

SERVICE MANUAL

LMI-300/500/650/900A

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1 General Information

1.1 For your safety

WARNING

- The ice machine must be installed in accordance with individual State/Regional Codes and regulations.
- Read the manual thoroughly before installation. Improper installation may void or limit warranty coverage. Most Importantly, Improper installation may damage the unit and could cause serious injury.
- The ice machines must be installed and serviced by a licensed and qualified technician.
- The ice machine must be grounded and have an independent electric supply.
- The ice machine must be leveled and the front edge of modular head and storage bin must be flat.
- Water Supply to the ice machine must be potable and of food grade quality.
- High pressure refrigerant is charged into the ice machine. Be careful not to damage the refrigerant circuit during installation, maintenance, and service.
- Remove remaining water on the bottom side of the ice machine and any other things may cause danger before installation, maintenance, and service.
- Turn off the power and disconnect electrical connection before installation, maintenance, and service.
- Wear full protective clothing when using chemicals for maintenance.
- Do not remove the ice by using sharp tools such as a knife. This prevents damage to the evaporator.

1.2 How to read model names and serial numbers

BLMI-500A

B: Blue Air (on US model # only)
 L: Lassele (Our brand in S. Korea)
M-Modular or **U**-Undercounter
 I: Crescent shaped ice

A: Air-cooled
 W: Water-cooled
 D: Dispenser

Daily ice Production in LBS.

[Label barcode]



MODEL NAME

- a (4 digits) : CIS code for specific model
- b (1 digit) : Product group
- c (2 digits) : Manufacturing site (supplier code)
- d (1 digit) : Manufacturing year
- e (1 digit) : Manufacturing month
- f (5 digits) : Serial number (00001 ~ 99999)

LUIA A 94 H 2 00001

a b c d e f

Year	2015	2016	2017	2018	2019	2020
Mark	G	H	J	K	M	N
Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.
Mark	1	2	3	4	5	6
Month	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Mark	7	8	9	A	B	C

1.3 Installation

1.3.1 Suggested installation requirements

- Indoors with good ventilation.
- No heaters or hot side equipment around the machine. Do not place in direct sunlight.
- Absolutely requires a sufficient water supply, well equipped drainage system, and close proximity to power outlet.
- Ice machine should not have any obstructions near the machine to promote and maintain proper air flow and optimum ice production.

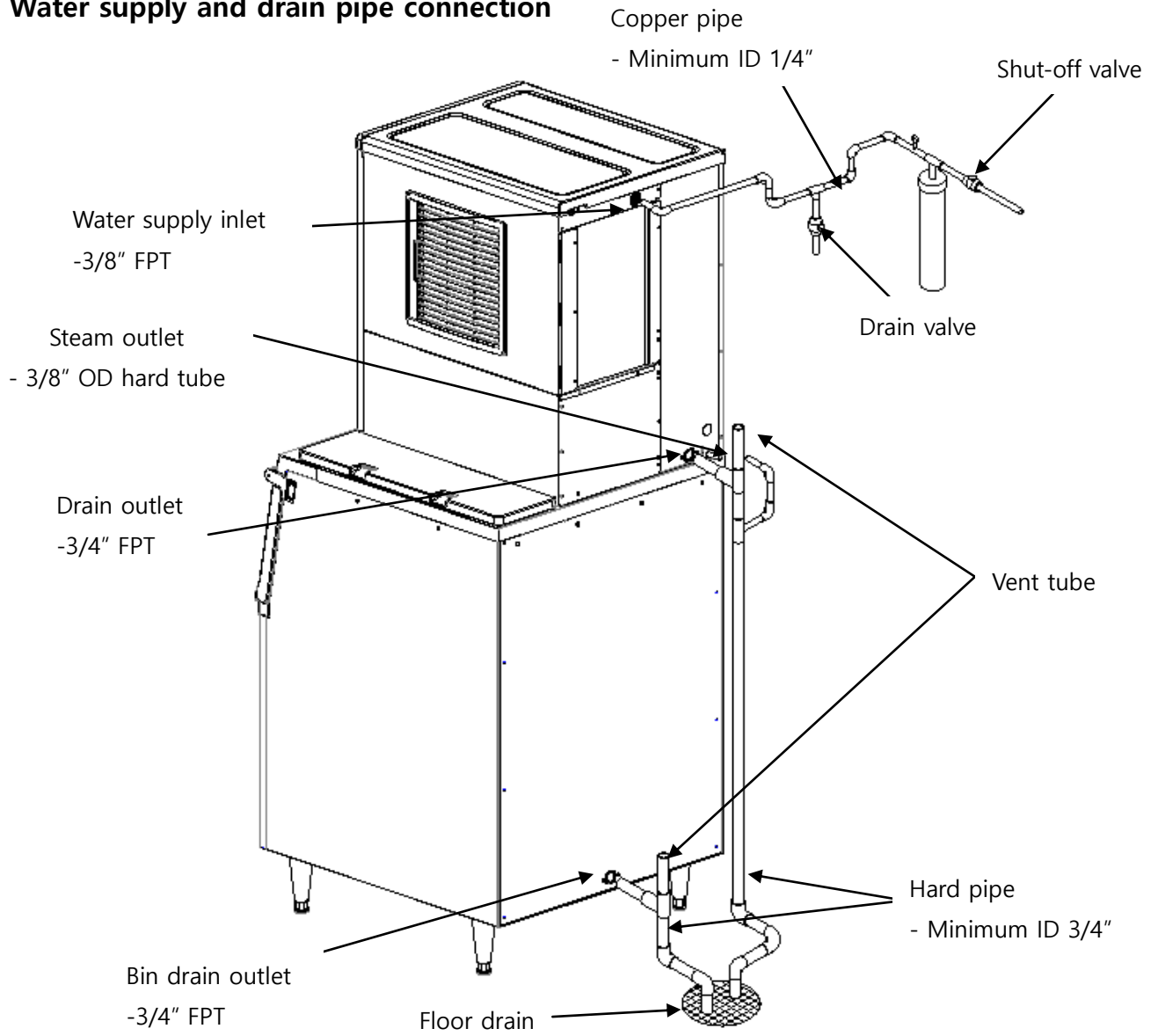
1.3.2 Installation check list

- Are the front edges of modular head and ice storage bin level and in alignment?
- Is the air vent pipe for the machine and drain line for ice storage bin separated?
- Is there an air gap at the end of the drain pipe of the ice storage bin?
- Have the modular head and ice storage bin, been checked and cleaned after installation?
- Is the drain pipe easily disconnected from the modular head?
- Is there 8" (200mm) minimum clearance around the ice machine?

1.3.3 Required environmental condition

Contents	Model	Available Range
Ambient Temperature	All	7-38°C
		45-100°F
Water Temperature	All	7-32°C
		45-90°F
Water Pressure	All	30-100psig
		2-7kg/cm ²
Voltage	115V	104-127V
	208-230V	187-264V
	220-240V	198-254V

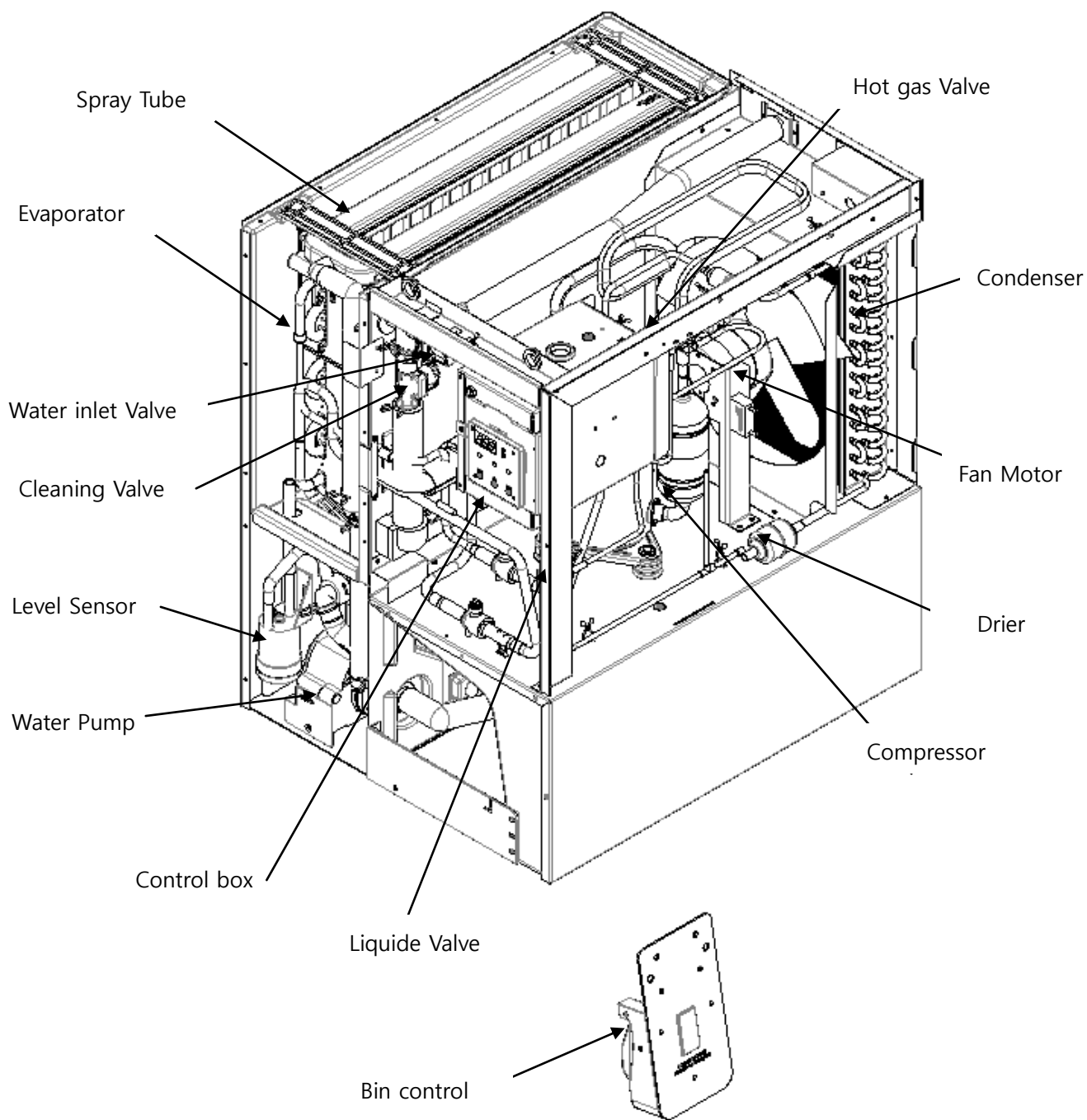
1.4 Water supply and drain pipe connection



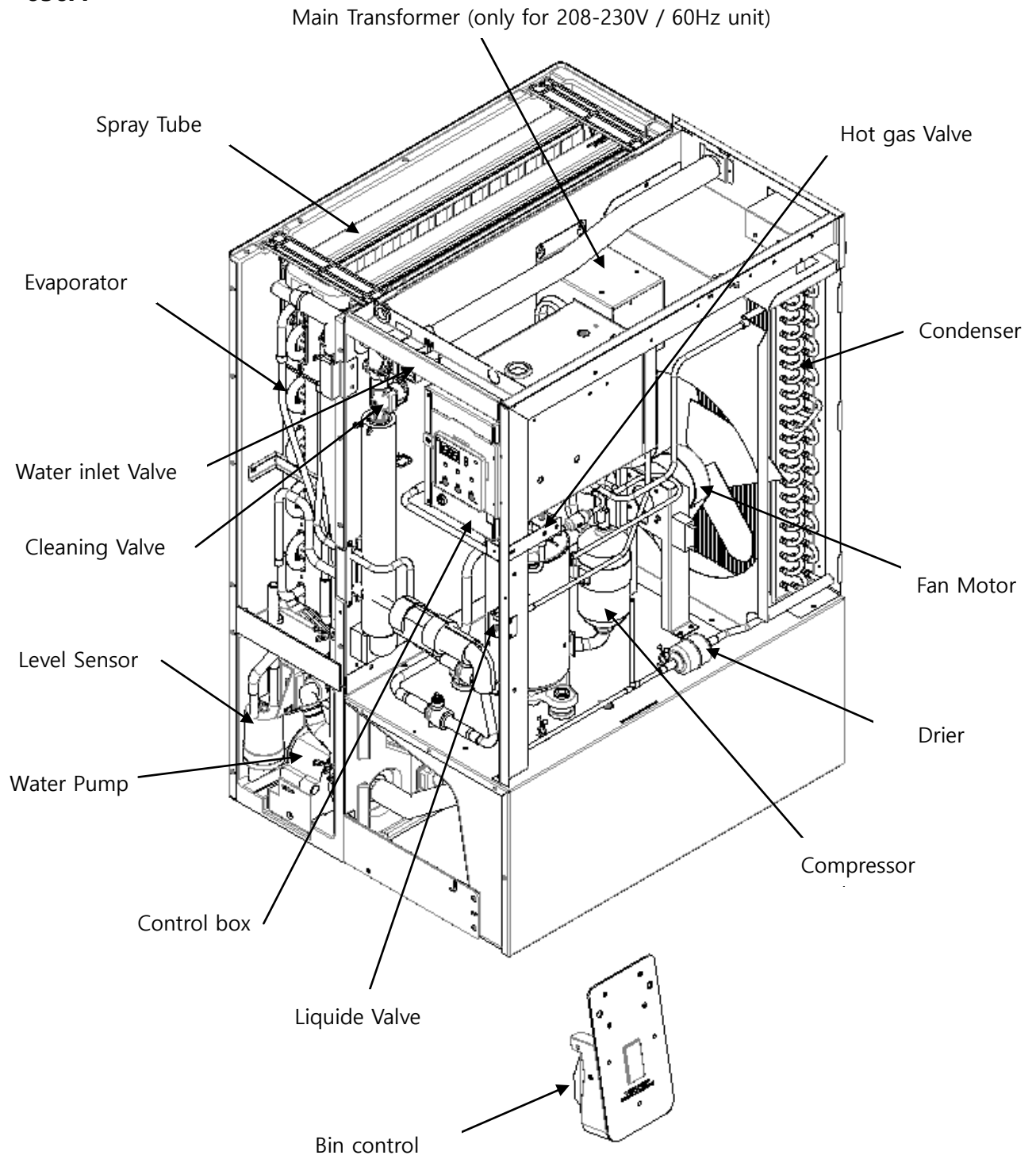
There must be at minimum of 2" (50mm) vertical clearance between drainage pipe end and drainage hole.

1.5 Assembly structure

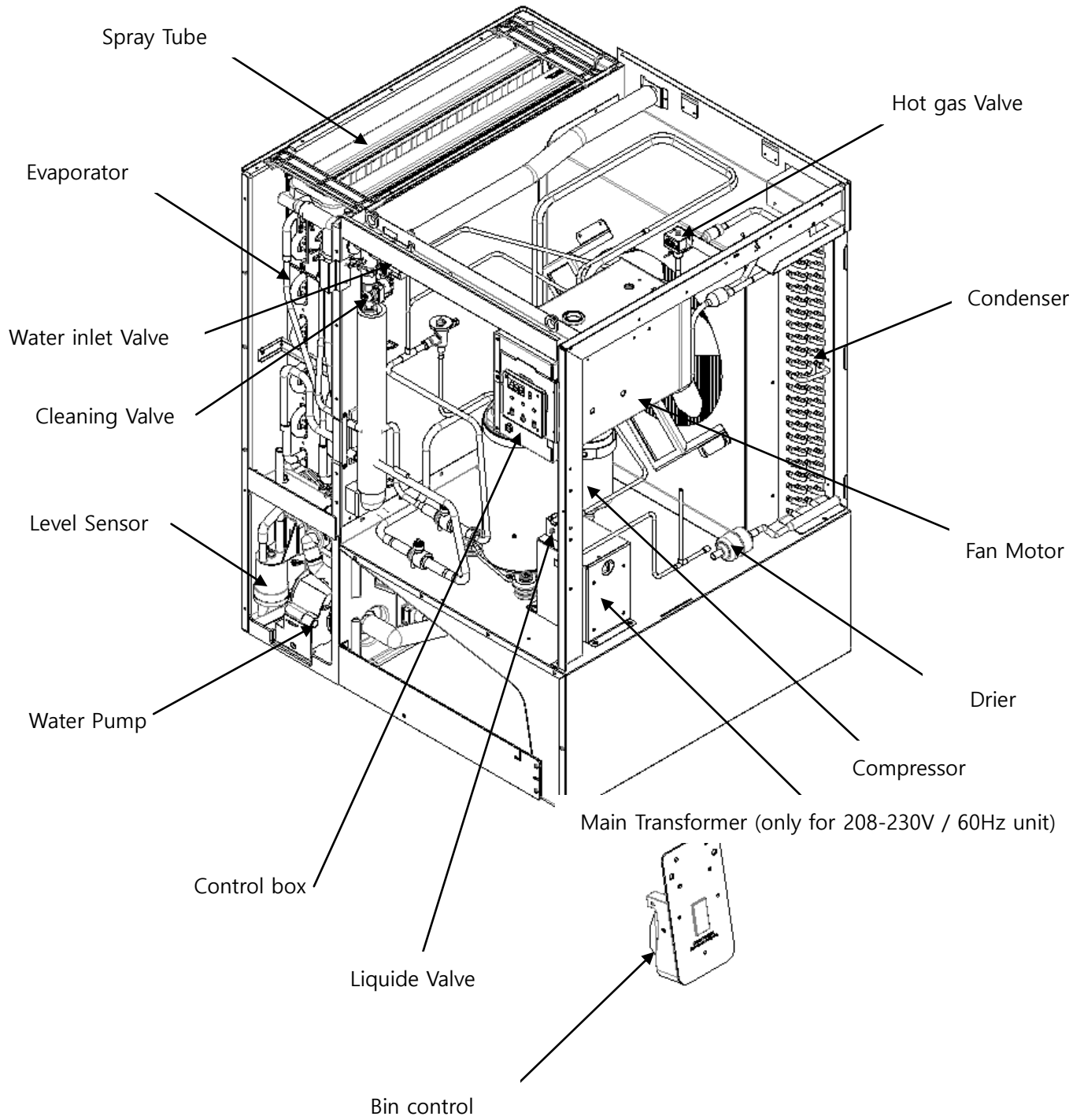
1) 300A/500A



2) 650A



3) 900A



1.6 Specification

Content	300A			REMARKS
AC Supply voltage	115V / 60Hz / 1Ph	220V / 60Hz / 1Ph	220V/ 50Ph / 1Ph	
Amperage / power onsumption	8.0A / 607W	6.0A/785W	6.0A/630W	AT90°F/WT70°F AT32°C/WT21°C
Maximum Fuse Circuit Breaker	15A	-		
Product size (W*D*H)	22" * 27 3/8" * 30 5/8" (inch) [558(W) * 696(D) * 778(H) (mm)]			
Weight	Net 53kg (117 lbs)	Net 60 kg (132 lbs)		
Per Cycle (lb / Cubes)	6.64 lb (2.9 Kg) / 360 EA	6.64 lb (2.9 Kg) / 360 EA	6.64 lb (2.9 Kg) / 360 EA	-
Refrigerant	R-410A	R-404A	R-404A	

