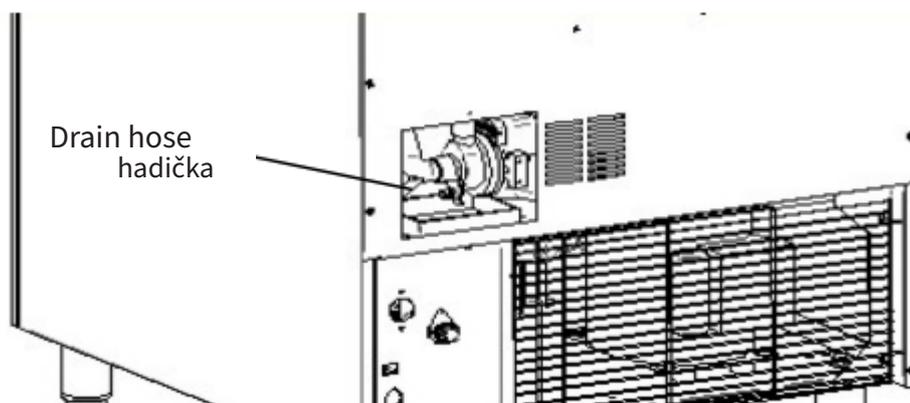
**WARNING:** Never use any tool to forcibly remove ice from the evaporator.

2. Remove the rear metal lid and top panel (if you deem it necessary to facilitate the cleaning process).



3. Remove the ice from the tray.

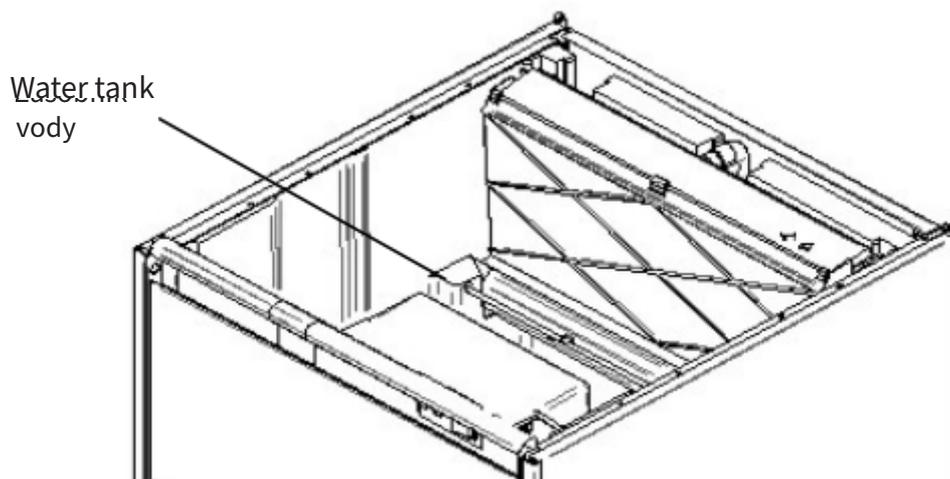
4. Remove the auxiliary drain hose near the pump and empty the water tank and return it to its original position to prevent water run-off.



