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ICE SYSTEMS

Flake ice machine
user's manual

SHENZHEN BROTHER ICE SYSTEMS CO., LTD

The innovative solution in flake ice technology

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IMPORTANT NOTE:

Directive of Flake Ice Machine Inspection
(After get the brand-new machine)

Dear Customers

ICESTA is much appreciated with your choice of our Ice Machines. ICESTA is setting out the standards for equipment inspection hereafter for your evaluation:

I. Inspection of Equipment Appearance

1. Speed Reducer: Check and make sure there is no oil leakage, abnormal vibration or noise; check and make sure there are no screws and bolts coming loose; check and make sure there are no scratched & loose power wires.
2. Compressor: Check and make sure there are no abnormal vibration & noise; check and make sure there are no loose screws & bolts; check and make sure there are no scratched & loose power wires.
3. Motor for the Fans: Check and make sure there are no abnormal vibration & noise; check and make sure there are no loose screws & bolts; check and make sure there are no scratched & loose power wires.
4. Copper Pipes: Check and make sure there are no distortions or vibrations;
5. Condenser: No abrasions or crushed fins on the Condenser
6. Recycling Pump: Check and make sure there is no water leakage, vibration or noise; check and make sure there are no loose bolts or screws; check and make sure there are no scratched & loose power wires.
7. Brine Pump: Check and Make sure the Brine Pump work properly
8. Controls: Check and make sure the buttons and controls on the electrical control box are agile; Check and make sure the Distance Swtich is not loose and well connected.

Much emphasis is put on the checking of power wires in the above checking process as it is of much priority to the safe operation of the ice machine.

II. Inspection of Equipment Operation

1. Full Ice Bin Checking: Block out the infrared sensor. The Indicator for Full Ice Bin will be lit up red in 3 minutes. Ice machine will stop working. Unblock the infrared sensor, the Indicator will be off and ice machine will start working in 3-5 minutes.
2. Insufficient Water Supply Checking: Turn off the external water supply. The Indicator for Water Lack will be lit up in 5-10 minutes. Ice machine will stop working. Turn on the external water supply and turn off the air switch. Switch on the air switch 2 minutes later. The Indicator for water lack will be off and the machine resumes working.
3. Current Overload checking: Open the electrical control box and adjust the current value to make it lower than the rated operation current. Start the ice machine. The Indicator for Current Overload will be lit on. Open the electrical control box and switch off of the air switch. Adjust the current to the rated value. Switch on the current and restart the ice machine.
4. System Failure Checking. The following can be done for system failure checking purpose: 1. Switch off the Air Switch, swap the positions of any two live wires of the three, and switch on the air switch. The system failure indicator will be lit on red. 2. Turn off some of the water valves that feed water to water distribution pan of the evaporator. The system failure indicator will be lit on 3-5 minuites later after the machine starts. Then open the electrical control box and switch off the air switch. Switch on the air switch one or two minutes later, turn on all the valves and start the machine.

The inspection & checking job in Item 3 and Item 4 shall be done by professionals.

2. Inspection of ice production capacity

The daily production capacity is normally indicated on the machine's brand plate, while is reached only when the ice machine is working under the standard circumstances. That is: the ambient temperature shall be 25 degrees Celsius, and the water temperature shall be 16 degrees Celsius. The capacity shall be a variant depending on the changes of temperature in ambient temp and water. Please refer to the the fifth page of Instruction Manual for the variation chart.

Shenzhen Brother Ice Systems Co., Ltd

Brief Introduction

In order to operate the Flake Ice Machine correctly, you are advised to read this manual carefully before installation and commissioning work is attempted.
An ICESTA flake ice machine is presented herein. We will be more detailed in the description of its water cooling capacity, Refrigerant, working conditions, performance technical data, installation and proper operation.

Flake ice is scraped internally by stainless ice blade and all operations are done through the manipulation of PLC system which makes the whole process totally automatic with least attention to the machines. The process include the below items;

1. **Power supply system**
2. **Running current**
3. **System protection**
4. **Protection in case water lack & full ice bin**

The control system will protect the machine in case any abnormity, and meanwhile warning indicator lamp is on with indicating the failure, which makes the failure examination and maintaining very easy.

I. SAFETY RULES

1. GENERAL SAFETY RULES

⚠**WARNING** Do not attempt to operate until you have read thoroughly and understand fully all instructions, rules, etc contained in this manual. Keep your owner manual for further reference.

1) KNOW YOUR MACHINE.

For your own safety, read the owner's manual carefully. Learn its application and limitations as well as specific potential hazards pertinent to this machine.

2) DO NOT USE IN DANGEROUS ENVIRONMENTS.