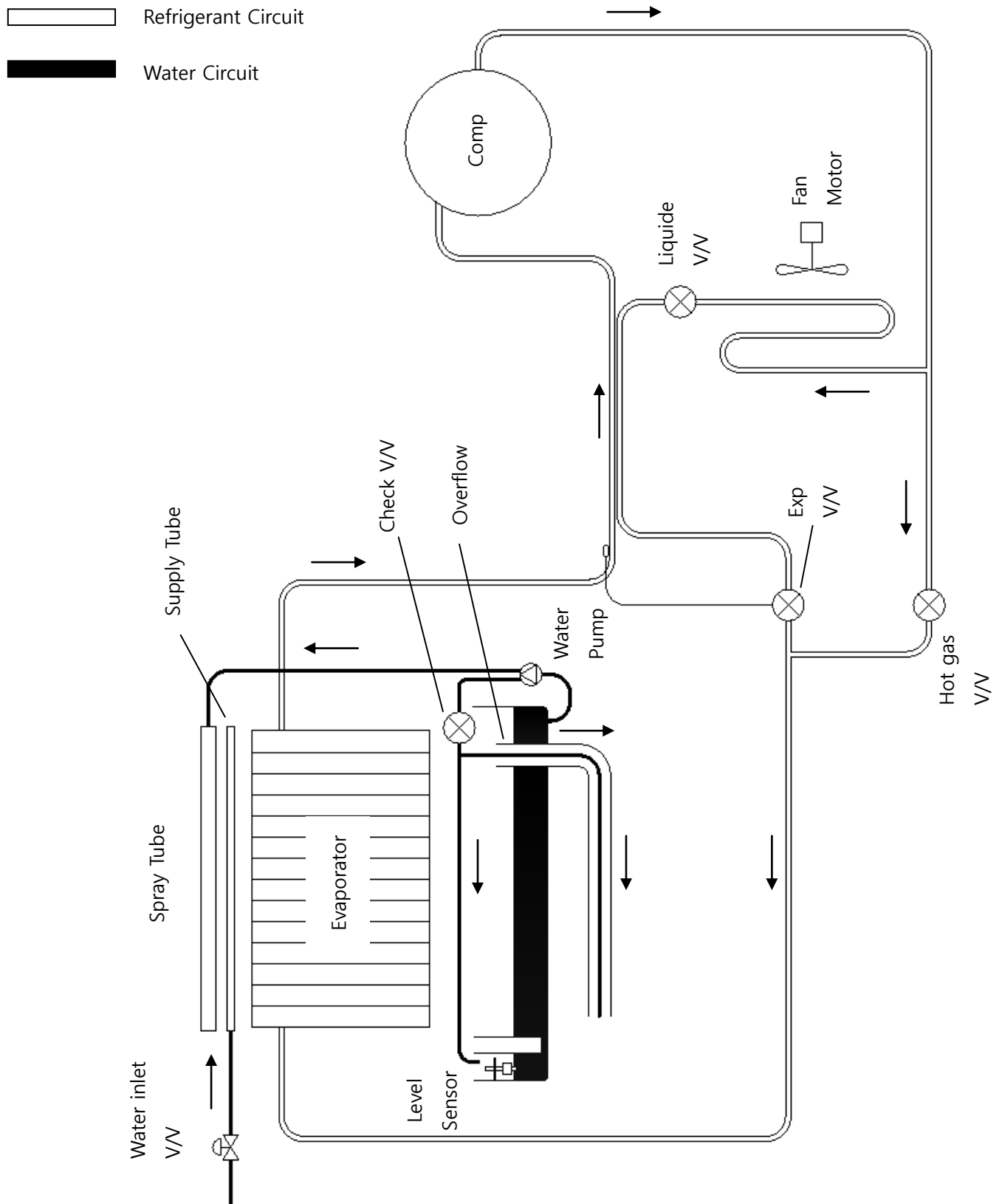
Content	500A			REMARKS
AC Supply voltage	115V / 60Hz / 1Ph	220V / 60Hz / 1Ph	220V/ 50Ph / 1Ph	
Amperage / power onsumption	14.0A / 977W	7.0A / 921W	7.0A / 930W	AT90°F/WT70°F AT32°C/WT21°C
Maximum Fuse Circuit Breaker	15A	-		
Product size (W*D*H)	22" * 27 3/8" * 30 5/8" (inch) [558(W) * 696(D) * 778(H) (mm)]			
Weight	Net 59kg (130lbs)	Net 62kg (136lbs)		
Per Cycle (lb / Cubes)	9.83 lb (4.45 Kg) / 480 EA	9.83 lb (4.45 Kg) / 480 EA	9.83 lb (4.45 Kg) / 480 EA	-
Refrigerant	R-410A	R-404A	R-404A	

Content	650A			REMARKS
AC Supply voltage	208-230 V / 60Hz / 1Ph (for 115V)	220V / 60Hz / 1Ph	220V/ 50Ph / 1Ph	
Amperage / power onsumption	9.0A/1186W	6.0A/1074W	6.0A/1070W	AT90°F/WT70°F AT32°C/WT21°C
Maximum Fuse Circuit Breaker	15A	-		
Product size (W*D*H)	22 * 27 3/8 * 37 3/4 (inch) [558 (W) * 696 (D) * 958 (H) (mm)]			
Weight	Net 73kg (161lbs)	Net 68kg (150lbs)		
Per Cycle (lb / Cubes)	14.35 lb (6.5 Kg) / 720 EA	14.35 lb (6.5 Kg) / 720 EA	14.35 lb (6.5 Kg) / 720 EA	-
Refrigerant	R-410A		R-410A	

Content	900A			REMARKS
AC Supply voltage	208-230 V / 60Hz / 1Ph (for 115V)	220V / 60Hz / 1Ph	220V/ 50Ph / 1Ph	
Amperage / power onsumption	9.0A/1133W	6.0A/1545W	6.0A/1599W	AT90°F/WT70°F AT32°C/WT21°C
Maximum Fuse Circuit Breaker	15A	-		
Product size (W*D*H)	30" * 27 3/8" * 37 3/4 " (inch) [762(W) * 696(D) * 958(H) (mm)]			
Weight	Net 86kg (190lbs)	Net 81kg (178lbs)		
Per Cycle (lb / Cubes)	14.35 lb (6.5 Kg) / 720 EA	14.35 lb (6.5 Kg) / 720 EA	14.35 lb (6.5 Kg) / 720 EA	-
Refrigerant	R-410A	R-410A	R-410A	

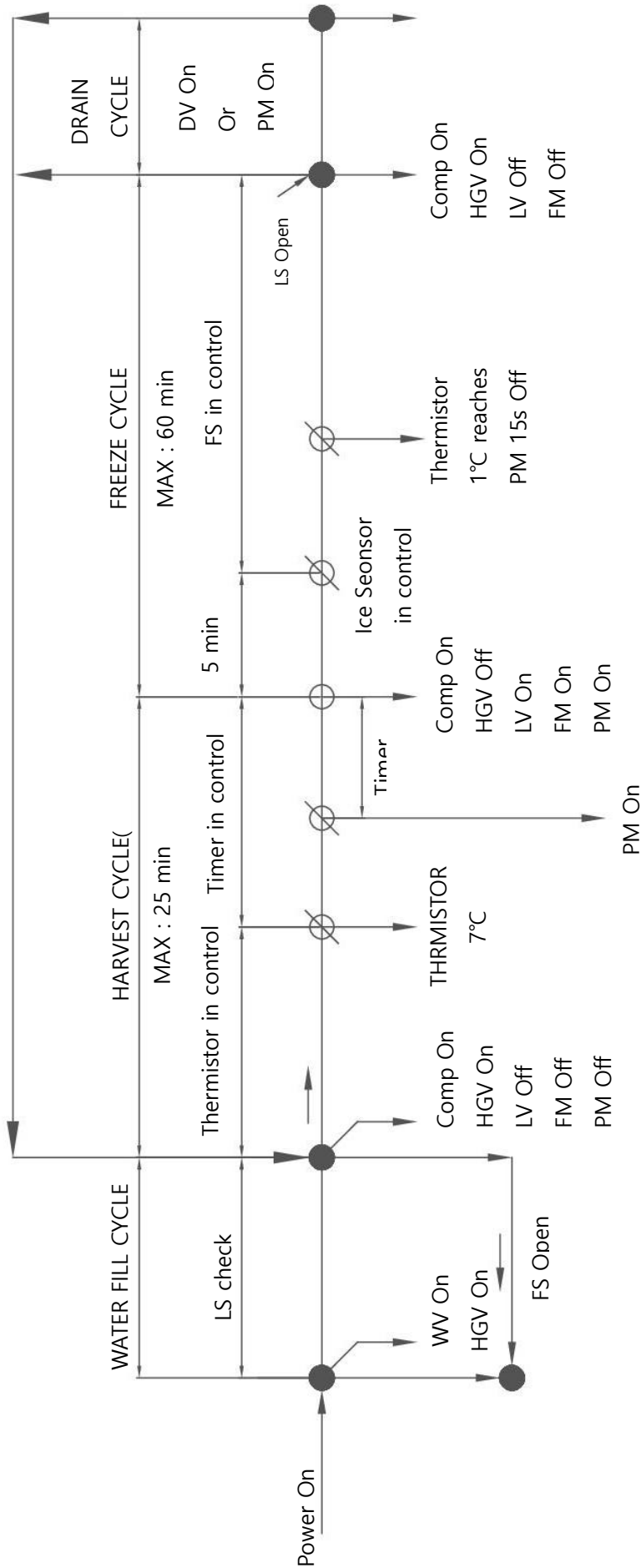
2 Technical information

2.1 Water and refrigerant system

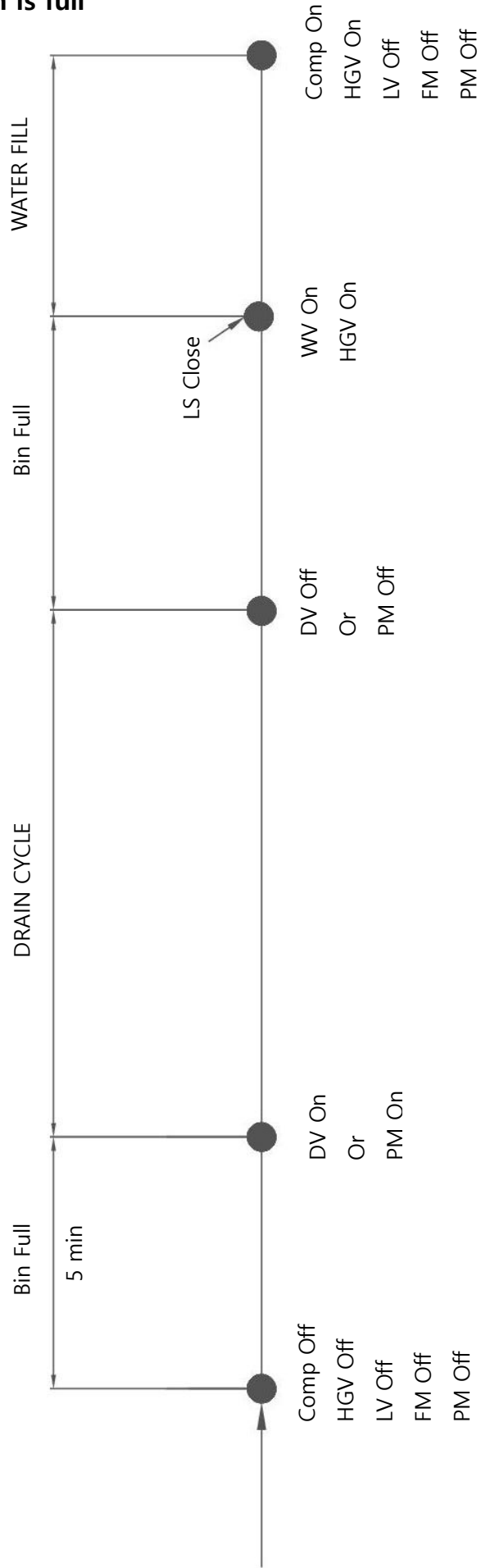


2.2 Operation

1) During freezing and harvesting cycle



2) During ice storage bin is full



3) Sequence

- Stand-by
 - Once the ice machine is connected to the main power supply, it shows model name and PCB (control board) version and stand-by for operation.

- Water supply
 - As soon as the power is turned on, the ice machine will immediately begin the water supply cycle.
 - The ice machine will revert back to the water supply cycle if the machine is reset (turned off and turned on) during operation.
 - The water valve and hot gas valve are operational during the water supply cycle.
 - On/off LED light turns to green from red once water supply cycle is complete.
 - "1.XX" is displayed during water supply cycle. [.XX = Elapsed time (x 10 seconds)]
Example: The number 1 before the dot signifies water supply cycle (2 being harvest cycle and 3 being freezing cycle). .02 means the water has been supplying the machine for 20 seconds. The last 2 digits tell you the time. Simply multiply by 10 and you will have the exact number of seconds the water cycle has been active.

- Harvest
 - The action of dropping a batch of ice from the evaporator into the bin is called the "Harvest cycle"
 - The ice machine continues to repeat harvest and freezing cycles except for the first time the machine is turned on.
 - The compressor, hot gas valve, and water valve are in operation during the harvest cycle.
 - Once evaporator temperature sensor reaches 7°C(44.6°F), harvest will be complete. This is due to the factory harvest delay time setting. (Default harvest delay time depends on model).
 - The Water pump starts operation before the harvest cycle is done.
 - On/off LED light turns from Red to Green once the harvest cycle is complete.
 - Harvest LED light turns to Green.
 - "2.xx" is displayed during harvest cycle. [.xx = Elapsed time (x 1 minute)]
Example: The display reads: 2.03 during the harvest cycle. The first number (2) indicates that the ice machine is in the Harvest cycle. The second number (03) indicates that the machine has been in harvest for 3 minutes.

- Freezing

- Freezing cycle is the act of water freezing onto the evaporator plate creating ice.
- Compressor, fan motor, water pump, and water valve are in operation during freezing cycle
- Once the freeze cycle is complete the LED light turns to Green.
- During the freezing cycle the LED light will be Red.
- "3.xx" is displayed during freezing cycle. [.xx = Elapsed time (x 1 minute)]
Example: The display reads: 3.02 during the Freezing cycle. This first number (3) tells us the ice machine is in the freezing cycle. The second number (02) tells us the freezing cycle has been active for 2 minutes.

- Drainage

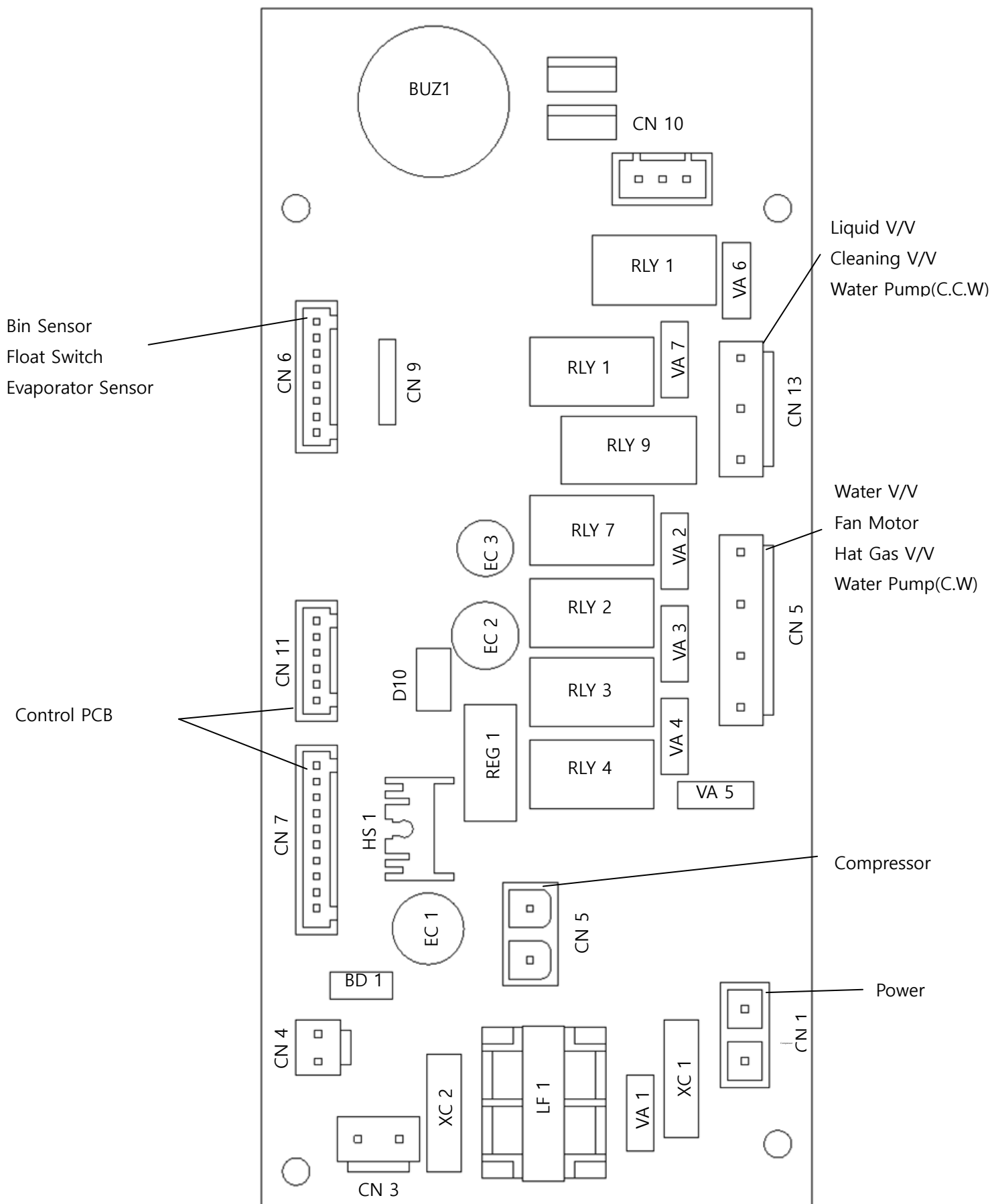
- The ice machine has regular drainage intervals. When the ice bin is full the machine will drain water regularly from the machine directly following the freezing cycle.
- The drainage interval last from 10-20 seconds.
- Regular drainage time and interval can be adjusted upon once the water condition conditions are ascertained at the site of installation place.
- The ice machine will go into the drainage interval if the ice storage bin is full for five minutes to prevent contamination of water inside the water tank.

