



# TECHNICAL MANUAL

## PULSAR R290 RANGE

MODELS:

<b>PULSAR</b>	25
<b>PULSAR</b>	35
<b>PULSAR</b>	45
<b>PULSAR</b>	95
<b>PULSAR</b>	115
<b>PULSAR</b>	145

**READ THIS MANUAL CAREFULLY, ESPECIALLY THE INSTALLATION AND MAINTENANCE SECTIONS. THE INSTALLATION OF THIS APPLIANCE MUST BE CARRIED OUT BY THE TECHNICAL ASSISTANCE SERVICE.**

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## **1. INTRODUCTION**

This manual has been created to provide the installer with information to carry out a correct installation and for the effective maintenance of the machine.

Furthermore, the user will find in the document a section referring to the cause of possible incidents, as well as complete information on their resolution.

Therefore, it is recommended to keep the manual in a safe place to resolve any questions related to the operation of the machine during its useful life.

### **1.1 WARNINGS**

- The installation of this equipment must be carried out by the Technical Service.
- Connect only to a drinking water distribution network.
- Use the new hoses supplied with the appliance. Old hoses must not be reused.
- The socket must always be located in an accessible place.
- When positioning the appliance, make sure that the power cord is not trapped or damaged.
- Do not place multiple portable power outlets or portable power sources at the rear of the appliance.
- Always disconnect power to the machine before any cleaning or maintenance service.
- Any necessary change in the electrical installation for the proper connection of the machine must be carried out exclusively by qualified and certified professional personnel.
- Modifying or attempting to modify this machine is extremely dangerous and will void the warranty.
- The appliance must not be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Connect only to potable water supply. This machine is not intended to be used outdoors or exposed to rain.
- The machine must be connected using the power cord supplied with the equipment. It is not intended to be connected to a fixed pipeline.
- To avoid danger due to instability of the appliance, it must be fixed in accordance with the instructions.

If the power cable is damaged, it must be replaced with a special mounting cable that will be supplied by the manufacturer or after-sales service. This replacement must be carried out only by a qualified technical service.

It is mandatory to connect the equipment to ground to avoid possible electric shocks to people or damage to the equipment. The machine must be grounded in accordance with local and/or national regulations. The manufacturer disclaims any responsibility in the event of damage occurring due to the lack of ground installation.

To ensure the proper functioning and efficiency of this equipment, it is very important to follow the manufacturer's recommendations, especially those related to cleaning and maintenance operations, which must only be carried out by qualified personnel.

**ATTENTION:** The intervention of unqualified personnel, in addition to being dangerous, can cause serious breakdowns. In case of damage, contact your dealer. We recommend always using original spare parts.

ITV reserves the right to make changes to specifications and design without notice.

**WE REMIND YOU THAT MAINTENANCE AND CLEANING OPERATIONS ARE NOT INCLUDED IN THE WARRANTY AND THEREFORE, THEY WILL BE BILLED BY THE INSTALLER.**

This sign indicates "Risk of Fire/Flammable Materials" due to the use of flammable refrigerant.



For this reason, the following warnings should be considered:

- Keep the openings for ventilation of the appliance casing or built-in furniture without obstructing it.
- Do not use mechanical devices or other means to accelerate defrosting, only those recommended by the manufacturer.
- Do not damage the refrigerant circuit.
- Do not use electrical devices inside the food compartments, unless they are recommended by the manufacturer.
- Explosive substances, such as aerosols with flammable propellant, must not be stored in this appliance.

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In case of refrigerant leak:

- Do not generate a flame in the surroundings of the appliance.
- Do not turn on/off switches or connect/disconnect plugs in the area of the appliance.
- Do not use a direct flame.
- Immediately ventilate the area of the appliance by opening doors and windows.
- Call an authorized technical service.

Disposal of the ice machine: ITV encourages you to follow the regulations of each country regarding the ecological disposal of electrical and electronic devices such as this. The user who wants to dispose of this equipment must contact the manufacturer and follow the appropriate differentiated collection method for subsequent treatment.

## 1.2. MACHINE RECEPTION

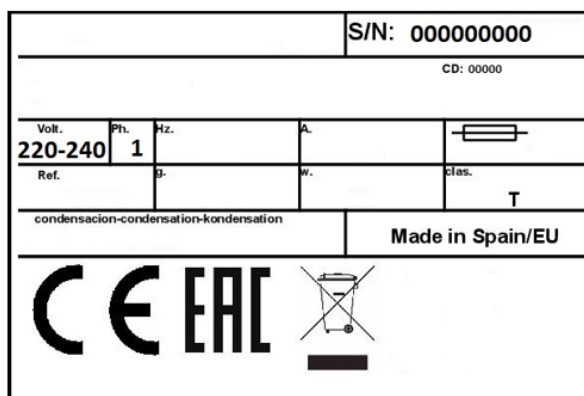
Inspect the outer packaging. In case of damage, make the corresponding claim to the carrier. To confirm the existence of damage, unpack the machine in the presence of the carrier and note any damage to the equipment on the receipt document or transport document.

Always indicate the number and model of the machine. This number is printed in three places:

(1) **Packaging:** On the outside it contains a label with the serial number.



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



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

Check that the installation kit inside the machine is complete and includes:

- Shovel
- 3/4 inch water inlet hose
- 22mm drain hose
- Filter gasket
- User manual
- Warranty

**CAUTION:** All packaging elements (plastic bags, cardboard boxes and wooden pallets) must be kept out of the reach of children, as they are a source of potential danger.

## 2. INSTALLATION

### 2.1. ICE MACHINE LOCATION

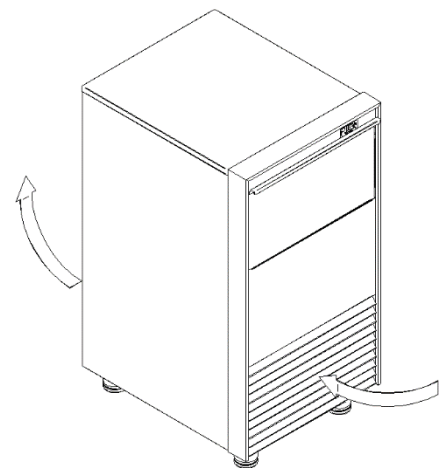
This ice maker is not designed to be used outdoors. The ice maker should not be located next to ovens, grills, or other equipment that produces a lot of heat.

Incorrect installation of the equipment may cause damage to persons, animals or property, for which the manufacturer cannot be held responsible.

PULSAR machines are designed to operate at ambient temperatures between 10°C and 43°C (50°F and 109°F) and inlet water temperatures between 5°C and 35°C (41°F and 95°F).

Below the minimum temperatures there may be some difficulties in making the ice flakes. Above the maximum temperature, compressor life is shortened and output is substantially lower.

