



ICETRO

WM-Series Installation & Service Manual
Air & Water Cooled Cubers



**INSTALLATIONS, SERVICE & OPERATIONS FOR
WM-460/460-22/680/1100 SERIES ICE MAKERS**

INSTALLATION AND PRE-STARTUP CHECK LIST

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

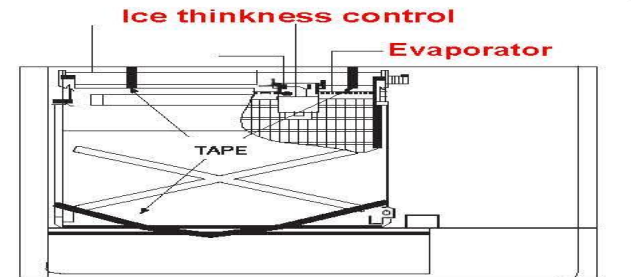
These items are NOT covered under your labor warranty.

- Has all tape and packing materials been removed from machine?
- 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.
- 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 pike or cause the circuit breaker to trip.
- Check drain line pipe sizes. Insure they are $\frac{3}{4}$ inch and line drops $\frac{1}{4}$ inch per foot of run to insure both machine and bin drainage is effective. Do not tie together machine and 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.
- Water Line size $\frac{3}{8}$ " inch must be supplied to insure sufficient water is available at all times. Required water pressure is 20 psi minimum and 80 psi maximum.
- Is the Unit installed in an area with sufficient ventilation on the sides, back and top for rejection of condenser heat?
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.
- 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 eventually shut down on a safety limit.
- Is the unit clean and without scale buildup? Scale or mold buildup can affect the sequence of operation, timing and production.
- Is a water filter installed? We recommend our exclusive Citryne Eco Ice Filtration for the best scale clean results. Scale can increase operating costs and reduce or shut down machines performance.

3. What to check before using the product

3-1. Removal of Tapes before Operation

After removing the front cover, be sure to remove the shake prevention tapes stuck to the sensor and the water curtain. - Unless the tapes are removed, the machine will not work.



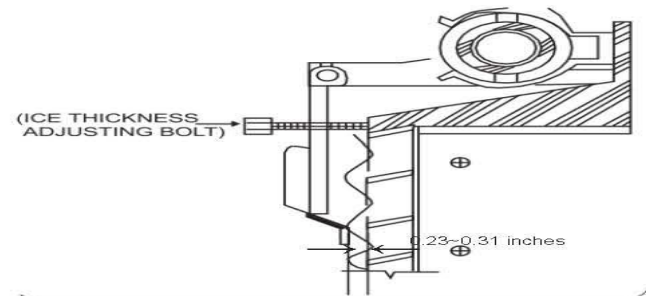
3-2. Check Water Level, make sure Ice Maker is level

The ice maker needs to be level to insure water flow over evap is consistent. Make sure water level is not allowing water to overflow into the overflow drain opening.



3-3. How To Adjust Ice Thickness

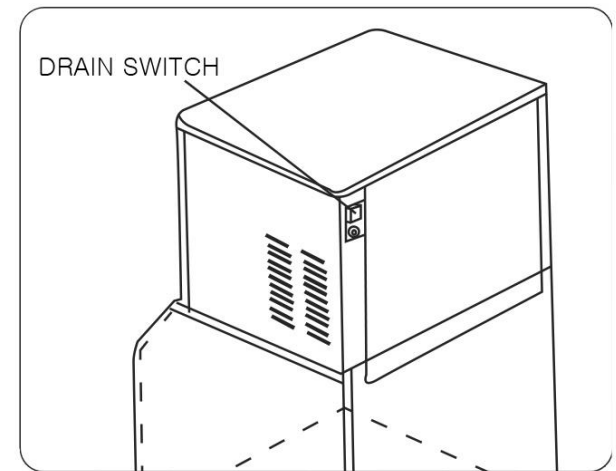
You can increase the thickness of the ice by turning the ice thickness adjusting bolt clockwise until it is about 0.23~0.31 inches away. Turn screw counter-clockwise to make ice bridge smaller.



“DRAIN SWITCH” ?

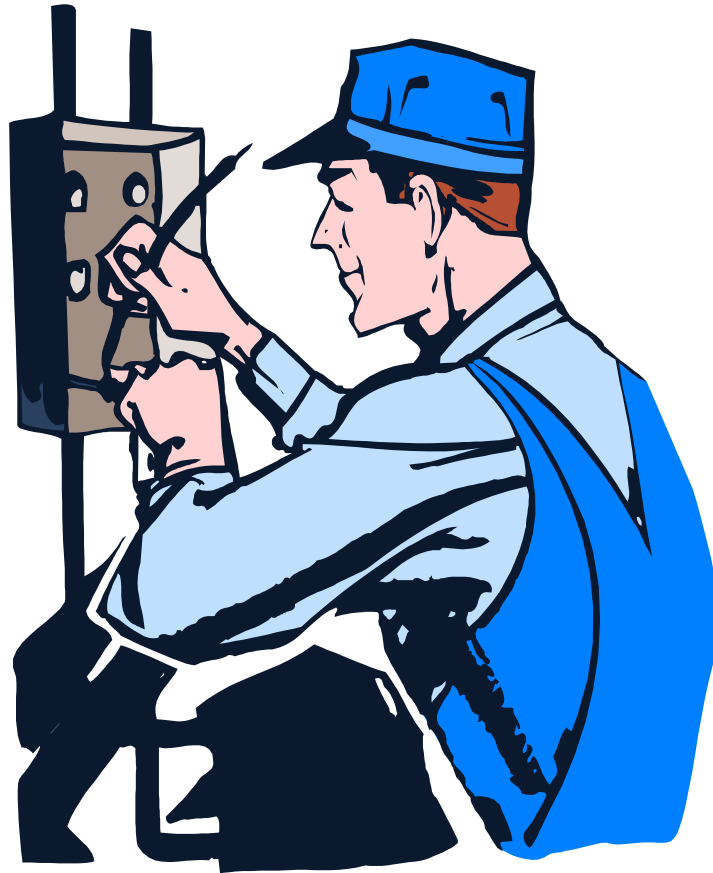
- ◆ WM-0460-AC / WM-0460-AH, WM-0460-AC(115V) / WM-0460-AH(115V)

Drain switch must be “ON” to insure proper flushing. Off position stops drain. Switch should only be in off position when pure water is supplied.

