ICE MATE

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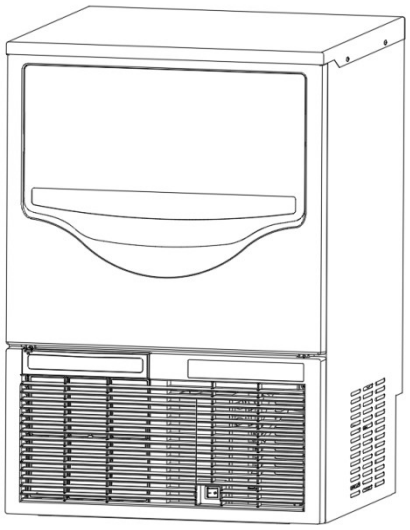


COMMERCIAL SELF-CONTAINED RHOMBIC ICE MAKER

Model: SRM-45A

SRM-60A

SRM-105A

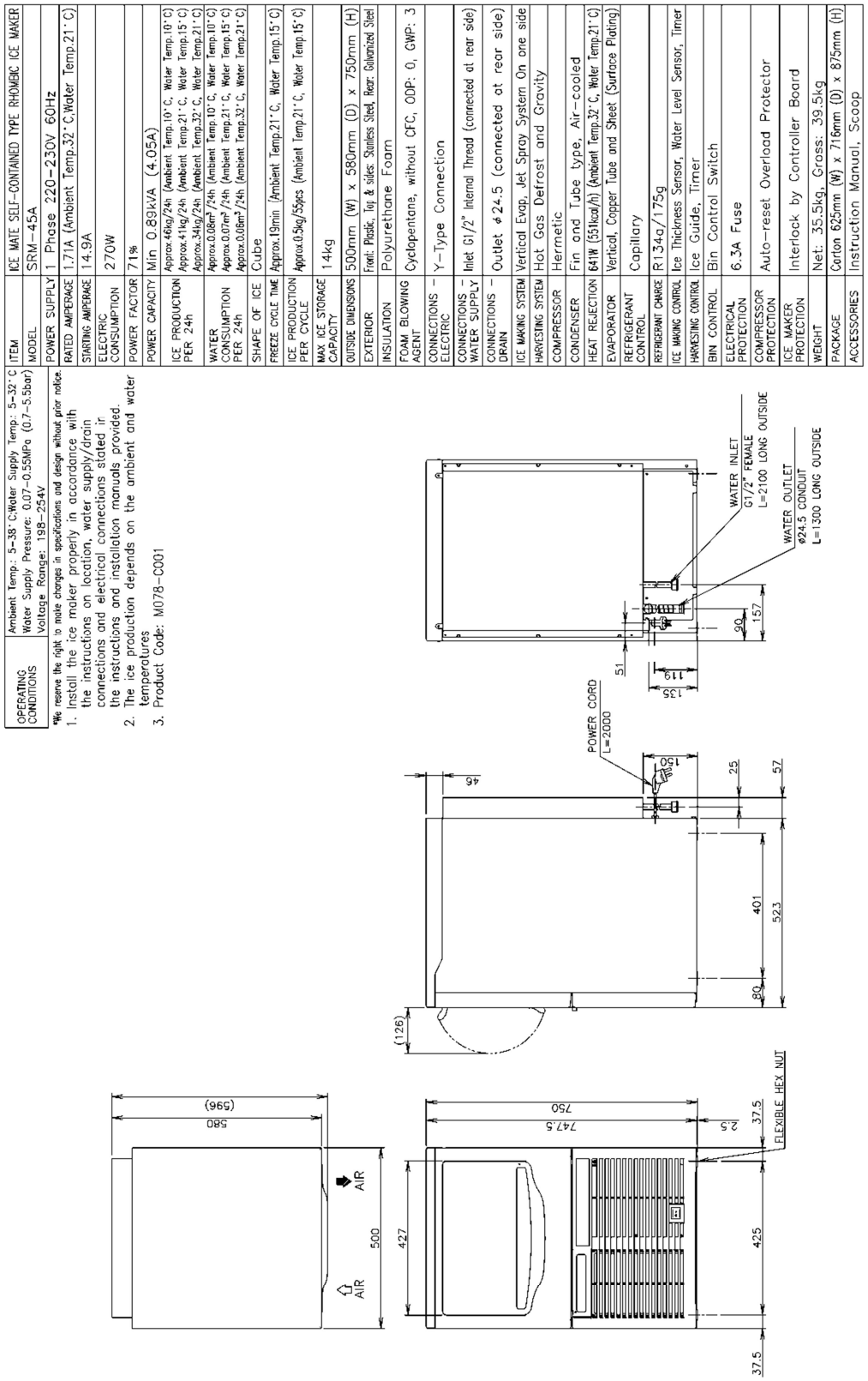
# SERVICE MANUAL

# CONTENT

# I . SPECIFICATIONS

## 1. DIMENSIONS/SPECIFICATIONS

### [a] SRM-45A



| ITEM | ICE MATE SELF-CONTAINED TYPE RHOMBIC ICE MAKER |
|---|---|
| MODEL | SRM-45A |
| POWER SUPPLY | 1 Phase 220-230V 60Hz |
| RATED AMPERAGE | 1.71A (Ambient Temp.32°C,Water Temp.21°C) |
| STARTING AMPERAGE | 14.9A |
| ELECTRIC CONSUMPTION | 270W |
| POWER FACTOR | 71% |
| POWER CAPACITY | Min 0.89kVA (4.05A) |
| ICE PRODUCTION PER 24h | Approx.46kg/24h (Ambient Temp.10°C, Water Temp.10°C)<br>Approx.41kg/24h (Ambient Temp.21°C, Water Temp.15°C)<br>Approx.34kg/24h (Ambient Temp.32°C, Water Temp.21°C) |
| WATER CONSUMPTION PER 24h | Approx.0.08m³/24h (Ambient Temp.10°C, Water Temp.10°C)<br>Approx.0.07m³/24h (Ambient Temp.21°C, Water Temp.15°C)<br>Approx.0.06m³/24h (Ambient Temp.32°C, Water Temp.21°C) |
| SHAPE OF ICE | Cube |
| FREEZE CYCLE TIME | Approx.19min (Ambient Temp.21°C, Water Temp.15°C) |
| ICE PRODUCTION PER CYCLE | Approx.0.5kg/5pcs (Ambient Temp.21°C, Water Temp.15°C) |
| MAX ICE STORAGE CAPACITY | 14kg |
| OUTSIDE DIMENSIONS | 500mm (W) x 580mm (D) x 750mm (H) |
| EXTERIOR | Front: Plastic, Top & Sides: Stainless Steel, Rear: Galvanized Steel |
| INSULATION | Polyurethane Foam |
| FOAM BLOWING AGENT | Cyclopentane, without CFC, ODP: 0, GWP: 3 |
