ICETRO

America

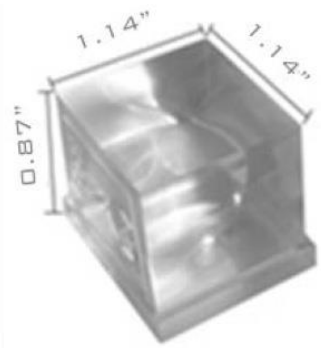
INSTALLATIONS, SERVICE & OPERATIONS FOR

IM-350/350-22/460/460-22/550/550-22/680/1100 SERIES

ICE MAKERS

THE MAESTRO
IM Series Cuber

ICETRO America



By Special Order Only

'C' SIZE CUBE

'H' SIZE CUBE

IM Series Models

30" WIDE SERIES

IM-0350-AH/C
IM-0460-AH/C
IM-0550-AH/C
IM-0680-AH/C
IM-1100-AH/C

22" WIDE SERIES

IM-0350-AH/C-22
IM0460-AH/C-22
IM-550-AH/C-22

Simple Digital Diagnostic Lamp Indicators For Maintenance & Service Ease

Operating Status Lamp Description

POWER Lamp (Green)
On: When the power is connected to the machine.

ICE/WASH Lamp ((Green)
On: When in the ice making mode. (Switched to ICE)
Flickers: When in the cleaning mode. (Switched to WASH)

FULL Lamp (Yellow)
On: When the Ice Storage Bin is filled with ice. When the water curtain is open for 30 seconds or longer

NO WATER Lamp (Yellow)
On: When insufficient water supplied to the machine. (Error code 15).
Flickers: When entering the harvest mode after making ice, when the water level sensor (high/low level) detects water level (water). (Error code 16).

POWER Lamp Flickers & ICE/WASH Lamp Flickers
When the maximum ice making time (65 minutes) is exceeded. (Error code 11).

POWER Lamp Flickers & FULL Lamp Flickers
When the maximum harvest time (5 minutes) is exceeded. (Error code 12).

POWER Lamp Flickers & NO WATER Lamp Flickers
When the ice making cycle exceeds 30 minutes and evaporator temperature Is higher than 32 deg. F. (Err. 01).

FULL Lamp Flickers & NO WATER Lamp Flickers.
High pressure cut-out occurred once. (Error code 13).

FULL Lamp Flickers & NO WATER Lamp On.
High pressure cut-out occurred three consecutive times. (Error code 14**)**

Remove two Screws on Swing door to open.

Then remove two front screws securing the right side panel to remove

How to Remove Panels

REMOVABLE PANELS!
FRONT SCREWS TO OPEN DOOR
SIDE PANELS LIFT UP & OUT
TOP PANEL LIFTS UP AND PUSH TO RELEASE FROM SLOT ON BACK.

Air Vents Top & Sides

TOP & SIDE VENTS FOR GREATER EFFICIENCY
CUSTOMERS STATE EQUIPMENT
OPERATION IS VERY QUIET

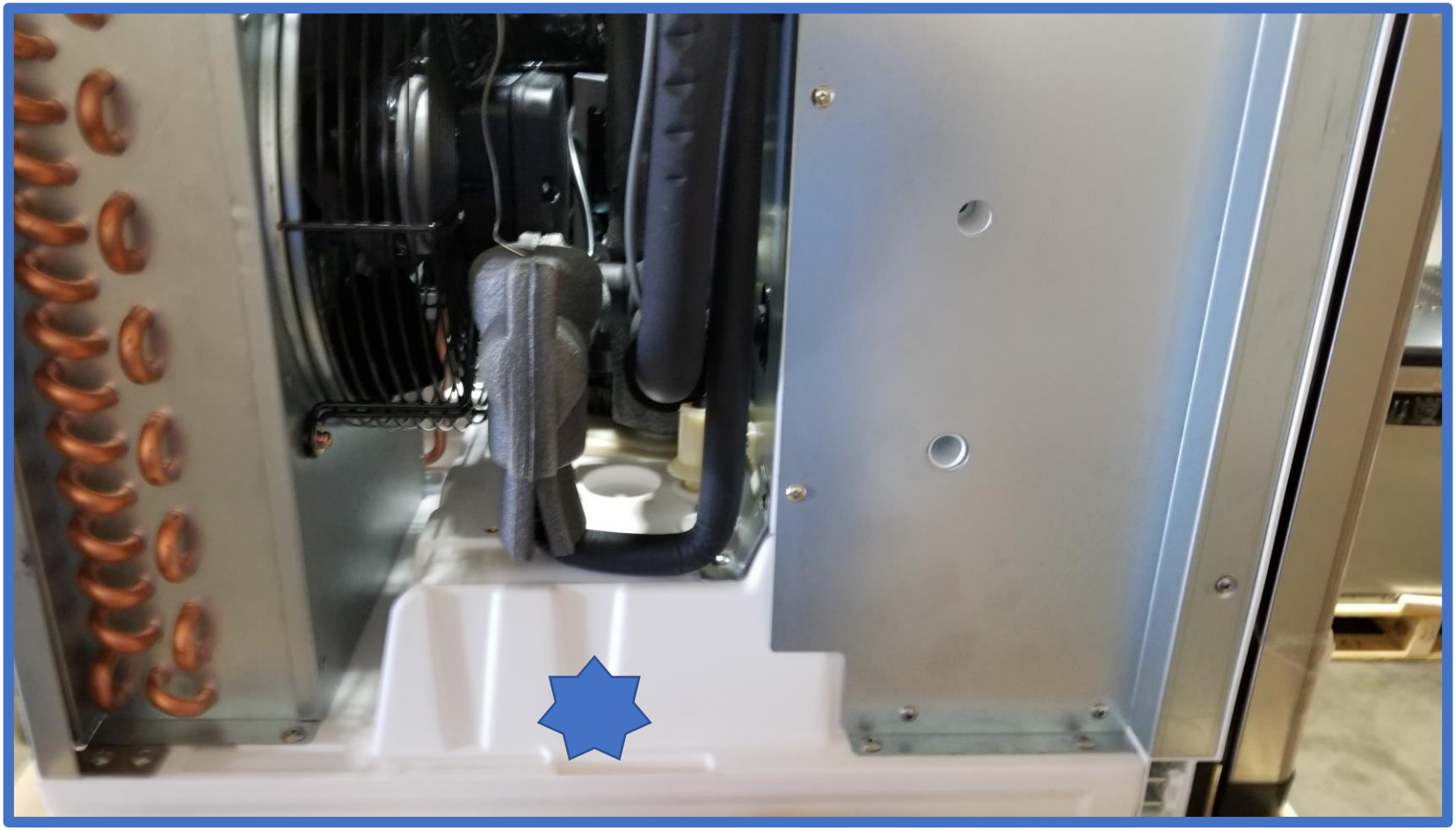
DOOR ON HINGE, ACCESS TO DIAGNOSTICS PANEL

Door can rest on top of machine if needed.

INTERIOR ABS ANTI MICROBIAL EVAPORATOR SECTION

No Tools Needed to remove water distributor tube and water sump for cleaning

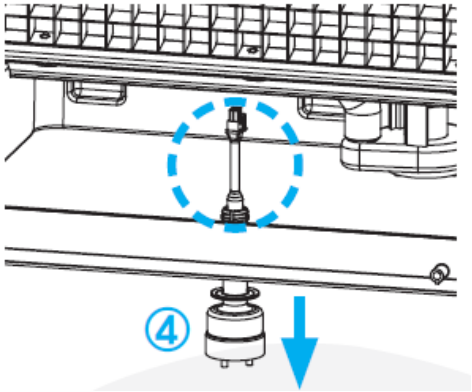
Non Corrosive Platform



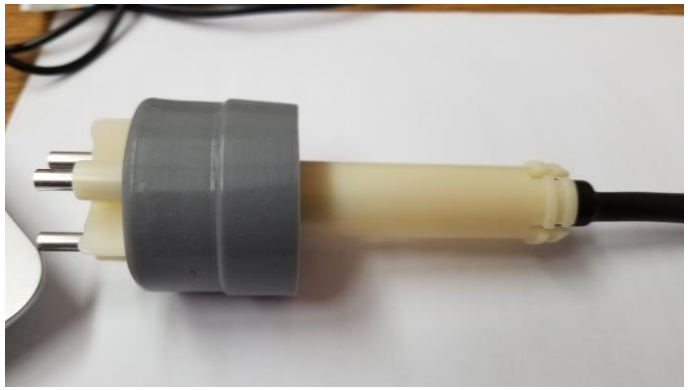
REMOVABLE WATER SUMP NO TOOLS NEEDED

TO REMOVE TROUGH, PULL TABS OUT, THEN DROP FRONT OF TROUGH DOWN AND PULL OUT OF MACHINE.
NOTE WHEN PUTTING BACK IN NOTICE THE BACK OF THE TROUGH HAS A PROTRUSION STICKING FROM TROUGH WHICH ALLIGNS INTO SLOT BELOW EVAP