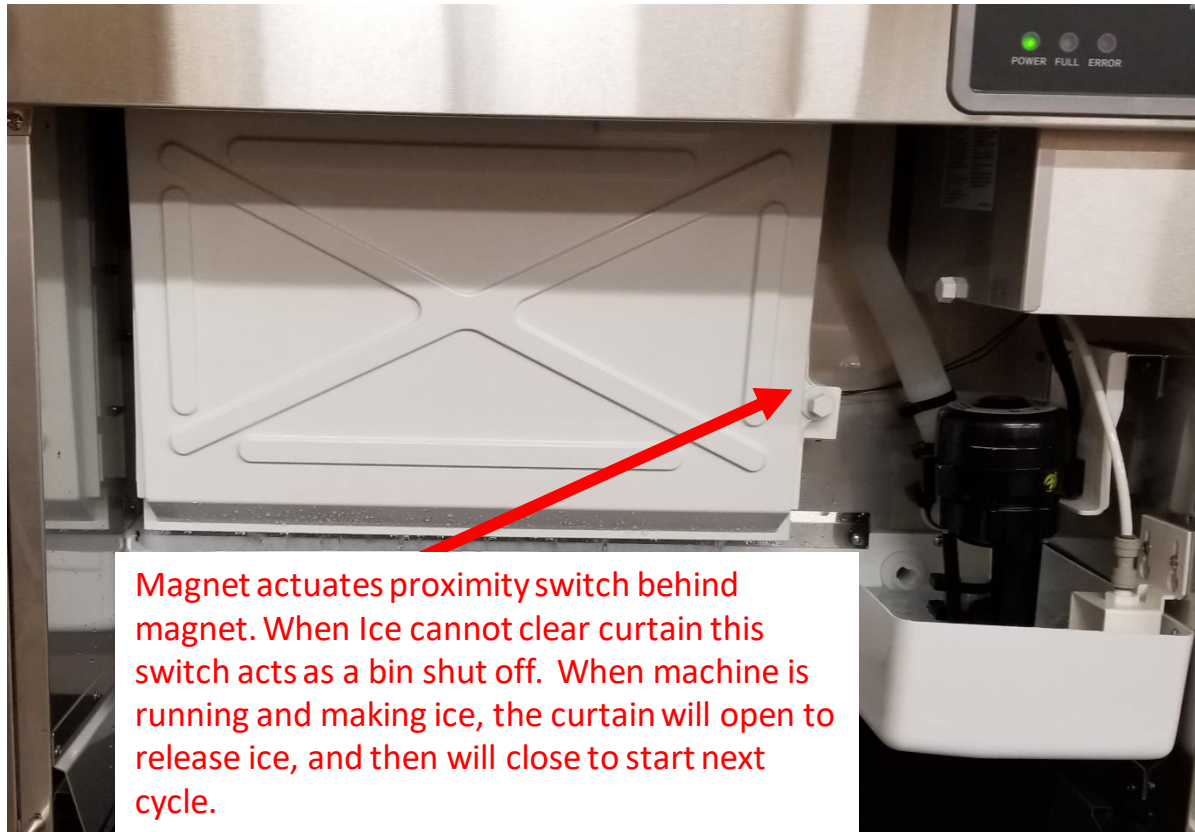


DRAIN SWITCH MUST BE ON TO PROPERLY FLUSH MACHINE.

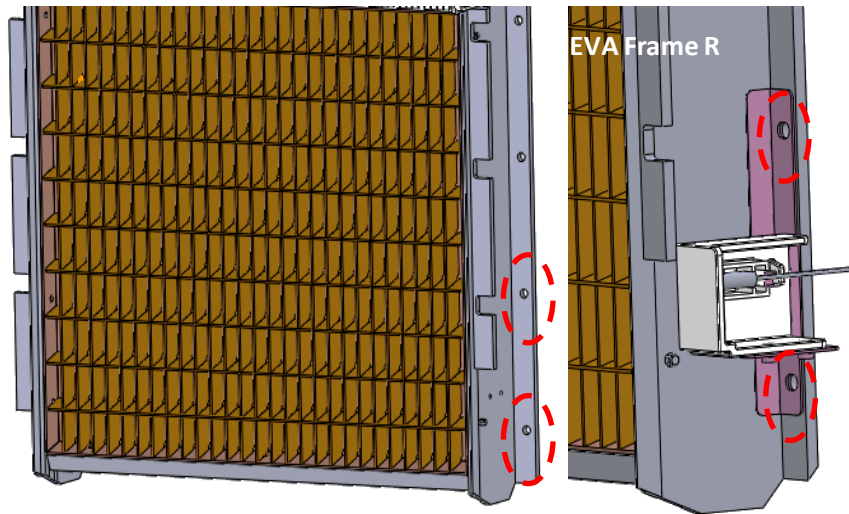
Refrigeration Circuit & Checking out the Controls & Components!



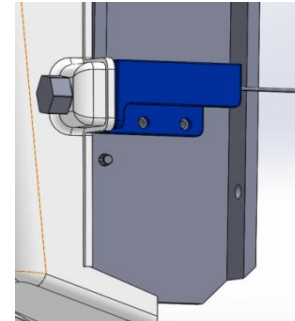
Water curtain magnet



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.



**Magnetic Proximity switch
is located behind water curtain.**



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.

(LABEL IS INSIDE OF MACHINE COVER)

Modular Cuber SEQUENCE OF OPERATION - 0460/0680/1100

INITIAL START-UP

1. Turn on water and allow water sump to fill until float valve shuts off completely.
2. Move the Ice-Off-Clean switch to the ice position.
3. Water pump and dump valve open and pump water from the sump.
4. After 26 seconds the Hot Gas Solenoid is energized along with the Water Pump and Dump Valve for 8 additional seconds
5. Water Pump Dump Valve are de-energized and the Hot Gas Solenoid remains energized for an additional 8 seconds.
6. Compressor and Condenser Fan circuits are energized along with the Hot Gas Solenoid for an additional 5 seconds.
7. *Hot Gas Solenoid is De-energized while Compressor and Condenser Fan continue to pre-chill the evaporator for 7 seconds.
8. With Compressor and Fan running, Water Pump is energized and water circulates over evaporator for approx. 9.5 minutes.
9. When water contacts the Ice Thickness Probe for 7 continuous seconds, machine enter defrost cycle
10. With Compressor and Water Pump running, Dump Valve and Hot Gas Valve are energized for 30 seconds.
11. Water Pump and Dump valve are De-energized while Hot Gas Valve and Compressor continue for approx. 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.

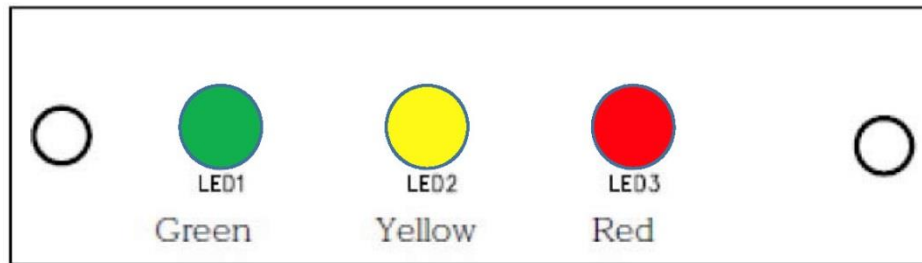
NORMAL CONTINUOUS SEQUENCE OF OPERATION DURING ICE MAKING MODE

1. With Water Curtain closed, Water Pump circulates water over evaporator while Compressor freezes evaporator plate
 2. When water contacts Ice Thickness Sensor for 7 continuous seconds, the machine enters defrost
 3. Water Pump, Dump Valve and Hot Gas Valve are energized for approximately 30 seconds.
 4. With brackish water pumped from the Sump Trough, Water Pump and Dump 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 closes the Curtain Switch and energize the machine with the same steps as “INITIAL START-UP”.
 - **The INITIAL START UP TAKES LONGER THAN NORMAL TO FILL SUMP AND REFRESH THE WATER TROUGH WITH CLEAN WATER. THIS OCCURS ON FIRST CYCLE.**
 - * Normal continuous operation starts a new cycle with steps 1 through #7.