Do not use power tools in damp or wet locations, or expose them to rain. Keep work area well illuminated.

3) KEEP NON-PROFESSIONAL PEOPLE AWAY.

All visitors should be kept at a safe distance from working area.

4) DO NOT FORCE THE MACHINE.

Do not force the machine or attachments to do a job for which they were not designed.

5) USE THE RIGHT TOOLS.

It will do the job better and be safer at the rate for which it was designed.

6) WEAR PROPER APPAREL.

Avoid loose clothing, gloves, neckties, rings, bracelets, or jewelry, which could be caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.

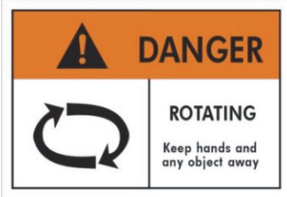
7) DON'T MAINTENANCE THE MACHINE IN RUNNING STATES

The machine should be maintained such as lubrication, proper adjustment.

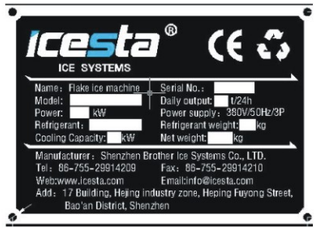
2. Warning Plate

This machine has warning symbols attached on it as shown below to ensure proper and safe operation.

These symbols are used on the machine to indicate points or instances of specific danger to operating personnel.
Make sure to memorize these symbols and bring them to the attention of others as and when necessary.
Do not remove safety symbols from the machine.



3. Name plate:

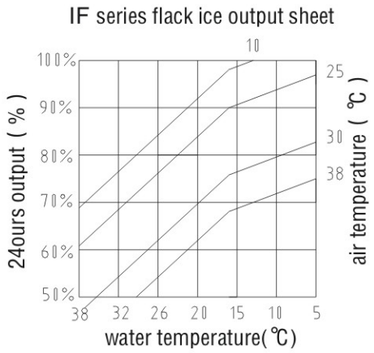


II. Working condition and performance parameter

1. Working condition

	Minimum	Maximum
Ambient temp.	5℃	40℃
Water temp.	5℃	40℃
Hydraulic pressure	0.15MPa	0.5MPa
Rated voltage variation	-10%	+6%

2. Ice output diagram



Please be noted that ICESTA will make no further notice of any change to the parameters in the manual

Remarks:

Daily output: The daily output of ice is subject to the air temp of the condenser inlet, water temp, and time span of use. In order for the ice machine to give best performance, please provide regular maintenance to the machine.

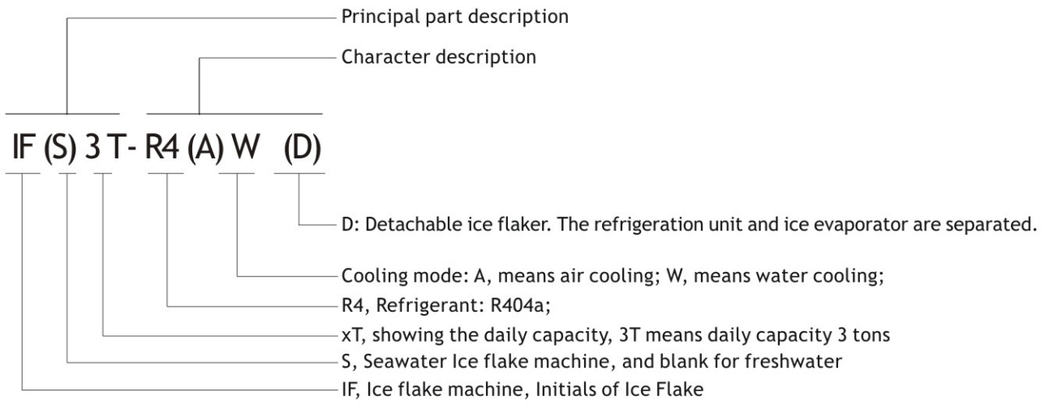
3. Working voltage

Discharge pressure	1.5MPa	Remark
Suction pressure	1.5MPa	Air cooling system,R404a refrigerant

Discharge pressure	1.3MPa	Remarks
Suction pressure	0.15MPa	Water cooling system, R404a refrigerant