| CONNECTIONS - ELECTRIC | Y-Type Connection |
| CONNECTIONS - WATER SUPPLY | Inlet G1/2" Internal Thread (connected at rear side) |
| CONNECTIONS - DRAIN | Outlet φ24.5 (connected at rear side) |
| ICE MAKING SYSTEM | Vertical Evap. Jet Spray System On one side |
| HARVESTING SYSTEM | Hot Gas Defrost and Gravity |
| COMPRESSOR | Hermetic |
| CONDENSER | Fin and Tube type, Air-cooled |
| HEAT REJECTION | 641W (551kcal/h) (Ambient Temp.32°C, Water Temp.21°C) |
| EVAPORATOR | Vertical, Copper Tube and Sheet (Surface Plating) |
| REFRIGERANT CONTROL | Capillary |
| REFRIGERANT CHARGE | R134a/175g |
| ICE MAKING CONTROL | Ice Thickness Sensor, Water Level Sensor, Timer |
| HARVESTING CONTROL | Ice Guide, Timer |
| BIN CONTROL | Bin Control Switch |
| ELECTRICAL PROTECTION | 6.3A Fuse |
| COMPRESSOR PROTECTION | Auto-reset Overload Protector |
| ICE MAKER PROTECTION | Interlock by Controller Board |
| WEIGHT | Net: 35.5kg, Gross: 39.5kg |
| PACKAGE | Carton 625mm (W) x 716mm (D) x 875mm (H) |
| ACCESSORIES | Instruction Manual, Scoop |

| OPERATING CONDITIONS | Ambient Temp.: 5~38°C/Water Supply Temp.: 5~32°C |
|---|---|
| | Water Supply Pressure: 0.07~0.55MPa (0.7~5.5bar) |
| | Voltage Range: 198~254V |

*We reserve the right to make changes in specifications and design without prior notice.

1. Install the ice maker properly in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instructions and installation manuals provided.
2. The ice production depends on the ambient and water temperatures
3. Product Code: M078-C001