Error Code Indicator lights

Diagnostics

Display Board



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

MODULAR CONTROL BOARD MODULAR CONTROL BOARD



FUSE
PROTECTION

Modular cuber Sequence of Operation 0460/0680

RELAY	1*	DELAY TIME	2	DELAY TIME	3	DELAY TIME	4	DELAY TIME	5*	DELAY TIME	6*	DELAY TIME	7*	DELAY TIME	8*	DELAY TIME
		26 sec.		8 sec.		8 sec.		5 sec.		7 sec.		9.5 min.		30 sec.		2 min
Compressor							on		on		on		on		on	
Cond. Fan							on		on		on					
Condenser fan motor controlled by Fan Cycling Pressure Switch																
Water pump	on		on								on		on			
Water Inlet	Not currently used on modular cube machines															
Hot Gas			on		on		on						on		on	
Drain	on		on										on			
Actuator	Not currently used on modular cubers															

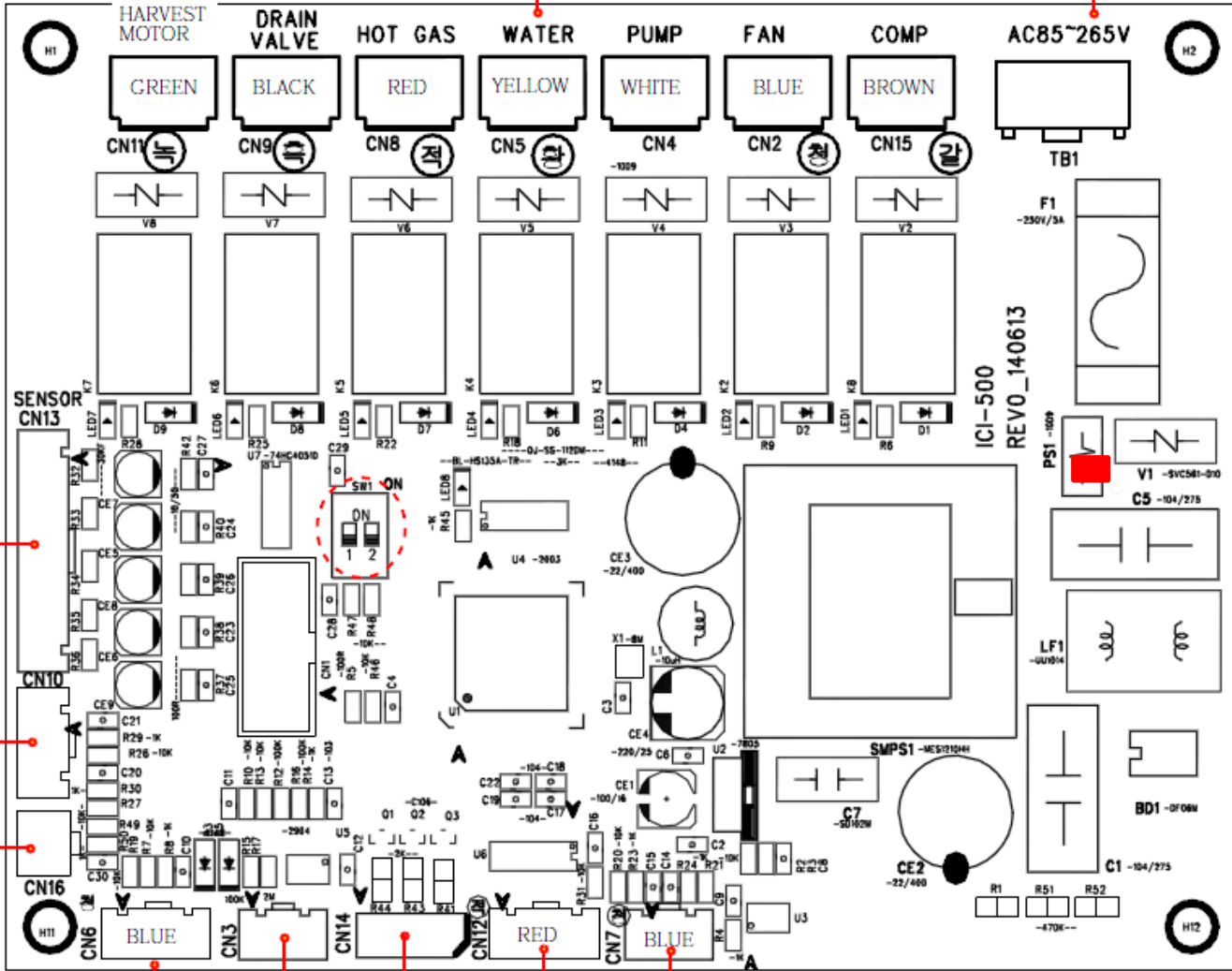
*

- 1 Start from 'power on' or restart after bin switch closed.
 - 5 2nd. And subsequent continuous freeze cycles start here
 - 6 Freeze time varies with air and water temperatures
 - 7 Initiates after water contact with ice thickness control for 7 continuous seconds.
Active brackish water drain and sump washout
 - 8 Defrost Time varies and terminates when curtain switch opens and closes with ice drop.
- * Note: If bin full and ice cannot clear evaporator and water curtain, open switch acts as bin switch and shuts machine down.
Machine re-start after bin switch shut down begins at sequence number 1.