3. Specification

1) Explanation of the models



2) Performance parameter

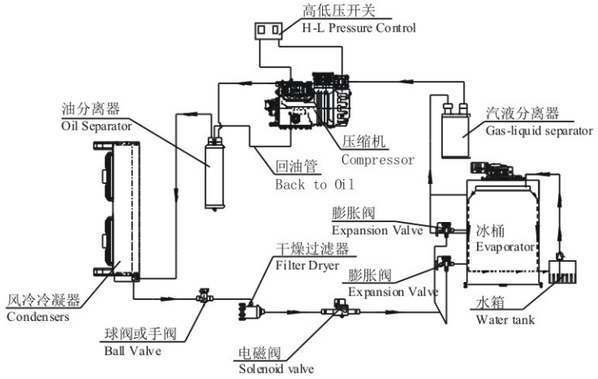
Model	Dimension(mm)	Power Supply V/Hz	Cable Diameter (mm^2)	Rate Current of Air Switch	Diameter of Water in/out Pipe	Weight (kg)
IF05T-R4A	1320*900*800	3P/380V/50Hz	3×2.5 + 2×1.5	16A	1/2"	300
IF1T-R4A	1320*900*900	3P/380V/50Hz	3×2.5 + 2×1.5	16A	1/2"	350
IF1.2T-R4A	1320*900*900	3P/380V/50Hz	3×4 + 2×1.5	16A	1/2"	400
IF1.5T-R4A	1700*1320*1200	3P/380V/50Hz	3×4 + 2×1.5	32A	1/2"	450
IF1.5T-R4W	1500*1250*1200					450
IF2T-R4A	1700*1320*1200	3P/380V/50Hz	3×6 + 2×1.5	32A	1/2"	500
IF2T-R4W	1500*1250*1200					500
IF2.5T-R4A	1700*1320*1200	3P/380V/50Hz	3×6 + 2×1.5	32A	1/2"	550
IF2.5T-R4W	1500*1250*1200					550
IF3T-R4A	1750*1700*1350	3P/380V/50Hz	3×6 + 2×1.5	32A	1/2"	600
IF3T-R4W	1500*1250*1350					600
IF4T-R4A	2400*1800*1410	3P/380V/50Hz	3×10 + 2×1.5	63A	1/2"	800
IF4T-R4W	1800*1500*1410					800
IF5T-R4A	2400*1800*1450	3P/380V/50Hz	3×10 + 2×1.5	100A	1/2"	950
IF5T-R4W	1800*1500*1450					950
IF8T-R4A	2800*2100*1450	3P/380V/50Hz	3×16 + 2×4	100A	3/4"	1900
IF8T-R4W	2300*2000*1450					1900
IF10T-R2A	3100*2100*1750	3P/380V/50Hz	3×25 + 2×4	100A	3/4"	2200
IF10T-R2W	2500*2000*1750					2200

Remarks: Any changes made to the parameters above will be done without further notice.

III. Working theory

1. Refrigeration system(as shown in the Figure below)

The hot refrigerant discharged from the compressor is cooled down to liquid by entering the condenser, and the liquid will go through Filter Drier to the pipes and then into the pipe ways around the ice drum through expansionvalve. The liquid refrigerant will be evaporated, and heat exchange happens between the flowing water and refrigerant while the liquid refrigerant is going around the ice drum. In the meantime, refrigerant will change to gas and is sucked in to the compressor again for the second cycle. (Note: the figure below is for illustration purpose only, and does not indicate the real composition of ICESTA ice machine)



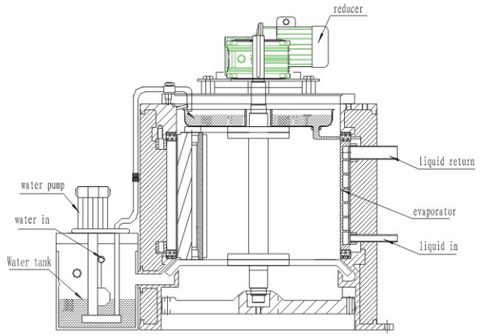
2. Water circulation system (as shown in the Figure below)

Water is led to the water tank through water pipe and float valve and then is pumped to water distribution pan by water pump. Water is distributed evenly onto the inner surface of the ice drum and part of it is frozen to ice after heat exchange with the refrigerant. The ice that is clotted on the inner surface of ice drum is scraped down by the ice blade to the ice storage. The water that is left unfrozen goes back to water tank for the next ice making cycle.

Note:

The water level of the water distribution pan is adjusted to its premium and it is advised not to readjust it. And the valve on the water tank can be adjusted for water to reach the desired level. The water is 26mm deep in the water distribution pan.

Salt water of the 0.1% density can be added to the water tank to get a perfect ice formation condition. Normally 0.5kg salt water is added for production of one-ton ice.