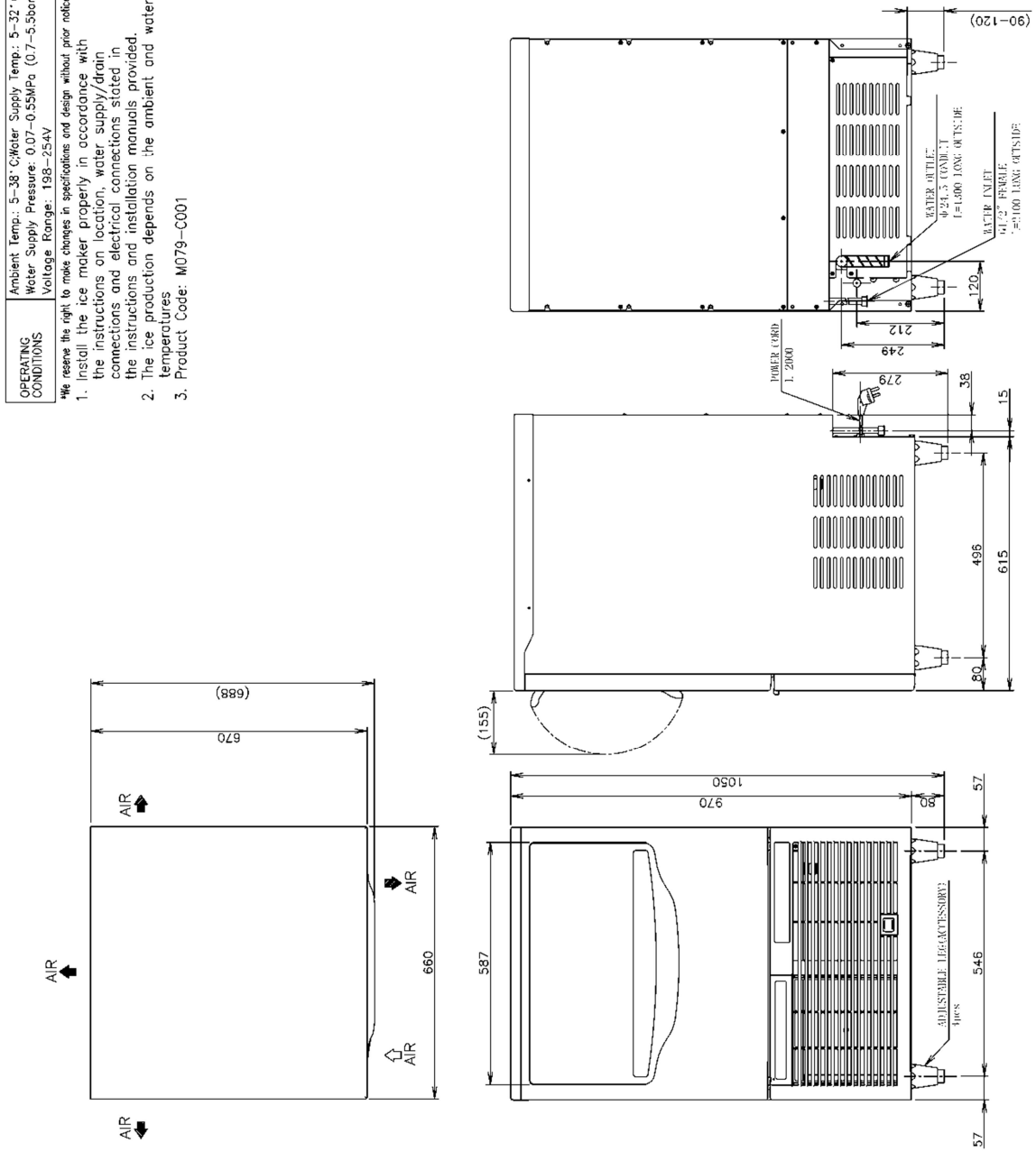
## [b] SRM-60A

| ITEM | ICE MATE SELF-CONTAINED TYPE RHOMBIC ICE MAKER |
|---|---|
| MODEL | SRM-60A |
| POWER SUPPLY | 1 Phase 220-230V 60Hz |
| RATED AMPERAGE | 3.5A (Ambient Temp.32°C,Water Temp.21°C) |
| STARTING AMPERAGE | 16.6A |
| ELECTRIC CONSUMPTION | 450W (Ambient Temp.32°C,Water Temp.21°C) |
| POWER FACTOR | 79% |
| POWER CAPACITY | Min 0.99kVA (4.55A) |
| ICE PRODUCTION PER 24h | Approx.70kg/24h (Ambient Temp.10°C, Water Temp.10°C)<br>Approx.60kg/24h (Ambient Temp.21°C, Water Temp.15°C)<br>Approx.54kg/24h (Ambient Temp.32°C, Water Temp.21°C) |
| WATER CONSUMPTION PER 24h | Approx.0.17m³/24h (Ambient Temp.10°C, Water Temp.10°C)<br>Approx.0.14m³/24h (Ambient Temp.21°C, Water Temp.15°C)<br>Approx.0.13m³/24h (Ambient Temp.32°C, Water Temp.21°C) |
| SHAPE OF ICE | Cube |
| FREEZE CYCLE TIME | Approx.19min (Ambient Temp.21°C, Water Temp.15°C) |
| ICE PRODUCTION PER CYCLE | Approx.0.8kg/8pcs (Ambient Temp.21°C, Water Temp.15°C) |
| MAX ICE STORAGE CAPACITY | 31.4kg (natural ice storage: 25.88kg) |
| OUTSIDE DIMENSIONS | 660mm (W) x 670mm (D) x 1050mm (H) |
| EXTERIOR | Front: Plastic, Top & sides: Stainless Steel, Rear: Galvanized Steel |
| INSULATION | Polyurethane Foam |
| FOAM BLOWING AGENT | Cyclopentane, without CFC, ODP: 0, GWP: 3 |
| CONNECTIONS - ELECTRIC | Y-Type Connection |
| CONNECTIONS - WATER SUPPLY | Inlet G1/2" Internal Thread (connected at rear side) |
| CONNECTIONS - DRAIN | Outlet φ24.5 (connected at rear side) |
| ICE MAKING SYSTEM | Vertical Evap. Jet Spray System On one side |
| HARVESTING SYSTEM | Hot Gas Defrost and Gravity |
| COMPRESSOR | Hermetic |
| CONDENSER | Fin and Tube type, Air-cooled |
| HEAT REJECTION | 1010W (868kcal/h) (Ambient Temp.32°C, Water Temp.21°C) |
| EVAPORATOR | Vertical, Copper Tube and Sheet (Surface Plating) |
| REFRIGERANT CONTROL | Expansion valve |
| REFRIGERANT CHARGE | R134a/210g |
| ICE MAKING CONTROL | Ice Thickness Sensor, Water Level Sensor, Timer |
| HARVESTING CONTROL | Ice Guide, Timer |
| BIN CONTROL | Bin Control Switch |
| ELECTRICAL PROTECTION | 6.3A FUSE |
| COMPRESSOR PROTECTION | Auto-reset Overload Protector |
| ICE MAKER PROTECTION | Interlock by Controller Board |
| WEIGHT | Net: 58kg, Gross: 65kg |
| PACKAGE | Carton 785mm (W) x 860mm (D) x 1100mm (H) |
| ACCESSORIES | Instruction Manual, Scoop |

| OPERATING CONDITIONS | |
|---|---|
| | Ambient Temp.: 5~38°C/Water Supply Temp.: 5~32°C |
| | Water Supply Pressure: 0.07~0.55MPa (0.7~5.5bar) |
| | Voltage Range: 198~254V |

*We reserve the right to make changes in specifications and design without prior notice.