- Full storage

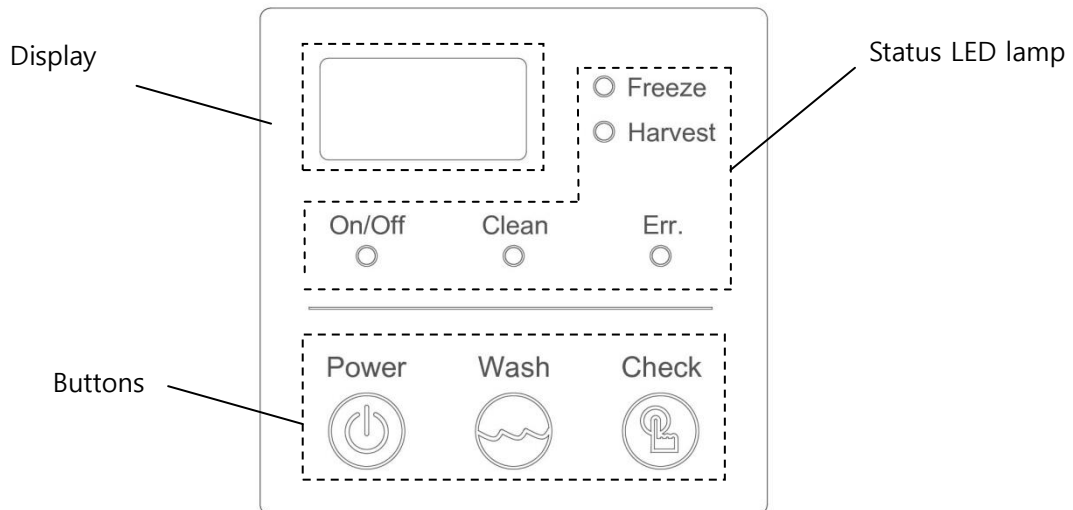
- If the bin switch senses the bin is full of ice but the ice machine is in the middle of a new harvest cycle, ice production will cease once the current harvest cycle is complete. Ice production will also cease if the bin switch senses a full bin five minutes before a new freezing cycle begins.
- If the bin switch senses that the bin is full five minutes After the freezing cycle begins all ice production will stop once the very next Harvest cycle is completed.
- If the bin switch senses the bin is not full after consuming some ices, the ice machine resumes working from water supply cycle.

2.3 Control board

2.3.1 Main control board layout



2.3.2 Display control board



1) Features

- 7-segment

Display	Meaning
	1 = Water supply cycle .xx = Elapsed time (x 10 seconds) Ex) 1.02 = In water supply cycle for 20 seconds.
	2 = Harvest cycle .xx = Elapsed time (x 1 minute) Ex) 2.02 = In harvest cycle for 20 seconds.
	3 = Freezing cycle .xx = Elapsed time (x 1 minute) Ex) 3.02 = In freezing cycle for 20 seconds.
	In drainage cycle.
	In cleaning cycle.
	Need to add cleaner or sanitizer.
	Cleaning cycle is completed.

- Error codes : Below error codes will be displayed so technicians can immediately identify specific malfunctions.

Display	Meaning
E1	Freezing cycle exceeds 60 minutes twice in a row.
E2	Harvest cycle exceeds 25 minutes twice in a row.
E3	Evaporator sensor temperature is over 60°C(140°F).
E4	Water is not drained during full storage.
E5	Water level sensor continues to detect insufficient water levels.
E6	Evaporator sensor error. (damaged or disconnected).
E7	Main PCB program error.

- E1 : If the freezing cycle exceeds 60 mins for the first time, the ice machine will activate the harvest cycle. This is called a "forced" harvest. E1 will be displayed if the same situation happens again.
- E2 : If the harvest cycle exceeds 25 mins for the first time, the ice machine will activate the freezing cycle. This is called a "forced" freezing cycle. E2 will be displayed if the same situation happens again.
- E3 : If evaporator sensor temperature is over 60°C(140°F).
- E4 : The ice machine automatically drains 5 minutes after the bin is full. E4 will be displayed if the water is not drained for 480 seconds.
- E5 :
 - 1) For the first ice making cycle: If the float switch does not sense enough water at the end of the first water supply cycle, the ice machine will go back to the water supply cycle again before advancing to the harvest cycle. E5 will be displayed If the float switch continues to sense insufficient water levels during subsequent supply cycles.
 - 2) Beginning with the second ice making cycle: If the float switch does not sense sufficient water levels at the end of the harvest cycle, the ice machine will return to the harvest cycle instead of advancing to the freezing cycle. E5 will be displayed If the float switch continues to sense insufficient water levels during the second harvest cycle.
- E6 : If the evaporator sensor is either damaged or disconnected.
- E7 : If main PCB is not operating properly.

- Status LED lamp

LED	Color	Meaning
On/Off	Green	Water has been supplied.
	Red	Water has not been supplied yet.
	Orange	Ice storage bin is full.
Freeze	Green	In freezing cycle.
Harvest	Green	In harvest cycle.
Clean	Green	In cleaning cycle.
Err	Red	The ice machine has a problem

- Buttons

- Power : To turn the ice machine on or off: Press and hold power button for 2 seconds.
- Wash : For cleaning and sanitizing the ice machine.
- Check : Allows the user to check the status of different operations of the machine.

- Combination

- Power + Wash : Pressing and holding these buttons will force the machine into the harvest cycle.
- Power + Check : Pressing and holding these buttons will force the drainage cycle.
- Wash + Check : This will open the hot gas valve and water valve to aid in the system evacuation in the lines if necessary.






- Status check :

- Once the check button is pressed, the display will cycle through the status of each of the categories below. Simply press check again to get to the next operation in the sequence. If there is no further activity on the check button, the display will automatically return to the standard operation status display.

Sequence	Status	Remarks
1 - E	Evapoator sensor Temepature	
2 - F	Average time of freezing cycle	
3 - H	Average time of harvest cycle	
4 - ≡	Total freezing cycle counts	

2.3.3 Parameter setting

1) Instruction – How to change the setting

Number	Display	Direction
1		Press check button for 5 seconds to change parameter setting.
2		P-1 will be displayed.
3		Press check button again to adjust P-1 setting result. The setting can be adjusted up or down by pressing power or wash buttons.
4		P-2 after pressing the check button again, P-2 will be displayed.
5	-	Refer to following table to check each parameter's meaning and further information.
6		Press check button for five seconds to get out of the parameter setting mode.

2) Parameter code meaning

Number	Display	Features	Range	Settable value	Unit
1	P-1	Set evaporator temperature for harvest control	5 ~ 30 41 ~ 86	1	°C °F
2	P-2	Set harvest delay time	60 ~ 300	5	sec
3	P-3	Set drainage cycle interval	1 ~ 10	1,2,5,10	-
4	P-4	Sensor temperature correction	-2 ~ 2 -4 ~ 4	0.1 1	°C °F
5	P-5	Set water pump delay time to prevent ice from becoming slush.	10~60	1	sec
6	P-6	Set PCB program	25A~90A	Model name	-
7	P-7	Set water pump operation time during harvest cycle	0 ~ 300	1	sec
8	P-8	Reset freezing cycle count	0~1	1	-
9	P-9	Set drainage time	10~20	10	sec
10	P-10	Set water supply time during harvest	0~300	10	sec
11	P-11	Set minimum freezing time	0~30	1	min
12	P-12	Set temperature display unit	°C , °F	-	-
13	P-13	Set hertz	50,60	-	hz

- P-1 / Set evaporator temperature for harvest control: Once evaporator sensor reaches the set temperature, harvest cycle will be done. [Default Setting : 7°C(44.6 °F)]
- P-2 / Set harvest delay time after evaporator sensor reaches a set temperature [Default: 7°C((44.6°F)] for harvest. Default harvest delay time depends on model.
- P-3 / Set drainage cycle interval to drain remaining water at the bottom of water tank. [Default: Every 10 freezing cycles]
- P-4 / Set the correct temperature range if there is a temperature discrepancy between sensor and actual thermometer. [Default : 0]
- P-5 / Set water pump delay time to prevent ice from turning to slush. Set the pump motor to stop when the evaporator sensor reads the set temperature. This will prevent the ice from turning to slush. [Default : 15 seconds]






- P-6 / Set PCB program: Default setting depends on model.
- P-7 / Set water pump operation time during harvest cycle. Default setting depends on model.
- P-8 / Reset freezing cycle count to zero. By reading the freezing cycles we can tell when a unit will need to have new filtration and also how long the unit has been in operation. This acts like the the ice machine odometer.
- P-9 / Set drainage time: [Default: 10 seconds]
- P-10 / Set water supply time during harvest
- P-11 / Set minimum freezing time to prevent the evaporator from freezing while the ambient temperature is low. Default setting depends on model.
- P-12 / Set temperature unit either °C or °F
- P-13 / Set herz either 50 or 60

3 Trouble shooting

3.1 Parts operation check

3.1.1 Test mode

1) How to get in test model to check parts' operation

#	Display Control Board	Direction
1		To turn off the machine: Press and hold the power button for 5 seconds.
2		Press and hold wash button for 5 seconds to activate test mode.
3		Off will be displayed.
4		C will be displayed. The compressor will turn on to show the compressor is working.
5	-	To cycle through all the working parts of the machine simply press the wash button again. Refer to the table below for further information.
6		To exit the test mode, press and hold wash button when "off" is displayed on the display.

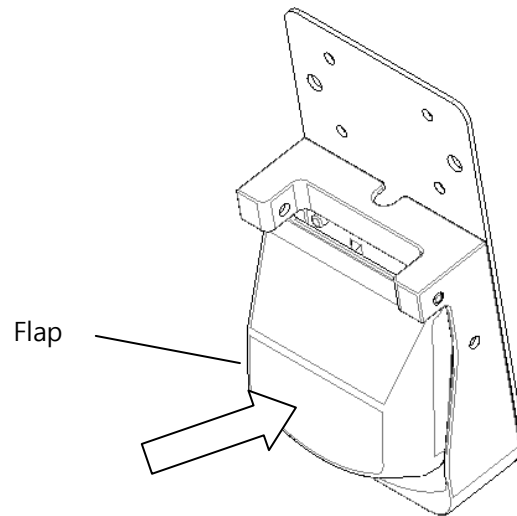
2) Test code meaning

Number	Display	Function	Remarks
1	OFF		
2	C	Compressor On	
		Fan motor On	
		Liquid valve On	
3	P	Pump motor C.W On (Circulation)	
4	P1	Pump motor C.C.W On (Drainage)	
5	H	Hot gas valve On	
6	F	Fan motor On	
7	E	Water valve On	
8	AC	Cleaning valve On	
9	AS	Liquid valve On	
10	d	Drain On	
11	Dyc	Water valve on	Factory use only
		Cleaning valve on	
		Drain valve on	

* The test mode only shows available parts for each machine. If the ice machine does not have a certain part, the test code for that part will not show up on the display.

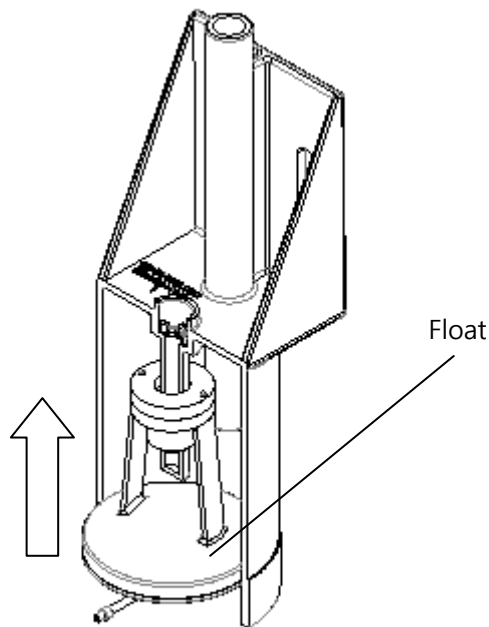
3.1.2 Sensor operation check

1) Bin switch sensor



- Can be checked while the machine is in operation. (Water supply, Freezing, or Harvesting Cycles.)
- Press and hold down the plate flap on bin switch.
- [FULL] will be displayed after 10 seconds if the bin switch properly works.
- [FULL] will disappear within 5 seconds after releasing the plate flap.

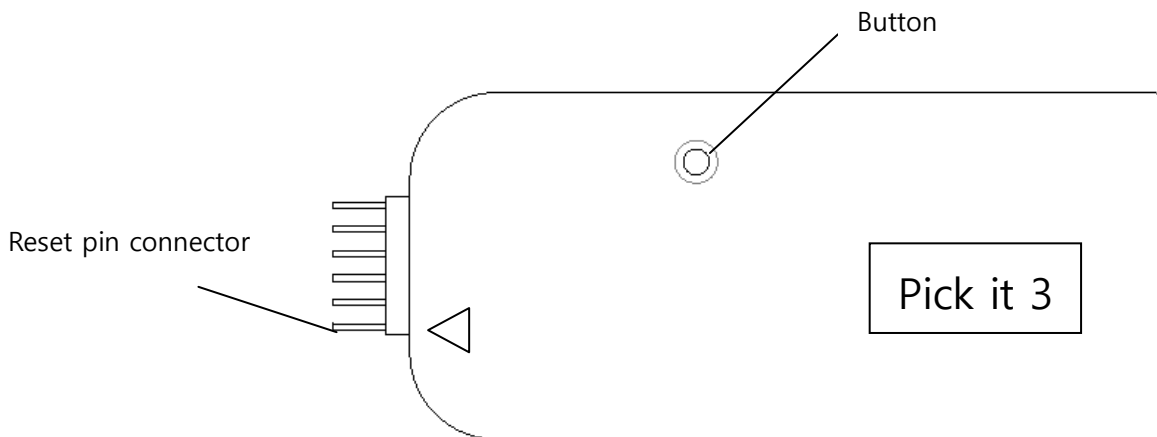
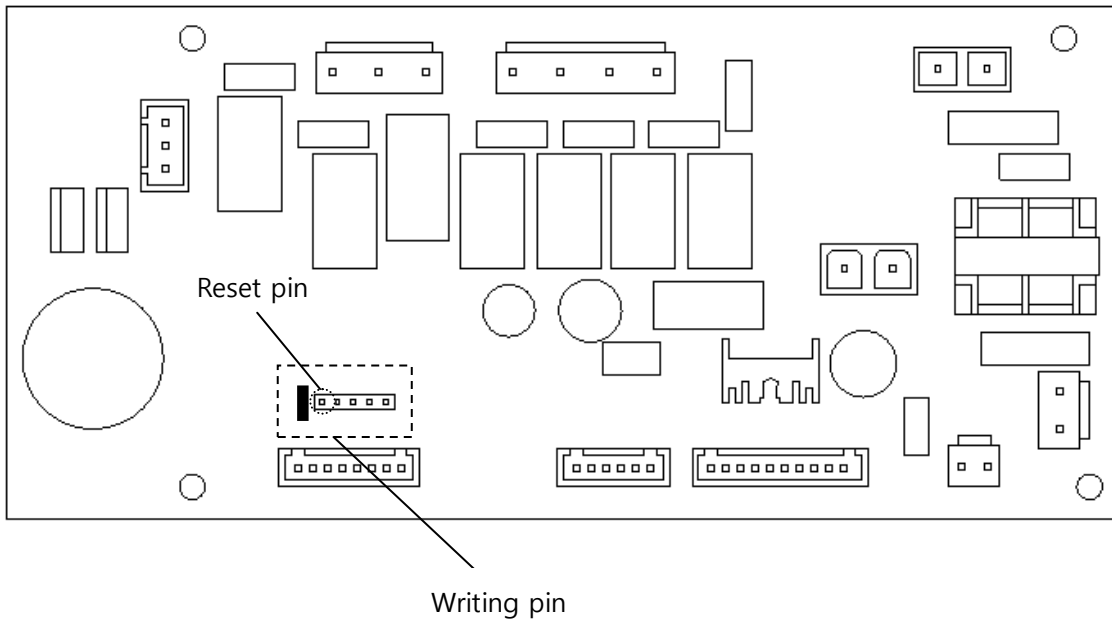
2) Water level sensor



- Can be checked while the machine is in operation. (Water supply, Freezing, or Harvesting Cycle.)
- Lift the float switch to its highest level, and then proceed to slowly push the float switch all the way down to the lowest position.
- The display will show a green light to indicate the float is at the lowest position. A Red light will appear if the float switch cannot sense the lowest position.