Power Switch On

Preparation

AC POWER INPUT



Fuse
Time leg 5[A]

Preparation

High pressure
switch
Cam switch

drain
selection
switch

Preparation

Display

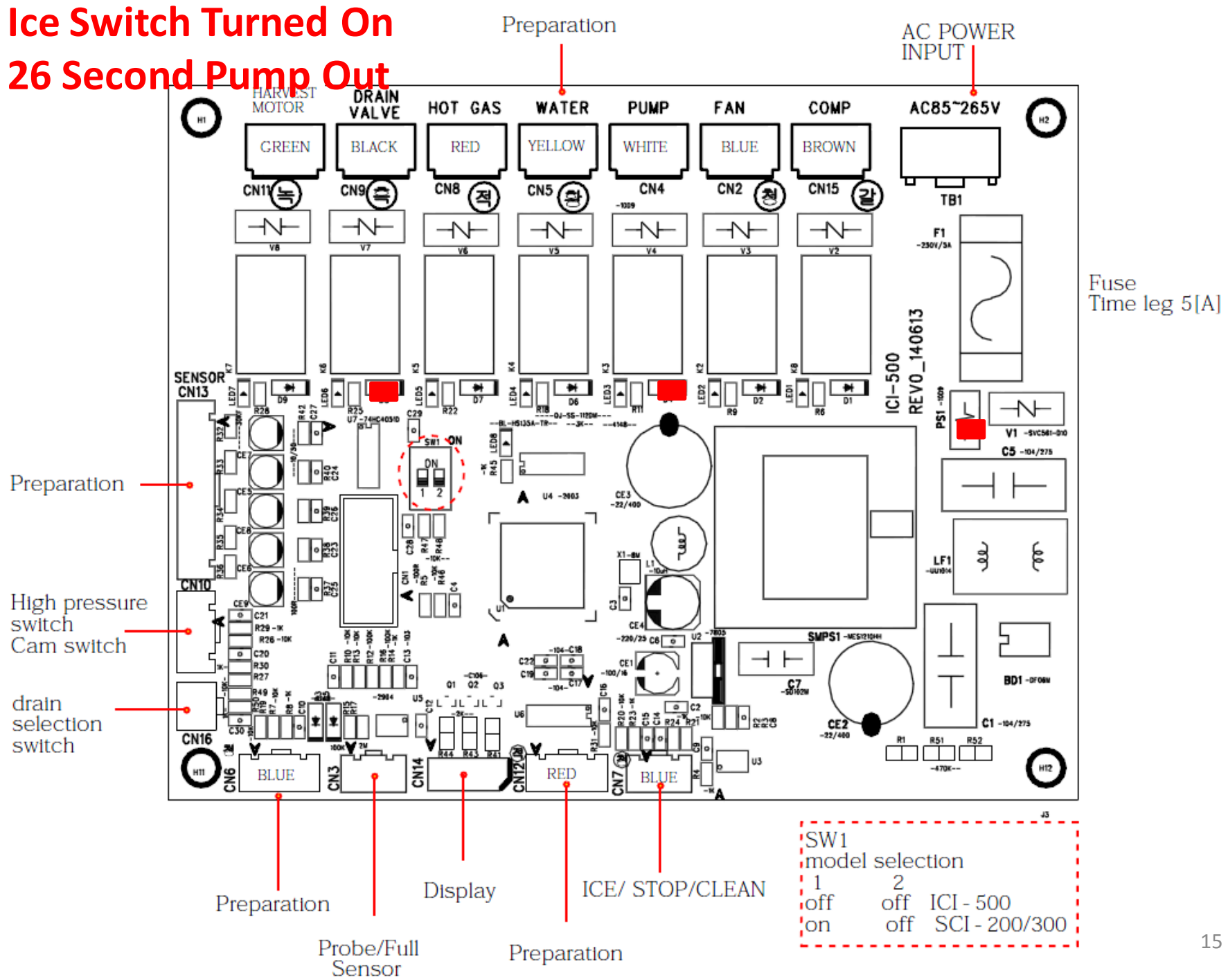
ICE/ STOP/CLEAN

Probe/Full
Sensor

Preparation

SW1
model selection
1 off ICI - 500
2 off SCI - 200/300
on off

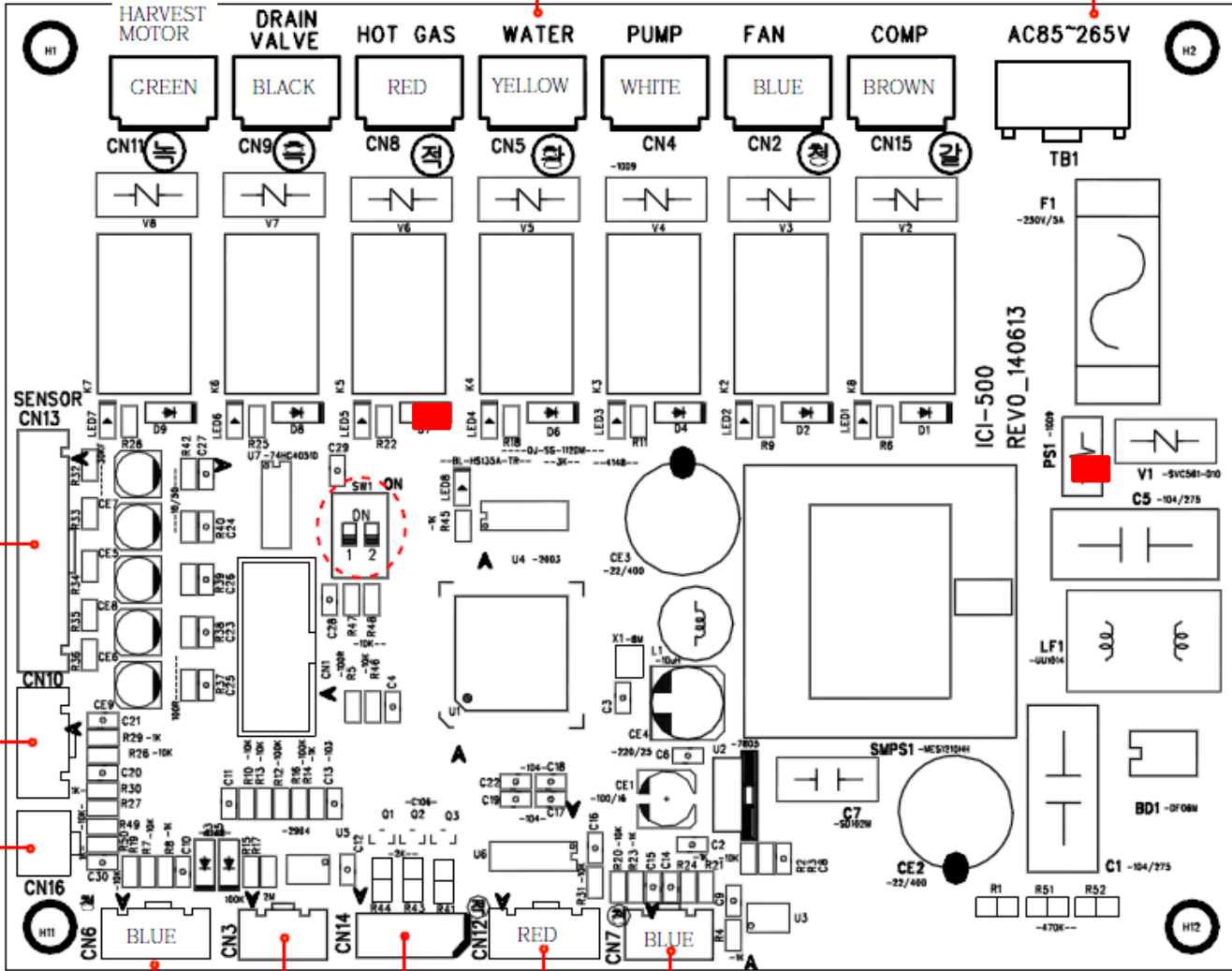
Ice Switch Turned On 26 Second Pump Out



Hot Gas Valve Opens,

Preparation

AC POWER INPUT



Fuse
Time leg 5[A]