Airflow on compact air-cooled machines enters through the front grille, entering the right front, and exiting the rear. In addition, the unit is equipped with a rear ventilation grill. Do not obstruct the front grill with any object.



If the frontal ventilation is not sufficient, the outlet is totally or partially obstructed or due to its location it receives hot air from another appliance, we recommend, if it is not possible to change the location of the machine, **INSTALLING A CONDENSED MACHINE BY WATER.**

**IT IS IMPORTANT THAT THE WATER PIPES DO NOT PASS NEAR HEAT SOURCES SO AS NOT TO LOSE ICE PRODUCTION.**

The location should allow sufficient clearance for the water, drain, and electrical connections at the rear of the icemaker.

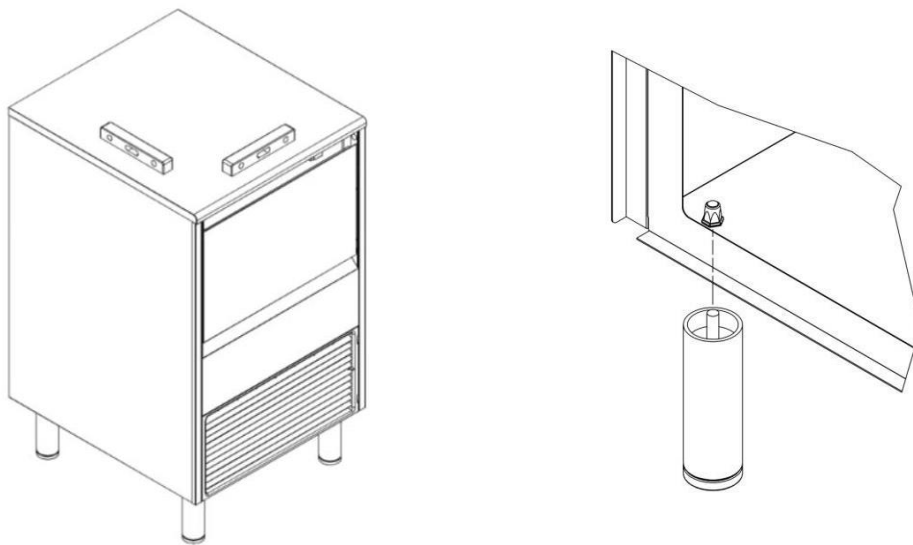


## 2.2. ICE MACHINE LEVELING

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

Screw the leveling feet into the bottom of the ice maker as far as they will go. Place the machine in its final position.

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

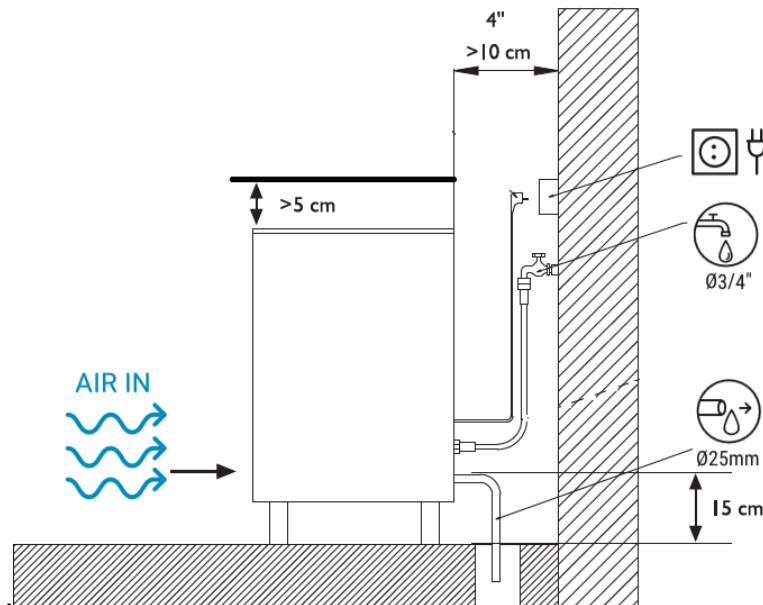


## 2.4. MINIMUM DISTANCE TO OBSTACLES

The machines expel hot air through the grilles, which must be discharged into the room and not accumulate. This is particularly important for the air expelled from the rear of the machines: a space of at least 10cm must be left up to the wall, allowing the air to flow from behind and out so that there is a renewal of this, avoiding the formation of hot air pockets in that area that could reduce the machine's ice production and even activate its protection against excessive temperature and stopping it.

**Connection diagram:**

The location should allow sufficient clearance for water drainage and electrical connections at the rear of the ice machine.



**2.5. WATER SUPPLY CONNECTION**

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

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

The pressure must be between 0.1MPa and 0.6MPa (1 and 6 bar). If the pressure exceeds these values, install a pressure regulator.

The water connection must be dedicated (only equipment hooked to the water line).

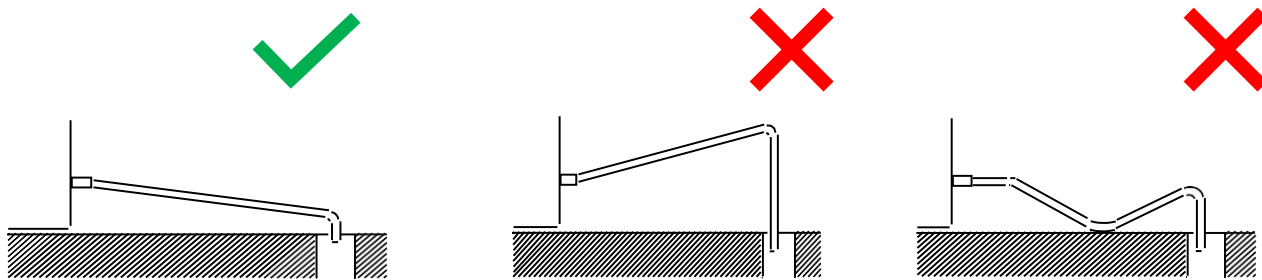
**ATTENTION:** The machine must be connected to the pipeline with adequate backflow protection in accordance with current national and local regulations.

## 2.6. DRAIN CONNECTION

### 2.6.1. GRAVITY DRAINAGE

The drain must be located lower than the level of the machine, at least 150mm.

It is advisable that the drain hose be 30mm in inner diameter and with a minimum slope of 3cm/meter.