3. Full ice storage control system

The light-operated control in between the ice storage and ice machine will sense the ice storage situation automatically. When flake ice in a full ice storage stops the control from sensing the light, the P00 LED on PLC will be lit immediately. When this happens on several occasions, the ice machine will stop working with the Ice Bin Full Light on. When ice is harvested and the control starts working, the P00 LED will go off immediately. The ice machine resumes working in 15 seconds.

4. Reducer system

The reducer system consists of geared motor and gearing device. The geared motor rotates the reducer which rotates ice blade and water distribution pan. When the reducer is overloaded in the operation, the thermal relay will be cut off and the ice machine will stop working. The machine shall be serviced before it is restarted, and press Reset button on the Electrical Control Box or switch off and then on the Start/Stop Button to start the machine.

IV. Transportation and installation

During the transporting, carrying, beware of collision, shake, incline and inversion leading components flexible or damage.

1. Components examination:

A、Check according to the list if the components and machines completely arrived, if the model accord with the order.

B、Examine if the package damage, if any component flexible or damage.

C、Check if all the pipe (water system, refrigeration system.) and circuit connection correct and no damage.

2. Installing condition (figure 2)

A、Electrical outlet and connection must accord with the electricity criteria and the request of the machine nameplate.

B、Choose the suited power supply switch according to the different rating current of the different size. It's better to set the switch at the place the hands easy to reach.

C、Continual water should be supplied (Pressure 0.15~0.5MPa) , and the water switch installed no far away from the ice machine. Both the water inlet and drain pipe should be single and near the machine. And two single draining pipes should be respectively used for the ice machine and ice storage.

D、The flake ice machine shouldn't be installed in such environment as: 1) hermetical ; 2) Close to the hot source; 3) In the open air

E、Water filtering device may be needed in case of unclean water supply in order to ensure the ice quality.

⚠WARNING

Note: Flake ice machine must be grounded correctly.

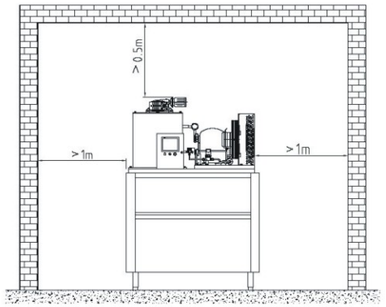
The mode of grounding: connect the yellow/green wire to the power supply, and before connecting the power cables to the power supply, confirm the grounding is properly done.

3. Installation steps:

Installation position:

Before installing the ice machine, make sure the distance to the walls and to the ceiling is not exceeding the data indicated in the figure 1.

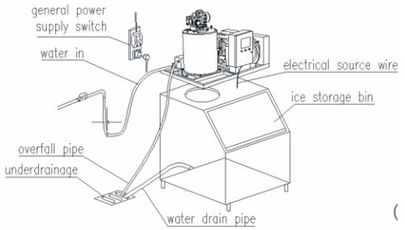
Install position drawing



(Figure 1)

1). Set the machine on the matched ice storage bin, and fix-up them with the bolts, and please note the location of ice dropping hole of the ice flaker should be the just at the mouth of the bin.

Installation drawing



(Figure 2)

2). Adjust the ice making system till it is level to the ground.

3).Connect the water supply with soft pipe, PVC, PPR pipe;

4). Connect the water drain outlet with above said pipe, the drainage pipe should be no less than 4cm above the bottom of the ice storage bin.

5). Open the water supply valve;

6). Insert the power supply pin, the connection including 3 live line, 1 null line, 1 ground line. Install the ground line in the electrical box or at the appointed position of the soleplate.
7). Follow strictly the professional advice from ICESTA in the installation and maintenance work to ensure safe operation of the ice machine.

IMPORTANT NOTE:

Installing Water Circulation System

Please see the three labels on the side of the water tank:

1) Water Inlet, 2) Water Overflow, 3) Water outlet (Drain)

1). Water Inlet, it is for water supplying for the ice machine. In order to assure normal operation of ice machine, the water of Inlet Water Pipe shall be pressured between the suggested water pressure range: 0.15MPa 0.5MPa. Too high a pressure will cause failure of floating valve in the water tank, while too low a pressure will cause insufficient water supply and the ice machine will run into failure. Please note the water pipe shall be properly warmed up in chilly weather.

2). Water Overflow, is for prevention of water reflux which causes high water level and obstruction of large volume of water which causes water overflow. Overflow Mouth is there to prevent spilled water from spoiling the quality of flake ice. The Overflow Mouth shall be piped properly to guide the surplus water to sewage system.

3). Water Outlet, is for the water tank to guide (drain) the surplus water to sewage system when the ice machine is not to be operating for a long time.