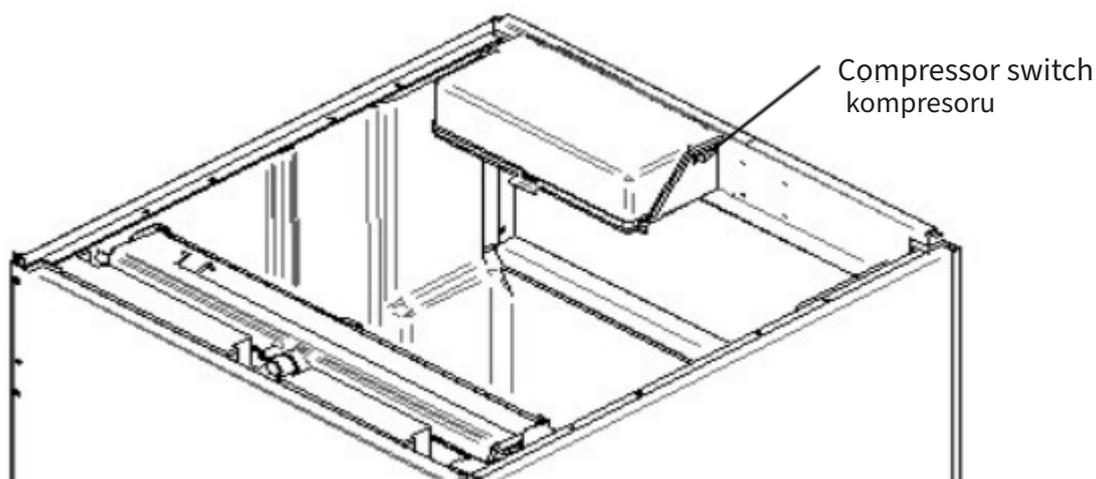
5. Prepare a solution of a product designed for cleaning ice machines (limescale). Do not use hydrochloric acid. Use of NSF (National Science Foundation) approved descaling products and use according to ma-

nufacturer's instructions is recommended.

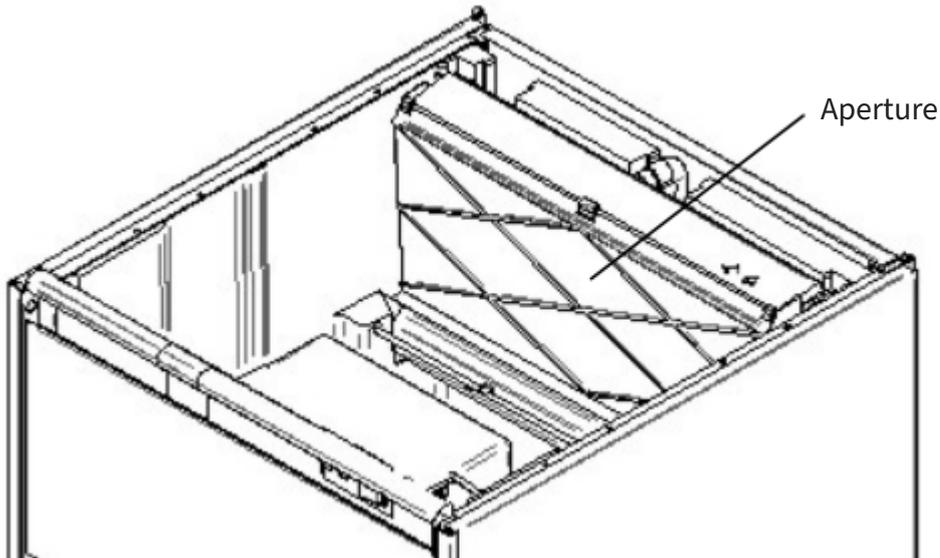
6. Fill the water reservoir with the solution.



7. Set the compressor switch (see image below) to position 0 and activate the unit to start the pump. Allow the solution to circulate for 30-40 minutes and then turn the unit off.



8. Disconnect from the electricity and water supply.
9. Remove the auxiliary drain tube and clean with a limescale and sediment eliminating solution. Put back in place.
10. Mix sufficient solution (as in 5) to clean the interior and particles in contact with water.



12. Clean the entire surface of the screen with the given cleaning agent, using a brush (not a wire brush) and a cloth. Rinse with water.
13. Clean all internal surfaces of the refrigeration unit (including the ice bin) with a cleaning solution, using a brush or cloth. Rinse all parts properly.
14. Prepare a disinfectant solution containing portable chlorine (EPA/FDA approved) to achieve a solution between 100 and 200 ppm (per mille) of free chlorine.
15. Disinfect the entire surface of the screen by applying a sufficient amount of disinfectant with a cloth or sponge.
16. Disinfect all internal surfaces of the refrigerator (including the ice bin) with sufficient disinfectant, using a cloth or sponge.
17. Return the screen to its original position.
18. Connect the mains cable y water supply.
19. Fill the water tank with disinfectant.
20. Switch on the machine to start the pump. Allow the solution to circulate for 20 minutes and turn the machine off.