## 2.7. ELECTRIC CONNECTION

- It is mandatory to connect the equipment to ground. To avoid possible electric shock to persons or damage to the equipment, the machine must be grounded in accordance with local and/or national regulations, as applicable.
- The manufacturer disclaims any responsibility in the event that damage occurs due to the lack of ground installation.
- The positioning of the appliance must ensure that the electrical supply is not damaged or choked.
- Do not install portable multiple sockets or other portable power sources on the rear of the appliance.
- The machine is supplied with a 1.5 m long cable.
- If the power cable is damaged, it must be replaced with a special mounting cable that will be supplied by the manufacturer or by the after-sales service. This replacement must be carried out only by a qualified technical service.
- The machine should be positioned so that there is a minimum of space between the back and the wall to allow easy and safe access to the cord plug.
- It is advisable to install a remote switch to completely disconnect the machine.
- Protect the outlet. Install appropriate switches, fuses and differential protector.

**ATENCIÓN:** El aparato requiere una fuente de alimentación independiente de capacidad adecuada. Consulte las especificaciones eléctricas en la placa de características. Si no se utiliza una fuente de alimentación independiente de la capacidad adecuada puede haber daños en los componentes internos o en el cableado. Esto podría provocar la generación de calor o un incendio.

The voltage is indicated on the nameplate and in the technical specifications section of this manual. A voltage variation greater than 10% indicated on the nameplate may cause damage or prevent the machine from starting.

### 3. PRIOR CONTROL AND START-UP

#### 3.1. PRIOR CHECK

- a) Is the machine leveled?
- b) Do the voltage and frequency match those on the nameplate?
- c) Are the drains connected and working?
- d) Are the ambient temperature and water temperature maintained in the following range?

	ATMOSPHERE	WATER
<i>MAXIMUM</i>	43°C/109.4°F	35°C/95°F
<i>MINIMUM</i>	10°C/50.0°F	5°C/41°F

- e) Is the water pressure adequate?

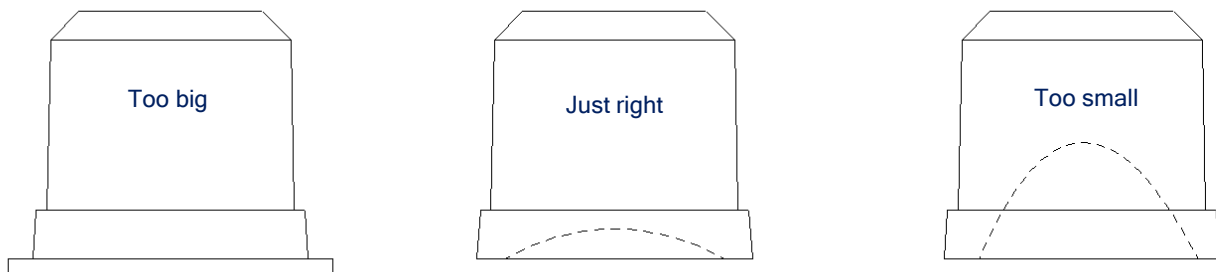
<i>MINIMUM</i>	0.1MPa (1 bar)
<i>MAXIMUM</i>	0.6 MPa (6 bar)

**NOTE:** In case the inlet water pressure is greater than 6 bar, install a pressure reducer.

### 3.2. START UP

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

1. Open the water inlet. Verify the no existence of leakages.
2. Open the door and remove the protection elements on the shield.
3. Verify that the curtain moves freely.
4. Connect the machine to the power supply.
5. Push the switch on the machine front side.
6. Verify that there are no vibrations or frictions on the elements.
7. The machine has a timer governing startup, allowing for water to be recharged for the production cycle.
8. Check that the water tank is filled with water and that the paddles send the water to the evaporator.
9. Check the cubes after two cycles; they should be uniform in shape. If they do not come out correctly, or the unit does not make ice, contact an authorized service technician.

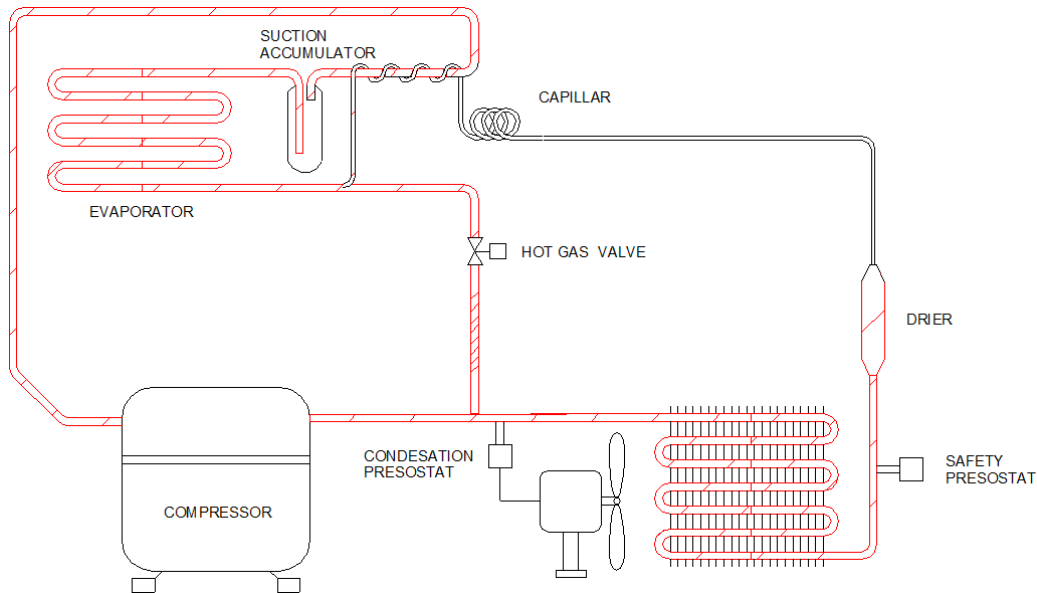


10. The unit produces ice until the bin is full, using a stop sensor. When the ice is removed from the bin, the unit will once again produce ice.

**WARNING:** this switch does not disconnect all the voltage inside the machine. Disconnect from the mains before handling.