3.2 Main PCB program update

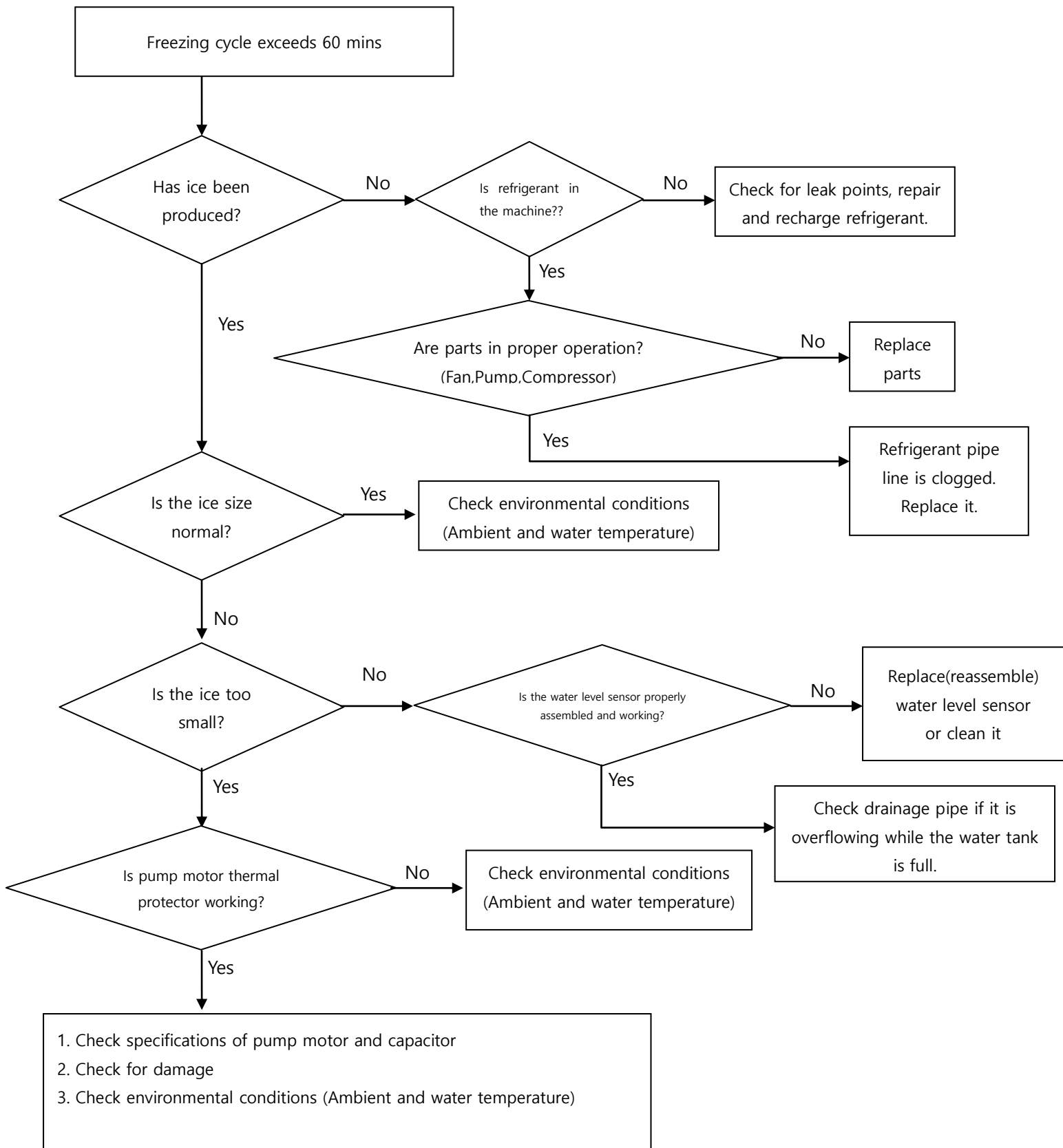
- The PCB program may be easily updated by using "Pick it 3"



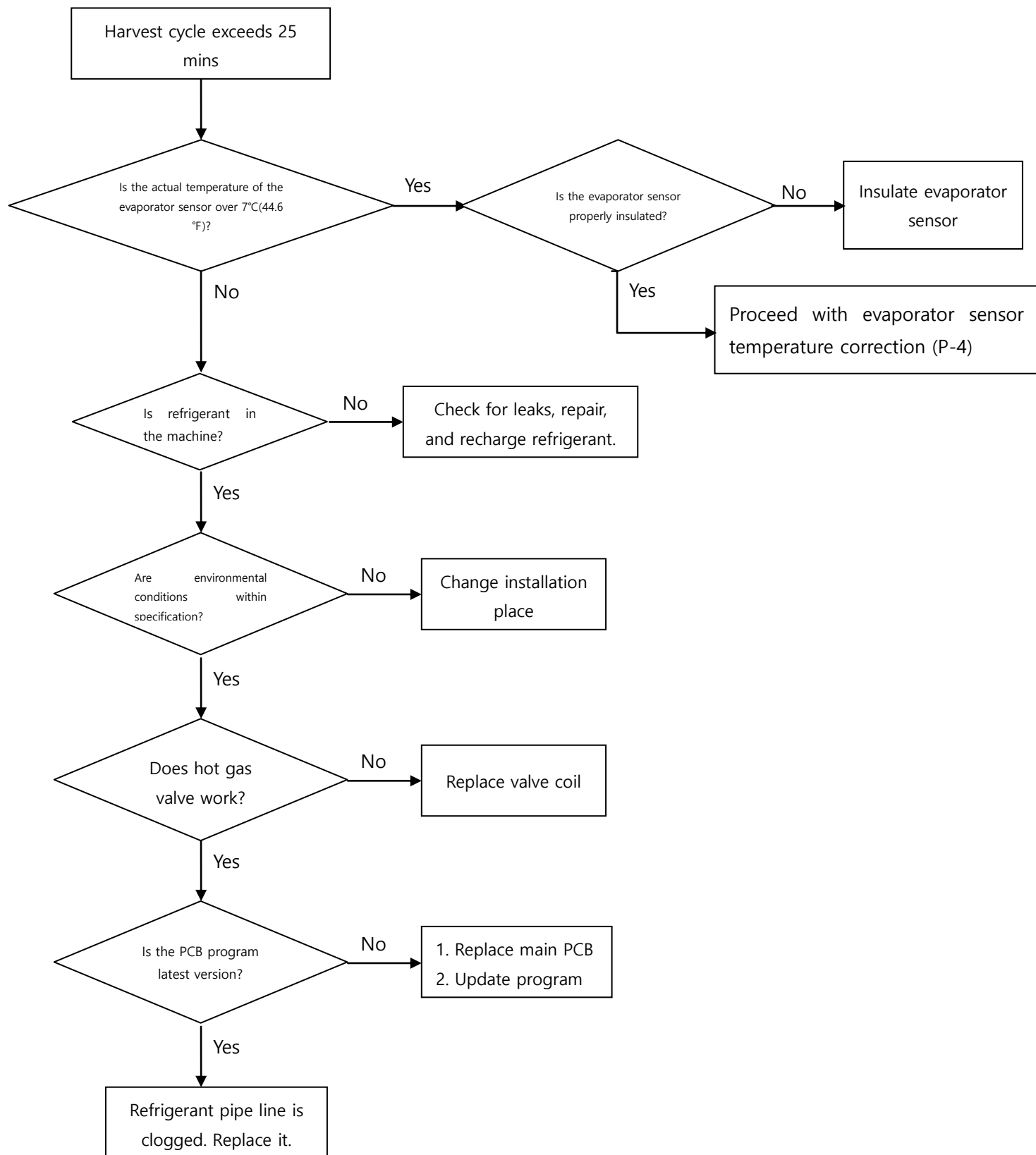
- Press "Off" button to turn off the machine.
(*Do not unplug power cord. The ice machine must be connected to main power for update.)
- Connect "Pick it 3" to potable battery pack.
- Connect "Pick it 3" to reset pin referring to above image.
(*Reset pin connector on "Pick it 3" and reset pin on main PCB must be properly matched.)
- Press button on "Pick it 3"
- 'Beep' alarm will sound when update is done.

3.3 Error codes

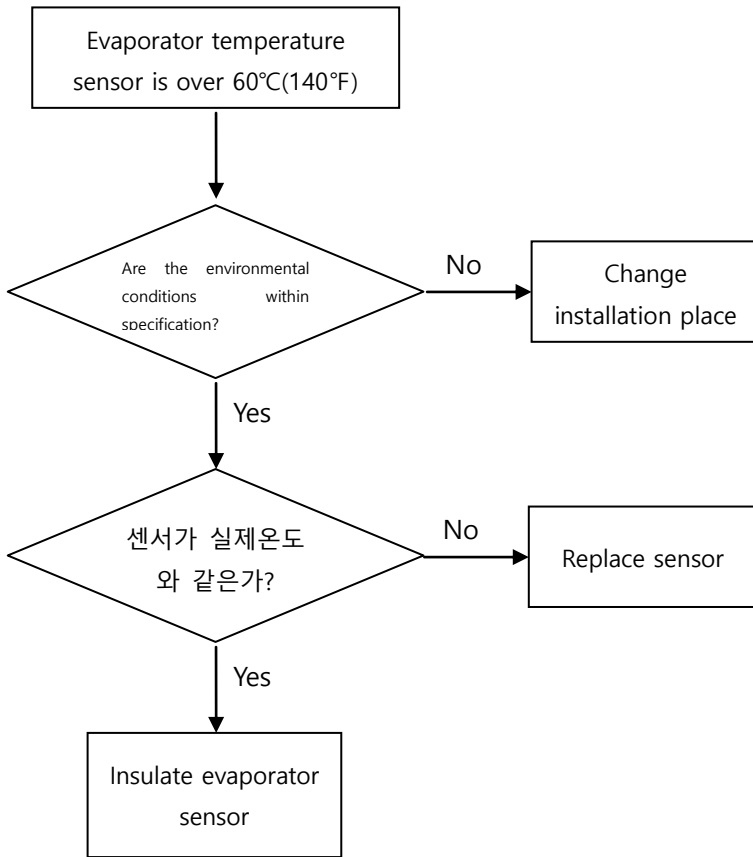
3.3.1 E1 / Freezing cycle exceeds 60 minutes.



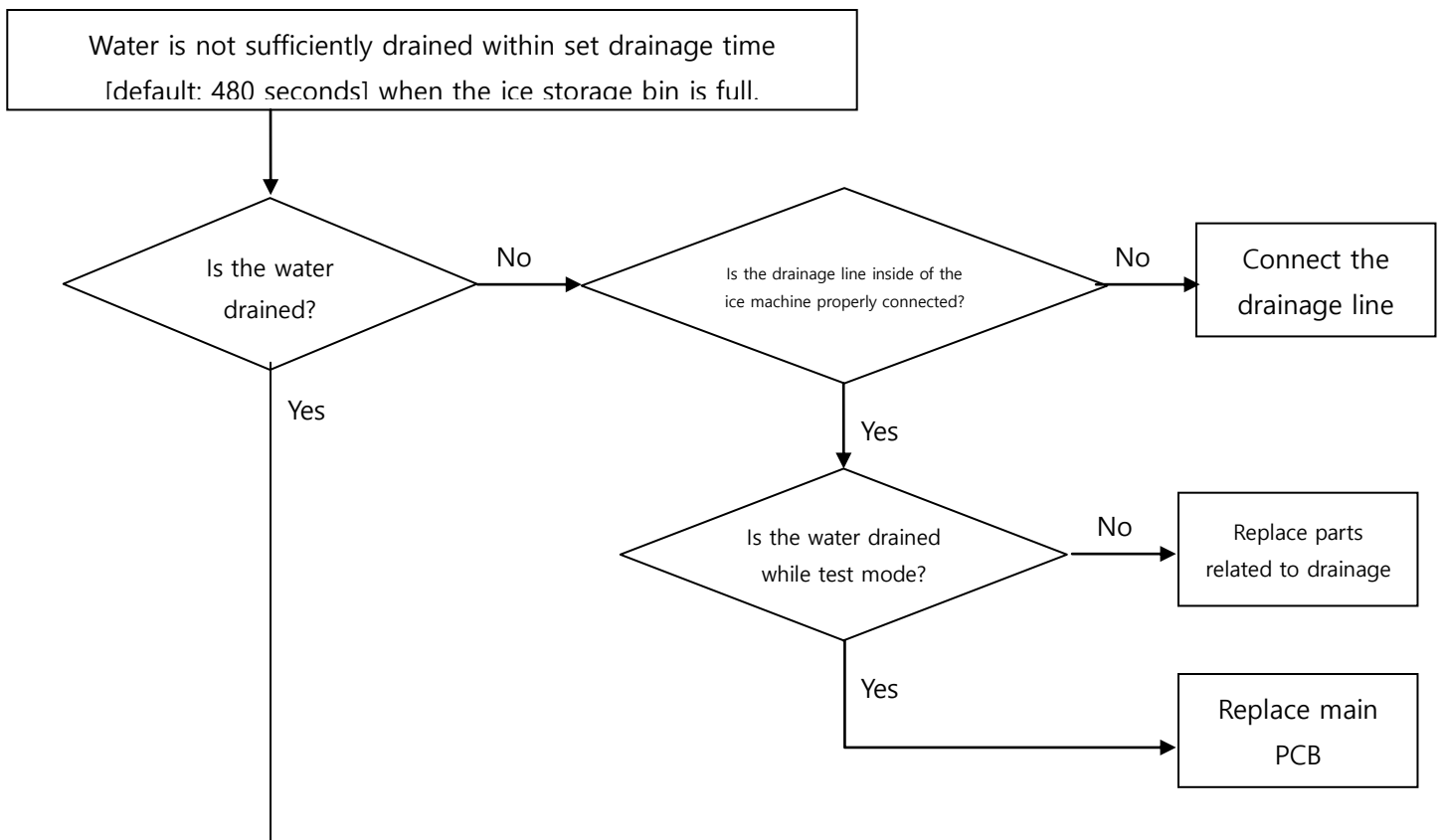
3.3.2 E2 / Harvest cycle exceeds 25 minutes.

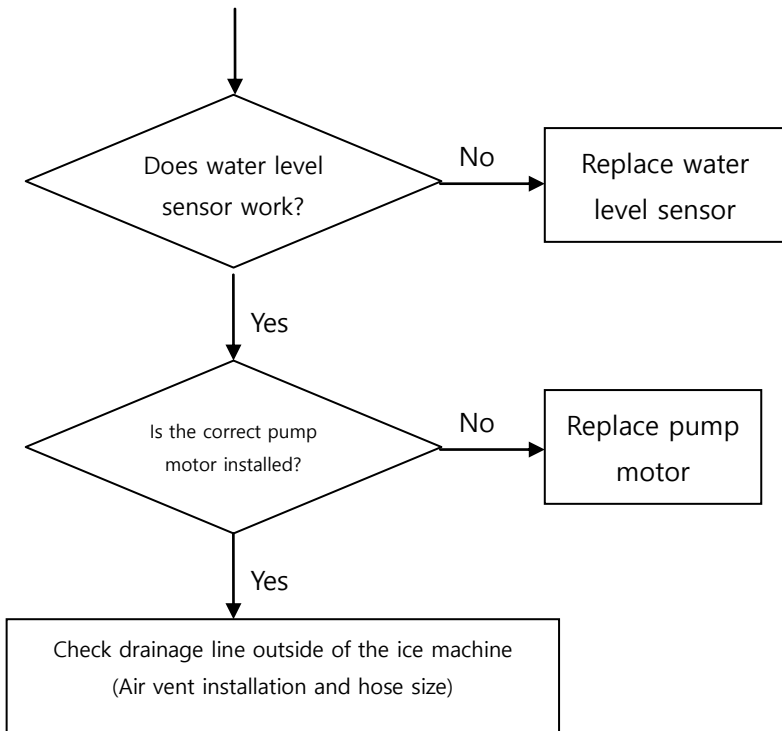


3.3.3 E3 / Evaporator sensor temperature is over 60°C(140°F)

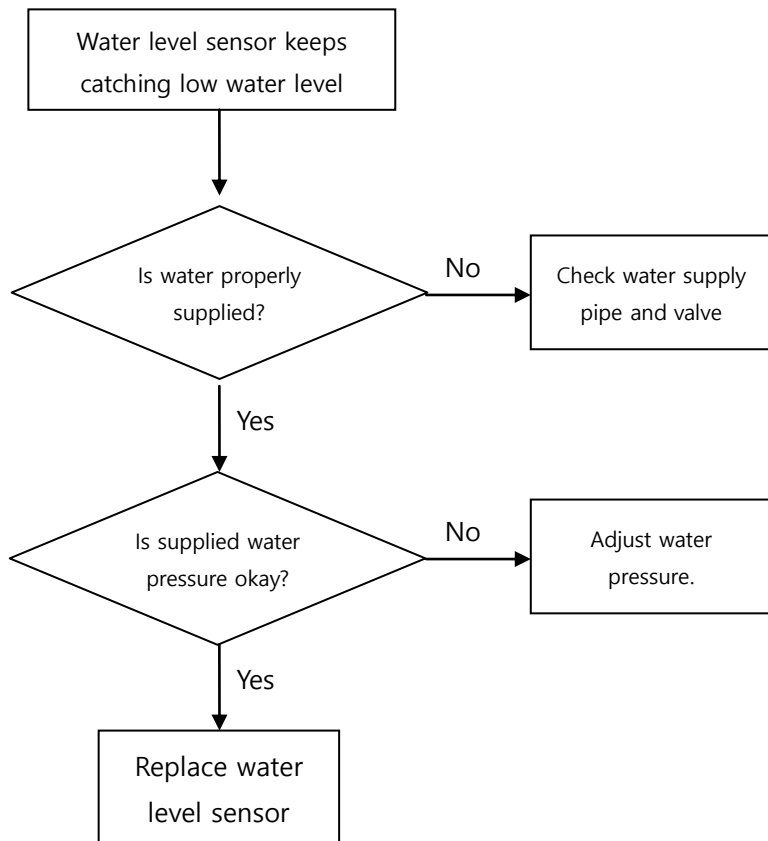


3.3.4 E4 / Water is not drained during full storage

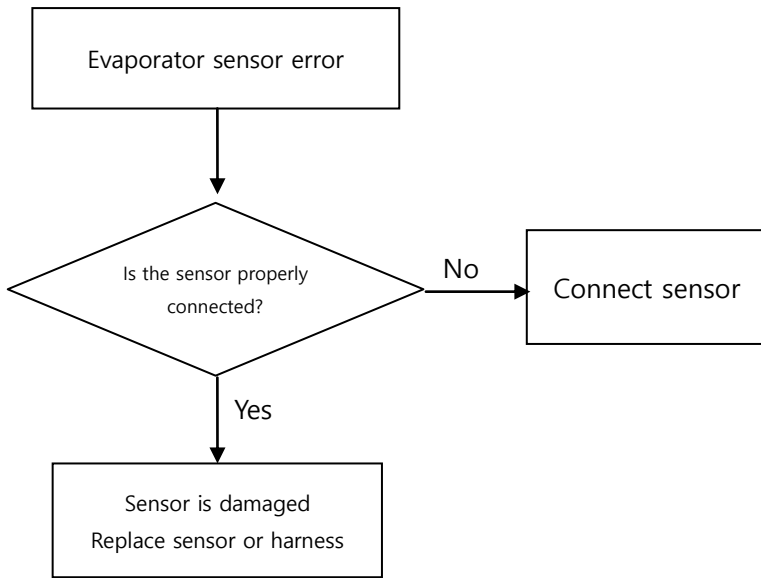




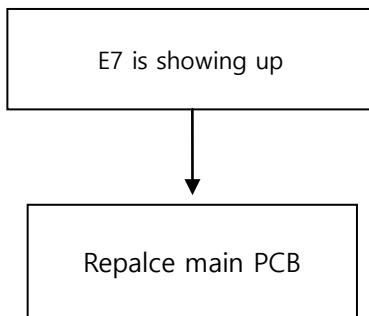
3.3.5 E5 / Water level sensor keeps catching low water