21. Remove the auxiliary drain tube and clean with disinfectant solution. Put back in place. Fill the reservoir with water and run the unit to achieve water circulation over a period of 5 minutes, then turn the unit off. Repeat this action twice to ensure that the device has been properly flushed.

22. Remove the auxiliary tube, the water will drain. Reconnect it and fill the reservoir with water to verify that the pump is working properly

23. Switch on the compressor switch (position I).

24. Place the rear metal lid and the top lid back in place.

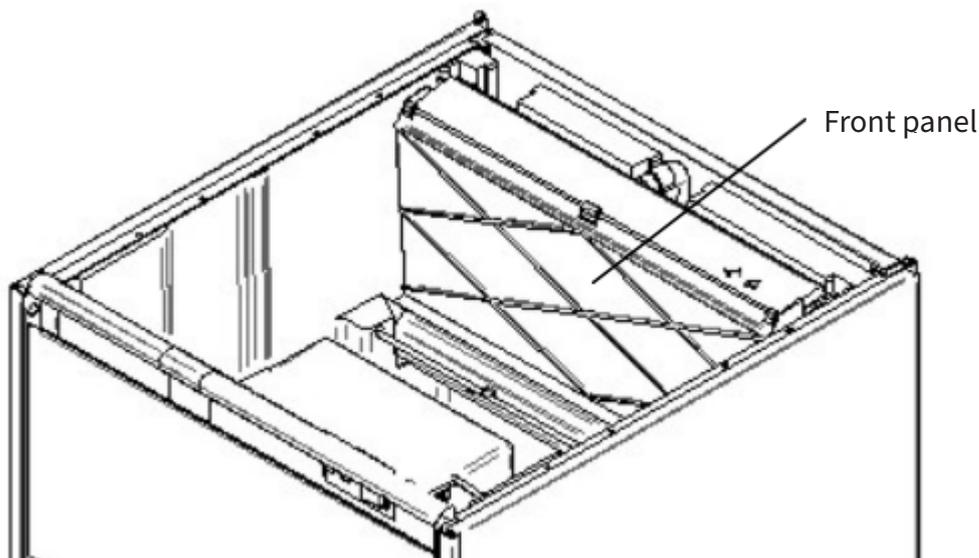
25. Switch on the machine and devalue the first two batches.

#### CLEANING OF THE WATER CIRCUIT FOR MODULAR MODELS

1. Set the activity switch (ice-cleaning) to OFF (position 0) after the ice has fallen from the evaporator at the end of the phase of ice drift, or set it to OFF and wait for the ice to melt from the evaporator.