1. Install the ice maker properly in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instructions and installation manuals provided.
2. The ice production depends on the ambient and water temperatures
3. Product Code: M079-C001



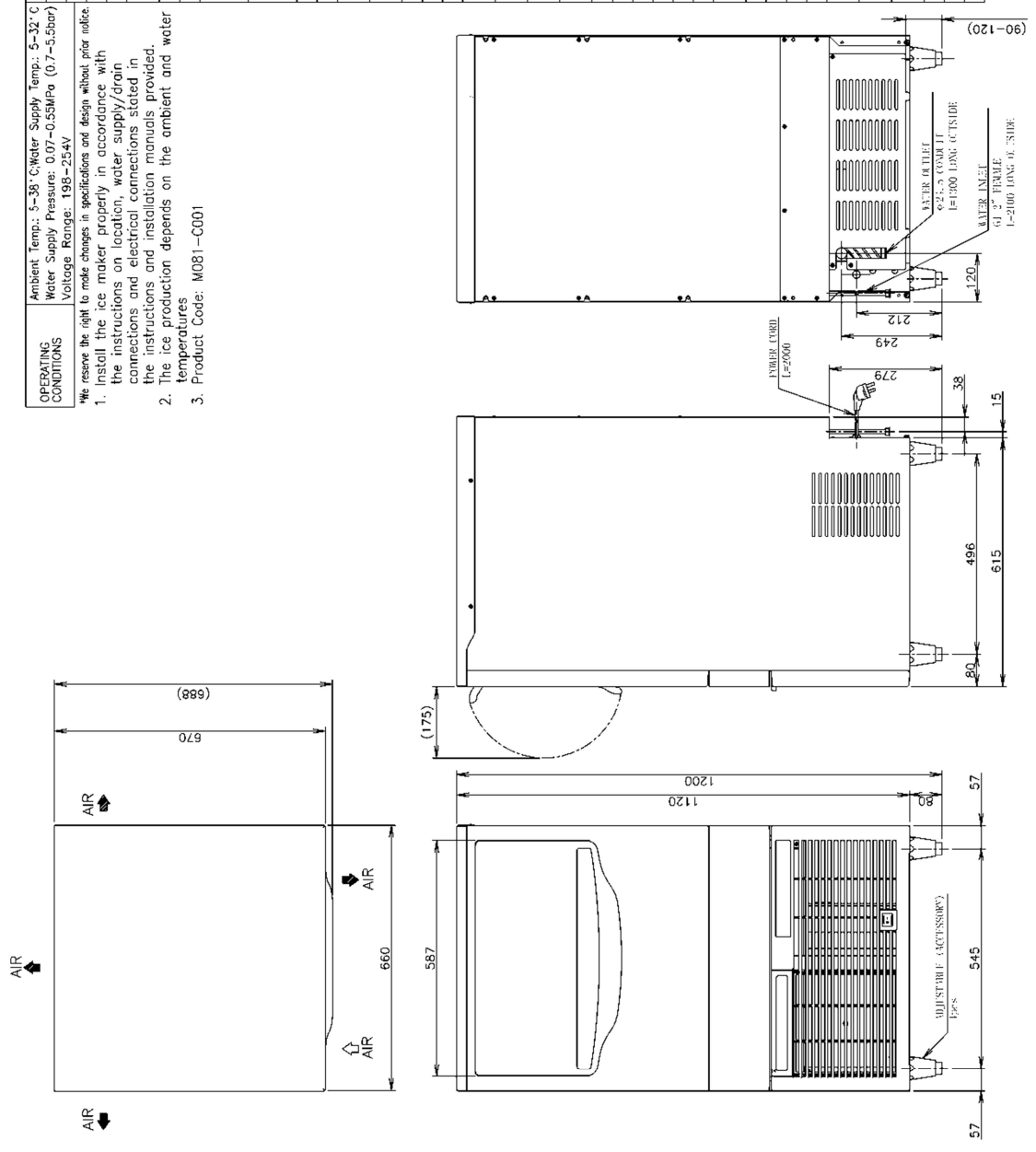
## [d] SRM-105A

| ITEM | ICE MATE SELF-CONTAINED TYPE RHOMBIC ICE MAKER |
|---|---|
| MODEL | SRM-105A |
| POWER SUPPLY | 1 Phase 220-230V 60Hz |
| RATED AMPERAGE | 4.0A (Ambient Temp.32°C,Water Temp.21°C) |
| STARTING AMPERAGE | 20.0A |
| ELECTRIC CONSUMPTION | 530W (Ambient Temp.32°C,Water Temp.21°C) |
| POWER FACTOR | 69% |
| POWER CAPACITY | Min 1.20kVA (5.45A) |
| ICE PRODUCTION PER 24h | Approx.108kg/24h (Ambient Temp.10°C, Water Temp.10°C)<br>Approx.95kg/24h (Ambient Temp.21°C, Water Temp.15°C)<br>Approx.78kg/24h (Ambient Temp.32°C, Water Temp.21°C) |
| WATER CONSUMPTION PER 24h | Approx.0.23m³/24h (Ambient Temp.10°C, Water Temp.10°C)<br>Approx.0.21m³/24h (Ambient Temp.21°C, Water Temp.15°C)<br>Approx.0.17m³/24h (Ambient Temp.32°C, Water Temp.21°C) |
| SHAPE OF ICE | Cube |
| FREEZE CYCLE TIME | Approx.18min (Ambient Temp.21°C, Water Temp.15°C) |
| ICE PRODUCTION PER CYCLE | Approx.1.28kg/1pcs (Ambient Temp.21°C, Water Temp.15°C) |
| MAX ICE STORAGE CAPACITY | 43.6kg (natural ice storage: 41.78kg) |
| OUTSIDE DIMENSIONS | 660mm (W) x 670mm (D) x 1200mm (H) |
| EXTERIOR | Front: Plastic, Top & sides: Stainless Steel, Rear: Galvanized Steel |
| INSULATION | Polyurethane Foam |
| FOAM BLOWING AGENT | Cyclopentane, without CFC, ODP: 0, GWP: 3 |