IV. Operation

A. The conventional control type (without touch-screen)

1. Start the machine

Warning: This User's Manual is for the 3PHASE - 5 WIRES. . (i.e. L1,L2,L3,N,E) L1,L2,L3 should connect with live wire, N with neutral wire, E with Ground wire.

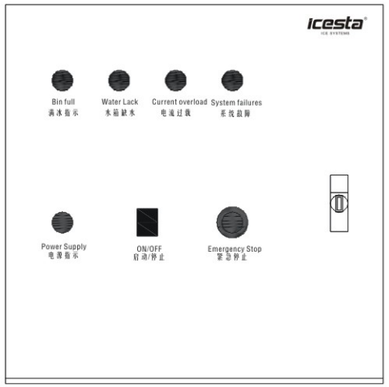
After correct installation, plug in the general power, the indicator lamp H1 (green light) is on, (If the control panel show “system failure” at the first time of power supply, which means error for the wire connection, please cut off the power, and adjust the phase of any two live wires which belong to the 380V power supply wire, then supply power again, the failure will be eliminated, then press the “ON/OFF” button.) and confirm the water tank supply water normally, and the reducer, condenser , solenoid valve and other parts start, the compressor starts after 30 seconds, the ice machine start. The ice will drop into the ice bin in about 3 minutes after compressor start, and 10 minutes later the ice drop in order.

Note :

When the machine start at first time or long time no operation, please firstly turn on the air switch of the main power supply, then turn on the “ON/OFF” switch after 2-3 hours waiting (for compressor with compressor oil heater), otherwise the compressor easily damaged.

2. Stop machine

Press the “ON/OFF” button., the compressor stop first, and other equipments stop working after 30 seconds.



2. Illustration of the control panel

1. **“Bin full”**: When the ice full in the ice bin, the infrared sensor at the bottom of the ice machine works which make the ice machine stop. In the electric panel the red indicator lamp is on. 3-5 minutes after removed the ice , the ice flaker will restart again without any manual operation.

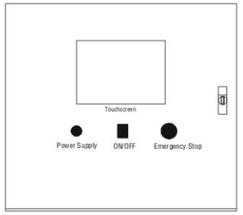
2. **“water lack”**: When the water level behind the ice drum is too low, the water level switch works, which makes the ice machine stop and the indicator lamp “water lack” is on. The user needs to check if the water supply pipe is in normal condition or not. After making sure the water supply is in normal order, cut off the power and re-supply, re-start the machine after the indicator lamp “water lack” is dark.

3. **“Current overload”**: When current in compressor, reducer, and condenser is overload, the thermal relay works which makes the ice machine stop. The user should check whether the circuit is fault or not, and push the reset button in thermal relay. Cut the power and re-supply, re-start the machine after the indicator lamp of “current overload” is dark.

4. **System Failures**: when the Phase Sequence is wrong and in case of deficient phase or when the Condensing Pressure is too high or the Evaporating Pressure is too low, the pressure switch will come disconnected and the machine will stop working. Users are advised to contact the qualified distributor or servicing personnel of ICESA for professional help instead of trying to fix the problems on their own.

B. The modern control type (with touch-screen).

I. The operation for Touch-screen control system



1.Knowing the control panel.

a.Display Screen: Interactive touch-screen helps user to manipulate the ice machine easily;
b.Power Supply Indicator: This indicator is to dignify the normal condition of power supply.
c.On/Off Switch: This switch is to control the touch screen system.
d.Emergency Stop Button: Cut off power in times of emergency.

2.Power Supply

After all the installation is done, connect the power supply.
Turn on the air switch of the main power in the electrical control box, and the air switches of control system & null line.
The Power Supply Indicator (green) is on. Then you need turn the on/off switch to “on” position. Check that the Emergency Stop Button is set to “on” Position, and check the power supply on the touch screen, now the touch-screen like as blow:

3.Entering the Menu

Press Enter button on the screen to enter the menu below.

4. Instruction of the starting menu:

A. Start — Start key

B. Stop — Stop key

C. Parameter setting — press this button to enter the menu of parameter setting. Please be noted that parameters has been reasonable set by technicians of ICESTA. And users can use this button to enter the parameter setting page when in need.

D. Runing state display — Press this button to enter the menu of flow chart of operations. The flow chart of operations will be automatically retrieved once the machine starts working

E. Current failure — Press this button to enter the menu of failure display.

F. Histor ical failure — Press this button to enter the menu of failure in history.

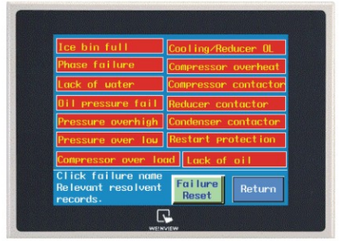
G. Return — Press this button to Return to the previous page.