NO FLOAT VALVE
WATER VALVE IS NOW CONTROLLED BY WATER LEVEL SENSOR

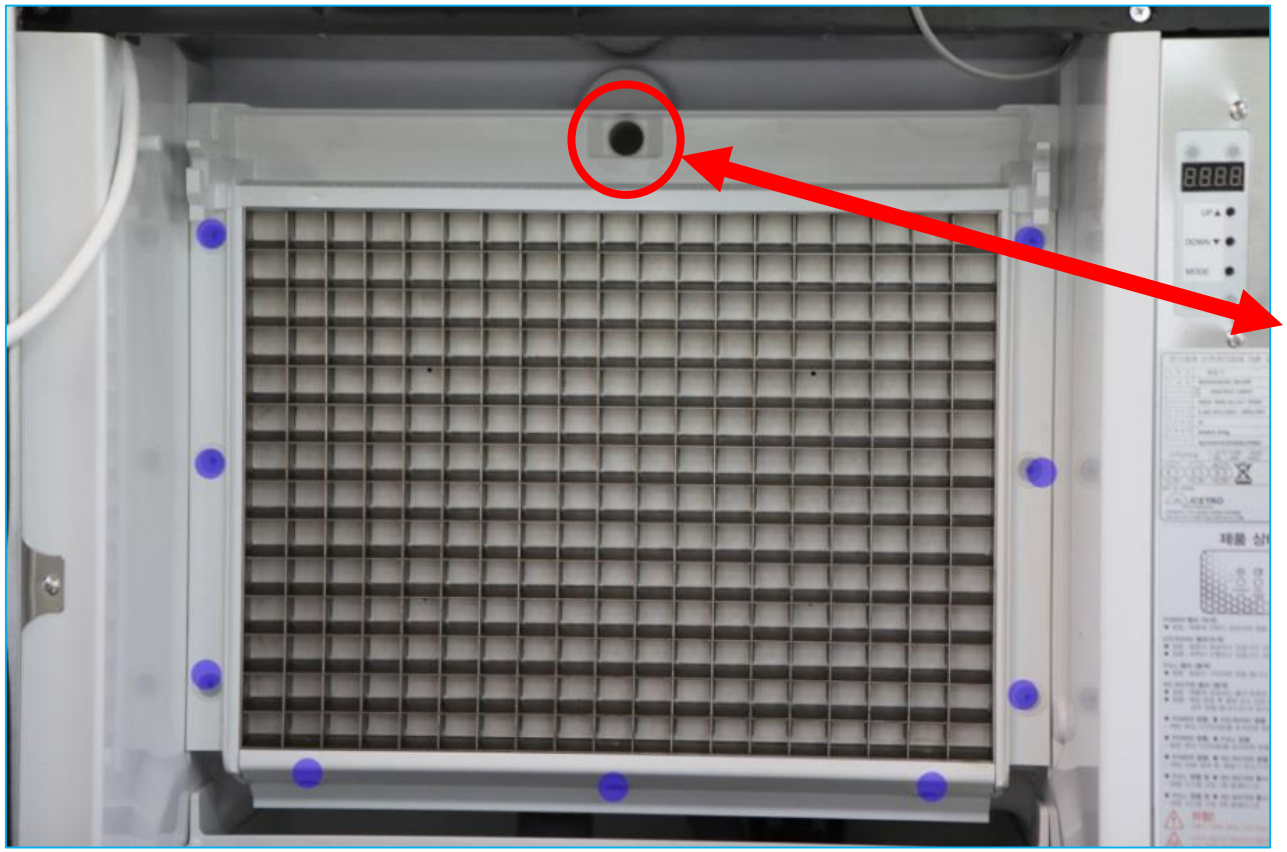


THIS IS THE WATER LEVEL CONTROL TO REMOVE SIMPLY PULL STRAIGHT DOWN AND UNPLUG



NEW WATER DISTRIBUTION TUBE
REMOVABLE NO TOOLS

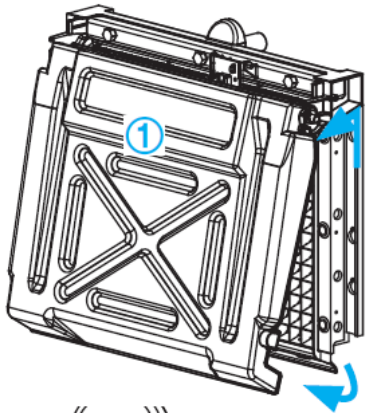
DISTRIBUTOR TUBE REMOVED FOR CLEANING



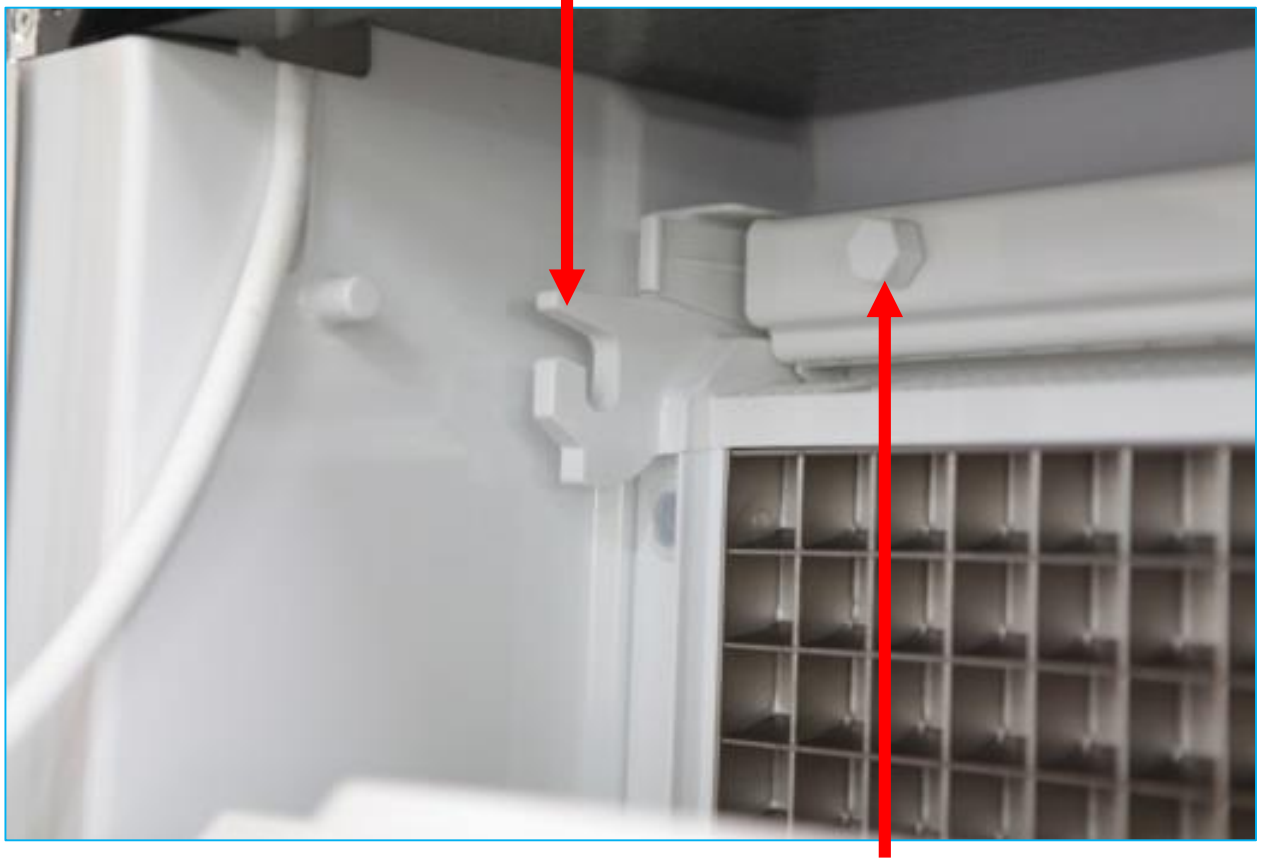
HEAVY DUTY WATER CURTAIN, HEAVY DUTY PINS, NOTE RED ARROW HEAVY DUTY CURTAIN HOLDERS, EASY REMOVAL

WATER CURTAIN, HINGES & RELIABILITY IS INDUSTRIES BEST

PULL CURTAIN OPEN ABOUT 30 DEGREES
LIFT & PULL FORWARD TO REMOVE



CLOSE UP OF CURTAIN HOLDERS



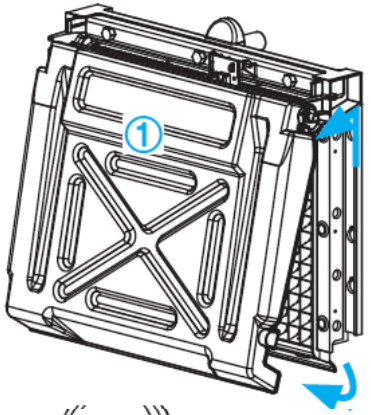
DISTRIBUTOR TUBE THUMB KNOBS

ADJUSTABLE FLUSH FOR DRAIN WATER TO REDUCE SCALE

ADJUSTABLE FLUSH CAN HELP TO REDUCE CLEANING COSTS & MAINTANENCE

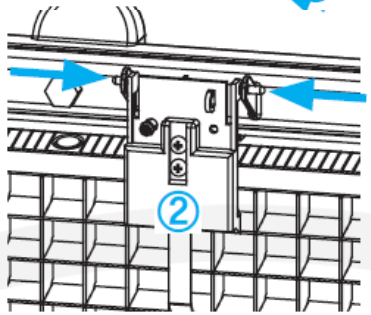
5. Maintenance, Repair, and Disinfection

5-1. Disassembling Parts



1) Disassembly of Water Curtain

① Hold the bottom side of the water curtain with both hands, slightly pull to the front, and push upward to remove.



2) Disassembly of Ice Thickness Sensor

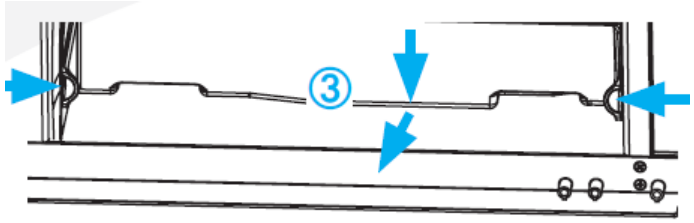
① Press both hinges on the top side of the ice thickness sensor and pull to the front to remove..

② To remove ice thickness sensor and wiring from the ice making chamber, remove the top cover of the ice making chamber and remove the connector connected to the electronic unit.

3) Disassembly of Water Vessel

① Twist bot hands and pull both projections on the front side of the water vessel.