| CONNECTIONS - ELECTRIC | Y-Type Connection |
| CONNECTIONS - WATER SUPPLY | Inlet G1/2" Internal Thread (connected at rear side) |
| CONNECTIONS - DRAIN | Outlet φ24.5 (connected at rear side) |
| ICE MAKING SYSTEM | Vertical Evap. Jet Spray System On one side |
| HARVESTING SYSTEM | Hot Gas Defrost and Gravity |
| COMPRESSOR | Hermetic |
| CONDENSER | Fin and Tube type, Air-cooled |
| HEAT REJECTION | 1270W (1092kcal/h) (Ambient Temp.32°C, Water Temp.21°C) |
| EVAPORATOR | Vertical, Copper Tube and Sheet (Surface Plating) |
| REFRIGERANT CONTROL | Expansion valve |
| REFRIGERANT CHARGE | R404A/320g |
| ICE MAKING CONTROL | Ice Thickness Sensor, Water Level Sensor, Timer |
| HARVESTING CONTROL | Ice Guide, Timer |
| BIN CONTROL | Bin Control Switch |
| ELECTRICAL PROTECTION | 6.3A FUSE |
| COMPRESSOR PROTECTION | Auto-reset Overload Protector |
| ICE MAKER PROTECTION | Interlock by Controller Board |
| WEIGHT | Net: 61kg, Gross: 69kg |
| PACKAGE | Carton 785mm (W) x 860mm (D) x 1250mm (H) |
| ACCESSORIES | Instruction Manual, Scoop |

| OPERATING CONDITIONS | Ambient Temp.: 5~38°C;Water Supply Temp.: 5~32°C |
|---|---|
| | Water Supply Pressure: 0.07~0.55MPa (0.7~5.5bar) |
| | Voltage Range: 198~254V |

*We reserve the right to make changes in specifications and design without prior notice.

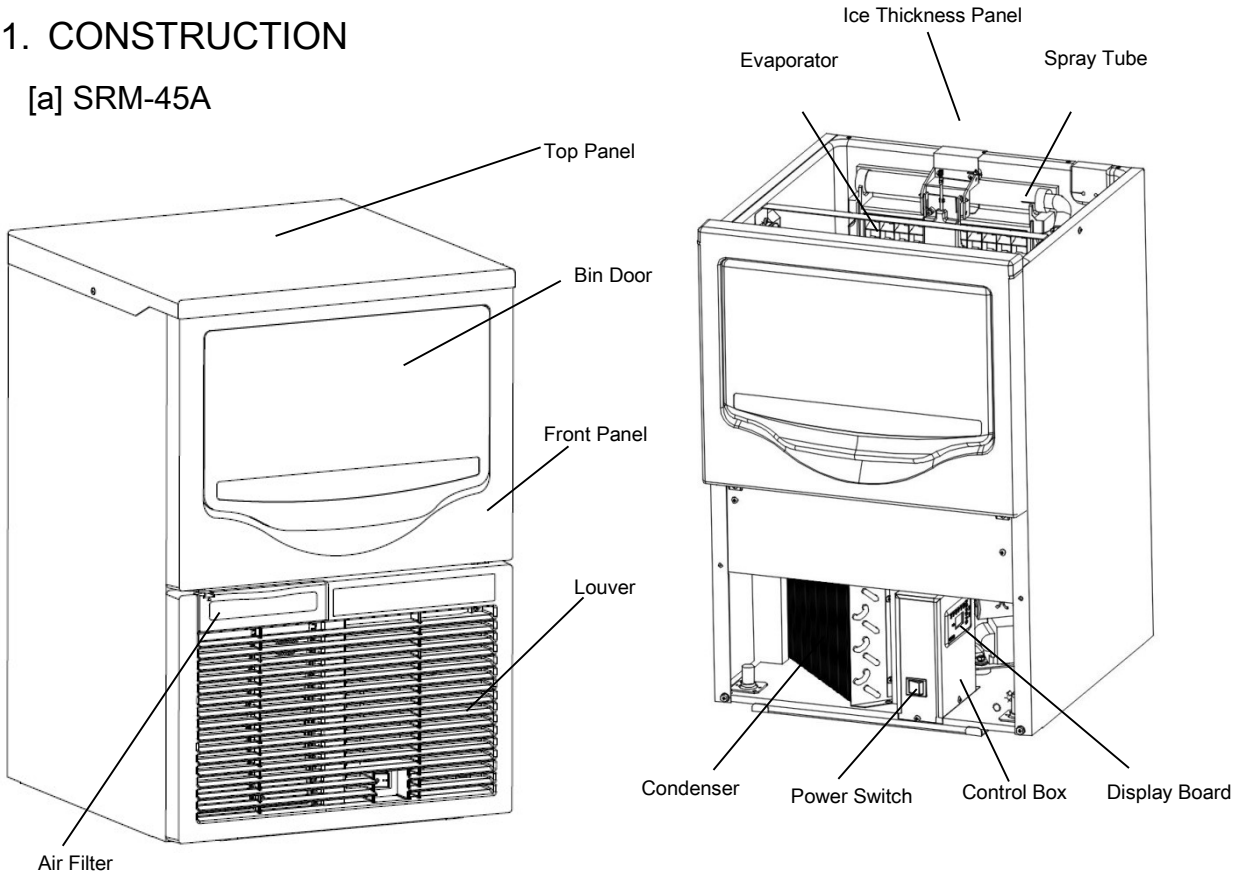
1. Install the ice maker properly in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instructions and installation manuals provided.
2. The ice production depends on the ambient and water temperatures
3. Product Code: M081-C001