H. Stop time set — Press this button to enter the page for machine stop time setting. Please refer to Page 18 of this manual for detailed description.

5. Pre-start failure checking

Press Current failure button to enter the menu below.

If any failure occurred, the relevant key turn red from green with the symptom shown in the meantime.



Press Failure Reset button to check that the failure corrects itself automatically. If it does, the relevant bar will turn back to green (for instance, the bar of “Lack of Water” will turn back to green when water is added and “Failure Reset” button is pressed.). If the failure insists, press the red button with relevant failure message and a solution message will be read.

6. Parameter setting:

The ice machine's parameters are optimized before leaving factory, while user can make adjustments to them by pressing Parameter setting button.

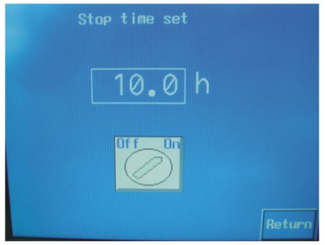
Now make changes to the figure as per specific needs. And be noted that they are all measured in second.

7. Operation Time Setting

Press Stop time set button to enter the operation time setting as below:

Press 0.0 h button

Let's take setting 10 hours as the operation time for example: choose 1 and 0 and press ENT button. The operation time is confirmed and the touch screen shows contents as below:

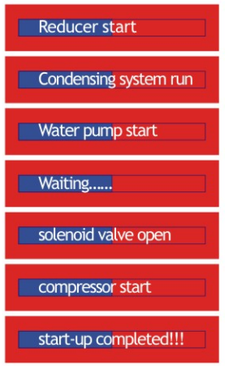


The ice machine will work in a continuous time span of 10 hours and stop automatically.

Note: Set on "Off" position when this function is not needed in case there shall be misunderstanding that the ice machine works only for a time span of 10 hours each time.

8. Start the machine

Press Start button to start machine.
Normally it starts as follows:



9. Checking after machine start:

A). the reducer shall be running in anti-clockwise direction;

B). the water level in the water distribution pan shall be 5-10mm higher than the water tubes, the water regulating valve shall be turned on, and the water pump phase shall be set correctly;

C). the condenser (Cooling fan) shall be running in a normal status, and the air shall be discharged outwards;

D). the compressor shall be operating with normal noise. The phase of compressor shall be checked before the start of machine.

10. The running state:

5 minutes after the start-up, system will automatically transfer to the dynamic flow-chart as below:

(Water-cooled type)

(Air-cooled type)

If any failure occurs, the relevant message will display in the red area on the screen. And it will flicker for attracting attention. Press on the information bar to retrieve solution description.

Message in red show the relevant failure in the above menu, click it to enter into the failure help- page, follow the direction to make elimination. Then machine could restart in 3 minutes Restart-delay protection. (It can also restart without waiting by cutting off and turn on the power supply of the PLC control system) .

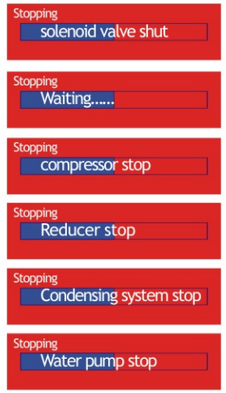
Note: When the machine is placed without working in an ambient temperature lower than 10 degrees Celsius, it is suggested to turn on the power supply switch and wait for a time span of 3-5 hours before the start of ice machine to secure the well-being of compressor. This step will help heat up the compressor refrigeration oil and help lubricating the compressor up in the process of ice machine start.

11. Stopping the machine

Press Return button as below.

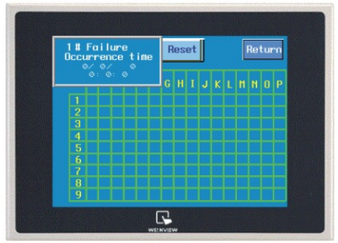
Press Stop button to stop the ice machine.

The touch screen shows the following:



12. Illustration for Searching historical failure records

The historical failure that occurred in the running process will be automatically recorded in the system. That will facilitate the search of failures after the event. Press Historical failure button to retrieve the records:



On the page, letters stand for failures explained below and numbers stand for times of happening.

A red dot automatically records when one failure occurs, and press the dot to show the occurring time. (Every one failure can be recorded for 20 times, when more than 20, the records cover the first one continually. All the records will be cleared when the All Reset button is pressed)

⚠ Remark :

(1) If the ice machine is left not working for more than 15 days, it is suggested to power the PLC and touch screen on for 1-2 hours on a periodical basis to ensure the reliability of the historical failure records.