Preparation

High pressure switch
Cam switch

drain selection switch

Preparation

Probe/Full Sensor

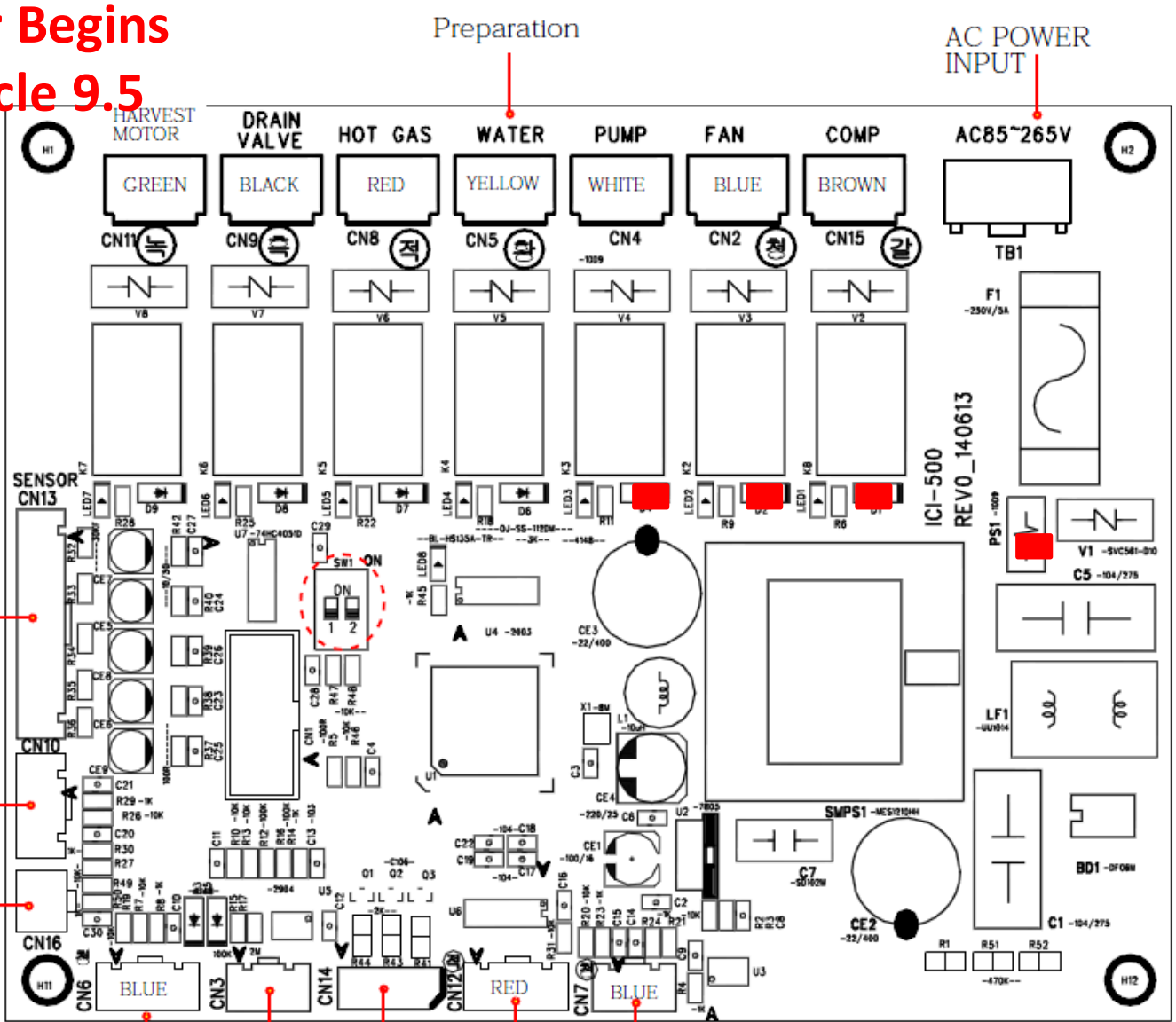
Display

Preparation

ICE/ STOP/CLEAN

SW1
model selection
1 2
off off ICI - 500
on off SCI - 200/300

Ice Maker Begins Freeze Cycle 9.5 Minutes



Fuse
Time leg 5[A]