3.3.6 E6 / Evaporator sensor error

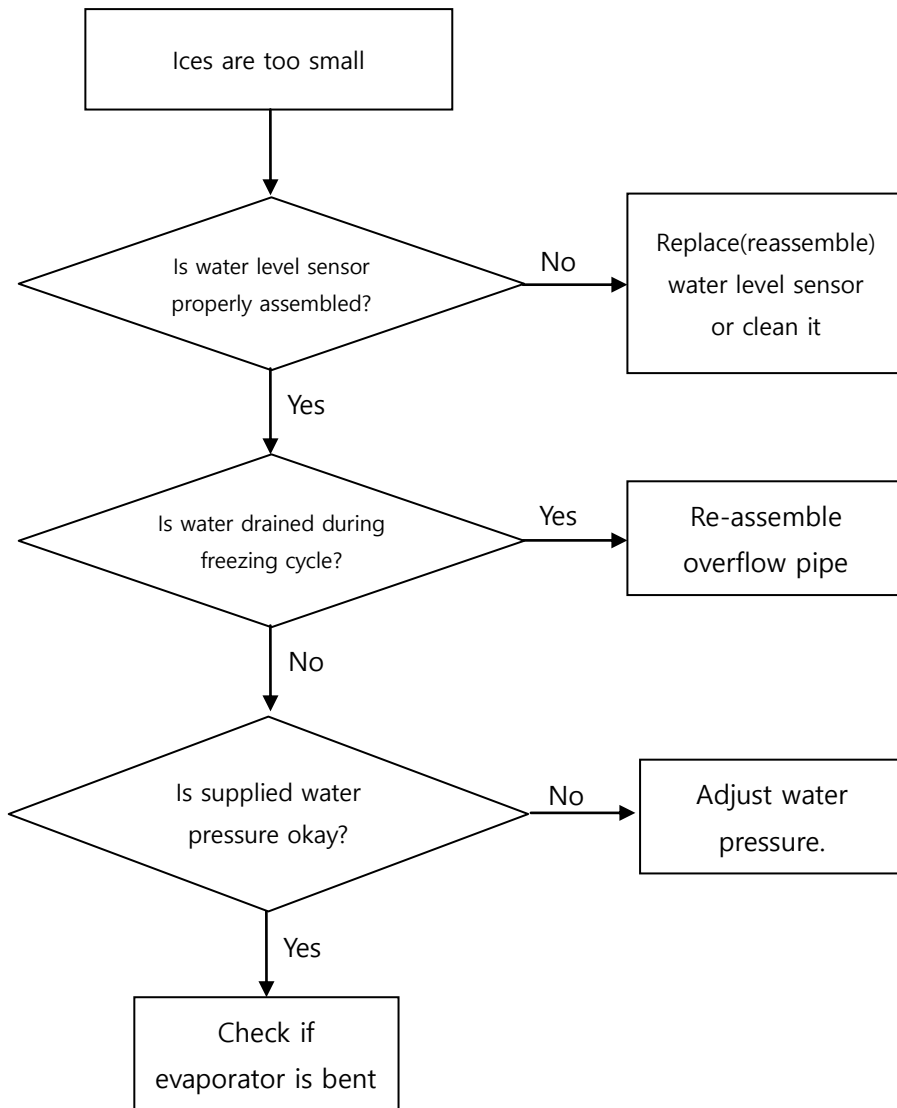


3.3.7 E7 / Main PCB program error

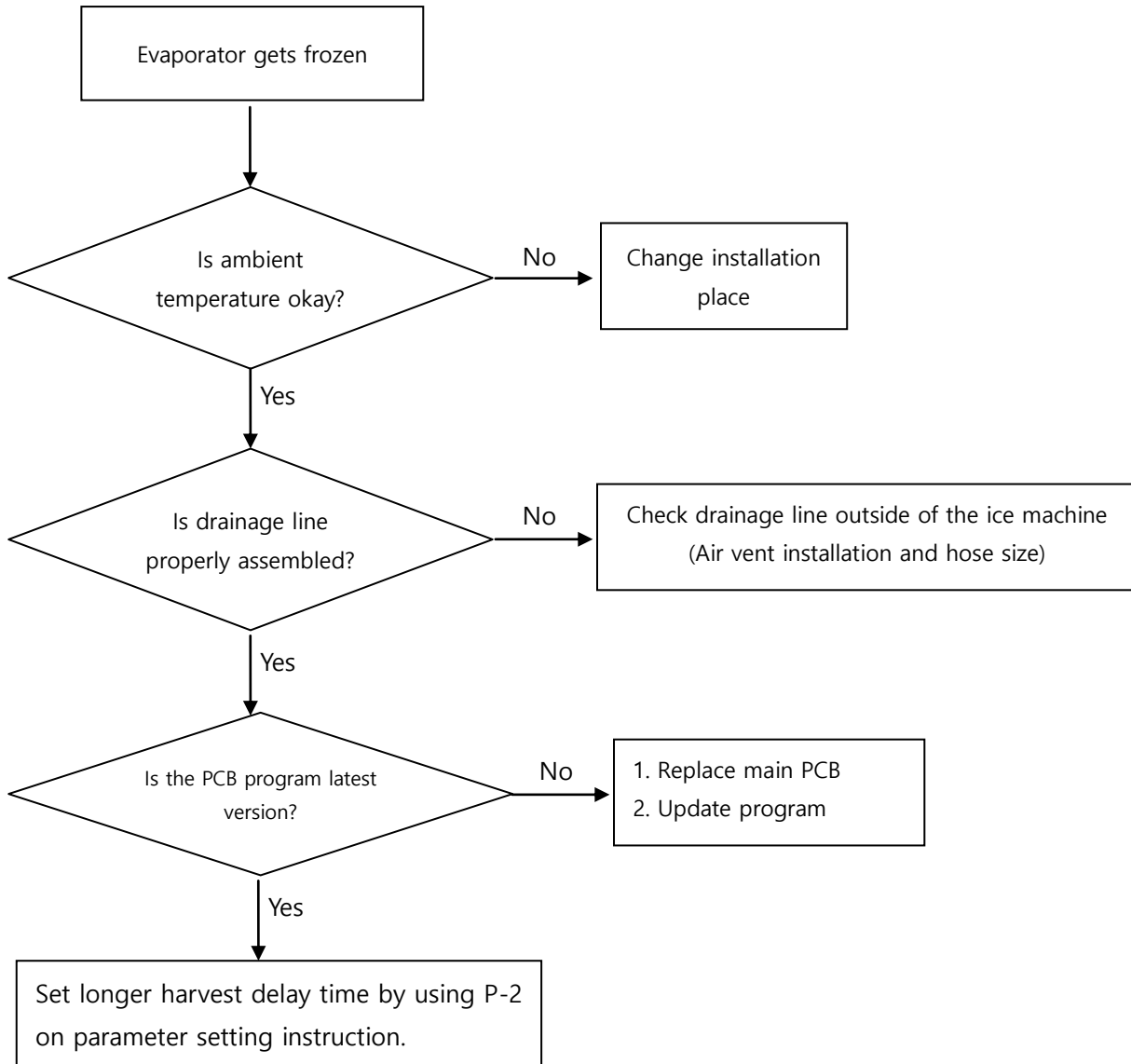


3.4 Problems and resolution

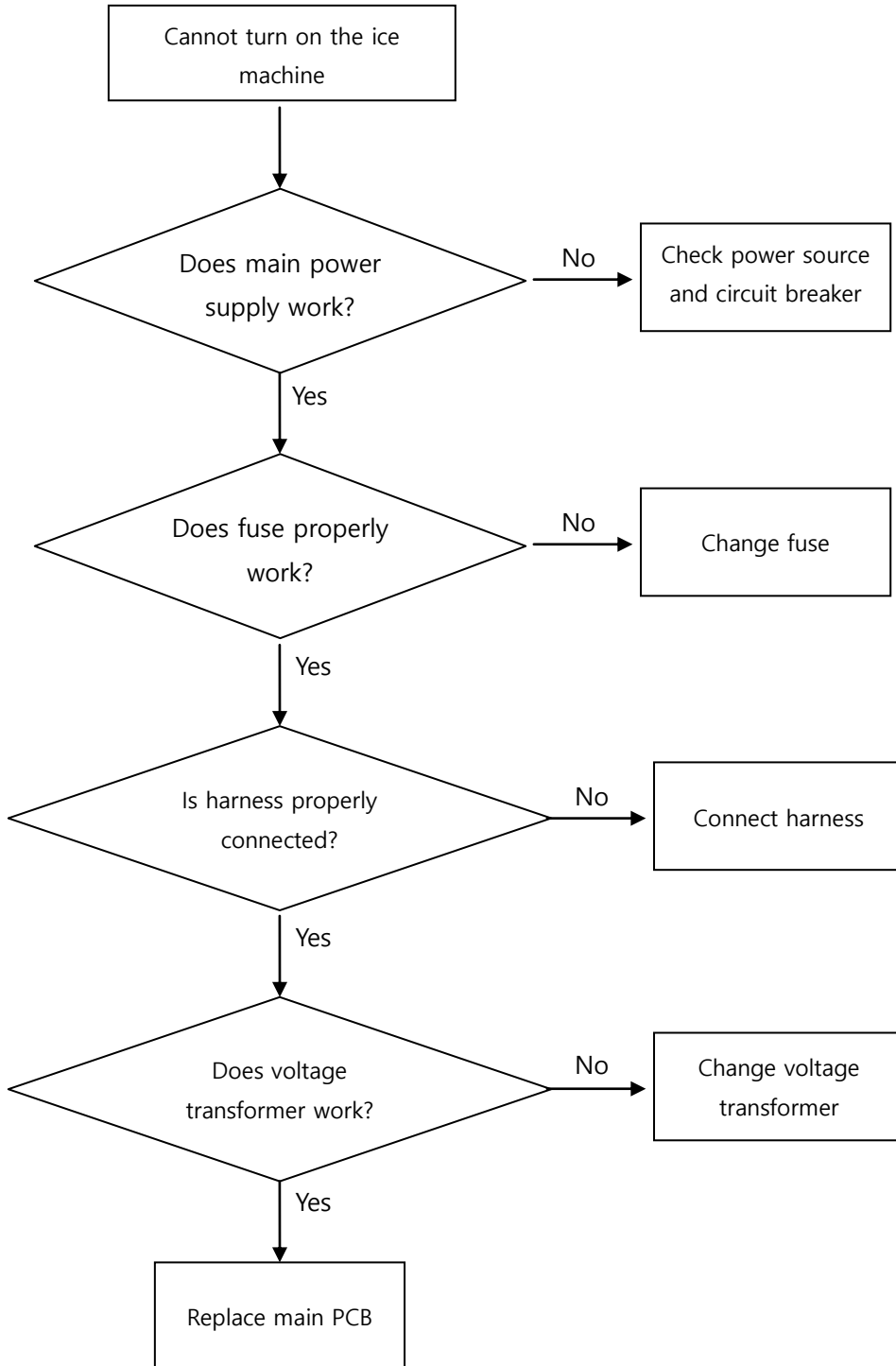
3.4.1 Ices are too small



3.4.2 Evaporator gets frozen



3.4.3 Cannot turn on the ice machine

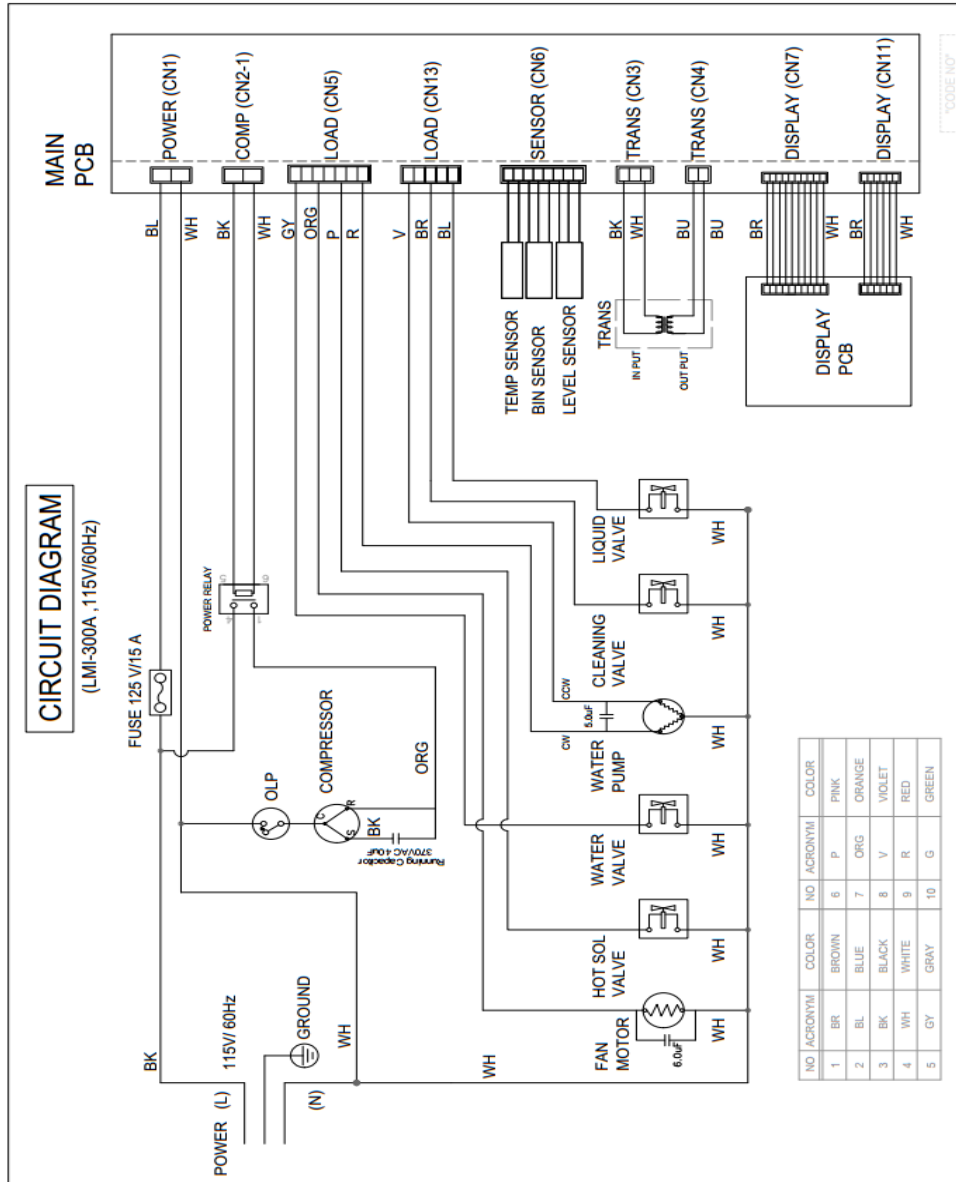


4 Circuit diagrams and technical data

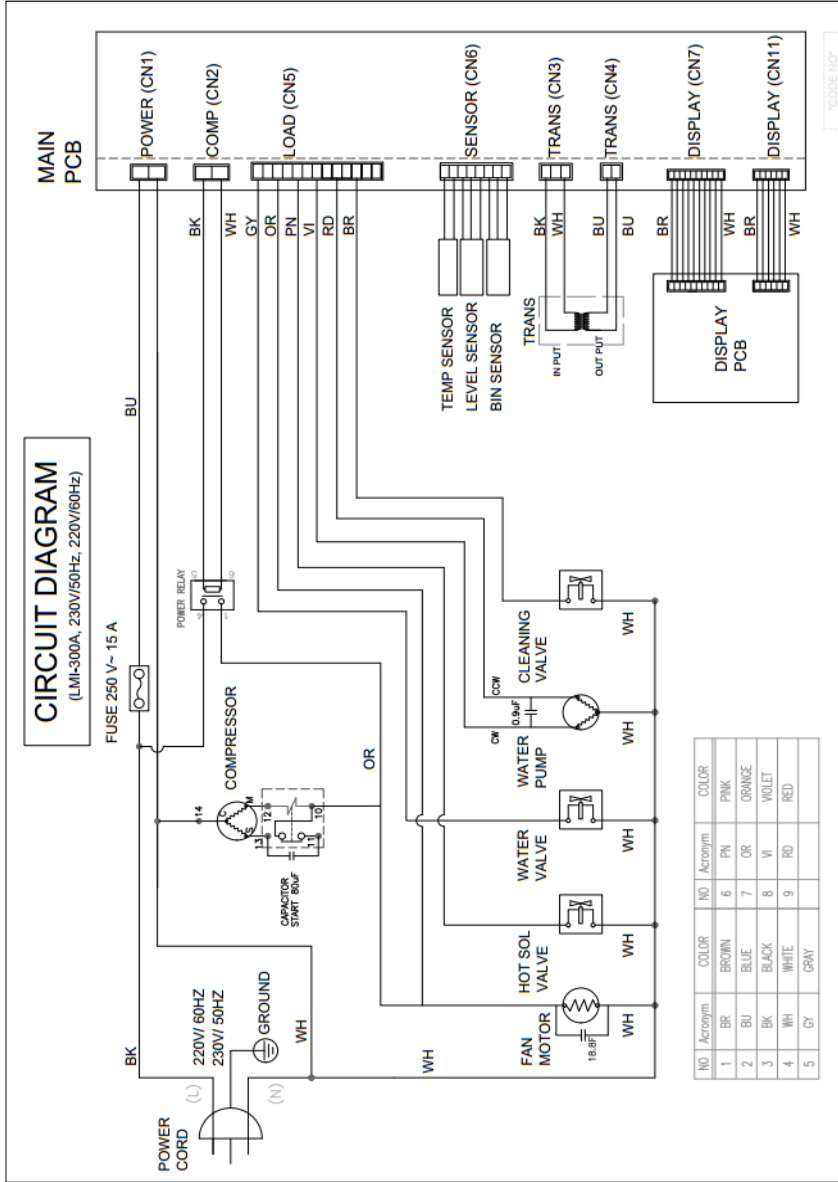
4.1 Circuit diagrams

4.1.1 300A

1) 115V/60Hz

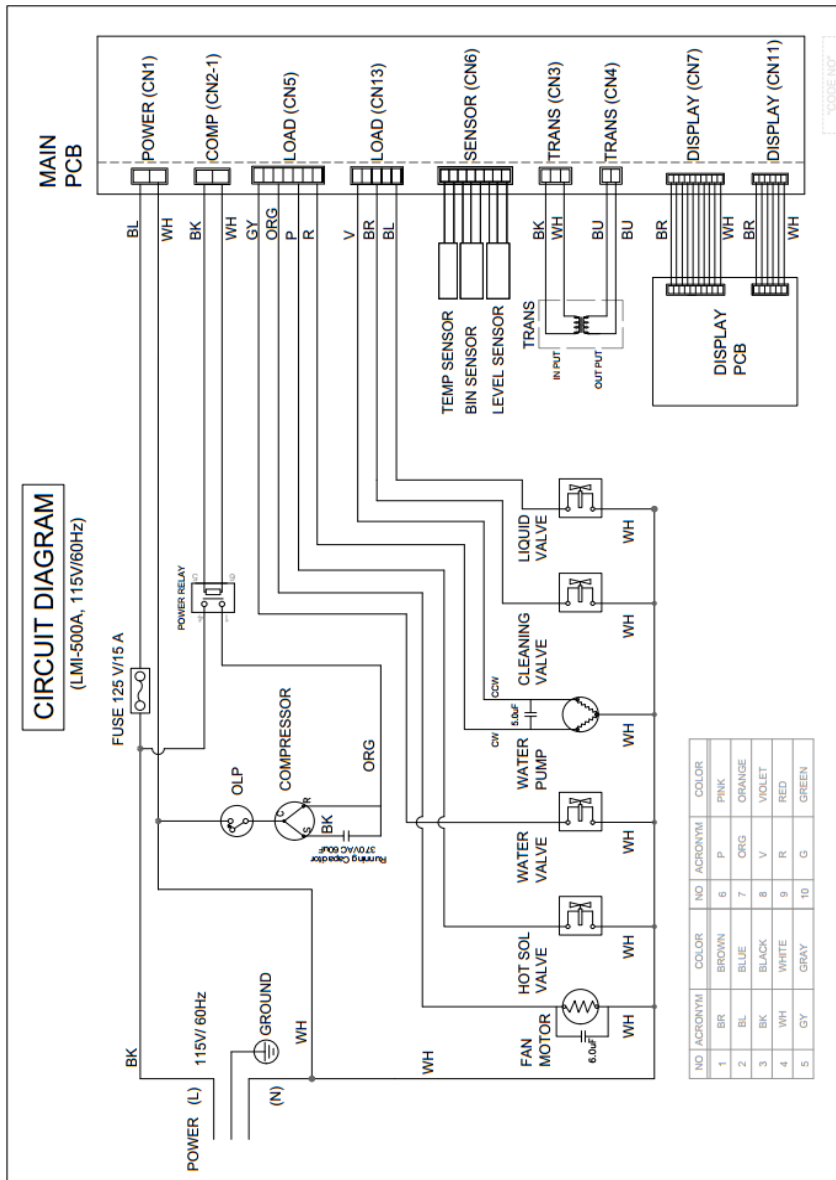


2) 220V/60Hz, 230V/50Hz

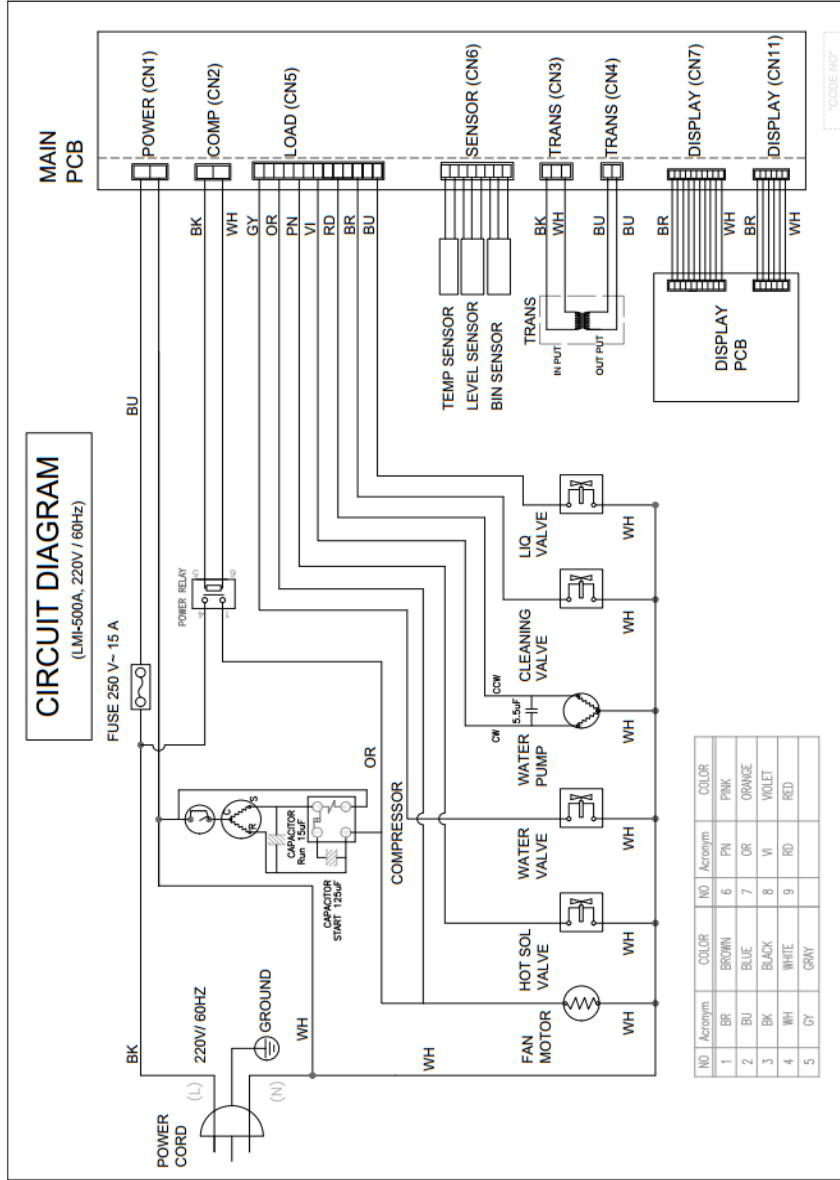


4.1.2500A

1) 115V/60Hz

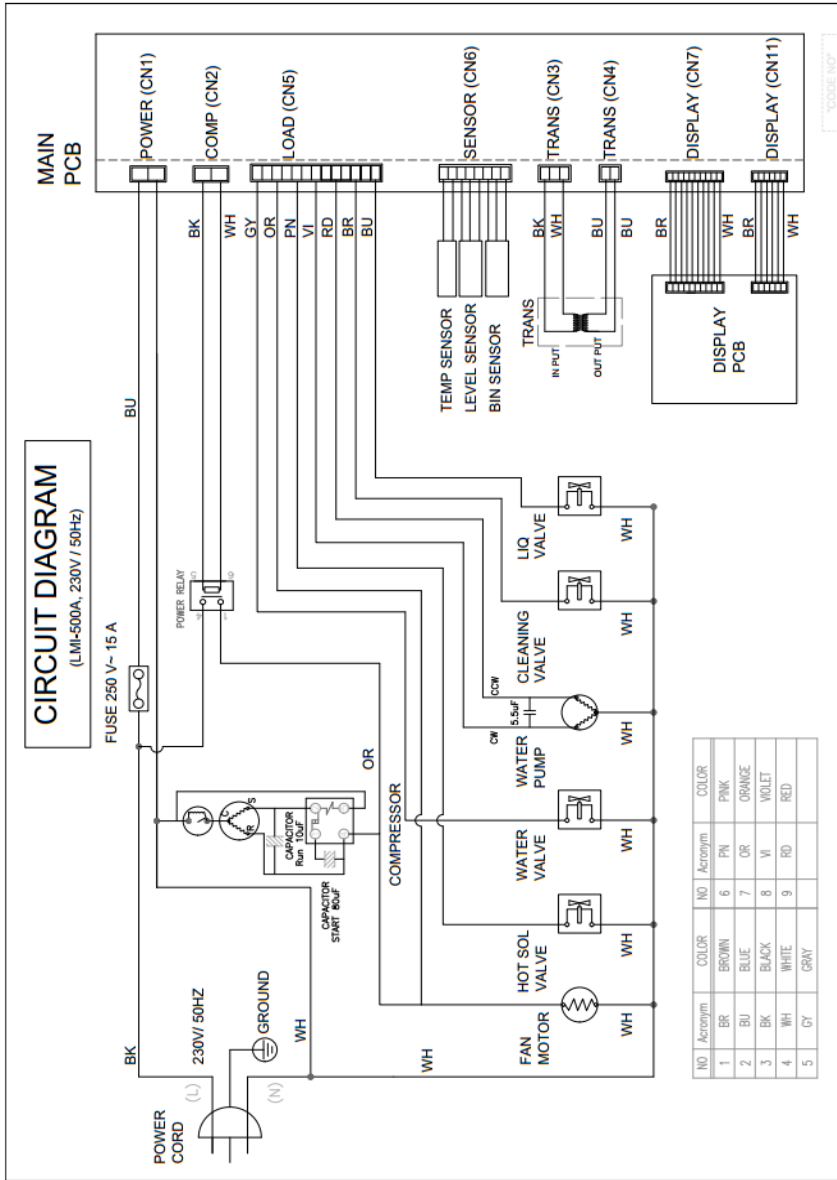


2) 220V/60Hz

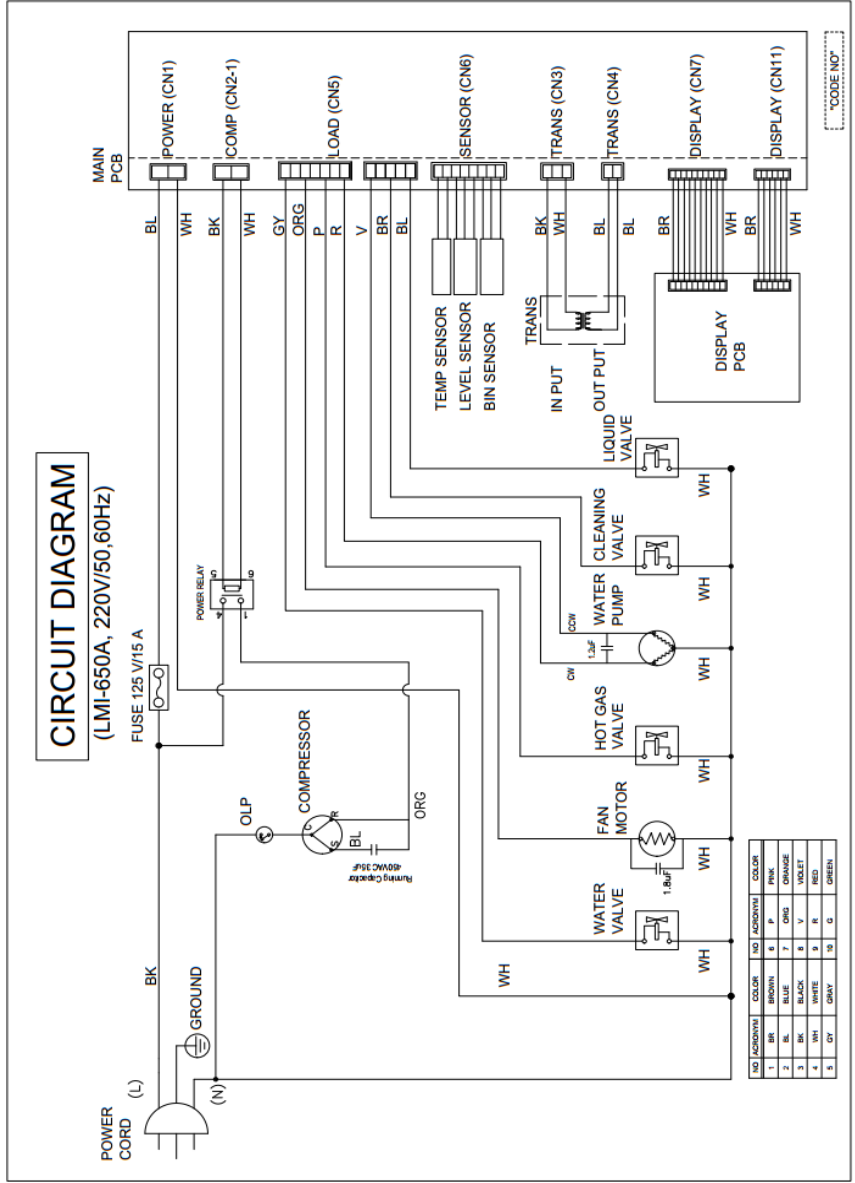


CODE NO.

3) 230V/50Hz

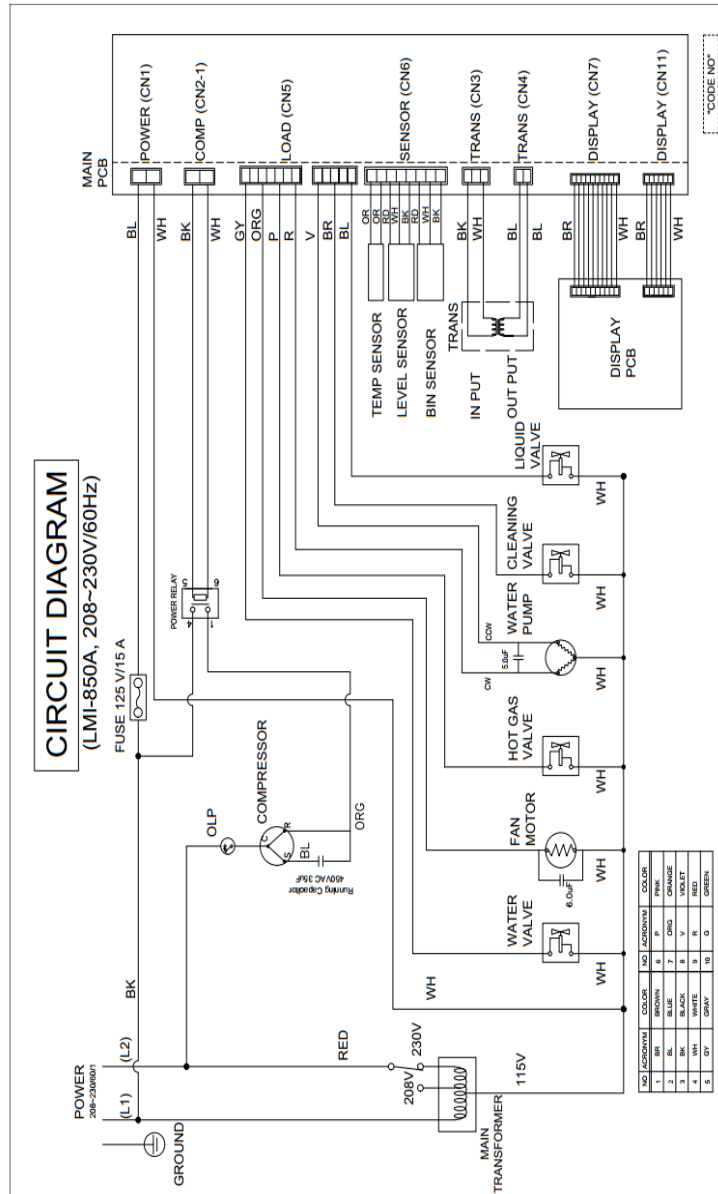


3) 230V/50Hz



4.1.4 900A

1) 208-230V/60Hz



4.2 Performance data

4.2.1 300A

1) 115V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	549	537	571	548	577	548
	80/27	597	574	610	577	617	578
	90/32	636	606	640	607	658	609
	100/38	685	644	700	644	707	650
Current consumption [A] (Stable after 5 min)	70/21	5.3	5.2	5.4	5.2	5.5	5.3
	80/27	5.6	5.4	5.7	5.5	5.8	5.5
	90/32	5.9	5.7	6.0	5.7	6.1	5.7
	100/38	6.3	6.0	6.4	6.0	6.5	6.0
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	36	0.14	35	0.13	34	0.13
	80/27	31	0.12	31	0.12	30	0.11
	90/32	28	0.11	27	0.10	26	0.10
	100/38	23	0.09	22	0.08	22	0.08
Approximate electric consumption per 24hr [kWh/day]	70/21	12.4		12.7		12.8	
	80/27	13.4		13.6		13.7	
	90/32	14.2		14.3		14.5	