(2)When the ice machine is left not working for a long time, it is prohibited that the electrical control box be place in surroundings of high humidity.

VI. Maintenance & Trouble Shooting

1.Maintenance

Regular Maintenance of ICESTA Flake Ice Machine

1 , Condenser is a key component in refrigration system, working as a heat radiator. And the clean status of condenser contributes directlly to the refrigeration effect of ice machine. Keeping the condenser clean is essential for the ice machine to work efficiently. Normally, an air cooled condenser is suggested to be cleaned once every three months, or every month under dirty working circumstances; a water cooled condenser is suggested to be cleaned once every six months, or every three months when the water for cooling is not so clean.

A. Cleaning the Air Cooled Condenser. Turn off the main power, wrap the the connecting boxes of power supply, motor of the speed reducer, motor of the recycling pump, motor of brine pump, compressor and motor of the fan. Wet the fins of the fan with plenty of water. Prepare the cleansing solution by dilute 50% water with 50% dust remover. Spray evenly the solution on the fins of the fan and wait 10 minutes for the solution to do its work. Flush the condenser with water hose until the bubbles on the fins are all got rid of. Unwrap the connecting boxes after the water on the fins all dries. Start the machine to make ice.

B. Cleaning the Water Cooled Condenser. Turn off the water valve for the cooling tower and drain 20% water in it. Add 5 Kg Cooling Tower Cleaning Agent. Work the machine 3 - 5 hours. Stop the machine and drain the water in it. Add water and the cleaning agent as described above repeat the cycle 2 and 3 times. Then add clean water and repeat the cycle 3 times, 30 minutes for each cycle.

2.It is suggested to clean the water tank, evaporator and water distribution pan once every month by doing the following. Cut off the power supply, and use sponge or soft cloth dipped with cleaning agent for stainless steel or cleanser essence, and wash them clean of the cleansing agent and cleanser essence with water. The surface of the motors for water pump, speed reducer and fan shall be rubbed with dry cloth.

3.Check the distance between the ice blade and inner wall of the evaporator once every six months. The distance shall be 0.1-0.2 mm for 0.4-3T machines, 0.1-0.25 mm for 5 - 8 T machine, and 0.1-0.3 mm for 8 - 30 T machine.

4.Check the oil level of speed reducer once every six months. The oil level shall be no lower than half of oil sight glass. Replace the lubricant every 12 months. The type of lubricant shall be Mobil 634 (460).

5.Check the circuitry once every six months, with the emphasis on the A/C contactor, Thermal Relay Contacts and the Connectings of motors. Make sure there are no occurance of oxidization and poor contact and phase disorder. Check the controls are agile.

6. Professional service should be done to check the suction and exhaust pressure after 18 months use. Air cooled machine: suction pressure: 0.13Mpa - 0.2Mpa, exhaust pressure: 1.4Mpa - 1.7Mpa; Water Cooled machine: suction pressure: 0.13Mpa - 0.2Mpa, exhaust pressure: 1.2Mpa - 1.4Mpa.

7.Check carefully each and every components, water supply and power supply are normal before starting the machine when it is not in use for more than 15 days. Power the machine (if it is with electrical heater) on 24 hours in advance for the refrigeration oil to warm up.

8.Compressor with oil sight glass shall be give constant observation in regards of oil level and oil colour. Normally the oil level shall be no lower than half of the oil sight glass. The refrigeration oil shall be tranparent and colourless. When it is found turbid or blackening, it should be replaced. Please refer to professionals to replace the refrigeration oil. The dry filter, gas-return filter and oil pump filter shall be cleaned or replaced. Any queries in the maintenance work, please feel free to contact after sales servicing personnel.