## 4. COMPONENTS DESCRIPTION

### 4.1 REFRIGERATION DIAGRAM



*Refrigeration diagram by air condenser*

It consists of the following components:

1. **Compressor:** It sucks in gases at low pressure from the cold source and supplies them with pressure and temperature to be discharged to the hot source.
2. **Condenser:** receives the gases from the compressor where they give up heat to the mean (air or water).
3. **Evaporator:** An evaporator that receives the refrigerant still with liquefied particles where they evaporate by absorbing heat from the mean. It is an isobaric and isothermal process.
4. **Capillar** in all the models.
5. **Hot gas valve:** is a valve that is installed between the compressor discharge line (high pressure hot gas) and the low pressure line.
6. **Drier:** filters and dehydrates the coolant.
7. **Safety pressure switch** (high pressure): Stops the machine, in case a pressure higher than this value is reached:

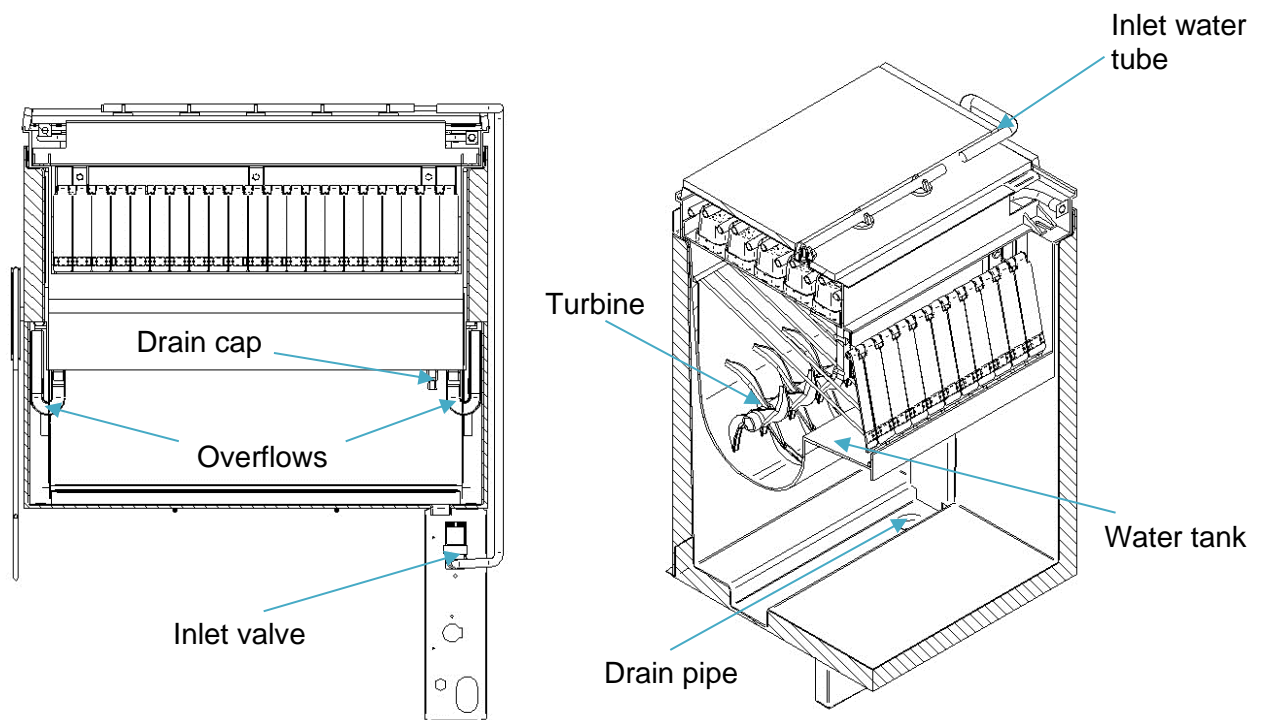
R290 → OFF 25 bar (362 psi)

8. **Condensing pressure switch:** Controls the fan (air condensation) or valve (water condensation) to keep the high pressure at the stipulated level:

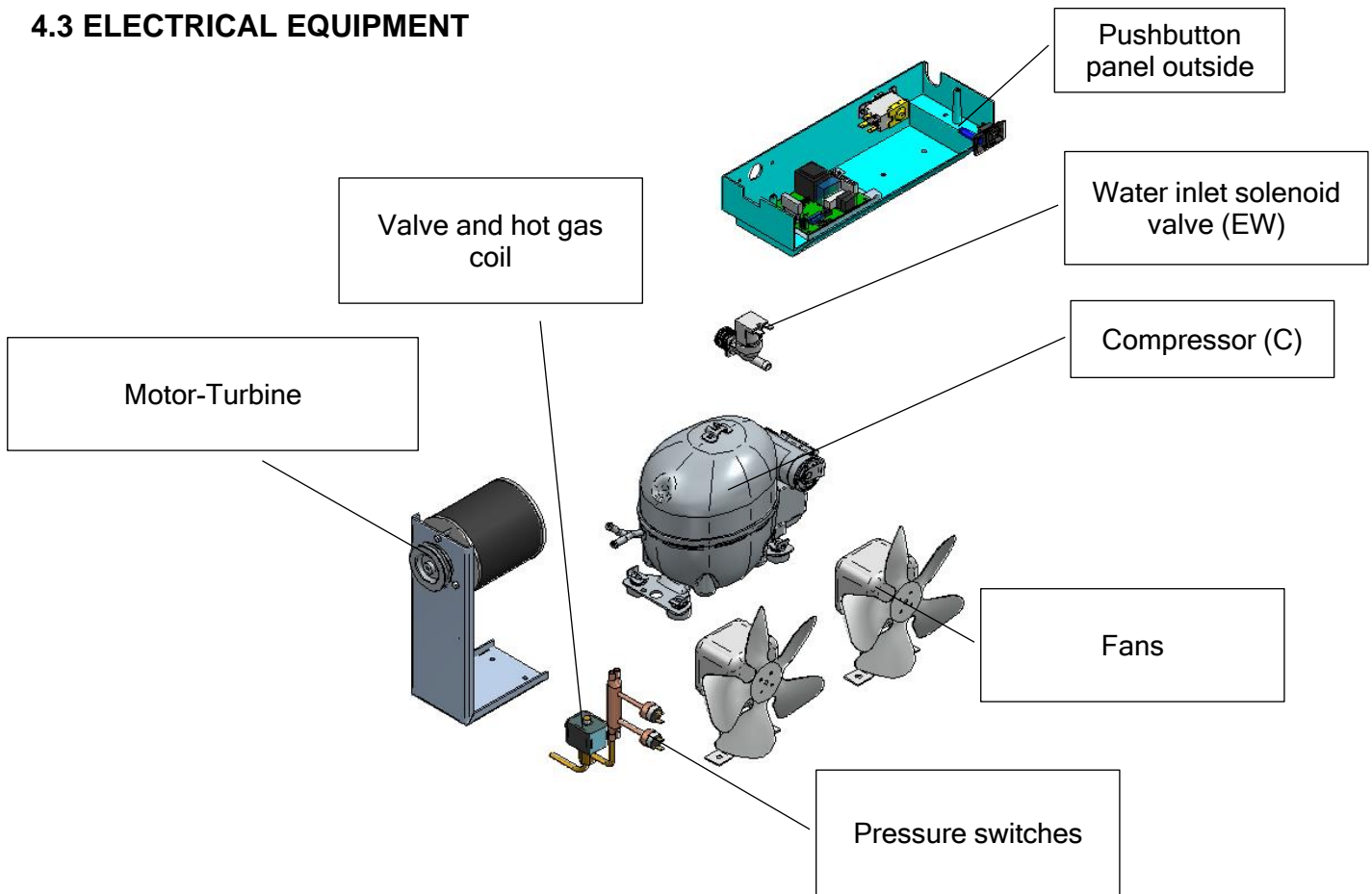
R290 → OFF11.5 - ON13.5 bar (167- 196 psi).