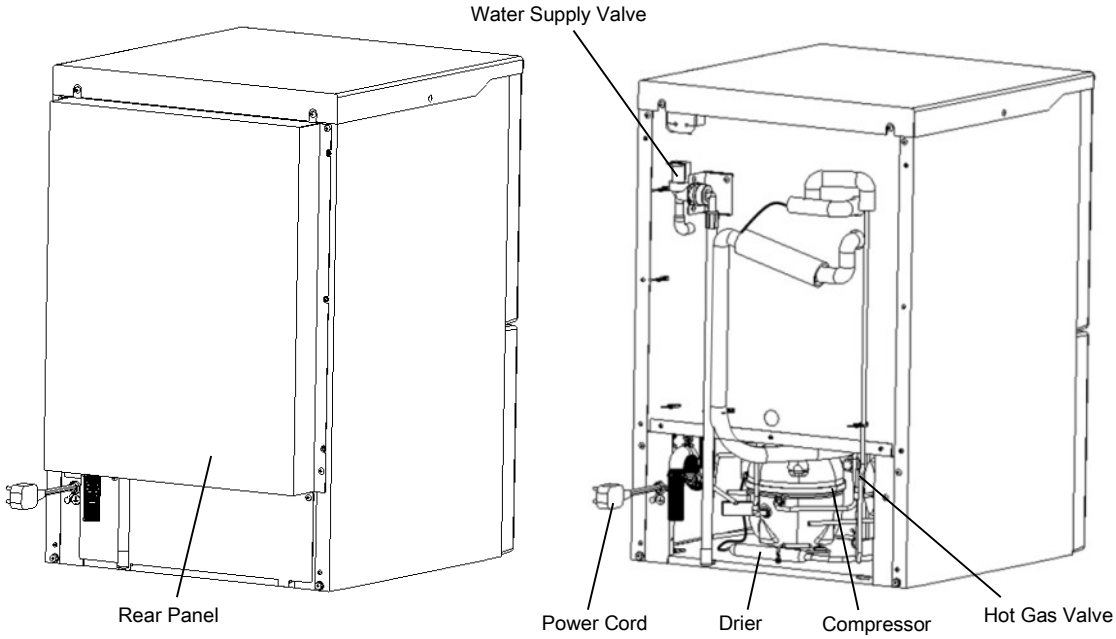
# II . GENERAL INFORMATION

## 1. CONSTRUCTION

### [a] SRM-45A