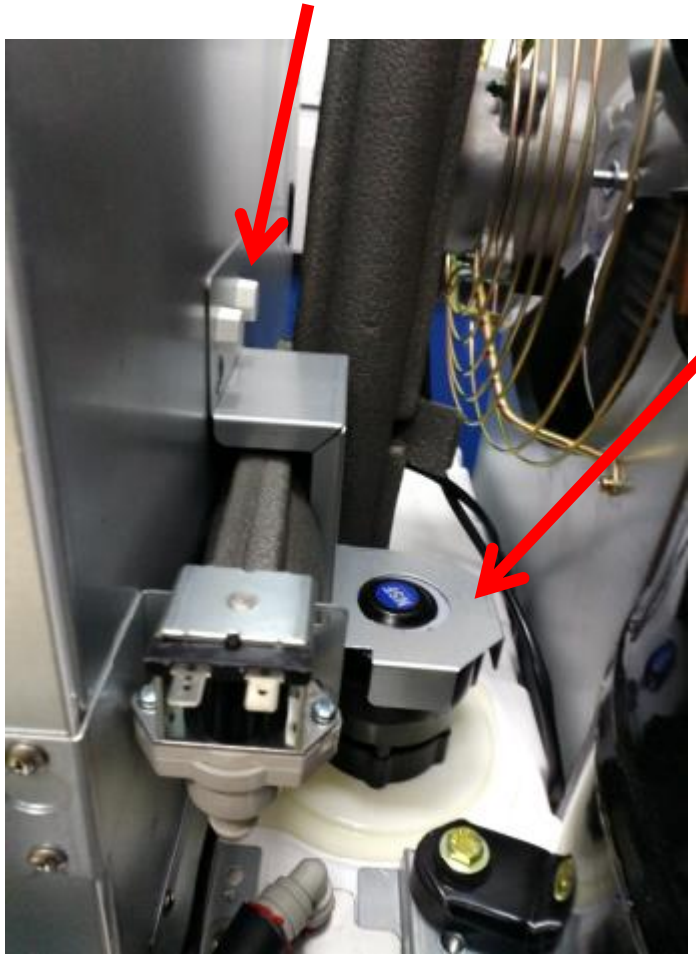
② When the projections on both sides are released from the grooves, hold the front side of the water vessel with hands, pull to the front side slightly, pull downward to remove in a way that the stop bumps(three) on the back side would be released.



※ Caution: When removing or inserting the water vessel, ensure it does not interrupt water level sensor and water pump.

WATER PUMP MOTOR OUT OF WET ZONE
EASY ACCESS TO PUMP

PUMP IN DRY ENVIRONMENT, TO REMOVE
SIMPLY LOOSEN THUMB SCREWS, HOSE & LIFT OUT.



Pump Motor Bracket

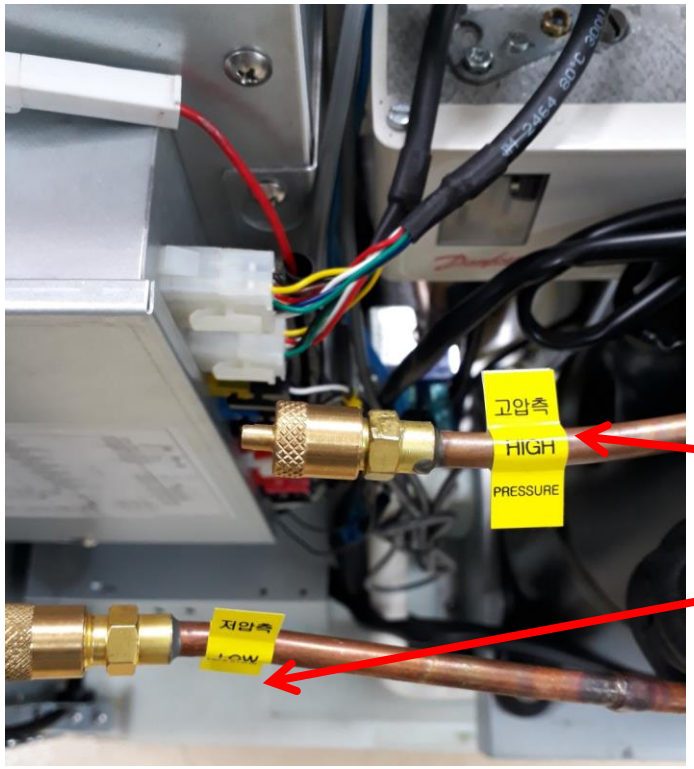
Keyhole slots

Side View

Top View

ACCESS PORTS

IM Series



Indication label of high pressure &
Low pressure nipple of compressor

Replacing a pressure switch?
Use a Pinch Off tool when possible

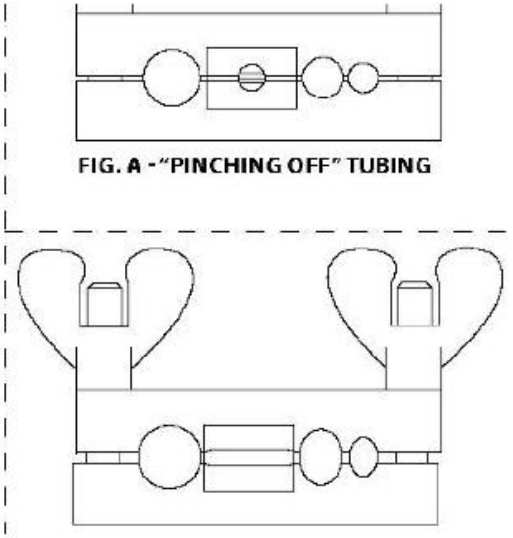


FIG. A - "PINCHING OFF" TUBING

FIG. B - RE-ROUNDING TUBING

SV

Using Pinch Off Tool

Important

This is a required in-warranty repair procedure.

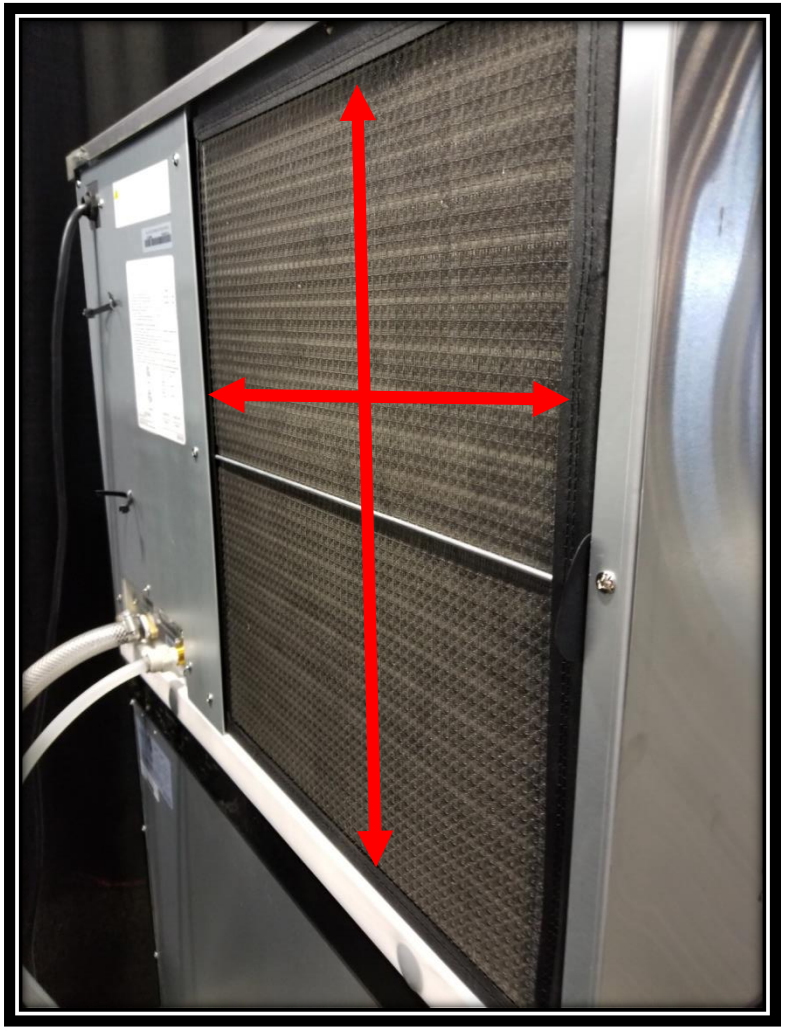
1. Disconnect power to the ice machine.
2. Follow all manufacturers' instructions supplied with the pinch-off tool. Position the pinch-off tool around the tubing as far from the pressure control as feasible. (See the figure on next page.) Clamp down on the tubing until the pinch-off is complete.

⚠ Warning

Do not unsolder a defective component. Cut it out of the system. Do not remove the pinch-off tool until the new component is securely in place.

3. Cut the tubing of the defective component with a small tubing cutter.
4. Solder the replacement component in place. Allow the solder joint to cool.
5. Remove the pinch-off tool.
6. Re-round the tubing. Position the flattened tubing in the proper hole in the pinch off tool. Tighten the wing nuts until the block is tight and the tubing is rounded.

MAGNETIC FRAME CLEANABLE CONDENSER AIR FILTER



OFF

1. Place the power switch on the front side in the 'Middle (OFF)' to stop the machine.

◆ When you place the power switch from 'ICE' → 'OFF', the machine will stop after ice making / harvest completes.

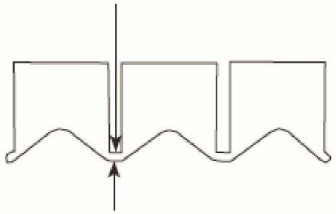
◆ When you place the power switch from 'WASH' → 'OFF', the machine will stop after the washing cycle ends

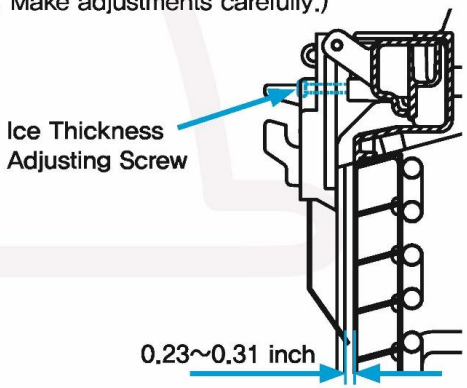
Adjusting Ice Thickness

1. After the harvest cycle ends, adjust the thickness between ice cubes in the bin.
   (Attention: When checking the size of ice, make sure the water curtain is mounted on the ice making chamber so that the ice would not be dispersed in the condenser's harvest cycle.)