Preparation

High pressure
switch
Cam switch

drain
selection
switch

Preparation

Probe/Full
Sensor

Display

Preparation

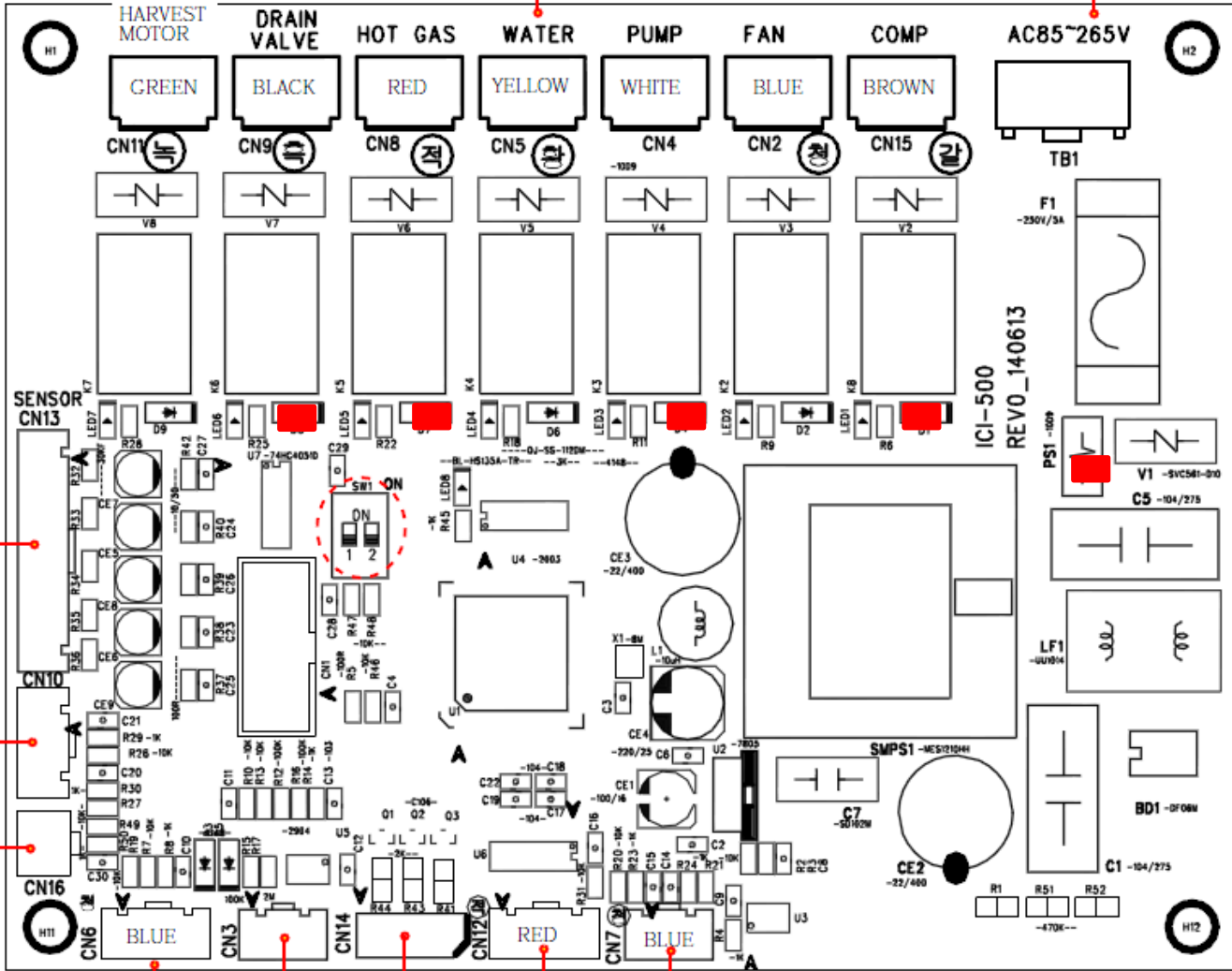
ICE/ STOP/CLEAN

SW1
model selection
1 2
off off ICI - 500
on off SCI - 200/300

Ice Thickness Control Senses Ice For 7 Seconds Machine Goes Into Harvest

Preparation

AC POWER INPUT



Fuse
Time leg 5[A]

Preparation

High pressure
switch
Cam switch

drain
selection
switch

Preparation

Probe/Full
Sensor

Display

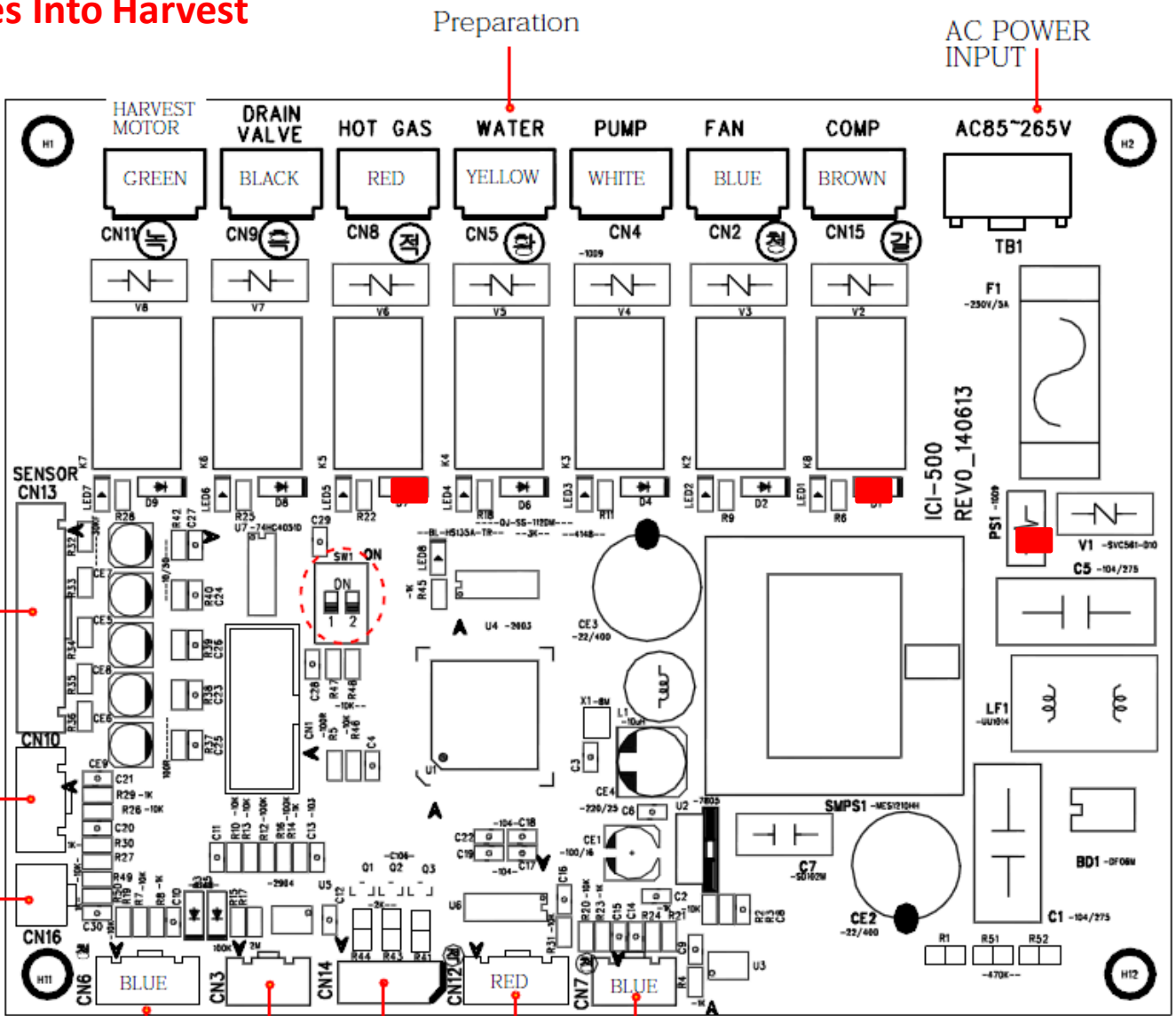
Preparation

ICE/ STOP/CLEAN

SW1
model selection

1	2	
off	off	ICI - 500
on	off	SCI - 200/300

Machine Goes Into Harvest



Fuse
Time leg 5[A]