**WARNING:** Never use any tool to forcibly remove ice from the evaporator. It could be damaged.

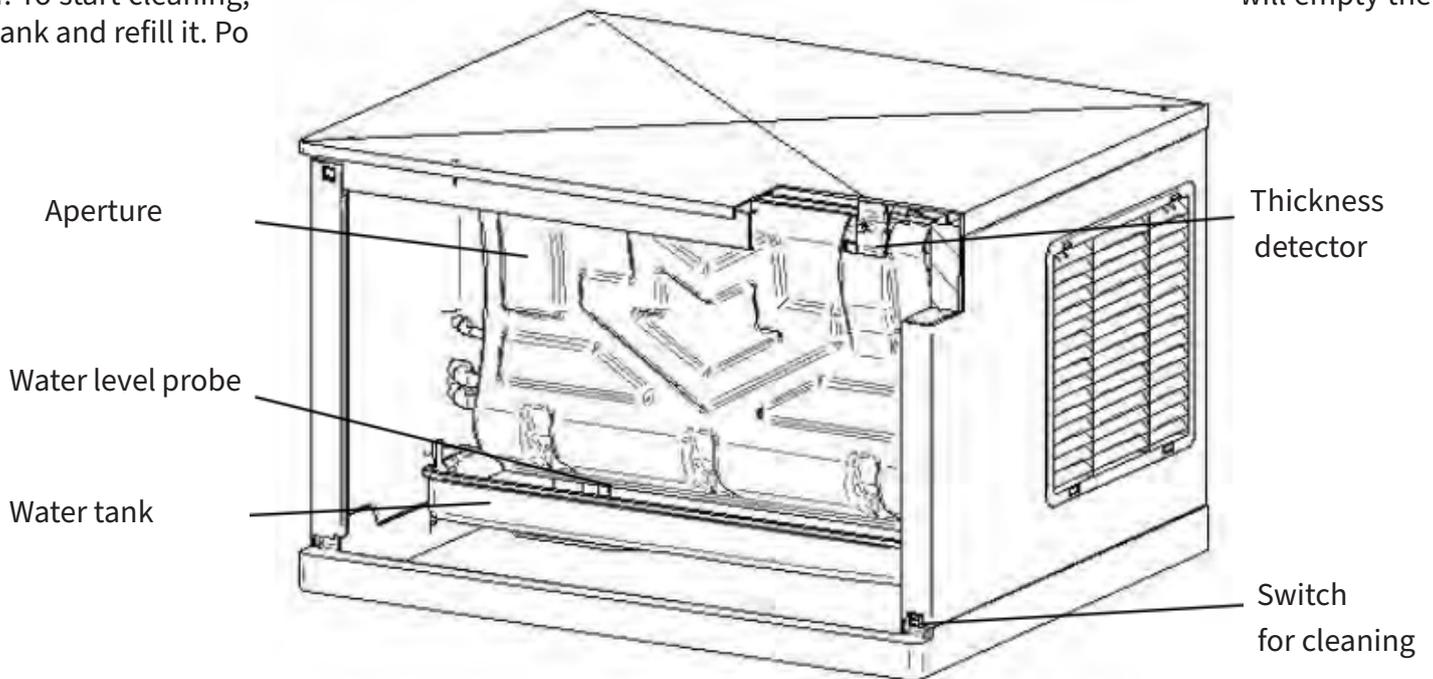
2. Remove the front panel.



3. Prepare a solution of a product designed for cleaning ice machines (limescale). Do not use hydrochloric acid. Use of NSF (National Science Foundation) approved descaling products and use according to manufacturer's instructions is recommended. For modular models, the water tank will automatically fill, so we recommend preparing

forward solution (e.g. 0.15l) according to the manufacturer's instructions and the required amount of solution in the water tank (3l for MS-FDHD 220-215 and 6l for MS-FDHD 410-415)

4. To start cleaning, turn the action switch to the cleaning position (position III). The machine will empty the tank and refill it. Po



5. Allow the solution to circulate through the water circuit for 30-40 minutes and then set the activity switch (ice cleaning) to OFF.