2. The standard distance between the thickness detection unit and evaporator is 6~8mm. (Refer to the following picture)
   - If you wish to make thicker ice, turn the adjustment screw clockwise (CW).
   - If you wish to make thinner ice, turn the adjustment screw counterclockwise (CCW).
   (Caution: Condenser may be overcooled. Make adjustments carefully.)

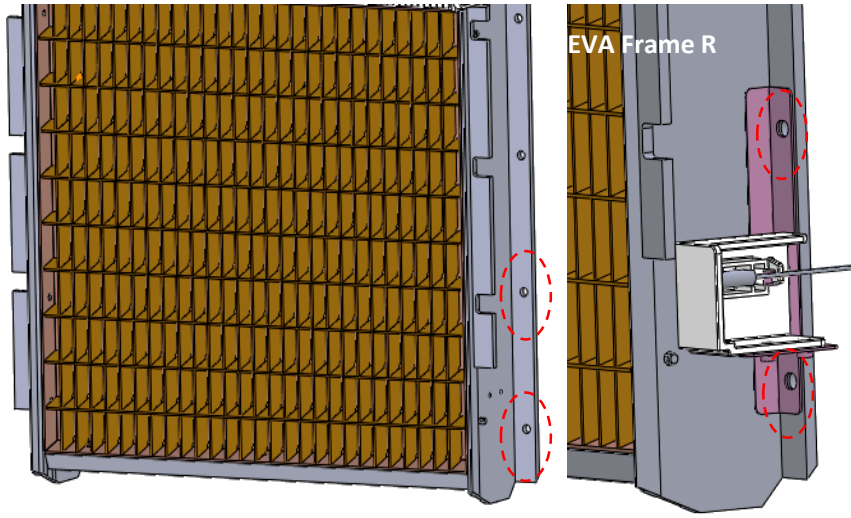
Ice Thickness Measuring Unit





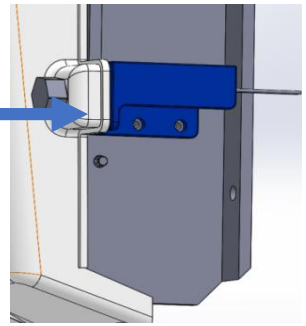
Magnet actuates proximity switch behind magnet. When Ice cannot clear curtain this switch acts as a bin shut off. When machine is running and making ice, the curtain will open to release ice, and then will close to start next cycle.

1. During the freeze cycle, the water curtain switch is closed.
2. When the ice thickness control puts machine into defrost
3. The ice will release from the evap and drop into the bin
4. The curtain will open, and then close putting the machine back into freeze
5. When the ice bin is full, ice will not allow the curtain to close and the machine will shut down.



Magnetic Proximity switch
is located behind water curtain.

Magnet is on water curtain



IM MODULAR SEQUENCE OF OPERATION

INITIAL START-UP IM SERIES

1. **Turn on water and allow water sump to fill until water level sensor detects high level.**
2. **Move the Ice-Off-Clean switch to the "ICE" position.**
3. **Dump valve and the pump motor operate to discard the remain sump water for 20 seconds after detecting the low water low level sensor detection.**
4. **Water valve open and supply water into sump until water level sensor reaches high level. 5 seconds later HOT GAS Valve open 10 seconds and wait until water level sensor reaches high level. (Minimum requirement time is 20 seconds and pressure equal ization step for reduce compressor starting torque)**
5. **The pump motor will operate after 15 seconds after the compressor and fan motors are in operation, so that the evaporator is pre-chilled through the compressor to keep the ice in good condition.**
6. **Water supply valve is open and supply water when water level sensor reaches low level. And stopped until water level sensor reaches high level plus set time.(At 1st cycle only. *From the second cycle, even if the low water level is detected, no additional water supplied*)**
7. ***Hot Gas Solenoid is De-energized while Compressor and Condenser Fan continue to pre-chill the evaporator for 15 seconds.**
8. **With Compressor and Fan running, Water Pump is energized and water circulates over evaporator for approx. 10 minutes.**
9. **When water contacts the Ice Thickness Probe for 7 continuous seconds, machine enter defrost cycle.(*Harvest*)**
10. **With Compressor running, Hot Gas Valve is energized for 50 seconds.**
11. **Water Pump and Dump valve are De-energized while Hot Gas Valve and Compressor continue for approximate 2 minutes.**
12. ***Defrost is terminated when ice drops from the evaporator and causes Curtain Switch to open and close.**
13. **If Bin level is sufficiently high that ice is trapped between Curtain and Evaporator, Machine stops operation and "Full Lamp" on front of machine is lit.**

NORMAL CONTINUOUS SEQUENCE OF OPERATION DURING ICE MAKING MODE IM SERIES

1. **With Water Curtain closed, Dump Valve and Water Valve are energized for 15 seconds.(set time) With brackish water pumped from the Sump Trough, Water Pump and Dump Valve are de-energized.**
2. **After 15 seconds Dump Valve is de-energized. But Water Valve is energized until water level sensor reaches high level plus 15 seconds. Fan motor energized after 5 seconds with Water Curtain closed.**
3. **When water contacts Ice Thickness Sensor for 7 continuous seconds, the machine enters defrost.**
4. **Hot Gas Valve are energized for approximately 50 seconds. At this time, the Pump Motor and the Water supply valve are de-energized.**
5. **Compressor and Hot Gas Valve continue to defrost evaporator until ice falls from evaporator plate.**
6. **Ice falling from evaporator cause Water Curtain open then closes when ice clears the Evaporator signaling defrost termination.**
7. **With the Curtain closed, the machine begins another cycle.**

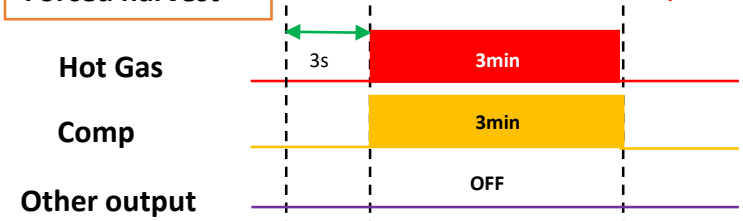
- **After shut down due to full bin level and lighting of "Full Lamp", removal of ice from bin will cause the Curtain to close which c loses the Curtain Switch and energize the machine with the same steps as "INITIAL START-UP".**
- *** Normal continuous operation starts a new cycle with steps 1 through #7.**

1.3 WM series PCB Logic chart_Ver. 7.0 – DOE Model (After Aug. 2018, including SVC supply part)

LED green lights	Power supply is on.
LED yellow lights	Ice Bin Full.
Flashing green LED	Harvest error or ice probe sensing error 3 times
Flashing yellow LED	Improper harvest
Flashing green LED LED red lights	Pressure switch error - If the pressure switch does not close.
Flashing green LED Flashing red LED	Pressure switch error – Occurs when switch has opened 3 times