Preparation

High pressure
switch
Cam switch

drain
selection
switch

Preparation

Probe/Full
Sensor

Display

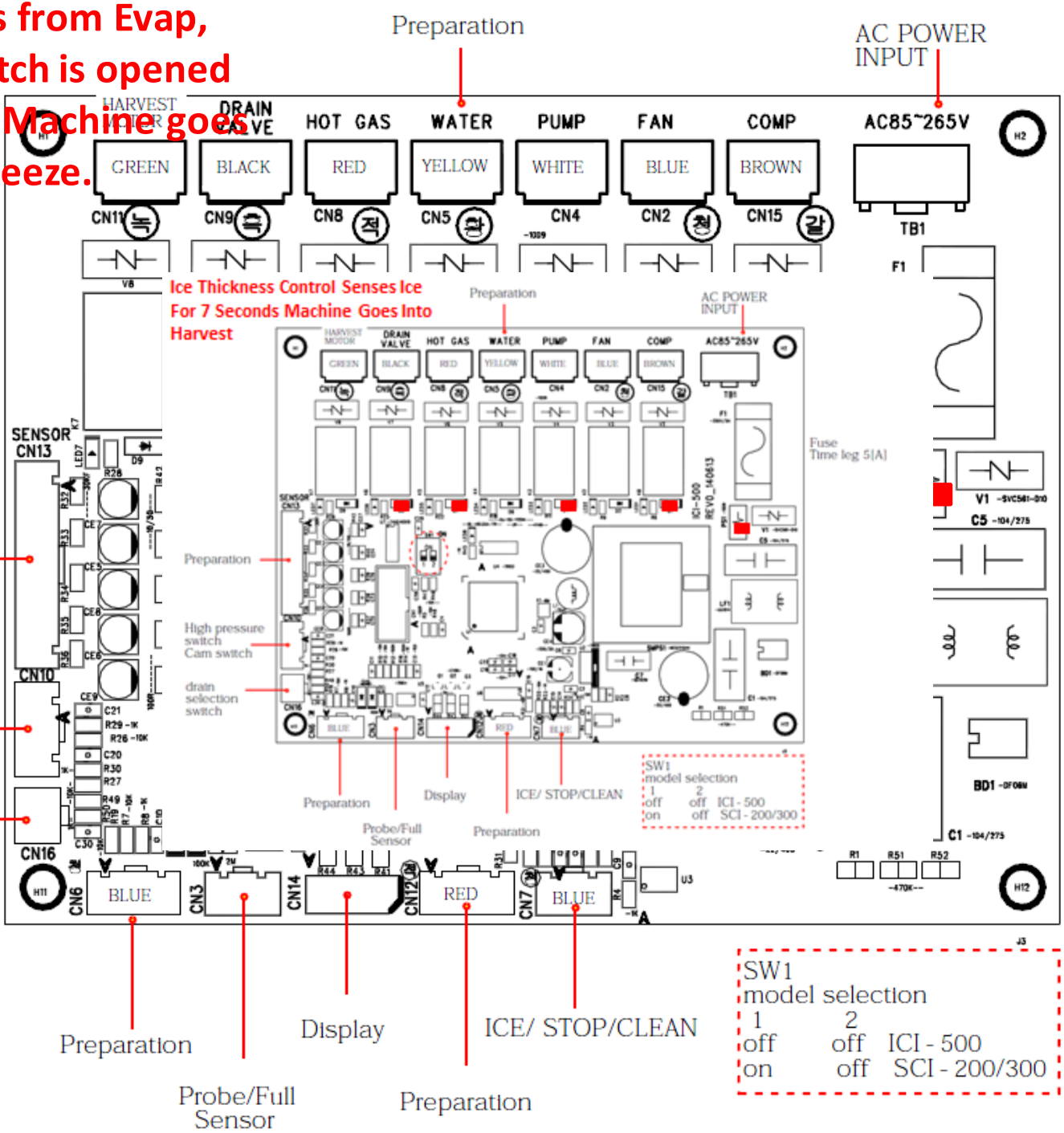
Preparation

ICE/ STOP/CLEAN

SW1
model selection
1 off ICI - 500
2 off SCI - 200/300
on off

**Ice Releases from Evap,
Curtain Switch is opened
And closes, Machine goes
Back into Freeze.**

**Ice Thickness Control Senses Ice
For 7 Seconds Machine Goes Into
Harvest**



Fuse Time leg 5[A]

Fuse Time leg 5[A]

Preparation

High pressure switch
Cam switch

drain
selection
switch

Preparation

Probe/Full
Sensor

Display

Preparation

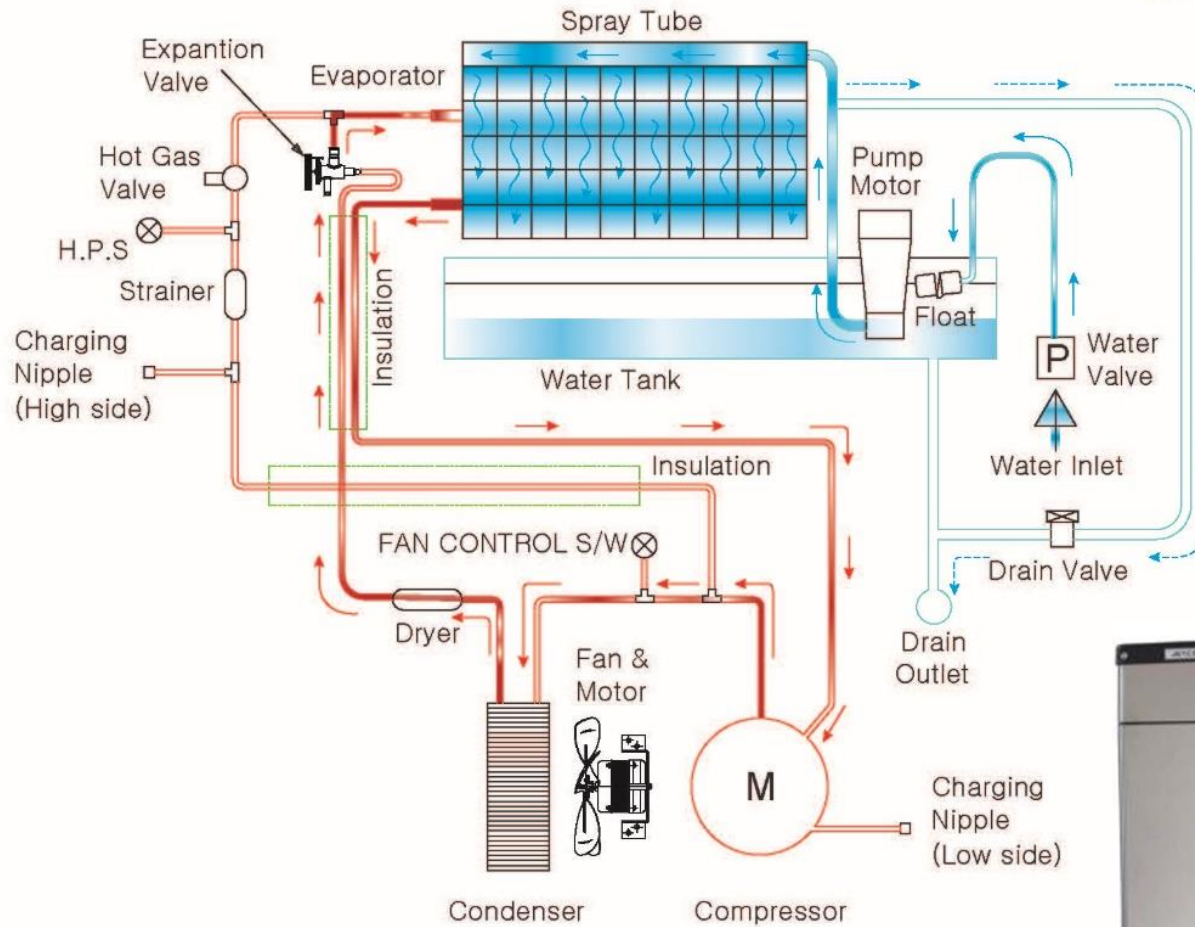
ICE/ STOP/CLEAN

WM-0460-AC/AH(115V)