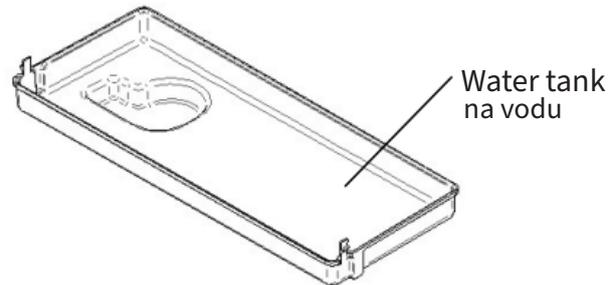
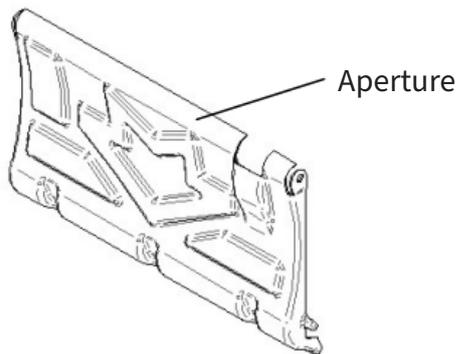
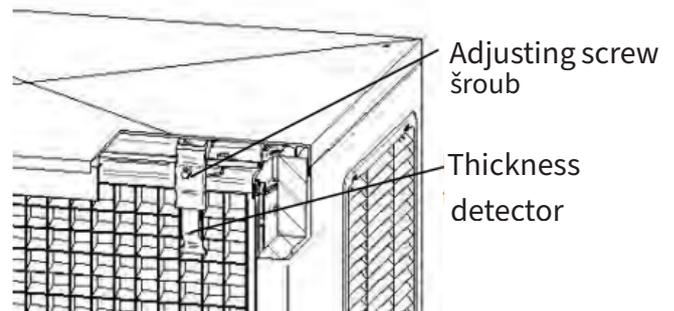
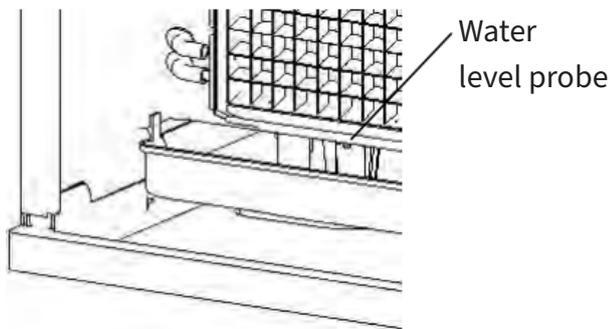
6. To remove the cleaning solution and sediment, set the action switch to the cleaning position (the device empties the reservoir and refills it). And then set the switch to the OFF position.

7. Disconnect from the electricity and water supply.

8. Prepare the disinfectant solution.

9. Remove the screen and the water tank.

10. Wash metal surfaces, thickness detector, water level detector, adjustment screw, orifice plate and water reservoir with cleaning solution using a brush (not wire) or cloth.



11. Clean all internal surfaces of the refrigeration unit (includes walls, plastic parts of the evaporator, dispenser...) with a cleaning solution, using a brush or cloth. Rinse all parts properly.
12. Prepare a disinfectant solution containing portable chlorine (EPA/FDA approved) to achieve a solution between 100 and 200 ppm (per mille) of free chlorine.
13. Disinfect the entire surface of the thickness detector, the water level detector, the screen and the water reservoir, applying sufficient disinfectant with a cloth or sponge.
14. Disinfect all internal surfaces of the refrigeration equipment (includes walls, plastic parts of the evaporator, dispenser...) and the front panel with a disinfectant, using a cloth or sponge.
15. Return the water tank and the screen to their original position.
16. Connect the mains cable and water supply.
17. To start the disinfection cycle, set the action switch to the cleaning position. The machine will empty the tank and refill it. Pour the solution into the water reservoir to obtain the solution described in step 12 (reservoir contents are approximately 6L for the MS-FDHD 410-415 and 3L for the MS-FDHD 220-215).
18. Allow the solution to circulate through the water system for 20 minutes and then set the activity switch to OFF.

19. To clean the disinfectant solution and sediments, set the action switch to the cleaning position (empty and fill), let the water circulate for 5 minutes. And then set the switch to the OFF position (drain). Repeat this action twice to flush the equipment properly.