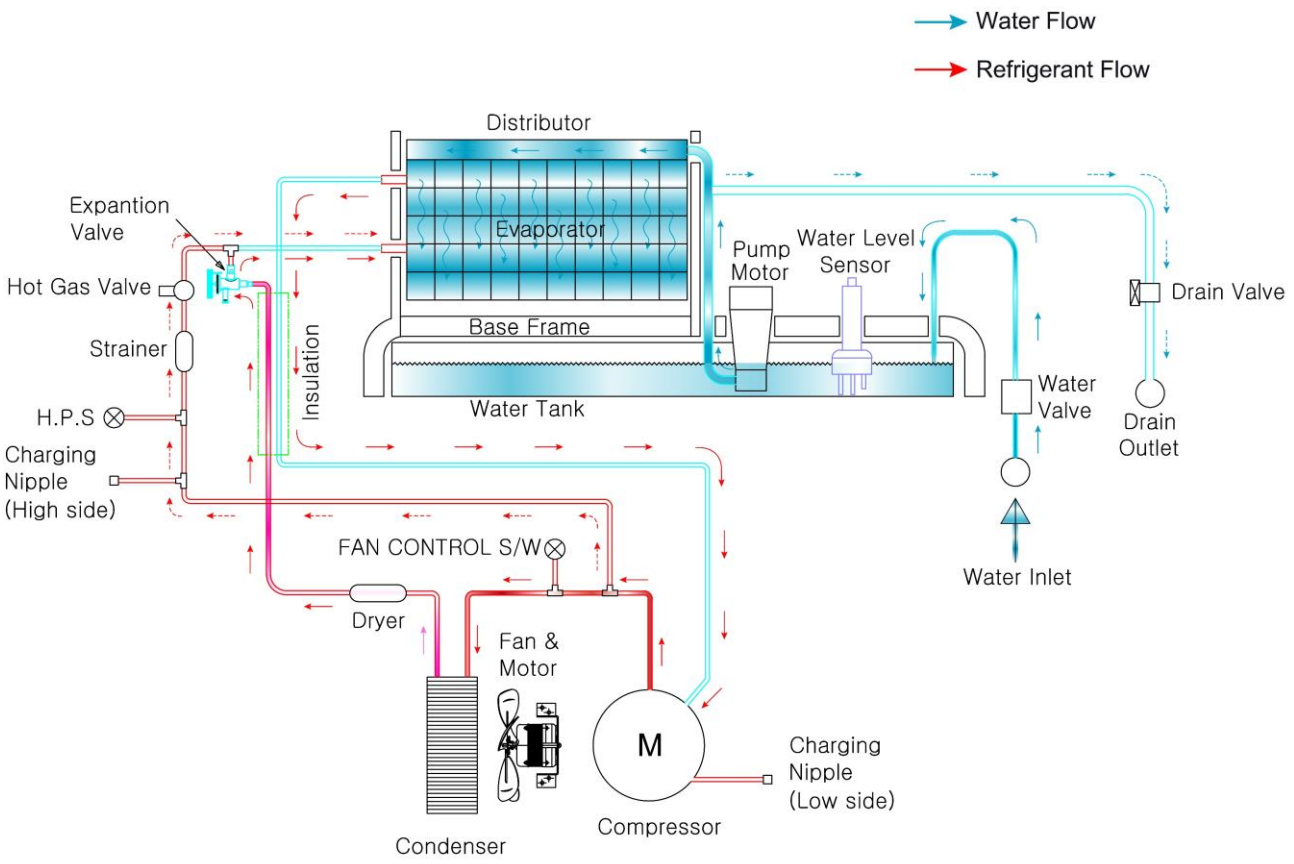
Forced harvest

DIP S/W No.2 ON and CN16 3s continuously ON



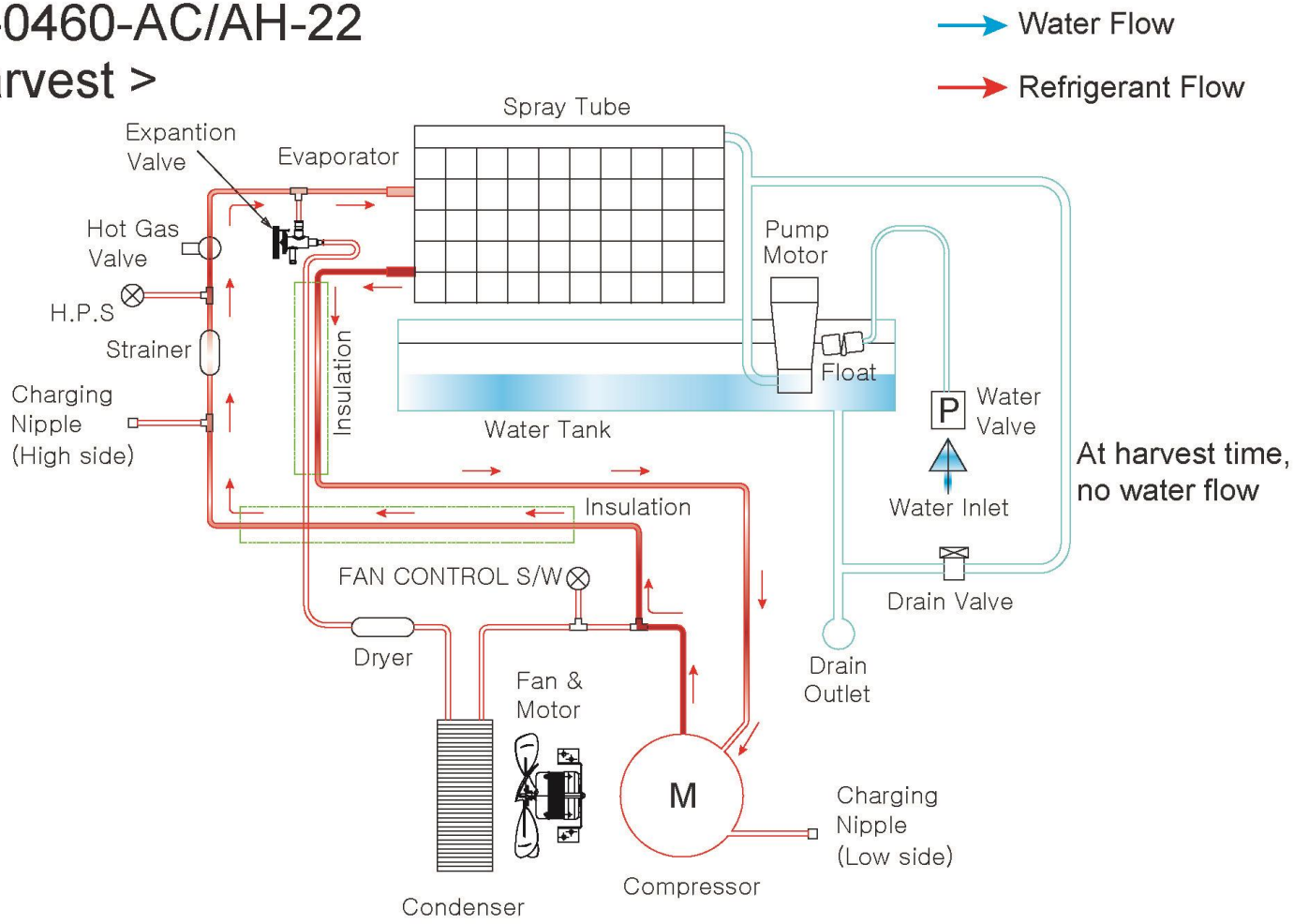
After forced harvest(5 min) according to mode S/W
1. ICE : Initial ice making process
2. Clean : clean process
3. OFF : Maintain steady state

WATER & REFRIGERANT FLOW



HARVEST CYCLE

WM-0460-AC/AH(115V)
WM-0460-AC/AH-22
< Harvest >



When harvest time fan stop.

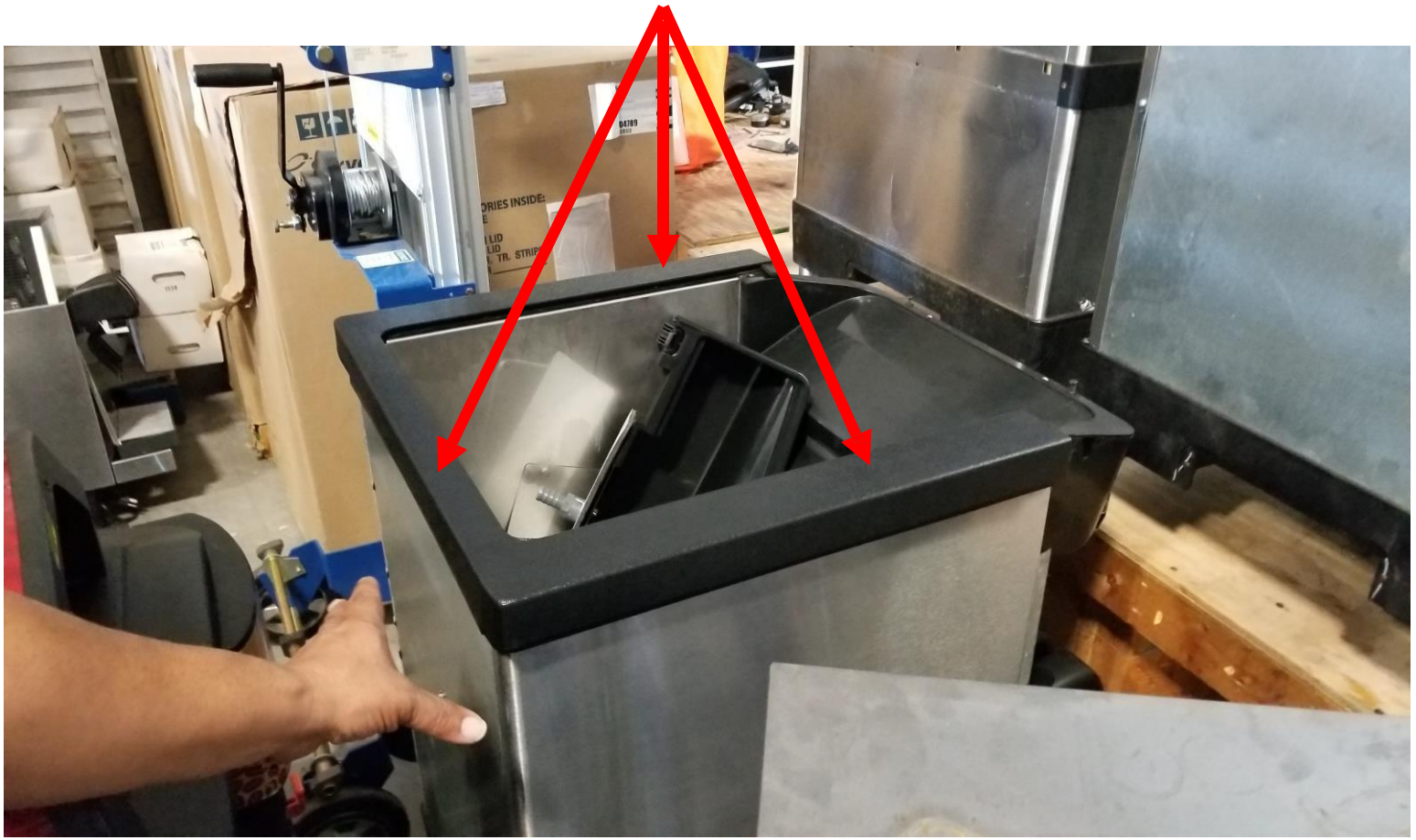
Please double check these items before startup and before calling for service.

These items are NOT covered under your labor warranty.

1. Has all tape and packing materials been removed from machine?
2. Unit is level front to back and side to side? This insures even water flow and ice formation across the evaporator. Adjustable legs on bins and dispensers make this quick and easy.
3. Has the correct electrical power been provided – specified voltage and amperage on a dedicated circuit? Do not use a drop cord or power strip with any ice machine. This could cause a voltage drop and compensatory amperage spike or cause the circuit breaker to trip.
4. Check drain line pipe sizes. Insure they are ¾ inch and line drops ¼ inch per foot of run to insure both machine and bin drainage is effective. Do not tie together ice machine drain and bin drain lines. They should be independent. This will help to properly flush out the sump at the end of the cycle, to insure the most effective scale removal and prevent water from backing up inside ice bin during defrost.
5. Water Line size 3/8" inch must be supplied to insure sufficient water is available at all times. Required water pressure is 20 psi minimum and 80 psi maximum.
6. Is the Unit installed in an area with sufficient ventilation on the sides, back and top for rejection of condenser heat?
7. Is the unit located in an area which has air borne particulate (flour, yeast, etc), which can build mold and bacteria inside machine or clog the filter and condenser? There are products which can be installed to help these problems.
8. Does the room in which the machine is installed have adequate ventilation 24 hours per day? Ice machines can heat a room up to 40 feet x 60 feet in the dead of winter. The heat removed from the water to produce ice must be removed from the area or the machine will overheat, produce less ice and/or eventually shut down on a safety limit.
9. Scale or mold buildup can affect the sequence of operation, timing and production. Is a water filter installed? We recommend our exclusive Citryne Pro Ice Filtration for the best scale clean results. Scale will increase operating costs and reduce or shut down machines performance.
10. **If you are installing the Ice Maker on top of an existing bin, check bin to insure it has baffle in bin to keep ice from coming out of bin door.**

11. If you are installing the ice maker on top of a dispenser, the dispenser manufacturer must provide the top kit to prevent leaks and bin problems

PLASTIC COVER PIECE WITH KIT/BAFFLE TO BE FURNISHED BY DISPENSER MFG!