	100/38	15.4		15.4		15.4	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	340	154	326	148	317	144
	80/27	293	133	286	130	278	126
	90/32	252	114	250	113	238	108
	100/38	206	94	199	90	198	90
Freezing cycle time [min]	70/21	29		31		32	
	80/27	35		35		36	
	90/32	39		40		42	
	100/38	49		51		51	
Harvest cycle time[min]	70/21	2.9		2.9		2.8	
	80/27	2.8		2.8		2.8	
	90/32	2.7		2.7		2.7	
	100/38	2.7		2.7		2.7	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	277.4	19.5	295.8	20.8	305.8	21.5
		80/27	336.4	23.7	339.9	23.9	343.5	24.2
		90/32	371.2	26.1	379.1	26.7	384.0	27.0
		100/38	416.7	29.3	420.3	29.6	428.1	30.1
	Stable	70/21	287.3	20.2	288.0	20.3	290.2	20.4
		80/27	312.9	22.0	323.6	22.8	325.0	22.9
		90/32	367.7	25.9	371.2	26.1	371.9	26.2
		100/38	399.0	28.1	411.1	28.9	412.5	29.0
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	73.3	5.2	91.7	6.5	95.3	6.7
		80/27	87.5	6.2	96.7	6.8	101.0	7.1
		90/32	98.9	7.0	103.8	7.3	108.8	7.7
		100/38	106.7	7.5	112.4	7.9	117.3	8.3
	Stable	70/21	56.9	4.0	60.4	4.3	61.2	4.3
		80/27	62.6	4.4	63.3	4.5	65.4	4.6
		90/32	65.4	4.6	65.4	4.6	68.3	4.8
		100/38	67.6	4.8	68.3	4.8	69.0	4.9
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	148.6	10.5	177.8	12.5	189.2	13.3
		80/27	158.6	11.2	182.1	12.8	192.0	13.5
		90/32	171.4	12.1	190.6	13.4	202.0	14.2
		100/38	182.8	12.9	199.1	14.0	219.8	15.5
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	124.5	8.8	152.2	10.7	162.1	11.4
		80/27	133.0	9.4	153.6	10.8	165.0	11.6
		90/32	143.7	10.1	160.7	11.3	170.7	12.0
		100/38	153.6	10.8	167.8	11.8	185.6	13.1