20. Place the panel in place.

21. Set the activity switch to ON (position I) and devalue the first two batches

## 5.2. CLEANING THE ICE BIN (FOR COMPACT MODELS).

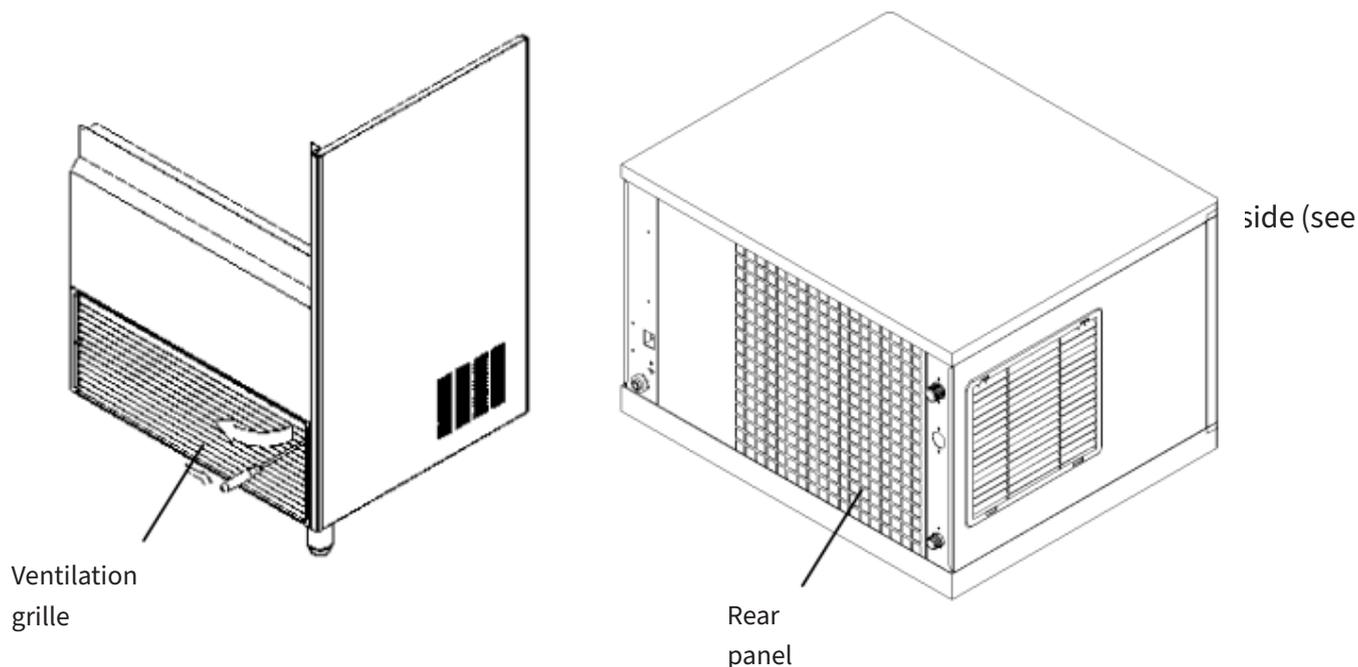
1. Disconnect the appliance, close the water stopper and empty the ice bin.

2. Use a cleaning solution to clean all surfaces of the tray. Use a brush or cloth. Rinse all parts properly with clean water.

3. Use a disinfectant solution to disinfect all surfaces of the ice bin. Use a brush or cloth.

4. Rinse properly, dry, switch on the appliance and open the water stopper.

## CONDENSER CLEANING



3. Clean the condenser using a vacuum cleaner, a soft brush or light air pressure. Clean from the bottom up, not from side to side. Caution is required to avoid bending the condenser wings)

## WATER CONDENSER

## EXTERNAL WASHING OF THE DEVICE

Wash the area around the appliance as often as necessary to keep the appliance in good hygienic conditions. A sponge with detergent and water can be used to remove dust and dirt from the outside of the appliance. Dry with a soft, clean cloth. A special product for cleaning stainless steel surfaces may be used if deemed necessary.

## WATER LEAKAGE CONTROL

Check water joints, seals and hoses at every opportunity to prevent leaks and prevent cracks and flooding.