WM-0460-AC/AH-22

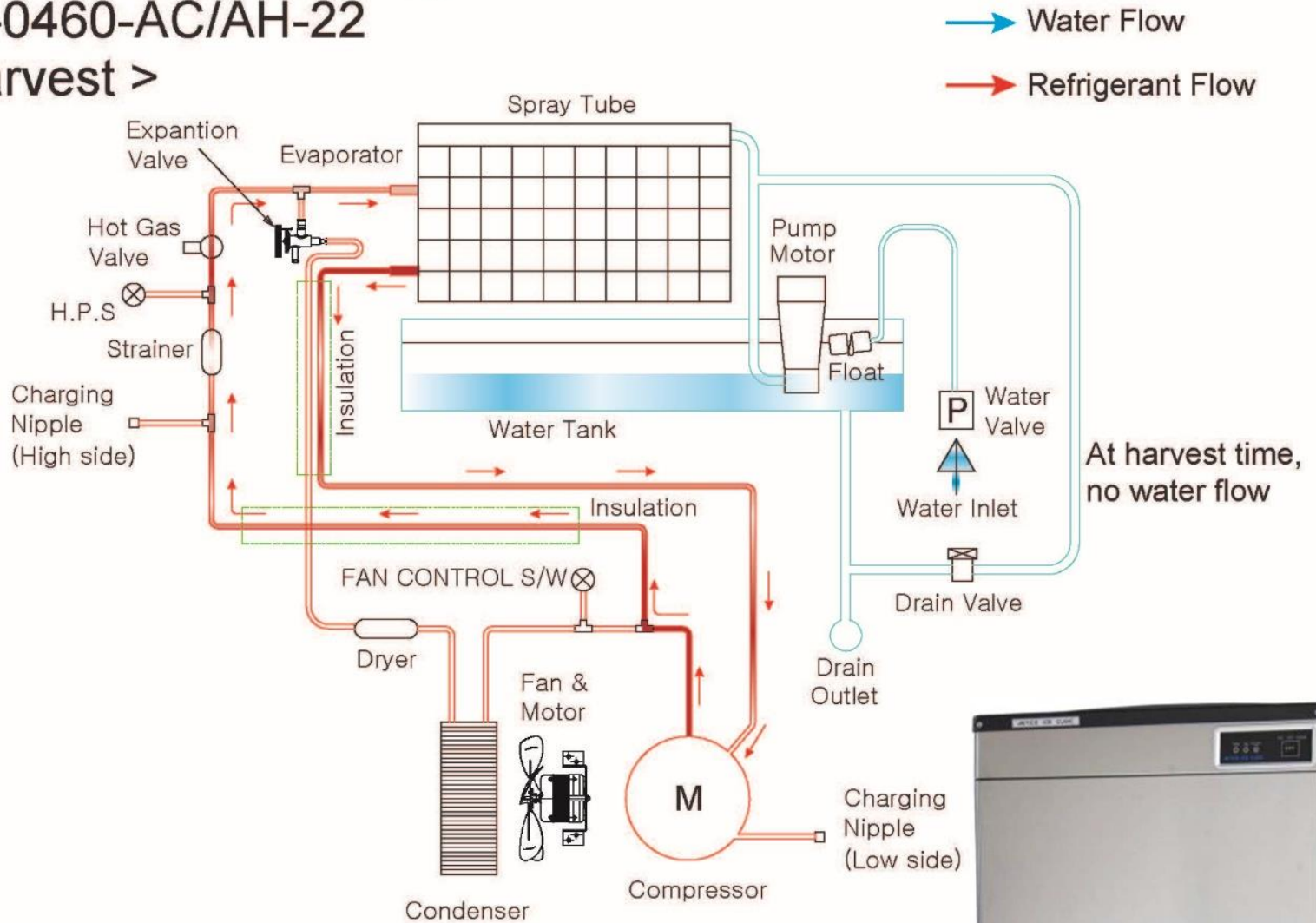
< Ice Making >

- Water Flow
- Refrigerant Flow
- Operating When drain valve switch "ON" position



WM-0460-AC/AH(115V) WM-0460-AC/AH-22

< Harvest >



When harvest time fan stop.



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. Carbon removes chlorine.
- 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™ 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.

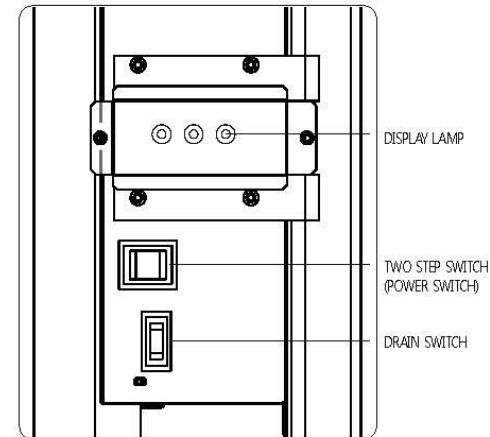


[WASH function]

1. Turn off the top right power switch.
(WM-0460-AC / WM-0460-AH,
WM-0460-WC / WM-0460-WH,
WM-0460-AC(115V) / WM-0460-AH(115V),
WM-0460-AC-22 / WM-0460-AH-22,
WM-0460-WC-22 / WM-0460-WH-22,
WM-0680-AC / WM-0680-AH,
WM-0680-WC / WM-0680-WH)
1. Turn off the power switch inside the front cover.
(WM-1100-AC / WM-1100-AH, IM-1100-RC /
IM-1100-RH, WM-1100-WC / WM-1100-WH)
2. Remove all ice; discard them or store in a proper
container such as ice box or freezer.
3. Dilute 0.1lb of mild detergent in 2.1gal of water
at 95~113 °F and pour into the water supply container.
4. **Turn on the power switch at the back to WASH.**
**The pump motor will run for about a minute
and a half, and then stop for around 30 seconds.**
This cycle will be repeated 5 times.
5. **Repeat the cycle above for 2 or 3 times?**
Refill the container with mild detergent as needed.
6. Dilute detergent with water to clean the ice container,
hoses, ice bucket, or water container.
7. Put back the ice in the container after cleaning.



- [WM-0460-AC / WM-0460-AH,
WM-0460-WC / WM-0460-WH,
WM-0460-AC(115V) / WM-0460-AH(115V),
WM-0460-AC-22 / WM-0460-AH-22,
WM-0460-WC-22 / WM-0460-WH-22,
WM-0680-AC / WM-0680-AH,
WM-0680-WC / WM-0680-WH]



- [WM-1100-AC / WM-1100-AH,
IM-1100-RC / IM-1100-RH,
WM-1100-WC / WM-1100-WH]



- **Be sure to clean the ice bucket periodically as with other food container.**
- **The handle of the ice bucket may get exposed to viruses from the user's hands, etc**

THANK YOU



ICETRO