## 4.2 HYDRAULIC EQUIPMENT

- **Water inlet valve:** Controlled by the control board; supplies water from to the tank.
- **Water tank:** Maintains the water level by means of a level tube.
- An **overflow** allows the water level in the tank to be maintained at the start of a new cycle. A drain plug is also provided to facilitate the draining of the tank and its cleaning.
- **Turbine:** A set of blades/vanes arranged on a shaft that projects the water into the moulds of the horizontal evaporators. It is partially submerged in water and is driven by an electric motor.



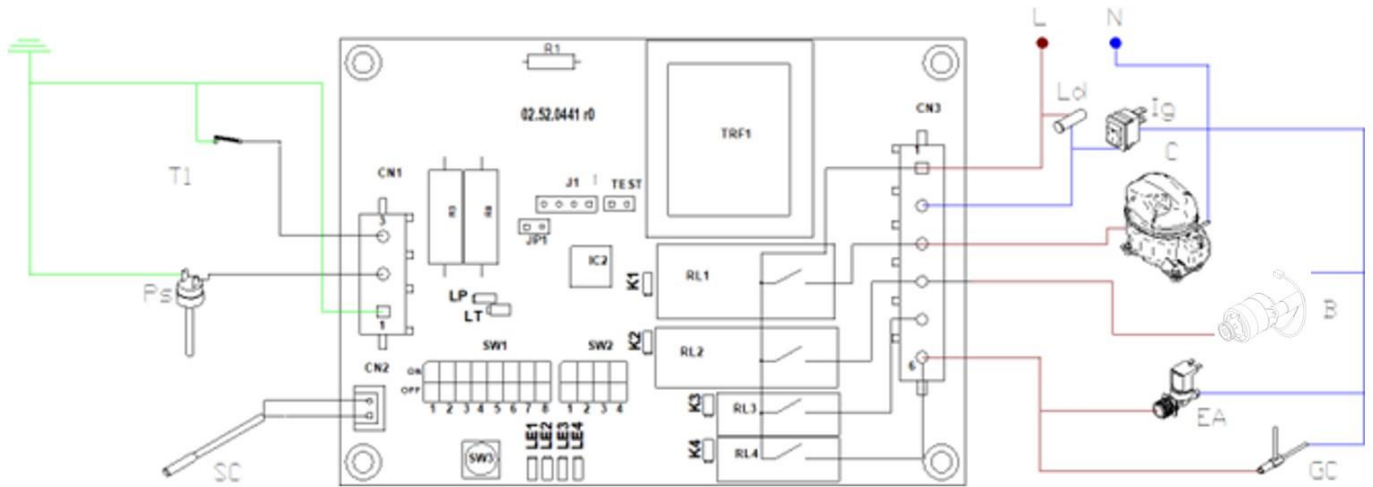
### 4.3 ELECTRICAL EQUIPMENT



- **Switch exterior** → Can disconnect the power supply to the equipment or a point in the control system that guarantees the disconnection of the electrical elements.
- **Electronic board (PCB control)** → Control board that receives input signals, manages them and returns outputs, normally by activating relays.
- **Water inlet solenoid valve (EW)** → Input fresh water for the new cycle.
- **Safety pressure switch (Pt)** → In the event of reaching the set pressure (25 bar), it stops the machine completely and sets it in alarm.
- **Condensing pressure switch (Pc)** → Starts or stops the fan or water inlet to maintain the set high pressure.
- **Stock thermostat** → Bulb located inside the bin that allows the ice making cycle to stop when the temperature reaches an adjustable range of 1-4 degrees.
- **Motor-turbine** → Motor that drives the turbine through a pulley and a belt.
- **Compressor** → It sucks in gases at low pressure from the cold source and supplies them with pressure and temperature to be discharged to the hot source.



## 4.4. CONTROL BOARD



### 4.4.1 INPUTS

Symbol	Description
SC	Evaporator temperature NTC probe
P	Safety pressure switch
N	PCB push button
T	Stock thermostat

### 4.4.2 OUTPUTS

Symbol	Description
C	Compressor
B	Motor-turbine
EA	Water inlet valve
GC	Hot gas valve.

### 4.4.3 SIGNALLING LEDs

The following tables describe the signals provided by the different LEDs on the control board.

#### 4.4.3.1 Input LEDs

The input LEDs are positioned next to each of their corresponding inputs. Orange LED color with active signal.

#### 4.4.3.2 Output LEDs

The output LEDs are positioned next to their corresponding relays. Orange LED color with active signal.

#### 4.4.3.3 Status LEDs. Normal work (fixed LEDs)

There are four additional red leds that signals machine status (continuous):

Continuous red LED	LE1	LE2	LE3	LE4
Start up delay	X			
Ice cycle $T > T_c$	X	X		
Ice cycle $T < T_c$		X		
Harvest $t < t_g$	X		X	
Harvest $> t_g$			X	
Full bin				X

#### 4.4.3.4 Status LEDs. Alarm (Flashing LEDs)

The following table defines the alarm states of the machine, which can be differentiated with the following flashing of the status LEDs:

Flashing red LED	DL1	DL2	DL3	DL4
Safety pressure switch	X			
Ice cycle timeout		X		
Harvest cycle timeout			X	
Faulty temperatura probe				X

#### 4.4.4 DIP SWITCHES SETTING

The following table describes the functionality of the micro-switches that the table has, that is, the work options that the combinations of these can provide:

DIP Switches	DescriptiON
1-4 (sw1-1/4)	tf - ice production timer. See table
5-7 (sw1-5/7)	tw – harvest timer. See table.
8 (sw1-8)	Tc (Evaporator temperatura for timer start) ON=-12°C / OFF=-8°C
9 (sw2-1)	Tg (Hot valve temperature). ON=+4°C / OFF=+0°C
10 (sw2-2)	Safety high pressure switch trip function.  ON= automatic reset (minimum stop 30 min.) OFF=manual reset (power OFF-ON)
11 (sw2-3)	ON. Timeout alarms operation activated.
12 (sw2-4)	Always ON for these models.