## TROUBLESHOOTING

### COMPACT MODELS:

CONCLUSION	POSSIBLE CAUSE	SOLUTION
No electrics working part of it.	The device is not in the socket.	Plug in the instrument and recheck the electrical connections.
	The inventory thermostat is open. The ice is touching the tube from the tray.	Remove the ice from the tray.
	The inventory thermostat is open. The ice is not touching the tube from the tray.	Adjust the stock thermostat (electrical box, under the top lid).
All electrical parts work except the compressor. (water is not cooled).	The compressor switch (next to the electrical box) is in the "cleaning" position (position 0).	Set the compressor switch to the "led" position (position I).
There's no water in the tank.	No water flow.	Check the water connection.
	Blocked water inlet valve.	Recheck and clean.
The reservoir is full, the ice is touching the tube from the reservoir, but the device does not turn off.	The stock thermostat does not open (it only works in the unstick phase).	Set the stock thermostat (electrical box, under the top lid).
The ice sheet is empty or too thick.	wrong cyclus setting.	Set the thermostat of the cycle (electric box, under the top lid).
In the ice drift phase, it is difficult to get the ice sheet out.	poor balance (tilted backwards).	Balance, lower the front.
	Not enough time to peel off the ice cubes.	Add jacks to the timer wheel (according to instructions on the sticker).
The water flow into the evaporator is not uniform.	Uncleanliness or scale on the dispenser.	Start the descaling process. Remove and clean the dispenser (Pull both side "clips" on the tray).
The device alternately switches on and off.	The safety pressure switch opens.	Clean the water condenser (bottom, behind the front grid).
For other faults, contact customer service.		

### MODULAR MODELS:

CONCLUSION	POSSIBLE CAUSE	SOLUTION
	The device is not in the socket.	Plug in the instrument and recheck the electrical connections.
	The rear switch is on OFF.	Set the rear switch to ON.
	The front action switch is at position 0.	Set the front action switch to position I.
All electrical parts work except the compressor. (water is not cooled).	The front action switch is in the cleaning position (position II).	Set the front activity switch to ice (position I).
There's no water in the tank.	No water flow.	Check the water connection.
	Blocked water inlet valve.	Recheck and clean.

There is not enough water to complete the cycle.	Detector de nivel de agua demasiado bajo. The water level detector is too low.	Move the water level detector higher up (stainless steel bar next to the pump).
	Defective drain valve (check for water leaks at the cooling phase drain).	Disassemble and clean.
	leaks at the atomizer on the screen.	Check the position of the aperture.
Water overflowing from the reservoir	Level detector too high or with a water stone.	Adjust and clean.
Too thick or empty ice sheet.	Unsorted thickness detector.	Adjust and clean.
Difficulty peeling off the ice sheet.	The instrument is poorly balanced (tilted backwards).	Balance, lower the front.
The water flow into the evaporator is not uniform.	Dirt or scale on the dispenser.	Start the descaling process. Remove and clean the dispenser (Pull both side "clips" on the tray).
Reduced production.	Dirty capacitor.	Clean (also check the air temperature and waters).
The device switches off after a short running time.	The safety pressure switch opens.	Clean the air capacitor (from the rear tranny).
For other faults, contact customer service.		

## 9. CLEANING AND MAINTENANCE

It is recommended to have the device checked with a specialist service at least once a year. All the interventions in the device can only be carried out by a qualified person who has the authorization to do so. **CAUTION!** The device must not be cleaned with direct or pressure water. Clean the equipment daily. Daily maintenance extends the life and efficiency of the equipment. Always turn off the main inlet to the device. Wash the stainless steel parts with a damp cloth with a detergent without coarse particles and wipe dry. Do not use abrasive or corrosive cleaning agents. Attention! Before using the device, it is necessary to remove the protective foil from the entire surface, and then wash it well with water with detergent, and then wipe it with a damp cloth. **ALERT!** The warranty does not apply to all consumables subject to normal wear (rubber seals, bulbs, glass and plastic parts, etc.). The warranty also does not apply to the device if the installation is not carried out in accordance with the instructions - an authorized worker according to the corresponding standards and if the equipment was unprofessionally manipulated (interventions in the internal equipment, etc.) or were operated by unhappy staff and contrary to the instructions for use, further The warranty does not apply to damage by natural effects or other external intervention. **Required service organization 2 times a year. After the lifetime, the shipping packaging and equipment are submitted to the collection, according to the regulations on waste management and hazardous waste.**