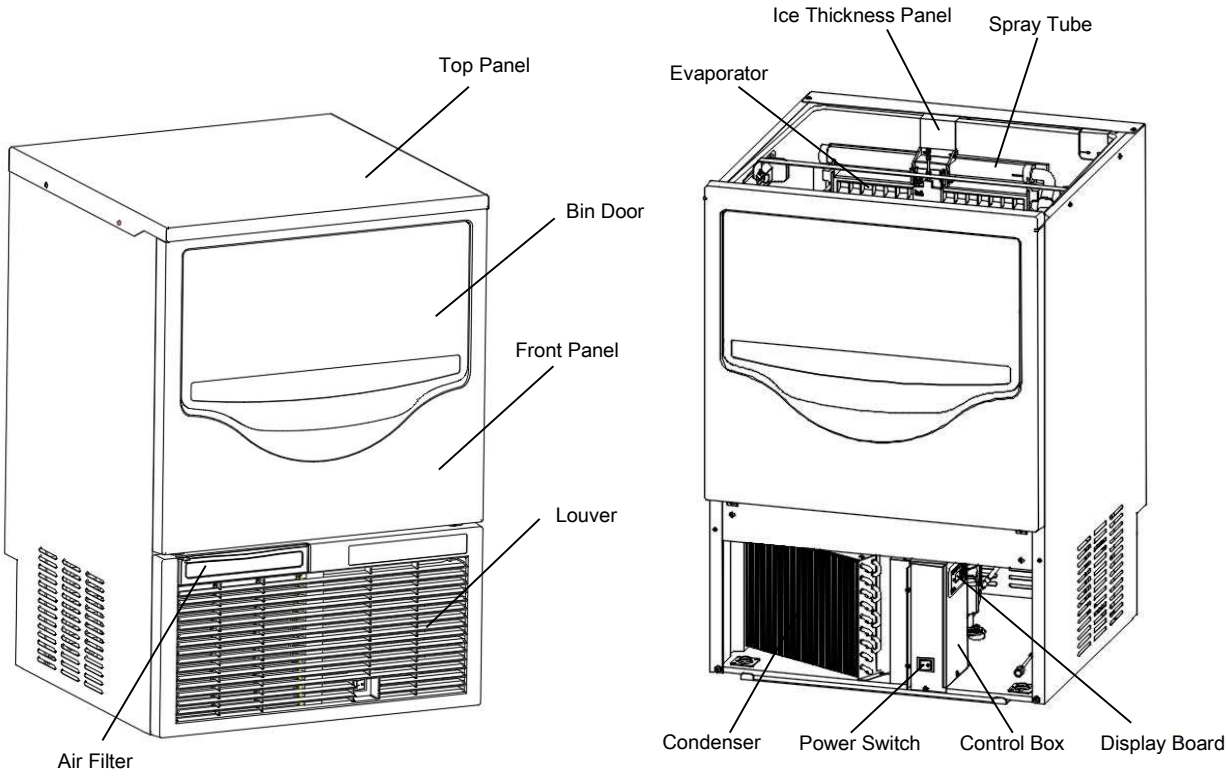



Front View

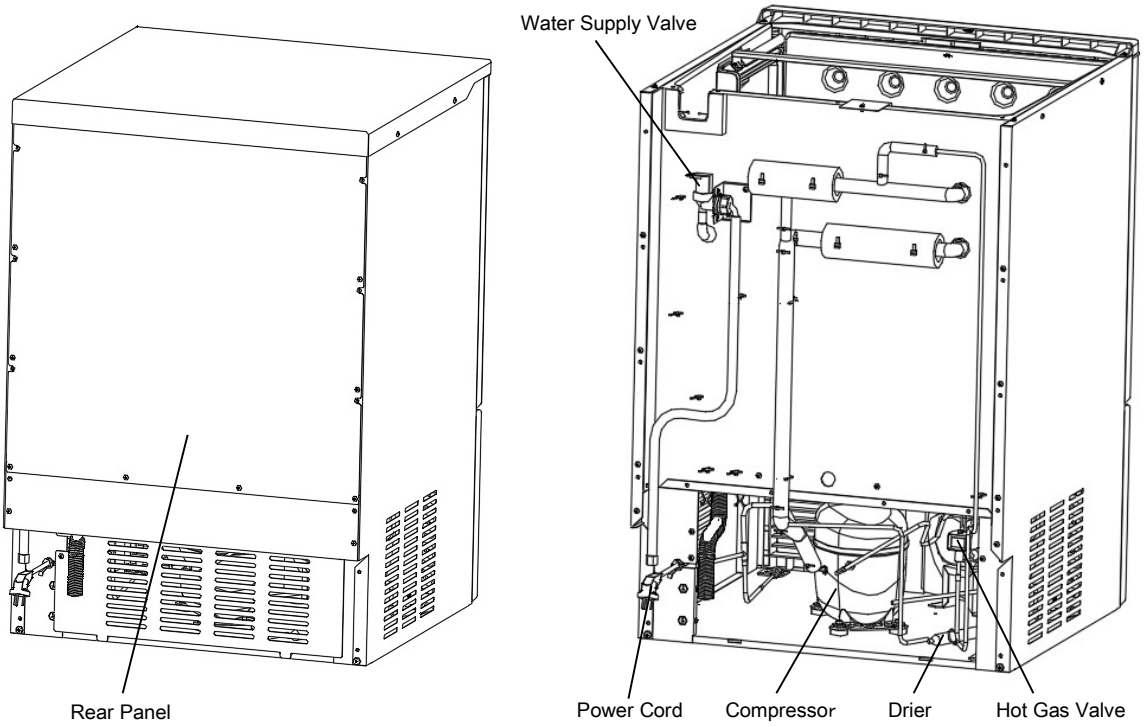



Rear View

[b] SRM-60A