Reliable Operations & Longevity

- Ice is digested and sanitation and bacteria control must be checked to ensure the machine is safe by keeping it clean.
- 80-85% of machine failures are due to poor install, lack of cleaning, inadequate water treatment or airborne slime (Bacteria).
- **Citryne by Systems IV** for all machines with pH over 7.0
- **Carbon filtration** removes chlorine. If there is slime or growth inside of the machine it is from airborne particulate.
- Bi Polar is effective with airborne contamination.
- Cleaning requires both Ice machine cleaner & sanitizer and should be done under good conditions 1-2 times per year.

HOW DOES CITRYNE FILTRATION WORK

Chelation Process

The Systems IV water treatment systems use patent pending technology to soften hard water based on the scientific process of chelation in which the metal ions causing hard water, principally calcium and magnesium, are bound to the chelating agent in our FDA approved, proprietary formulation, which keeps the minerals (calcium and magnesium) soluble and unable to bind to cause hard water problems. The resulting water is soft and healthy for all of your equipment needs.

The ideal pH level of drinking water is between 6 and 8.5. The pH value of water is used to determine whether water is hard or soft. Pure water has a pH of 7, and water lower than 7 pH is considered acidic. Citryne is for all ice makers with water pH above 7. For systems with pH 7 or below use carbon & polyphosphate filters.

Citryne is used to facilitate the chelation process.

CITRYNE

CITRYNE™ is a food grade, biodegradable formulation that eliminates scale buildup. With its FDA approved ingredients, CITRYNE™ can be used on equipment without having to stop water flow. The CITRYNE formulation not only removes existing scale buildup, but will eliminate future potential scale buildup.

AIR BORNE BACTERIA CAUSES SLIME & BACTERIA TO GROW INSIDE OF MACHINE. BI-POLAR TECHNOLOGY HAS PROVEN VERY EFFECTIVE TO CONTROL SLIME & BACTERIA.

Pos/Neg Ions fall freely across evap, into sump and overflow into the bin for positive cleansing effect in cuber and bin.

No Ozone!

Diagnostic Lamp Indicators Will Show When Cleaning is Needed/

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On: When the power is connected to the machine.

ICE/WASH Lamp ((Green)
On: When in the ice making mode. (Switched to ICE)
Flickers: When in the cleaning mode. (Switched to WASH)

FULL Lamp (Yellow)
On: When the Ice Storage Bin is filled with ice. When the water curtain is open for 30 seconds or longer

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On: When insufficient water supplied to the machine. (Error code 15).
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High pressure cut-out occurred once. (Error code 13).

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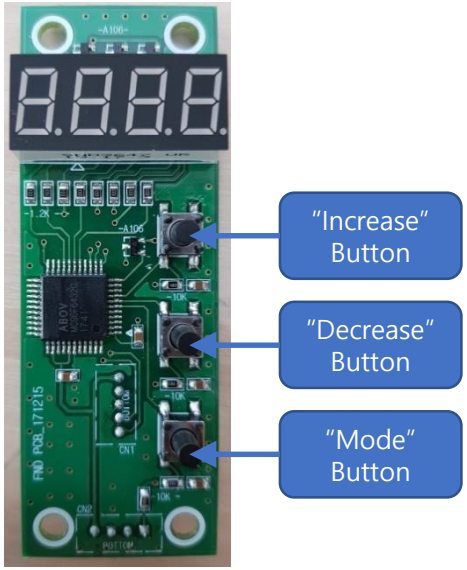
High pressure cut-out occurred three consecutive times. (Error code 14**)**

IM series FND PCB module function provides additional error code info and can be adjusted for longer flush times



Operating Order

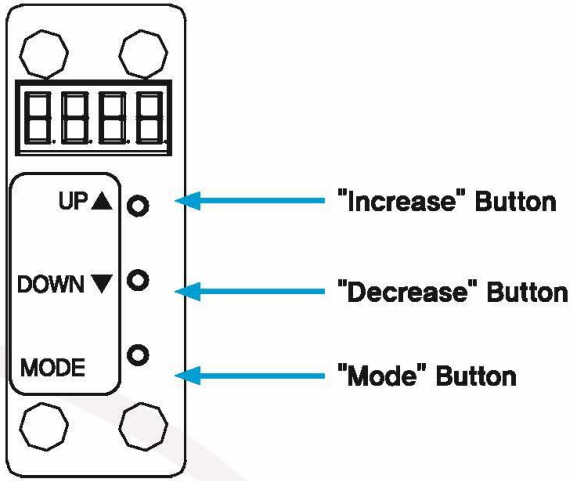
1) In standby mode, FND is off.
2) When you press "MODE" button, FND will turn on and show the program version.
3) While FND is on, press "UP" or "DOWN" button to move to the previous or next item.
4) Move to each item and press "MODE" button to see the default value on FND.
5) Change setting with "UP" or "DOWN" button, and press "MODE" button to save to move to upper item.
6) Press "MODE" button on simple display item to display the corresponding value and press "MODE" button again to move to upper item.
7) It will turn off automatically when it has no input for 30 seconds.

WITH FND 'ON' – Program version displayed:

8) Press "UP" + "DOWN" buttons simultaneous for 3 seconds to perform forced harvest. (3 minutes) – **Forced harvest Function**
9) Press "DOWN" + "MODE" buttons simultaneous for 3 seconds to perform forced drain. (30 seconds) – **Forced Drain Function**
10) Press "UP" + "DOWN" + "MODE" buttons simultaneous for 3 seconds and the FND setting values will be initialized. – **Setting Value Initialization**

[Display of Flexible Numeric Display (FND) Module]

※ Attention: FND module is an optional feature.
This is applied to only the models to which FND module is mounted.



● Operating Order

1. In standby mode, FND is off.
2. When you press "MODE" button, FND will turn on and show the program version.
3. While FND is on, press "UP" or "DOWN" button to move to the previous or next item.
4. Move to each item and press "MODE" button to see the default value on FND.
5. Change setting with "UP" or "DOWN" button, and press "MODE" button to save to move to upper item.
6. Press "MODE" button on simple display item to display the corresponding value and press "MODE" button again to move to upper item.
7. It will turn off automatically when it has no input for 30 seconds.

● Forced Harvest

– Press "UP" + "DOWN" buttons simultaneous for 3 seconds to perform forced harvest.
※ Please avoid using this function unless repair service is needed.

● Forced Drain

– Press "DOWN" + "MODE" buttons simultaneous for 3 seconds to perform forced drain (30 seconds).

● Setting Value Initialization

– Press "UP" + "DOWN" + "MODE" buttons simultaneous for 3 seconds and the FND setting values will be initialized.
– However, please setting the value refer to the contents of "Specifications" for "Drain time after harvest".

FNB BOARD ERROR CODE INFO

■ Error code

07/25/2019

★: Flashing, ● : solid

Error display		Errors	Causes	Troble shootings
FND	Display			
Er01		**Not making ice.** If the evaporator temperature is 32° F. or higher after 30 minutes in freeze cycle.	①Low refrigerant charge. ②Evaporator outlet temperature sensor fault. ③Hot gas valve leaking.	①Check for refrigerant leakage. ②feel inlet and outlet of hot gas valve during freeze. ③Check evaporator temperature sensor
Er03		**Defective ice making** If evaporator temperature exceeds 23° F after 30 minutes in freeze cycle.	④ Inlet water valve stuck open ⑤ Dump valve dirty or stuck	④Check compressor efficiency ⑤Check water inlet valve, water level sensor.
Er11		**extended freeze time** Ice thickness probe not sensing water contact after 65 minutes maximum. 3 consequtive faults initiates safety limit shutdown.	①Insufficient water quantity . ②Freezeing system malfunction ③ Drain dump valve dirty or stuck	①Water inlet pressure below 20 psi ②Increase water delay time in FND. ③Inspect and repair freezing fault (see Er01)
Er12		**Harvest Delay time error** If tcurtain switch is not detected until maximum harvest timeout - 5 minutes. If occurs for 3 consecutive times then stop operation by safety limit shutdown.	①Water curtain sensor fault. ②Hot Gas Valve not feeding properly. ③Freezing cycle abnormal.	①Inspection / replacement of full sensor or PCB(see Er01) ①Check and replace abnormal operation. ①Inspect and repair freezing cycle fault. (see Er01)
Er13		**High pressure switch shutdown** Occurs when the high pressure switch is open due to high discharge pressure. Condenser not cooling refrigerant.	①Condenser inlet water insufficient. - Water cooled only.	①Water inlet pressure below 20 psi ②Condenser water line should be separate from the ice water supply line and not through a filter. ③Auto restart occurs after one hour.
Er14		**Detective continuously 3 times H.P.S** Occurs when Er 13 is detected continuous 3 times. Condenser does not cooling.	②The air circulation flow path is blocked or the installation environment is poor. - Air cooled model ③Fan motor not working. Check capacitor and electrical supply. - Air cooled model	①Do not block the air circulation path. (clean filter) ②Remove from any heat sources. ③Air cooled type manual reset.(main s/w off and on) ①Check PCB power output(FAN) and check fan motor operation.