2) 220V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	833	743	851	746	869	749
	80/27	871	764	898	768	911	770
	90/32	902	782	914	785	919	787
	100/38	940	803	965	806	989	809
Current consumption [A] (Stable after 5 min)	70/21	4.5	4.1	4.6	4.1	4.7	4.1
	80/27	4.7	4.2	4.8	4.2	4.9	4.2
	90/32	4.8	4.3	4.9	4.3	5.0	4.3
	100/38	5.0	4.4	5.1	4.4	5.2	4.4
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	47	0.18	45	0.17	42	0.16
	80/27	44	0.17	42	0.16	40	0.15
	90/32	42	0.16	40	0.15	39	0.15
	100/38	39	0.15	38	0.14	37	0.14
Approximate electric consumption per 24hr [kWh/day]	70/21	19.3		19.6		19.9	
	80/27	19.9		20.8		20.4	
	90/32	20.3		21.0		20.9	
	100/38	20.9		21.2		21.4	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	337	153	323	146	309	140
	80/27	313	142	298	135	291	132
	90/32	308	140	293	133	288	131
	100/38	269	122	264	120	259	118
Freezing cycle time [min]	70/21	29		31		33	
	80/27	31		33		34	
	90/32	33		35		36	
	100/38	35		37		38	
Harvest cycle time[min]	70/21	2.5		2.5		2.5	
	80/27	2.4		2.4		2.4	
	90/32	2.4		2.4		2.4	
	100/38	2.3		2.3		2.3	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	286.3	20.1	291.3	20.5	296.3	20.8
		80/27	318.6	22.4	328.6	23.1	334.6	23.5
		90/32	345.5	24.3	355.6	25.0	366.6	25.8
		100/38	377.8	26.6	391.4	27.5	404.9	28.5
	Stable	70/21	264.6	18.6	272.4	19.2	280.2	19.7
		80/27	300.2	21.1	310.1	21.8	315.3	22.2
		90/32	329.9	23.2	337.1	23.7	344.6	24.2
		100/38	365.5	25.7	372.7	26.2	379.8	26.7
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	48.4	3.4	49.8	3.5	51.2	3.6
		80/27	51.8	3.6	54.0	3.8	56.0	3.9
		90/32	54.6	3.8	56.9	4.0	59.9	4.2
		100/38	58.0	4.1	61.4	4.3	64.7	4.6
	Stable	70/21	42.7	3.0	43.4	3.1	44.1	3.1
		80/27	45.7	3.2	45.5	3.2	47.6	3.3
		90/32	48.2	3.4	49.8	3.5	50.5	3.6
		100/38	51.2	3.6	52.6	3.7	54.0	3.8
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	157.9	11.1	169.3	11.9	180.6	12.7
		80/27	169.4	11.9	187.7	13.2	194.2	13.7
		90/32	179.0	12.6	204.8	14.4	205.5	14.4
		100/38	190.6	13.4	204.8	14.4	219.0	15.4
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	115.2	8.1	123.7	8.7	132.3	9.3
		80/27	124.7	8.8	142.2	10.0	144.3	10.1
		90/32	132.7	9.3	143.7	10.1	154.4	10.9
		100/38	142.2	10.0	154.3	10.9	166.4	11.7

3) 230V/50Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	667	597	685	602	702	606
	80/27	703	615	723	627	734	627
	90/32	732	630	747	630	740	631
	100/38	768	648	780	657	793	666
Current consumption [A] (Stable after 5 min)	70/21	4.0	3.8	4.1	3.8	4.1	3.8
	80/27	4.1	3.8	4.2	3.8	4.3	3.8
	90/32	4.3	3.9	4.3	3.9	4.4	3.9
	100/38	4.4	3.9	4.5	4.0	4.5	4.0
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	46	0.17	42	0.16	38	0.15
	80/27	40	0.15	38	0.14	34	0.13
	90/32	39	0.15	35	0.13	34	0.13
	100/38	33	0.12	30	0.12	29	0.11
Approximate electric consumption per 24hr [kWh/day]	70/21	14.9		15.0		15.3	
	80/27	15.5		15.7		15.9	
	90/32	15.6		15.9		16.0	
	100/38	16.5		16.7		16.9	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	303	137	295	134	287	130
	80/27	273	124	259	117	256	116
	90/32	248	112	236	107	226	102
	100/38	218	99	209	95	200	91
Freezing cycle time [min]	70/21	30		33		36	
	80/27	35		37		41	
	90/32	35		40		41	
	100/38	43		46		49	
Harvest cycle time[min]	70/21	2.5		2.5		2.6	
	80/27	2.5		2.5		2.7	
	90/32	2.5		2.6		2.6	
	100/38	2.6		2.7		2.8	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	236.5	16.6	246.3	17.3	256.2	18.0
		80/27	271.2	19.1	287.3	20.2	288.7	20.3
		90/32	300.0	21.1	312.9	22.0	314.4	22.1
		100/38	334.7	23.5	340.4	23.9	346.2	24.3
	Stable	70/21	231.8	16.3	236.8	16.7	241.8	17.0
		80/27	265.5	18.7	277.4	19.5	273.9	19.3
		90/32	293.5	20.6	303.0	21.3	300.7	21.1
		100/38	327.1	23.0	330.0	23.2	332.8	23.4
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	55.5	3.9	59.5	4.2	63.6	4.5
		80/27	57.1	4.0	64.3	4.5	65.8	4.6
		90/32	58.5	4.1	62.7	4.4	67.7	4.8
		100/38	60.2	4.2	65.1	4.6	70.0	4.9
	Stable	70/21	46.9	3.3	47.6	3.4	48.4	3.4
		80/27	47.9	3.4	49.8	3.5	51.2	3.6
		90/32	48.8	3.4	49.8	3.5	50.2	3.5
		100/38	49.8	3.5	50.5	3.6	51.2	3.6
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	145.1	10.2	155.7	11.0	166.4	11.7
		80/27	148.1	10.4	165.0	11.6	173.4	12.2
		90/32	150.6	10.6	167.8	11.8	179.3	12.6
		100/38	153.6	10.8	170.0	12.0	186.3	13.1
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	103.8	7.3	111.7	7.9	119.5	8.4
		80/27	106.3	7.5	116.6	8.2	124.0	8.7
		90/32	108.4	7.6	118.1	8.3	127.8	9.0
		100/38	110.9	7.8	121.6	8.6	132.3	9.3

4.2.2 500A

1) 115V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	905	854	940	856	973	865
	80/27	982	915	1030	923	1061	926
	90/32	1060	966	1107	977	1145	982
	100/38	1163	1049	1210	1056	1265	1064
Current consumption [A] (Stable after 5 min)	70/21	8.3	7.8	8.6	7.8	8.8	7.9
	80/27	8.9	8.4	9.3	8.4	9.6	8.4
	90/32	9.6	8.8	10.0	8.8	10.3	8.9
	100/38	10.5	9.5	10.9	9.5	11.4	9.5
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	73	0.28	68	0.26	68	0.26
	80/27	67	0.25	63	0.24	62	0.23
	90/32	60	0.23	61	0.23	55	0.21
	100/38	52	0.20	51	0.19	48	0.18
Approximate electric consumption per 24hr [kWh/day]	70/21	19.6		20.3		20.8	
	80/27	21.2		22.0		22.4	
	90/32	22.9		23.1		23.9	
	100/38	25.0		25.5		26.1	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	538	244	524	238	486	221
	80/27	497	225	461	209	419	190
	90/32	451	205	443	201	409	185
	100/38	385	175	372	169	336	152
Freezing cycle time [min]	70/21	23		25		25	
	80/27	25		27		28	
	90/32	28		28		32	
	100/38	33		34		37	
Harvest cycle time[min]	70/21	3.6		3.0		2.8	
	80/27	3.3		3.0		2.8	
	90/32	3.3		3.1		2.8	
	100/38	3.1		2.8		2.7	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	332.2	23.4	332.6	23.4	346.7	24.4
		80/27	373.2	26.2	392.4	27.6	400.7	28.2
		90/32	414.4	29.1	427.2	30.0	447.3	31.5
		100/38	461.3	32.4	474.7	33.4	486.0	34.2
	Stable	70/21	312.0	21.9	320.7	22.6	321.4	22.6
		80/27	357.0	25.1	360.8	25.4	365.5	25.7
		90/32	391.6	27.5	401.1	28.2	450.9	31.7
		100/38	441.4	31.0	444.2	31.2	447.6	31.5
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	74.8	5.3	78.5	5.5	84.6	5.9
		80/27	83.3	5.9	87.8	6.2	96.3	6.8
		90/32	89.5	6.3	98.0	6.9	103.1	7.3
		100/38	93.7	6.6	97.3	6.8	121.6	8.6
	Stable	70/21	54.0	3.8	54.0	3.8	55.5	3.9
		80/27	54.8	3.9	57.4	4.0	86.8	6.1
		90/32	60.2	4.2	78.2	5.5	96.7	6.8
		100/38	72.1	5.1	95.8	6.7	111.4	7.8
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	163.6	11.5	184.9	13.0	215.1	15.1
		80/27	167.1	11.8	195.8	13.8	224.7	15.8
		90/32	175.4	12.3	203.4	14.3	232.8	16.4
		100/38	187.7	13.2	219.0	15.4	239.9	16.9
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	129.9	9.1	147.4	10.4	170.0	12.0
		80/27	132.3	9.3	155.0	10.9	178.3	12.5
		90/32	138.9	9.8	161.7	11.4	185.4	13.0
		100/38	149.3	10.5	173.5	12.2	191.5	13.5

2) 220V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	961	867	970	870	980	872
	80/27	1008	896	1035	897	1038	900
	90/32	1048	921	1048	921	1048	922
	100/38	1096	950	1120	950	1143	950
Current consumption [A] (Stable after 5 min)	70/21	4.4	4.0	4.5	4.0	4.5	4.0
	80/27	4.7	4.2	4.8	4.1	4.8	4.1
	90/32	4.9	4.3	5.0	4.2	5.0	4.3
	100/38	5.1	4.4	5.2	4.4	5.3	4.4
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	59	0.22	56	0.21	53	0.20
	80/27	56	0.21	52	0.20	48	0.18
	90/32	53	0.20	47	0.18	44	0.16
	100/38	49	0.19	44	0.17	38	0.15
Approximate electric consumption per 24hr [kWh/day]	70/21	22.2		22.4		22.7	
	80/27	22.9		23.5		23.5	
	90/32	23.6		24.1		24.1	
	100/38	24.3		24.6		24.9	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	457	208	425	193	392	178
	80/27	409	185	361	164	347	158
	90/32	400	181	336	152	339	154
	100/38	319	145	293	133	266	121
Freezing cycle time [min]	70/21	29		31		33	
	80/27	32		34		38	
	90/32	34		38		42	
	100/38	36		41		47	
Harvest cycle time[min]	70/21	2.8		2.8		2.7	
	80/27	2.8		2.7		2.6	
	90/32	2.7		2.6		2.6	
	100/38	2.6		2.6		2.5	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	251.8	17.7	263.3	18.5	274.8	19.3
		80/27	291.0	20.5	307.9	21.7	315.0	22.1
		90/32	323.6	22.8	344.3	24.2	348.5	24.5
		100/38	362.8	25.5	375.8	26.4	388.7	27.3
	Stable	70/21	251.8	17.7	256.7	18.1	261.7	18.4
		80/27	287.9	20.2	293.0	20.6	301.4	21.2
		90/32	318.0	22.4	325.7	22.9	334.4	23.5
		100/38	354.2	24.9	364.1	25.6	374.1	26.3
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	47.2	3.3	50.2	3.5	53.2	3.7
		80/27	53.1	3.7	57.3	4.0	58.8	4.1
		90/32	58.0	4.1	62.2	4.4	63.4	4.5
		100/38	63.9	4.5	66.4	4.7	69.0	4.9
	Stable	70/21	46.9	3.3	47.6	3.4	48.4	3.4
		80/27	50.5	3.5	51.2	3.6	51.9	3.6
		90/32	53.4	3.8	54.0	3.8	54.8	3.9
		100/38	56.9	4.0	57.6	4.1	58.3	4.1
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	163.6	11.5	174.9	12.3	186.3	13.1
		80/27	169.1	11.9	193.4	13.6	200.9	14.1
		90/32	173.7	12.2	200.5	14.1	213.0	15.0
		100/38	179.2	12.6	203.4	14.3	227.6	16.0
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	106.7	7.5	114.5	8.1	122.3	8.6
		80/27	110.7	7.8	128.0	9.0	133.9	9.4
		90/32	114.0	8.0	135.1	9.5	143.5	10.1
		100/38	118.1	8.3	136.5	9.6	155.0	10.9

3) 230V/50Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	964	868	985	869	1006	869
	80/27	1031	901	1061	905	1079	907
	90/32	1087	929	1091	930	1093	939
	100/38	1154	962	1184	970	1213	978
Current consumption [A] (Stable after 5 min)	70/21	4.9	4.4	5.0	4.4	5.0	4.4
	80/27	5.2	4.6	5.3	4.6	5.4	4.6
	90/32	5.4	4.7	5.6	4.7	5.6	4.7
	100/38	5.7	4.8	5.8	4.8	6.0	4.9
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	59	0.22	53	0.20	46	0.17
	80/27	54	0.21	51	0.19	43	0.16
	90/32	50	0.19	46	0.17	40	0.15
	100/38	45	0.17	41	0.16	38	0.14
Approximate electric consumption per 24hr [kWh/day]	70/21	21.9		23.2		24.5	
	80/27	22.9		23.5		25.0	
	90/32	23.8		24.5		25.5	
	100/38	24.9		25.5		26.1	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	463	210	407	185	351	159
	80/27	419	190	397	180	328	149
	90/32	410	186	351	159	324	147
	100/38	337	153	312	142	287	130
Freezing cycle time [min]	70/21	29		34		39	
	80/27	33		35		42	
	90/32	36		39		45	
	100/38	40		44		48	
Harvest cycle time[min]	70/21	2.8		2.7		2.7	
	80/27	2.7		2.6		2.6	
	90/32	2.6		2.6		2.6	
	100/38	2.6		2.5		2.5	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	275.6	19.4	287.5	20.2	299.4	21.1
		80/27	318.5	22.4	333.0	23.4	345.3	24.3
		90/32	354.2	24.9	374.5	26.3	383.6	27.0
		100/38	397.1	27.9	413.3	29.1	429.5	30.2
	Stable	70/21	271.7	19.1	275.2	19.4	278.8	19.6
		80/27	309.8	21.8	314.3	22.1	321.4	22.6
		90/32	341.6	24.0	354.2	24.9	357.0	25.1
		100/38	379.8	26.7	389.7	27.4	399.7	28.1
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	43.4	3.1	45.8	3.2	48.2	3.4
		80/27	47.3	3.3	50.6	3.6	51.3	3.6
		90/32	50.6	3.6	52.6	3.7	53.9	3.8
		100/38	54.5	3.8	55.8	3.9	57.0	4.0
	Stable	70/21	41.2	2.9	42.0	3.0	42.7	3.0
		80/27	42.8	3.0	44.1	3.1	44.2	3.1
		90/32	44.0	3.1	44.1	3.1	45.4	3.2
		100/38	45.5	3.2	46.2	3.3	46.9	3.3
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	176.4	12.4	187.7	13.2	199.1	14.0
		80/27	184.4	13.0	206.2	14.5	216.7	15.2
		90/32	191.1	13.4	219.0	15.4	231.3	16.3
		100/38	199.1	14.0	224.0	15.8	248.9	17.5
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	105.3	7.4	113.1	8.0	120.9	8.5
		80/27	110.8	7.8	128.0	9.0	135.0	9.5
		90/32	115.4	8.1	133.7	9.4	146.7	10.3
		100/38	120.9	8.5	140.8	9.9	160.7	11.3

4.2.3 650A

1) 208-230V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	1102	1071	1080	1015	1164	1024
	80/27	1139	1096	1177	1129	1226	1105
	90/32	1213	1199	1280	1186	1331	1188
	100/38	1305	1281	1356	1279	1428	1290
Current consumption [A] (Stable after 5 min)	70/21	4.9	4.7	5.0	4.7	5.1	4.9
	80/27	5.1	5.1	5.4	5.1	5.6	5.1
	90/32	5.5	5.4	5.8	5.5	6.0	5.5
	100/38	5.9	5.7	6.2	5.7	6.5	5.9
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	89	0.34	89	0.34	86	0.33
	80/27	85	0.32	85	0.32	78	0.30
	90/32	80	0.30	76	0.29	73	0.28
	100/38	72	0.27	67	0.25	67	0.25
Approximate electric consumption per 24hr [kWh/day]	70/21	24.0		24.7		24.7	
	80/27	25.2		26.4		26.7	
	90/32	27.1		27.3		28.6	
	100/38	29.2		30.0		30.6	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	625	283	611	277	592	269
	80/27	593	269	541	246	519	236
	90/32	545	247	535	243	465	211
	100/38	453	206	450	204	416	189
Freezing cycle time [min]	70/21	29		30		32	
	80/27	31		32		35	
	90/32	34		35		38	
	100/38	38		41		42	
Harvest cycle time[min]	70/21	4.8		3.8		3.3	
	80/27	4.3		3.4		3.2	
	90/32	4.0		3.3		3.2	
	100/38	4.0		3.3		3.2	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	333.5	23.5	348.3	24.5	354.0	24.9
		80/27	369.9	26.0	401.0	28.2	405.5	28.5
		90/32	415.1	29.2	441.7	31.1	458.1	32.2
		100/38	473.7	33.3	485.5	34.1	509.7	35.8
	Stable	70/21	314.3	22.1	321.4	22.6	344.2	24.2
		80/27	366.3	25.8	371.2	26.1	378.3	26.6
		90/32	414.8	29.2	422.0	29.7	426.7	30.0
		100/38	469.8	33.0	474.5	33.4	474.6	33.4
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	77.5	5.5	82.3	5.8	85.7	6.0
		80/27	79.0	5.6	83.3	5.9	92.8	6.5
		90/32	81.6	5.7	89.8	6.3	99.6	7.0
		100/38	82.4	5.8	91.6	6.4	101.4	7.1
	Stable	70/21	56.9	4.0	58.3	4.1	59.7	4.2
		80/27	60.4	4.3	60.4	4.3	63.1	4.4
		90/32	64.0	4.5	64.5	4.5	65.4	4.6
		100/38	64.5	4.5	67.8	4.8	83.1	5.8
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	158.6	11.2	162.1	11.4	209.1	14.7
		80/27	161.4	11.4	179.9	12.7	217.6	15.3
		90/32	165.5	11.6	188.7	13.3	216.2	15.2
		100/38	167.1	11.8	199.1	14.0	220.9	15.5
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	127.5	9.0	140.8	9.9	164.3	11.6
		80/27	123.0	8.7	145.1	10.2	167.4	11.8
		90/32	123.0	8.7	149.3	10.5	168.3	11.8
		100/38	124.5	8.8	151.2	10.6	170.0	12.0