The following table shows the default intensity configuration in each of the possible combinations allowed by the switches on the control board:

SWITCH 1 (SW1)				TF (MIN)	SWITCH 1 (SW1)			TW (SEG)
1	2	3	4		5	6	7	
OFF	OFF	OFF	OFF	6	OFF	OFF	OFF	40
ON	OFF	OFF	OFF	8	ON	OFF	OFF	60
OFF	ON	OFF	OFF	10	OFF	ON	OFF	80
ON	ON	OFF	OFF	12	ON	ON	OFF	100
OFF	OFF	ON	OFF	14	OFF	OFF	ON	120
ON	OFF	ON	OFF	16	ON	OFF	ON	140
OFF	ON	ON	OFF	18	OFF	ON	ON	160
ON	ON	ON	OFF	20	ON	ON	ON	180
OFF	OFF	OFF	ON	22				
ON	OFF	OFF	ON	24				
OFF	ON	OFF	ON	26				
ON	ON	OFF	ON	28				
OFF	OFF	ON	ON	30				
ON	OFF	ON	ON	32				
OFF	ON	ON	ON	34				
ON	ON	ON	ON	36				

The factory default will be indicated on the machine's wiring diagram, located on the cover of the electrical panel.

#### 4.4.5 FUNCTIONS OF THE INTERNAL BUTTON ON THE PCB

Function depends on the unit status:

- Start up timer: Finish initial delay y passes to ice production stage
- Ice production. Switches to harvest
- Harvest. Switches to Ice production

##### ***Wash cycle activation***

Keep pressed the button while switching on main front switch. Wash cycle is activated and only the water recirculation pump is running. There is a maximum time for this cycle of 30 min. After this time, pump stops.

Wash cycle is finished by switching off main power.

Read cleaning and sanitizing instructions for proper usage of this function.

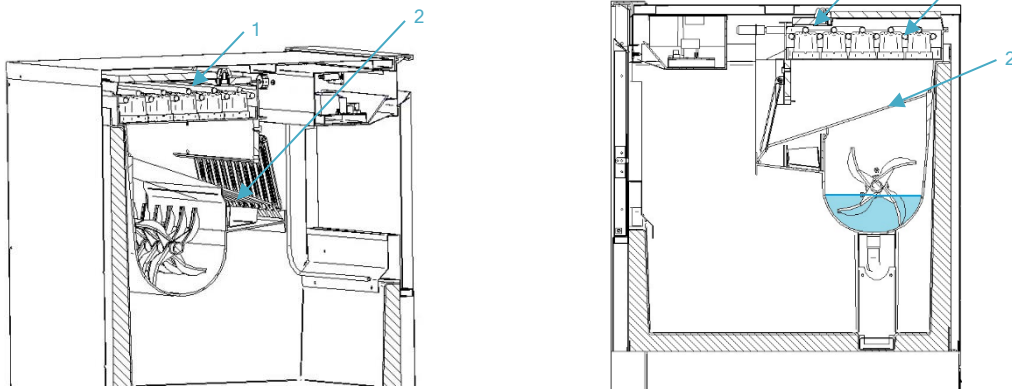
## 5. SEQUENCE OF OPERATION

Once you connect the machine there is a time delay of 140" during which the water valve is activated to ensure the water tray is filled. Compressor, pump will be off.

Once the time is up, it continues with a harvest cycle and the compressor starts.

During take-off, the water tank where the turbines are located is filled and the water above the set level goes out through an overflow.

After take-off, ice production starts, so the turbine starts running, the hot gas valve closes and the freezing cycle begins. The blades push the water into the rows of ice cubes in the evaporator, where the water starts to freeze and make ice.



When the temperature probe (#3) at the end of the evaporator reaches an adjusted value  $T_c$  ( $-12/-8^{\circ}\text{C}$ ), the fabrication continues the fixed time with the combination of dip-switches 1-4 (see table). This way we can ensure the filling of the ICE CUBE is correct in different working conditions.

Once the production time is over the harvest phase starts. The pump stops, the hot gas and the water inlet valves open. When the evaporator temperature probe (#3) reaches an adjusted value  $T_g$  ( $4/0^{\circ}\text{C}$ ) the harvest continues the fixed time with the combination of dip-switches 5-7 (see table). Water is poured over the evaporator helping unstick the ice cubes from the plastic frame.

After the harvest cycle, the machine comes back to the production cycle.

At the beginning of each Harvest cycle, the PCB checks if the Thermostat is open or close. Once the ice bin is full and the ice cubes cover the thermostat tube, the contact open, so when the harvest begins, the machine will stop until the contact of the thermostat close again. When it close, it starts with a harvest cycle and then it will continue with the production cycle again.

## 6- ALARMS

They detect operational malfunctions. They are indicated with the flashing status Leds LE1-4.

In case that a machine stop has been caused by alarm, the reset is done by switching OFF and ON the main switch. If the dip-switch 11 OFF, time alarms are not to be followed.

### 6.1 SAFETY HIGH PRESSURE SWITCH

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

When it is closed again, there are two possibilities:

- Dip-switch 10 OFF. Manual reset. The machine remains stopped until reset to Initial start-up.
- Dip-switch 10 ON. Automatic reset. The machine check pressure switch status every 30 min. When closed, the machine will continue at the position where it was.

*Signalling:* Flashing LE1.

### 6.2 LONG HARVEST

If the harvest time is longer than 5 min., the harvest is interrupted, switching over to the production cycle.

If the same happens again at the next harvest, the machine will stop.

*Signalling:* Flashing LE3.

### 6.3 ICE PRODUCTION CYCLE TIMEOUT

If during the production cycle, evaporator temperature probe has not reached the set temperature Tc in more than 60 min, the machine will stop until reset.

*Signalling:* Flashing LE2.

### 6.4. FAULTY TEMPERATURE PROBE

If PCB detects that evaporator temperature probe is broken or unconnected, the machine will stop

*Signalling:* Flashing LE4.

Probe type is NTC and resistance value must be 10kΩ at 25°C.

## **7. 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.

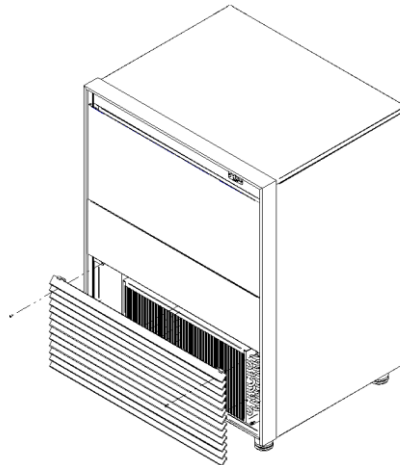
**WARNING:** Wear rubber gloves and safety goggles when handling Ice Machine Cleaner or Sanitizer.

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

**RUBBER GLOVES AND SAFETY GOGGLES SHOULD BE WORN WHEN HANDLING ICE MACHINE CLEANER OR SANITIZER.**

## 7.1 CLEANING THE AIR CONDENSER

1. Disconnect the machine.
2. Disconnect machine and close water faucet.
3. Remove the front grid by removing the two screws placed at front side (see figure).