FNB BOARD ERROR CODE INFO

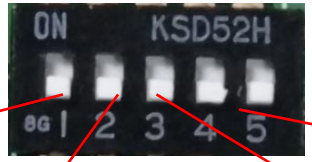
■ Error code

07/25/2019

★: Flashing, ● : solid

Error display		Errors	Causes	Troble shootings
FND	Display			
Er 15		**Inadequate water supply** Occurs when the water level sensor(high) is not detected after a maximum water supply time of 5 minutes.	①Insufficient water supply. (Water supply valve failure, water source interruption.	①Water inlet pressure below 20 psi ②Check PCB power output and check whether water inlet valve is working
			②Water level sensor harness connection is loose or a harness wire short.	①Check water level sensor wire connection or replace PCB.
			③Lime/scale build-up on water level sensor.	①Remove lime/scale attached to the surface of the water level sensor. (Use Nickle safe cleaner -see manual) - Clean at least every 3 months
Er 16		**Defective Water level sensor** If water level sensor detects high water level at the end of the freeze cycle.	①Water is left in the water vessel after defrost.	①Reduce water delay time on FNB and chec ice cube formation.
			②Sensor insulation breakdown due to moisture penetration inside the water level sensor.	①Check if the low, high and COM sensors have continuity (0 Ω = normal).
			③PCB failure.	①Check or replace PCB
Er 17		**Condenser water leak - Water cooled.** Water flowing through condenser during machine shut down or other low refrigerant pressure situation - defrost.	①Water regulator valve failure.	①Water regulator check / change
			②Flow sensor failure.(Outlet of condenser)	①Check Flow sensor / change, Disconnect the flow sensor terminal as a temporary measure. - If error has occurs machine keeps making ice.
Er 18		**Does not drain** If the dump valve is activated, but water level sensor do not reach low level within 5 minutes.	①Possible Insulation breakdown due to moisture penetration inside the water level sensor.	①Check if the low, high, COM sensor is energized (resistance 0 Ω - normal) in single condition. - When abnormal replace the water level sensor
			②Drain valve or drain line blockage or drain valve not working.	①Check drain line and drain line hole for debri. ②Check PCB power output and check drain valve operation

2.2 IM series PCB _ Dip switch setting



1	Descriptions
ON	Drain after harvest
OFF	Drain after ice making

2	Descriptions
ON	Use drain function
OFF	Do not use drain function (All the drain time : oFF)

3	Descriptions
ON	Air cooled
OFF	Water cooled

4	5	Descriptions
ON	ON	IM-0350/0460/0550-22 Series(22”)
ON	OFF	IM-1100 Series
OFF	ON	TBD
OFF	OFF	IM-0350/0460 /0550/0680 Series(30”)

- Initial dump : basic process

1) It only works at the beginning of the first “ice making".
2) Check the water level sensor and operate the dump valve and water pump in case of high water level.
3) When the low level is detected, the dump valve and the water pump are stopped.
4) The maximum drain time is 30 seconds.
5) After the initial drainage is completed, the water supply enters operation.

Model	Initial drain time	Drain after harvest	Drain after ice making	Water supply delay time	Pump stop time during ice making	Harvest Assist Temperature
30” Series	**20s**	**10s**	**N/A (20s)**	**15s**	**N/A (15s)**	**N/A (32F)**
22” Series	**20s**	**10s**	**N/A (10s)**	**5s**	**N/A (0s)**	**N/A (32F)**
1100 Series	**20s**	**10s**	**N/A (10s)**	**30s**	**N/A (15s)**	**N/A (32F)**

IM-0460/0680
Water cooled
Model

IM-0350/0460
0550/0680
Air cooled model

IM-0350/0460
0550-22(22”)
Water Cooled
Model

IM-0350/0460
0550-22(22”)
Air Cooled model

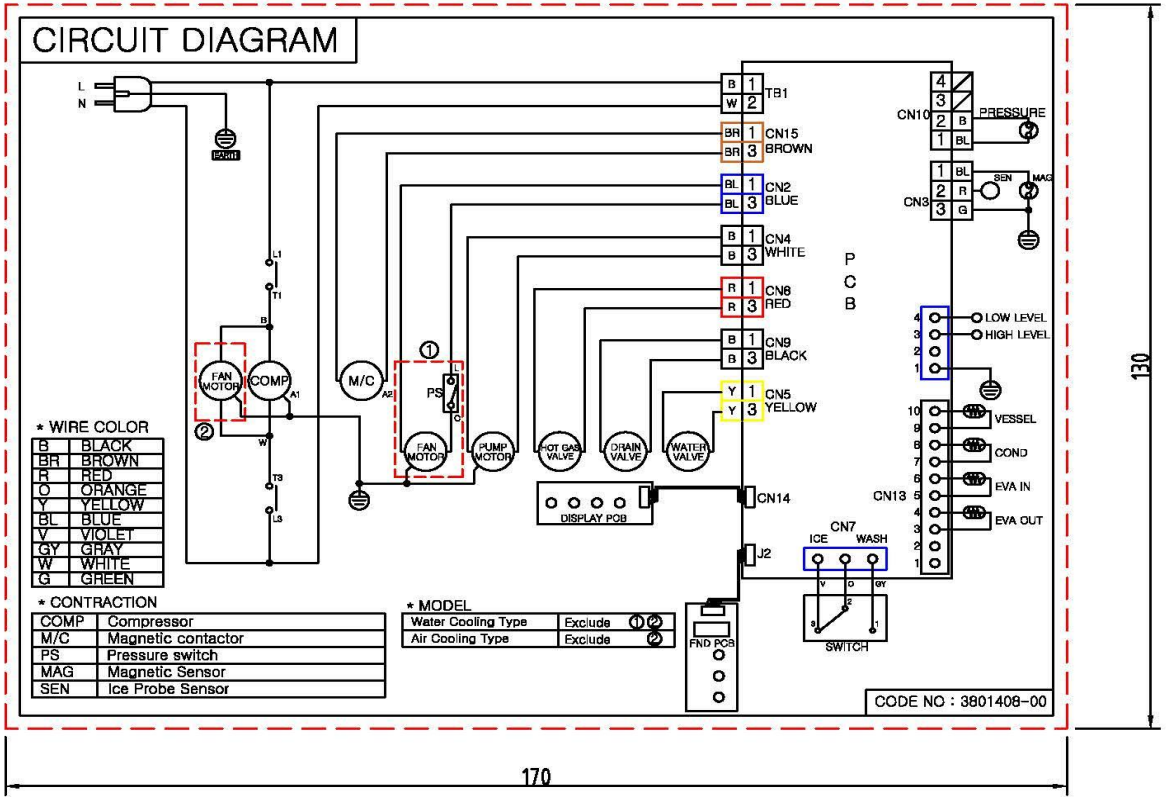
IM-1100
Water cooled
Model

IM-1100
Air cooled
Model

Should a replacement board be needed, insure setting is correct for model of ice maker

IM SERIES WIRING DIAGRAM

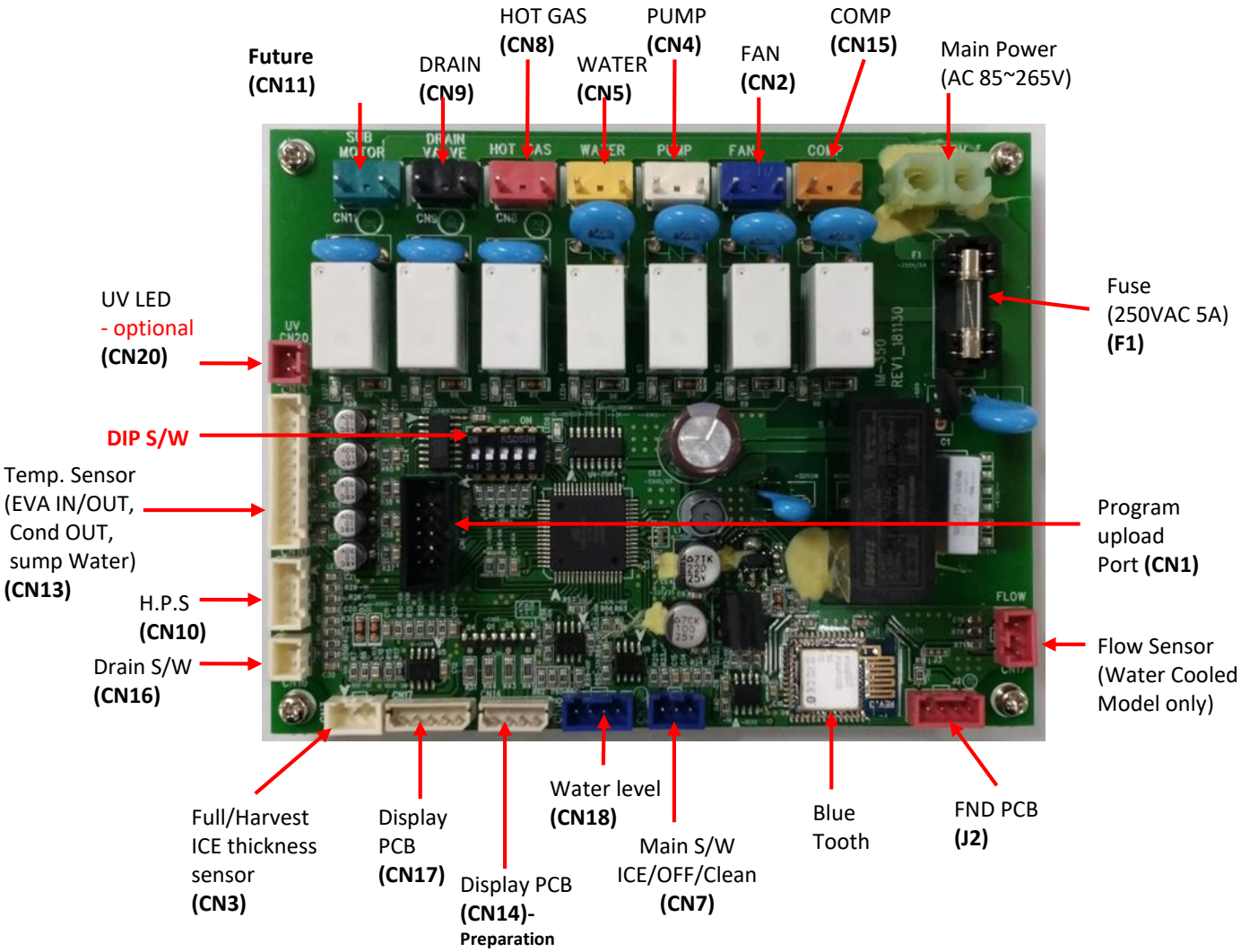
구분	수정일자	수정내용	작성자	비고



각도				NO	CODE-NO	데드롱지		1	ICI-350AN	
롱경						MATERIAL	TREATMENT	Q,TY	MODEL	REMARK
~ 500	±0.30	±0.90	±1.50	ICETRO		DATE	2018.06.27	NAME	LABEL CIRCUIT	
~ 150	±0.18	±0.55	±0.90	www.icetro.com						
~ 50	±0.10	±0.30	±0.50	DRAWN	DESIGN / CHECK / APPRO	TOLERANCE		SCALE		
~ 15	±0.07	±0.20	±0.35						DWG.NO	3801408-00
~ 5	±0.05	±0.10	±0.25					UNIT	MM	
각도	A급	B급	C급							
도면에 지정되지 않은 일반공차										

2. IM Series

2.1 IM series PCB _ Name of each part



CONTROL BOARD PRICING $230 LIST

Control Board

The control board provides diagnostics
to help Identify problems, should they occur. This is extremely beneficial in alerting the operator of a problem immediately. Which may save on additional ice purchases that could be incurred during down-time.