Ii). Trouble Shooting

Symptom	Possible Causes	Trouble Shooting
Water leakage	1. The level of float ball valve is too high; 2. The water level in water distribution pan is too high; 3. The conduits in the water distribution pan is jammed or half jammed and water is unable to spray to the inner wall the evaporator.	1. Readjust the height of Float Valve so that the water level in water tank is lower than the water return opening; 2. Adjust the ball valve of the water recyle pump for the water distribution pan to ensure the water level is 2-3mm higher than the conduits. 3. Clean the water distribution pan and dredge the conduits.
False Indication of Bin Full	1. The infrared sensor is covered with dirt 2. The infrared sensor is blocked 3. The infrared is not correctly adjusted 4. The infrared sensor is not functioning properly	1. Clean the lens with soft cloth dipped with spirit/alcohol 2. Remove the Blocking objects 3. Readjust it so the beam is in line 4. Replace it
Current Failure Indication	1. Thermal Relay is not properly adjusted 2. The Power switch is burned 3. One or many of the motors for compressor, electric fan, reducer, recycling pump and brine pump are short circuited or encounter an open circuit.	1. Readjust the thermal relay to a proper value 2. Rectify or replace the power switch 3. check the motors and find which one that causes the current failure.
Water Lack Failure	1. The float valve is not set too low; 2. there is no water coming from the external water supply; 3. the external water supply is not turned on; 4. the pressure of the water supply is low; 5. the water level switch of the ice mahcine is not working properly.	1. Readjust the float valve; 2. connect the water supply; 3. turn on the water supply; 4. adjust the water pressure; 5. replace the water level switch
System Failure Indication	1. Phase absence; 2. Phase Disorder; 3. Phasa protector is broken down; 4. Low pressure (leakage of refrigrant; liquid feeding pipe, expansion valve and suction filter is jammed; liquid that goes through the expansion valve is insufficient; too much oil in the system; the ambient temp is too low); 5. Low pressure switch is broken down; 6. High pressure (there is air or other non condensing gas in the system; insufficient cooling water or the temp of the cooling water is high; the condener is dirty; insufficient space for the ice machine and the motor for the electric fan is not working); 7. High pressure switch is broken; 8. Water pump is not working	1. Check the normalcy of power supply; readjust it if needed; 2. readjust the order if needed (normally for installation of newly purchased machine); 3. rectify or replace the phase protector; 4. seal the leakage and refill the machine with refrigerant gas; dissemble it for a check and give it a thorough clean; Adjust the expansion valve; find where the surplus oil is and releaese it. 5. rectify or replace the switch; 6. let go the surplus air and non condensing gas; check that the water valve is filter jammed, and try to provide lower temp water for cooling; wash the condenser, and provide sufficient space for ventilation; rectify or replace the motor. 7. rectify or replace the high pressure switch; 8. rectify or replace the recycling pump.
Too much noise produced by the reducer	1. the leaves touch the protective dome 2. Insufficient lubricant in the bearing box 3. Bearings are worn out 4. Oil seal is worn out 5. Ventilation is blocked 6. Surplus amount of Oil	1. Readjust the relative position of the leaves and dome 2. Add lubricant 3. Replace the bearings 4. Replace the oil seal 5. Dredge the ventilation 6. manipulate the oil to the oil indicating position.

Symptom	Possible Causes	Trouble Shooting
No ice produced	1. the ball valve for the water supply to the distribution pan is not turned on 2. the opening of inlet water pump is jammed 3. the motor for water pump breaks down 4. the reducer is not working properly 5. the ice scraper is not revolving 6. the heat sensor of the thermal components is not working properly	1. check and turn on the valve 2. clean the opening 3. maintain or replace the broken motor 4. maintain or replace the reducer 5. maintain or replace the ice scraper 6. replace the thermal components.
Ice production reduced	1. Hostile surroundings, bad ventilation conditions. 2. Expansion Valve is jammed 3. Filter is jammed	1. Place the machine in a mild surrounding 2. Clean the expansion valve 3. replace the filter or the valve core of the filter

VII. Circuit Diagram (In the Electrical Control Box)

VIII.After-Sales Service

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Attachment:

DIRECTIVE OF INSTALLATION

Important Notice: Use Multi meter to confirm the right connections of live and null lines before turn on the mains power. This operation is to protect PLC and the power switch from damages.

1，If System Failure appears the first time the machine is powered on, the power supply is expected to encounter "missing phase" problem. Exchange the position of any two of the three live lines, and fasten the screws. The red indicator on the right of Phase Protector is lit up.

2，The water supply is advised to meet the standard drinking requirements. PVC or PPR water tap is to be connected seamlessly with the water supply. The water pressure shall be between 0.15MPa and 0.5MPa. When the water pressure is lower than 0.15MPa, the ice machine is subject to deficient water supply and when it is higher than 0.5MPa, the float valve can be overloaded and the machine is subject to water leakage problem.When The Water pressure is not sufficient, it is suggested that pressure pump be added for needed water pressure; when **The Water Pressure is overloaded, it is suggested that the water regulating valve be regulated to reduce the water volume. When the Water Distributing Pan overflows, it is suggested that you reduce the water volume by regulating the water valve that controls the water between water tank and water distribution pan. The ideal water level is water is 2-3mm higher than the water distribution pipe.**

3，The same standard Water pipes are used for the over flow port and discharge port. And the Brine Pump is already properly connected. When water is needed for the brine pump, user is suggested to turn on the valve for the discharge port.

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