2) 220V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	1000	937	1038	942	1109	951
	80/27	1007	1006	1126	1018	1197	1026
	90/32	1157	1073	1223	1074	1288	1085
	100/38	1243	1136	1318	1152	1391	1153
Current consumption [A] (Stable after 5 min)	70/21	4.6	4.3	4.8	4.3	5.1	4.4
	80/27	4.6	4.6	5.2	4.7	5.5	4.7
	90/32	5.3	4.9	5.6	4.9	5.9	5.0
	100/38	5.7	5.2	6.0	5.3	6.4	5.3
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	98	0.37	93	0.35	87	0.33
	80/27	90	0.34	86	0.32	80	0.30
	90/32	82	0.31	76	0.29	72	0.27
	100/38	72	0.27	67	0.26	63	0.24
Approximate electric consumption per 24hr [kWh/day]	70/21	21.8		22.5		23.3	
	80/27	23.8		24.5		25.1	
	90/32	25.4		26.3		26.7	
	100/38	27.1		28.1		28.7	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	643	292	614	279	576	261
	80/27	593	269	561	255	527	239
	90/32	537	244	503	228	470	213
	100/38	465	211	437	198	408	185
Freezing cycle time [min]	70/21	27		29		31	
	80/27	30		32		35	
	90/32	34		36		39	
	100/38	39		42		45	
Harvest cycle time[min]	70/21	3.9		3.3		3.0	
	80/27	3.4		3.0		2.8	
	90/32	3.1		2.9		2.7	
	100/38	3.0		2.7		2.7	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	322.2	22.7	337.1	23.7	345.6	24.3
		80/27	364.1	25.6	371.2	26.1	388.3	27.3
		90/32	401.8	28.3	413.2	29.1	429.5	30.2
		100/38	435.9	30.7	453.7	31.9	472.2	33.2
	Stable	70/21	312.9	22.0	312.9	22.0	313.6	22.1
		80/27	350.6	24.7	351.3	24.7	351.3	24.7
		90/32	381.9	26.9	386.2	27.2	386.2	27.2
		100/38	416.0	29.3	420.3	29.6	428.1	30.1
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	83.9	5.9	91.0	6.4	95.3	6.7
		80/27	88.9	6.3	93.9	6.6	97.4	6.9
		90/32	92.5	6.5	98.1	6.9	102.4	7.2
		100/38	93.2	6.6	101.0	7.1	106.7	7.5
	Stable	70/21	68.3	4.8	68.3	4.8	68.3	4.8
		80/27	68.3	4.8	69.0	4.9	70.4	5.0
		90/32	69.7	4.9	72.5	5.1	73.3	5.2
		100/38	71.8	5.1	75.4	5.3	75.4	5.3
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	174.2	12.3	207.7	14.6	236.8	16.7
		80/27	190.6	13.4	209.8	14.8	242.5	17.1
		90/32	193.4	13.6	228.3	16.1	248.9	17.5
		100/38	194.1	13.7	234.0	16.5	269.5	19.0
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	126.6	8.9	149.3	10.5	178.5	12.6
		80/27	130.9	9.2	157.2	11.1	179.2	12.6
		90/32	134.4	9.5	163.6	11.5	188.5	13.3
		100/38	135.8	9.6	168.5	11.9	193.4	13.6

3) 230V/50Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	976	936	1002	938	1105	942
	80/27	1055	996	1103	1011	1165	1014
	90/32	1146	1057	1196	1070	1250	1088
	100/38	1261	1148	1309	1151	1345	1156
Current consumption [A] (Stable after 5 min)	70/21	4.5	4.3	4.6	4.3	5.1	4.3
	80/27	4.9	4.6	5.1	4.7	5.3	4.7
	90/32	5.3	4.5	5.5	4.9	5.7	4.9
	100/38	5.8	5.3	6.0	5.3	6.2	5.3
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	101	0.38	100	0.38	90	0.34
	80/27	94	0.36	92	0.35	89	0.34
	90/32	88	0.33	89	0.34	81	0.31
	100/38	76	0.29	75	0.28	73	0.28
Approximate electric consumption per 24hr [kWh/day]	70/21	21.6		22.4		23.1	
	80/27	23.5		24.3		24.8	
	90/32	25.3		25.8		26.5	
	100/38	27.5		28.1		28.4	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	726	329	716	325	667	303
	80/27	686	311	658	298	642	291
	90/32	640	290	633	287	582	264
	100/38	547	248	545	247	520	236
Freezing cycle time [min]	70/21	26		27		30	
	80/27	29		30		31	
	90/32	31		31		34	
	100/38	37		38		39	
Harvest cycle time[min]	70/21	3.8		3.1		2.9	
	80/27	3.2		2.8		2.7	
	90/32	2.8		2.6		2.6	
	100/38	2.8		2.6		2.5	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	328.6	23.1	341.4	24.0	380.5	26.8
		80/27	371.2	26.1	394.9	27.8	411.8	29.0
		90/32	417.5	29.4	435.9	30.7	454.4	32.0
		100/38	470.1	33.1	484.3	34.1	499.2	35.1
	Stable	70/21	317.9	22.4	321.4	22.6	321.4	22.6
		80/27	358.4	25.2	368.4	25.9	367.7	25.9
		90/32	396.8	27.9	405.4	28.5	408.9	28.8
		100/38	450.9	31.7	455.1	32.0	455.9	32.1
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	75.4	5.3	77.5	5.5	93.2	6.6
		80/27	78.2	5.5	87.7	6.2	96.0	6.8
		90/32	82.5	5.8	90.3	6.4	98.1	6.9
		100/38	88.2	6.2	96.7	6.8	102.4	7.2
	Stable	70/21	57.6	4.1	58.3	4.1	59.0	4.2
		80/27	58.3	4.1	61.2	4.3	61.2	4.3
		90/32	61.2	4.3	62.6	4.4	64.0	4.5
		100/38	60.4	4.3	66.1	4.7	66.8	4.7
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	172.8	12.2	196.3	13.8	219.0	15.4
		80/27	184.9	13.0	198.7	14.0	237.5	16.7
		90/32	202.0	14.2	224.7	15.8	247.5	17.4
		100/38	207.7	14.6	242.5	17.1	253.2	17.8
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	127.3	9.0	146.5	10.3	164.3	11.6
		80/27	133.7	9.4	153.1	10.8	177.8	12.5
		90/32	143.7	10.1	165.0	11.6	185.6	13.1
		100/38	148.6	10.5	174.9	12.3	192.0	13.5

4.2.4 900A

1) 208-230V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	1342	1248	1361	1251	1405	1253
	80/27	1448	1340	1520	1354	1558	1355
	90/32	1554	1427	1583	1433	1666	1440
	100/38	1709	1539	1735	1543	1749	1547
Current consumption [A] (Stable after 5 min)	70/21	6.2	5.8	6.3	5.8	6.5	5.8
	80/27	6.7	6.2	7.0	6.3	7.2	6.3
	90/32	7.2	6.6	7.3	6.6	7.7	6.7
	100/38	7.9	7.1	8.0	7.1	7.9	7.1
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	125	0.47	124	0.47	122	0.46
	80/27	116	0.44	112	0.43	111	0.42
	90/32	108	0.41	97	0.37	96	0.36
	100/38	94	0.36	92	0.35	90	0.34
Approximate electric consumption per 24hr [kWh/day]	70/21	29.8		30.5		31.0	
	80/27	32.5		33.4		33.8	
	90/32	34.6		34.7		36.2	
	100/38	38.0		38.3		38.9	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	890	404	868	394	853	387
	80/27	807	366	794	360	784	356
	90/32	759	344	706	320	703	319
	100/38	666	302	647	293	629	285
Freezing cycle time [min]	70/21	20		20		21	
	80/27	22		23		23	
	90/32	24		27		26	
	100/38	28		29		29	
Harvest cycle time[min]	70/21	3.3		2.8		2.7	
	80/27	2.8		2.5		2.4	
	90/32	2.4		2.3		2.2	
	100/38	2.2		2.2		2.2	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	338.5	23.8	348.9	24.5	358.4	25.2
		80/27	386.2	27.2	406.3	28.6	416.3	29.3
		90/32	430.5	30.3	438.1	30.8	463.0	32.6
		100/38	492.6	34.6	497.8	35.0	498.3	35.0
	Stable	70/21	318.1	22.4	320.0	22.5	321.4	22.6
		80/27	366.3	25.8	370.8	26.1	373.6	26.3
		90/32	401.8	28.3	408.2	28.7	414.6	29.2
		100/38	460.8	32.4	465.6	32.7	464.6	32.7
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	68.3	4.8	69.7	4.9	77.3	5.4
		80/27	72.5	5.1	81.1	5.7	86.8	6.1
		90/32	77.8	5.5	82.5	5.8	88.9	6.3
		100/38	88.7	6.2	89.6	6.3	89.6	6.3
	Stable	70/21	51.7	3.6	51.7	3.6	52.2	3.7
		80/27	54.0	3.8	54.5	3.8	55.5	3.9
		90/32	56.9	4.0	56.9	4.0	56.9	4.0
		100/38	60.7	4.3	61.2	4.3	61.2	4.3
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	236.1	16.6	250.3	17.6	272.6	19.2
		80/27	240.4	16.9	266.9	18.8	287.3	20.2
		90/32	257.0	18.1	262.4	18.5	306.5	21.6
		100/38	290.2	20.4	308.2	21.7	326.2	22.9
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	133.7	9.4	144.6	10.2	163.6	11.5
		80/27	134.4	9.5	156.0	11.0	173.1	12.2
		90/32	143.7	10.1	170.0	12.0	184.2	13.0
		100/38	159.3	11.2	176.4	12.4	193.9	13.6

2) 220V/60Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	1492	1381	1562	1391	1600	1396
	80/27	1616	1459	1653	1466	1654	1476
	90/32	1714	1540	1737	1545	1834	1559
	100/38	1811	1657	1838	1658	1970	1662
Current consumption [A] (Stable after 5 min)	70/21	6.9	6.4	7.2	6.4	7.3	6.4
	80/27	7.5	6.7	7.5	6.7	7.6	6.8
	90/32	7.9	7.1	8.0	7.1	8.4	7.1
	100/38	8.3	7.7	8.5	7.7	9.0	7.6
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	136	0.51	131	0.49	126	0.48
	80/27	127	0.48	122	0.46	117	0.44
	90/32	121	0.46	117	0.44	110	0.42
	100/38	109	0.41	108	0.41	100	0.38
Approximate electric consumption per 24hr [kWh/day]	70/21	33.9		35.0		35.7	
	80/27	36.4		37.2		38.1	
	90/32	38.1		39.0		40.0	
	100/38	41.3		42.2		42.7	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	915	415	866	393	847	384
	80/27	844	383	819	371	781	354
	90/32	807	366	773	351	737	334
	100/38	723	328	722	328	663	301
Freezing cycle time [min]	70/21	18		19		20	
	80/27	19		21		22	
	90/32	21		22		24	
	100/38	24		24		26	
Harvest cycle time[min]	70/21	3.3		2.8		2.6	
	80/27	3.2		2.7		2.5	
	90/32	2.9		2.5		2.3	
	100/38	2.4		2.3		2.2	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	327.1	23.0	335.2	23.6	355.6	25.0
		80/27	367.4	25.8	383.6	27.0	474.4	33.4
		90/32	404.4	28.4	423.4	29.8	441.4	31.0
		100/38	491.2	34.5	510.6	35.9	535.5	37.7
	Stable	70/21	301.5	21.2	303.4	21.3	304.9	21.4
		80/27	327.6	23.0	348.9	24.5	431.0	30.3
		90/32	380.2	26.7	386.9	27.2	404.9	28.5
		100/38	438.1	30.8	501.4	35.3	511.3	36.0
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	66.8	4.7	71.1	5.0	72.5	5.1
		80/27	68.7	4.8	72.5	5.1	74.7	5.3
		90/32	71.6	5.0	72.5	5.1	79.2	5.6
		100/38	72.5	5.1	74.0	5.2	82.5	5.8
	Stable	70/21	53.6	3.8	53.6	3.8	53.6	3.8
		80/27	54.0	3.8	54.0	3.8	54.0	3.8
		90/32	55.5	3.9	55.0	3.9	55.5	3.9
		100/38	55.9	3.9	56.2	4.0	56.2	4.0
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	268.8	18.9	283.5	19.9	297.3	20.9
		80/27	275.9	19.4	285.9	20.1	451.6	31.8
		90/32	283.5	19.9	330.0	23.2	387.4	27.2
		100/38	348.9	24.5	377.6	26.6	426.0	30.0
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	144.6	10.2	160.7	11.3	167.4	11.8
		80/27	150.8	10.6	169.3	11.9	177.8	12.5
		90/32	153.6	10.8	173.1	12.2	184.4	13.0
		100/38	157.2	11.1	181.3	12.8	193.0	13.6

3) 230V/50Hz

content	Ambient Temp (°F/°C)	Water temp(°F/°C)					
		50°F/10°C		70°F/21°C		90°F/32°C	
Approximate electric consumption [W] (Stable after 5 min)	70/21	1477	1371	1549	1385	1594	1395
	80/27	1651	1499	1704	1501	1740	1515
	90/32	1775	1591	1821	1599	1897	1613
	100/38	1963	1719	2013	1733	2068	1737
Current consumption [A] (Stable after 5 min)	70/21	6.8	6.3	7.1	6.3	7.3	6.4
	80/27	7.6	6.9	7.8	6.9	8.0	6.9
	90/32	8.2	7.3	8.4	7.3	8.7	7.4
	100/38	9.0	7.9	9.2	7.9	9.5	8.0
Approximate water consumption per 24hr [gal/day, m ³ /day]	70/21	121	0.46	121	0.46	119	0.45
	80/27	111	0.42	111	0.42	108	0.41
	90/32	103	0.39	102	0.39	98	0.37
	100/38	91	0.35	91	0.34	88	0.33
Approximate electric consumption per 24hr [kWh/day]	70/21	33.1		34.2		34.7	
	80/27	36.2		37.1		37.9	
	90/32	38.7		39.4		40.5	
	100/38	42.4		43.1		43.3	
Approximate ice production per 24hr [lb/day , kg/day]	70/21	858	389	857	389	844	383
	80/27	790	358	784	356	759	345
	90/32	726	329	717	325	698	317
	100/38	641	291	634	288	624	283
Freezing cycle time [min]	70/21	19		19		20	
	80/27	21		22		22	
	90/32	23		24		25	
	100/38	27		28		29	
Harvest cycle time[min]	70/21	4.8		4.4		4.0	
	80/27	4.5		4.2		3.9	
	90/32	4.4		4.0		3.8	
	100/38	4.3		3.9		3.7	

content		Ambient Temp (°F/°C)	Water temp(°F/°C)					
			50°F/10°C		70°F/21°C		90°F/32°C	
High pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	326.4	23.0	344.9	24.3	351.8	24.7
		80/27	377.6	26.6	390.7	27.5	405.8	28.5
		90/32	418.2	29.4	433.3	30.5	444.2	31.2
		100/38	471.5	33.2	484.5	34.1	492.1	34.6
	Stable	70/21	310.1	21.8	316.2	22.2	316.5	22.3
		80/27	357.7	25.2	359.9	25.3	365.5	25.7
		90/32	398.7	28.0	398.7	28.0	403.0	28.3
		100/38	446.1	31.4	450.9	31.7	450.2	31.7
Low pressure in freezing (psig / kgf/cm ² g)	after 5min	70/21	62.6	4.4	69.0	4.9	75.4	5.3
		80/27	72.5	5.1	76.8	5.4	77.8	5.5
		90/32	76.8	5.4	78.2	5.5	86.3	6.1
		100/38	83.2	5.9	89.1	6.3	95.3	6.7
	Stable	70/21	46.9	3.3	47.6	3.4	48.4	3.4
		80/27	51.2	3.6	51.2	3.6	51.7	3.6
		90/32	53.1	3.7	54.0	3.8	54.0	3.8
		100/38	56.9	4.0	56.9	4.0	56.4	4.0
High pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	259.6	18.3	285.9	20.1	300.1	21.1
		80/27	287.3	20.2	313.4	22.0	333.3	23.4
		90/32	303.9	21.4	330.5	23.2	358.4	25.2
		100/38	327.8	23.1	356.1	25.0	380.7	26.8
Low pressure in harvest (psig / kgf/cm ² g)	Stable	70/21	132.3	9.3	149.3	10.5	163.1	11.5
		80/27	143.7	10.1	161.2	11.3	176.4	12.4
		90/32	151.7	10.7	168.8	11.9	190.1	13.4
		100/38	163.6	11.5	182.5	12.8	201.5	14.2

4.3 Evaporator sensor data

Temp' (°C)	Resistance (kΩ)	Temp' (°C)	Resistance (kΩ)	Temp' (°C)	Resistance (kΩ)	Temp' (°C)	Resistance (kΩ)
-40	87.8	0	13.29	40	2.97	80	0.886
-39	83.3	1	12.75	41	2.87	81	0.862
-38	79.0	2	12.23	42	2.78	82	0.839
-37	75.0	3	11.73	43	2.69	83	0.817
-36	71.2	4	11.26	44	2.60	84	0.795
-35	67.6	5	10.81	45	2.52	85	0.774
-34	64.2	6	10.38	46	2.44	86	0.754
-33	61.0	7	9.97	47	2.36	87	0.734
-32	58.0	8	9.58	48	2.28	88	0.715
-31	55.1	9	9.21	49	2.21	89	0.697
-30	52.5	10	8.85	50	2.14	90	0.679
-29	49.9	11	8.51	51	2.08	91	0.661
-28	47.5	12	8.18	52	2.01	92	0.645
-27	45.2	13	7.87	53	1.95	93	0.628
-26	43.1	14	7.57	54	1.89	94	0.612
-25	41.0	15	7.28	55	1.83	95	0.597
-24	39.1	16	7.01	56	1.78	96	0.582
-23	37.2	17	6.75	57	1.72	97	0.568
-22	35.5	18	6.50	58	1.67	98	0.554
-21	33.9	19	6.26	59	1.62	99	0.540
-20	32.3	20	6.03	60	1.57	100	0.527
-19	30.8	21	5.80	61	1.53	101	0.514
-18	29.4	22	5.59	62	1.48	102	0.501
-17	28.1	23	5.39	63	1.44	103	0.489
-16	26.8	24	5.20	64	1.40	104	0.477
-15	25.6	25	5.01	65	1.35	105	0.466
-14	24.5	26	4.83	66	1.32	106	0.455
-13	23.4	27	4.66	67	1.28	107	0.444
-12	22.4	28	4.50	68	1.24	108	0.434
-11	21.4	29	4.34	69	1.21	109	0.423
-10	20.4	30	4.19	70	1.17	110	0.414
-9	19.6	31	4.04	71	1.14	111	0.404
-8	18.7	32	3.90	72	1.11	112	0.395
-7	17.9	33	3.77	73	1.08	113	0.385
-6	17.2	34	3.64	74	1.05	114	0.377
-5	16.4	35	3.52	75	1.02	115	0.368
-4	15.7	36	3.40	76	0.99	116	0.360
-3	15.1	37	3.29	77	0.96	117	0.351
-2	14.5	38	3.18	78	0.94	118	0.343
-1	13.9	39	3.07	79	0.91	119	0.336
0	13.3	40	2.97	80	0.89	120	0.328