Features Include:

Temperature safety –
shuts-down unit if high temperature condition exists

Freeze back-up safety-
shuts-down unit after 3 sensing error during freeze cycle

Harvest back-up safety-
shuts-down unit after 3 harvest times errors

Voltage protection-
automatically shuts-down and restarts unit if voltage fluctuates outside of acceptable ranges. There is board fuse to protect board due to electrical spikes , drops or shorts.

Front Panel diagnostic lights
on control board to expedite repairs.
Flashing lights on panel will advise type of problem. Most often problems due to lack of cleaning.

Water use & sump cleaning can be adjusted to-
adapt to varying water conditions, reducing cleaning costs.

Reliable Operations & Longevity

- Ice is digested and sanitation and bacteria control must be checked to ensure the machine is safe by keeping it clean.
- 80-85% of machine failures are due to poor install, lack of cleaning, inadequate water treatment or airborne slime (Bacteria).
- **Citryne by Systems IV** for all machines with pH over 7.0
- **Carbon filtration** removes chlorine. If there is slime or growth inside of the machine it is from airborne particulate.
- Bi Polar is effective with airborne contamination.
- Cleaning requires both Ice machine cleaner & sanitizer and should be done under good conditions 1-2 times per year.

HOW DOES CITRYNE FILTRATION WORK

Chelation Process

The Systems IV water treatment systems use patent pending technology to soften hard water based on the scientific process of chelation in which the metal ions causing hard water, principally calcium and magnesium, are bound to the chelating agent in our FDA approved, proprietary formulation, which keeps the minerals (calcium and magnesium) soluble and unable to bind to cause hard water problems. The resulting water is soft and healthy for all of your equipment needs.

The ideal pH level of drinking water is between 6 and 8.5. The pH value of water is used to determine whether water is hard or soft. Pure water has a pH of 7, and water lower than 7 pH is considered acidic. Citryne is for all ice makers with water pH above 7. For systems with pH 7 or below use carbon & polyphosphate filters.

CITRYNE

Citryne is used to facilitate the chelation process.

CITRYNE™ is a food grade, biodegradable formulation that eliminates scale buildup. With its FDA approved ingredients, CITRYNE™ can be used on equipment without having to stop water flow. The CITRYNE formulation not only removes existing scale buildup, but will eliminate future potential scale buildup.

AIR BORNE BACTERIA CAUSES SLIME & BACTERIA TO GROW INSIDE OF MACHINE. BI-POLAR TECHNOLOGY HAS PROVEN VERY EFFECTIVE TO CONTROL SLIME & BACTERIA.

Pos/Neg Ions fall freely across evap, into sump and overflow into the bin for positive cleansing effect in cuber and bin.

No Ozone!

5. Operation Guide

ICE MAKING

1. Place the power switch on the front panel to 'Left (ICE)' to run the machine.

◆ When the product begins to run, the water will be supplied to water vessel, and the condenser and water pump will begin to run. (Approximately 20~30 seconds)

WASH

1. Place the power switch on the front panel to 'Right (WASH)' run the washing cycle.

◆ The washing process will automatically wash the water vessel, water pump, connecting hose, water distributor, and evaporator according to the washing procedure (preset by program).

◆ When you place the power switch from 'ICE' → 'WASH', it will begin washing after making and harvest ice.

[Wash Cycle]

① Supply water until the full level (30 seconds) → Run the pump for 10 minutes (Wash) → Drain for 40 seconds

② Supply water until the full level (30 seconds) → Run the pump for 1 minute and 30 seconds (Wash) → Drain for 40 seconds (Repeats ② five times)

※ For details of washing and sanitizing processes, please refer to 'Cleaning and Disinfection' of section 8 – 'Maintenance, Repair, and Disinfection'.

Cleaning and Disinfection

• General

The end user has the responsibility to take good care of and repair this ice maker according to the descriptions of this manual.
The insurance does not cover the maintenance procedure.
Basic sanitation and the maintenance and repair of ice maker will enhance reliability and performance and also reduce water consumption and power consumption.
You can minimize unwanted repairs caused by maintenance if you manage the ice maker according to our rules.
The following table shows the maintenance activities that end consumers and service personnel must perform and how often they need to perform them.
These figures indicate the minimum requirement. If low-quality water is supplied to the ice maker, you will have to clean the evaporator more often. If the condenser's air filter is completely clogged, it needs to be cleaned more often such as every week.

※Warning: If you do not fully understand the essential safety rules and procedures, please contact our agency to perform necessary repair.

[Cleaning and Disinfecting Inside]

• General

Clean and disinfect the ice maker every six month for efficient operation.
If the ice maker needs to be cleaned and disinfected more often, consult a certified service company to check water quality and take necessary actions.
If the condition inside the ice maker is not acceptable, disassemble key parts of the ice maker for cleaning and disinfection.

※Caution: Please use proven ice maker cleaning agent and disinfectant. (The cleaning agent is only available from us or our agency.)
Please read and fully understand the label printed on the storage bin before use in advance.
Do not mix ice maker cleaning agent and disinfectant.

The type and concentration of sanitizing agent(Ice Maker Cleaner, Sanitizer, mild or neutral detergent, and so forth)recommended
Comply with 40 CFR 180.9403 or
Be registered with the USA Office of pesticides program Antimicrobials Division
As a food contact sanitizer and
- If produced by a device, as defined per 40 CFR 152.5003, be demonstrable to be efficacious per USEPA performance. The device shall maintain a USEPA Site manufacturing device establishment number and
- If produced by a device, as defined per 40 CFR 152.5003, have in place and readily discernable to the operator a monitor or indicating device that the device is producing adequate amounts of sanitizing agent during the sanitization operation.

※Warning: Wear rubber gloves and goggles (or face mask) when using cleaning agent or disinfectant.

• Washing Method

Ice maker cleaning agent is used to remove lime trace and other mineral sediments.
It is not designed for removing fur or sticky mucous substance.
Refer to "Disinfection" section in the next page about removing fur or sticky mucous substance.
Mix 150ml of cleaning agent and 4 liters of water in a plastic or stainless storage bin.

Cleaning Agent (Nickel Safe Cleaner)	Water
150 ml (16 oz)	4 Liters
Disinfectant (5.25% Sodium Hypochlorite)	Water
200 ml	5 Liters

10. Before Contacting Service Center

If the machine is not operating as it is expected to, please check the following.
If the machine does not operate properly afterwards, please contact the retailer you purchased the product from or the service center.
When you contact the retailer or service center, please inform them the following thoroughly.
(Model name, manufacturer's serial, agency that sold the machine, date of purchase and the detailed description of the current state)

Operating Status	Checklist	What to do
1. Machine is Not Working	1. Is the power supplied?	1. Supply power.
	2. Is the power supply of the machine using correctly?	2. Check power and use exclusive outlet.
	3. Is the 3-step switch turned to ice?	3. If on 'OFF' or 'WASH', turn to 'ICE'.
	4. Is the water curtain open?	4. Eliminate the cause and close.
2. Takes Too Long to Make Ice	1. Machine is too dirty.	1. Clean as indicated in 'Clause 6'.
	2. Ambien temperature is too low.	2. Adjust ambient temperature to 50 °F or greater.
	3. Dregs remaining in the coolant flow control valve.	3. Clean the valve as indicated in 'Clause 6'.
	4. Ice thickness is too widely set.	4. Adjust to 0.23~0.31 inches.
3. Ice is Too Small or Dirty.	1. Water supply pressure is too weak.	1. Raise the supply pressure. Clean the strainer on the back.
	2. Machine is too dirty.	2. Clean as indicated in 'Clause 6'.
4. Does Not Form or Make Easily.	1. Ice thickness adjustment sensor is malfunctioning.	1. Maintain at around 0.23~0.31 inches by adjusting the sensor screw.
	2. Water supply level is too low or high.	2. Adjust water supply delay time.
	3. Water supply valve failure.	3. Check normal operation.
	4. Strainer is blocked.	4. Disassemble and clean the strainer on the back.
	5. Water supply temperature and pressure are high.	5. Refer to '3-2'.
5. Ice Producing Amount is Too Small	1. Supplied water is dirty.	1. Clean as indicated in 'Clause 6'.
	2. Insufficient water supply.	2. Check water pressure or water outage.
	3. Condenser is dirty.	3. Clean the filter on the back for air-cooled condenser.
	4. Ambient temperature is too high.	4. Ambient temperature should be less than 100 °F.
6. Water Standing inside Bin	1. Drain is higher than bin.	1. Ensure that the drain is lower than bin.
	2. Drain is clogged.	2. Clean the hose.

Thank You

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