4. 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 fins of the condenser.
5. Open the water inlet valve or tap.
6. Switch on the power supply to the machine.

## 7.2 CLEANING THE WATER CONDENSER

1. Disconnect the machine.
2. Disconnect the water inlet or close the faucet.
3. Disconnect the water inlet and outlet from the condenser.
4. Prepare a solution at the 50% of phosphoric acid and distilled or demineralized water.
5. Make the solution circulate through the condenser. (The solution is more effective if hot – between 35°C [95°F] and 40°C [104°F]).

## 7.3 CLEANING THE ICE BIN AND EXTERIOR

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.



## 7.4 WATER LEAKAGE CHECKING

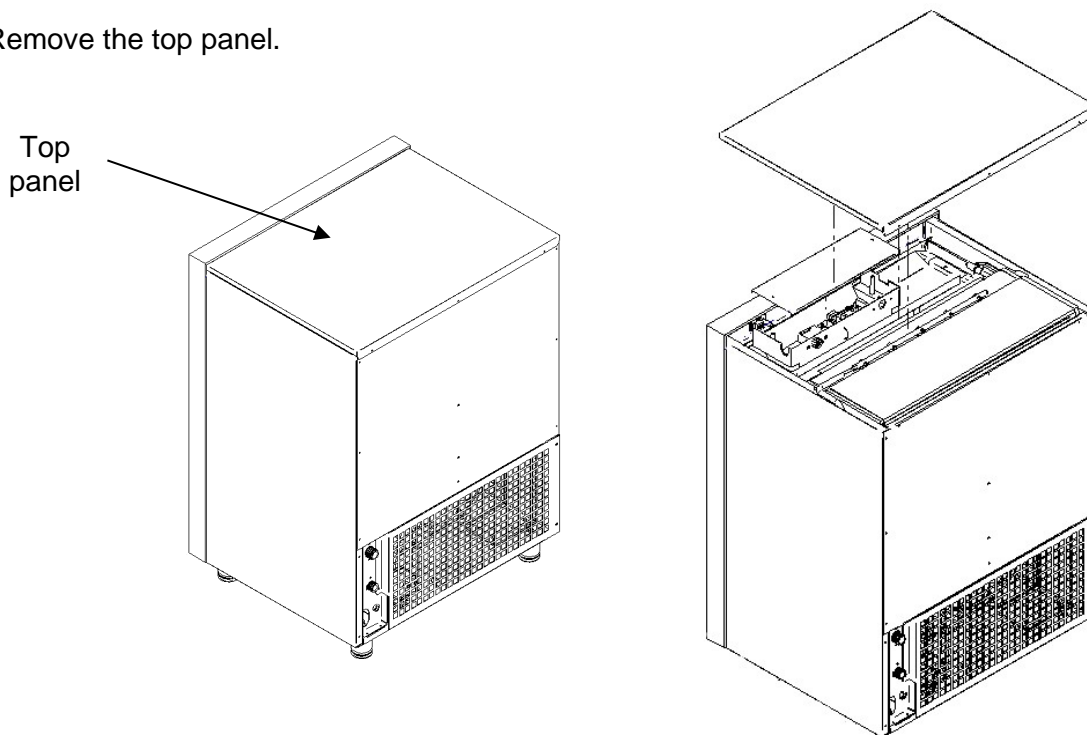
This must be done whenever maintenance is carried out on the machine: check all water connections, braces, tubes and hoses in order to eliminate leaks and prevent breakages and flooding.

## 7.5 CLEANING THE HYDRAULIC SYSTEM

1. 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.

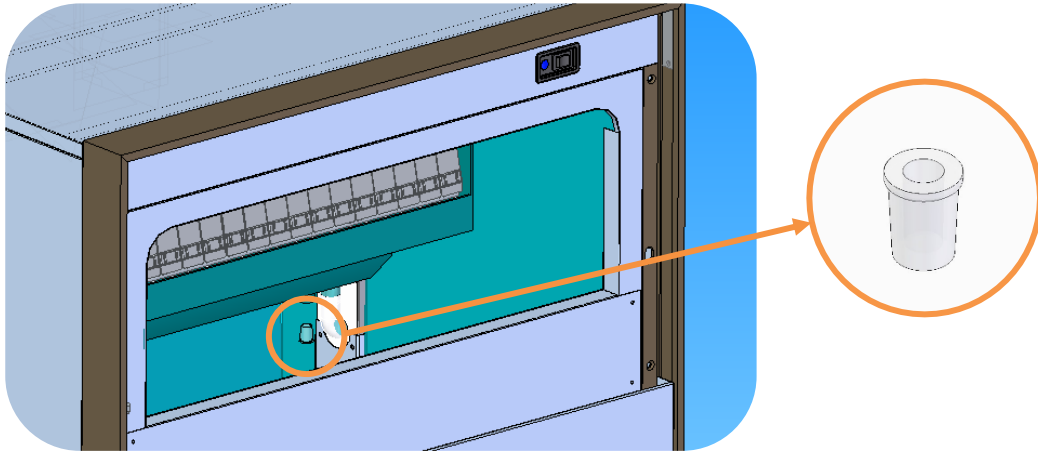
**CAUTION:** Never use anything to force ice from the evaporator.

2. Remove all ice from the bin.
3. Remove the top panel.

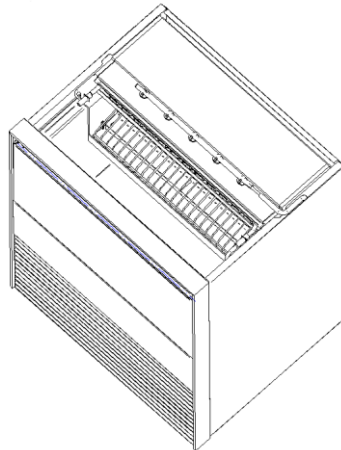


1. Remove the universal Pulsar cap for drain operations near the pump and empty the water tray.

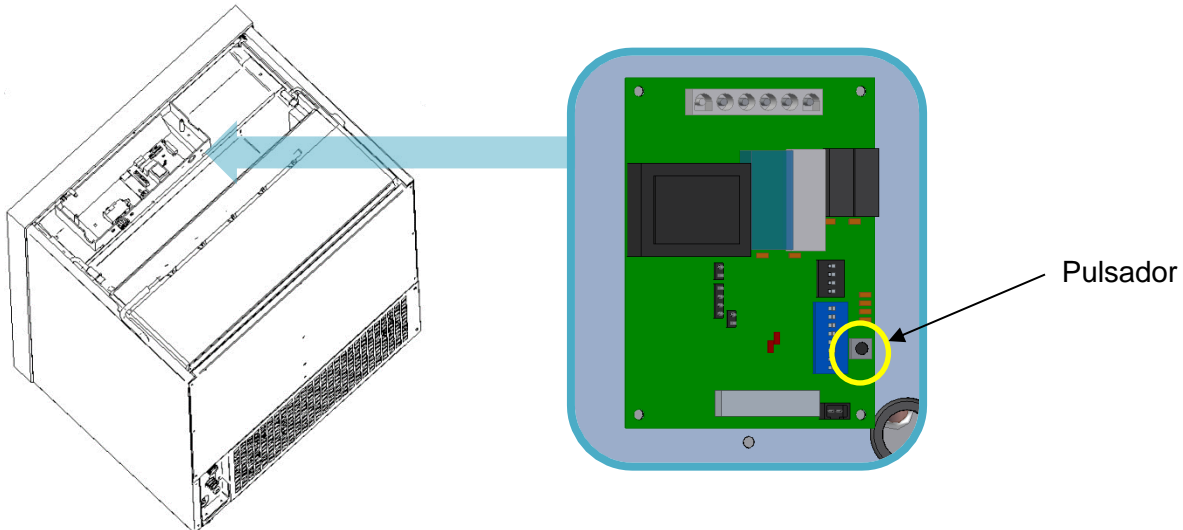
Return it to their original position to avoid water spill.



2. 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 approved scale removal product prepared according to the manufacturer's instructions as for example CalKlin.
3. Fill water tray with the solution



4. Disconnect power. Turn on the machine pushing SW3 (see picture). Let solution stand for 30-40 minutes and then switch off the machine. Disconnect power



4. Remove the universal Pulsar cap to drain and purge out the ice machine scale remover and residue. Replace it.
5. Mix enough cleaning solution (as in point e) to clean parts and interior food zone surfaces.
6. Clean all surfaces of the shield (#3) with the cleaner solution using a brush (not a wire brush) or cloth. Rinse all areas with water.
7. 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.
8. Mix a disinfectant solution using a sanitizer approved for food equipment (following the manufacturer's instructions for use).
9. Sanitize all the interior surfaces of the freezing compartment (including the storage bin) applying liberally sanitizer solution, using a cloth or sponge.
10. Connect power and water supplies.
11. Fill water reservoir with the sanitizer solution.
12. Switch on machine in order to run water pump. Let solution stand for 20 minutes and switch off.
13. Remove the auxiliary cap to drain and purge out the sanitizer solution and residue. Replace it.
14. 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 (by removing the cap to drain the water and replacing it for each cleaning cycle).
15. Return the back metal lid and the top panel to their position.
16. Switch on machine and discard the first two harvests.

## 7.7 MAINTENANCE TABLE

ACTION	MONTHLY	QUARTERLY	SEMESTERLY	ANNUAL	BIENNIAL	T UNIT
Cleaning air condenser						30 minutes
Cleaning water condenser						90 minutes
Exterior and stock bin cleaning						30 minutes
Cleaning hydraulic system						30 minutes
General cleaning						--

	Depending on the characteristics of the environment
	Indispensable/Essential
	Depending on water quality
	Performed by owner

Maintenance and cleaning procedures, as well as problems resulting from their non-performance, **ARE NOT COVERED BY THE GUARANTEE.** Service personnel will bill you for travel expenses, time spent and materials required for maintenance and cleaning of the unit.

# 1. TROUBLESHOOTING GUIDE

## 8.1 GENERAL QUESTIONS

PROBLEMS	POSSIBLE CAUSES	SOLUTION
None of the electrical systems work.	No power	Check power supply and connection
	Switch Interruptor OFF	Power on
None of the electrical systems work. Front pilot is ON	Full bin status (LE4 on) with no ice. Thermostat defective or incorrectly set	Check. Replace
	PCB alarm.	Check the LED code
<b>PCB ALARMS</b> See section 6		
Safety pressure switch	Dirty condenser	Clean condenser
	Machine wrong located	Change machine location
	Defective fan	Check. Replace
	Water machine: Faulty water valve	Check. Replace
NTC probe error	Defective safety / cooling switch	Check. Replace
	Defective probe	Check. Replace
Ice cycle timeout	Defective probe plug connection	Check.
	No frozen evaporator	Check refrigeration system
Harvest cycle timeout	NTC probe faulty contact	Check probe fitting
	Faulty hot gas valve/coil	Check. Replace
Wrong cycle sequence	Harvest do not happen	Check water inlet strainer
	Faulty hot gas valve/coil	Check. Replace
	DIP-Switch 2-4 OFF	Set ON
<b>OTHER PROBLEMS</b>		
Compressor does not run, but voltage is supplied	Compressor/electrical equipment defective	Check/replace
Compressor runs, but does not cool	Refrigeration system not working properly	Check load and components
Plate is energized, but does not turn on	Internal board fuse open	Replace
Shutdown due to full store, but no ice	Failure of the stock thermostat	Replace
	Thermostat NOK placement	Correct positioning
Abnormal noise in the machine	Fan or fan blades in bad condition or loose	Fix or substitute
	Deteriorated turbine bearings	Replace complete bin
	Vibrating pipes or components	Reposition and/or fix
White and partially formed cubes.	Noise in compressor	Substitute
	Dirty nozzles	Clean/Replace
	Dirty suction filter	Clean/Replace
Too large cubes	Lack of water at cycle's end	Check water leaks
	Freezing time too large	Adjust by dip-switches 1-4
Too small cubes	Probe makes bad contact	Adjust by means of dip switches
	Freezing time too short	Adjust by dip-switches 1-4
	Dirty condenser	Clean
	Faulty probe	Replace

PROBLEMAS	POSIBLES CAUSAS	SOLUCIÓN
<b>Not all cubes are released</b>	Harvest time too short	Adjust by dip-switches
	Freezing time too large (Ice slab)	Adjust by dip-switches
	Faulty hot gas valve	Check / replace
	Lack of water input	Check net pressure and input filters
<b>Low ice production</b>	Blocked condenser or air access to condenser	Clean condenser; improve air circulation
	Faulty hot gas valve, doesn't close totally.	Replace
	Low performance refrigeration system	Check
<b>No ice production</b>	The belt is broken	Replace
	Tank water cap out of position	Check and place correctly

## 9. TECHNICAL DATA

### WIRING DIAGRAM

To see the wiring diagram, please the following QR code or click the link:



<https://acortar.link/DHhIhM>

### OTHER TECHNICAL INFORMATION

For more technical information scan the following QR code or click the link:



- Specification sheets
- User manual
- Exploded views
- CAD / REVIT drawings
- Technical videos

<https://acortar.link/O8zoKO>