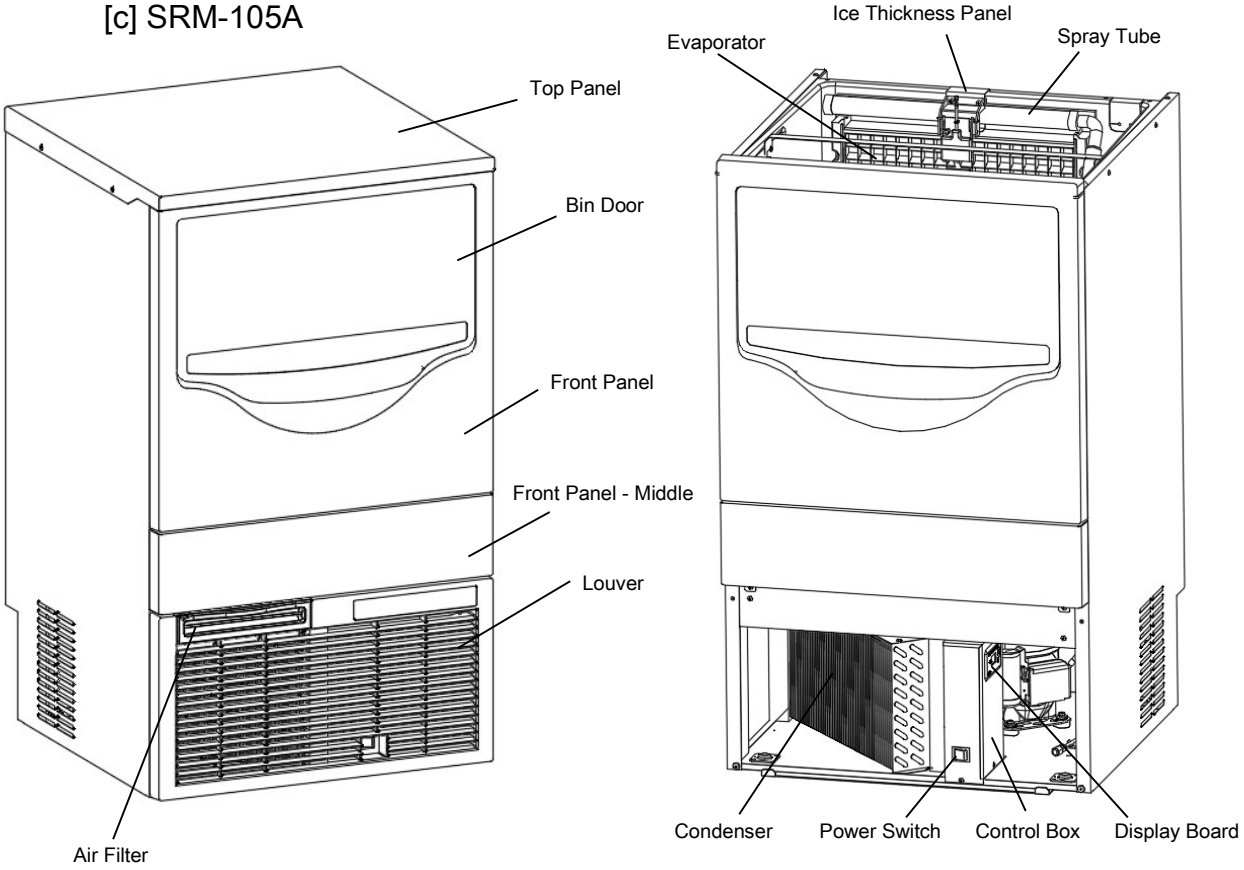



Front View

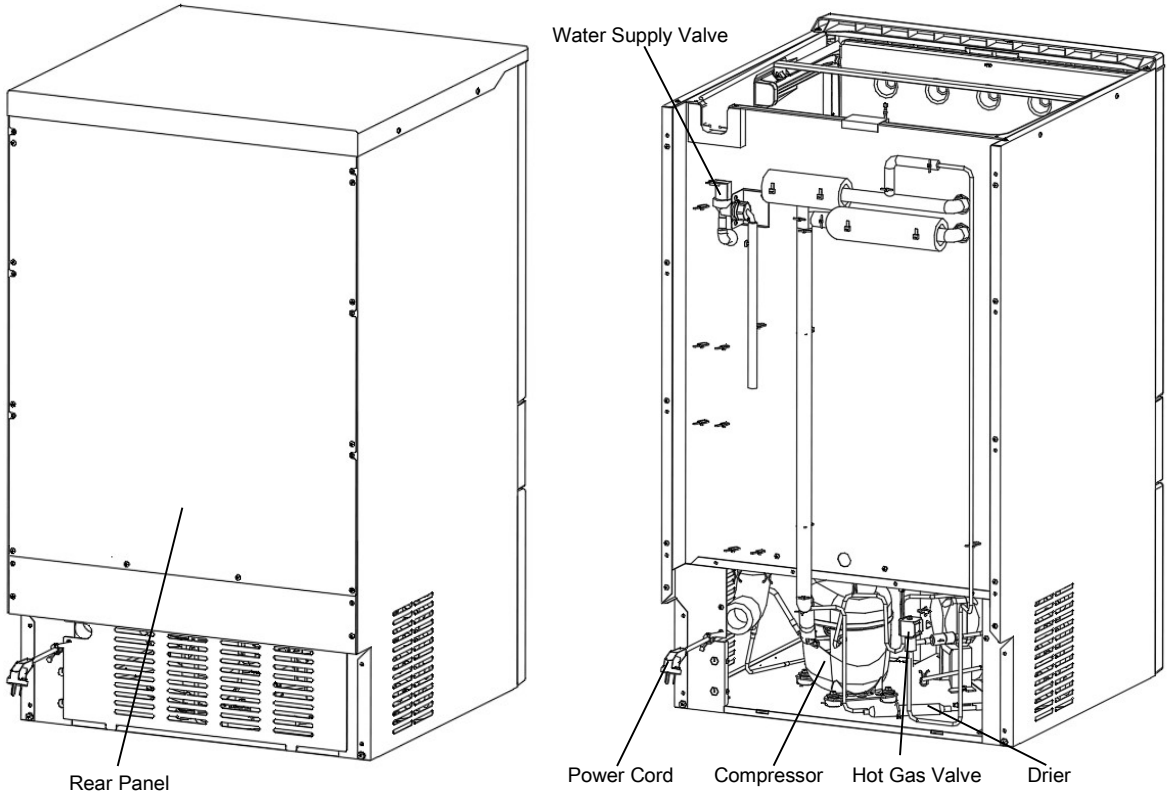



Rear View

## [c] SRM-105A

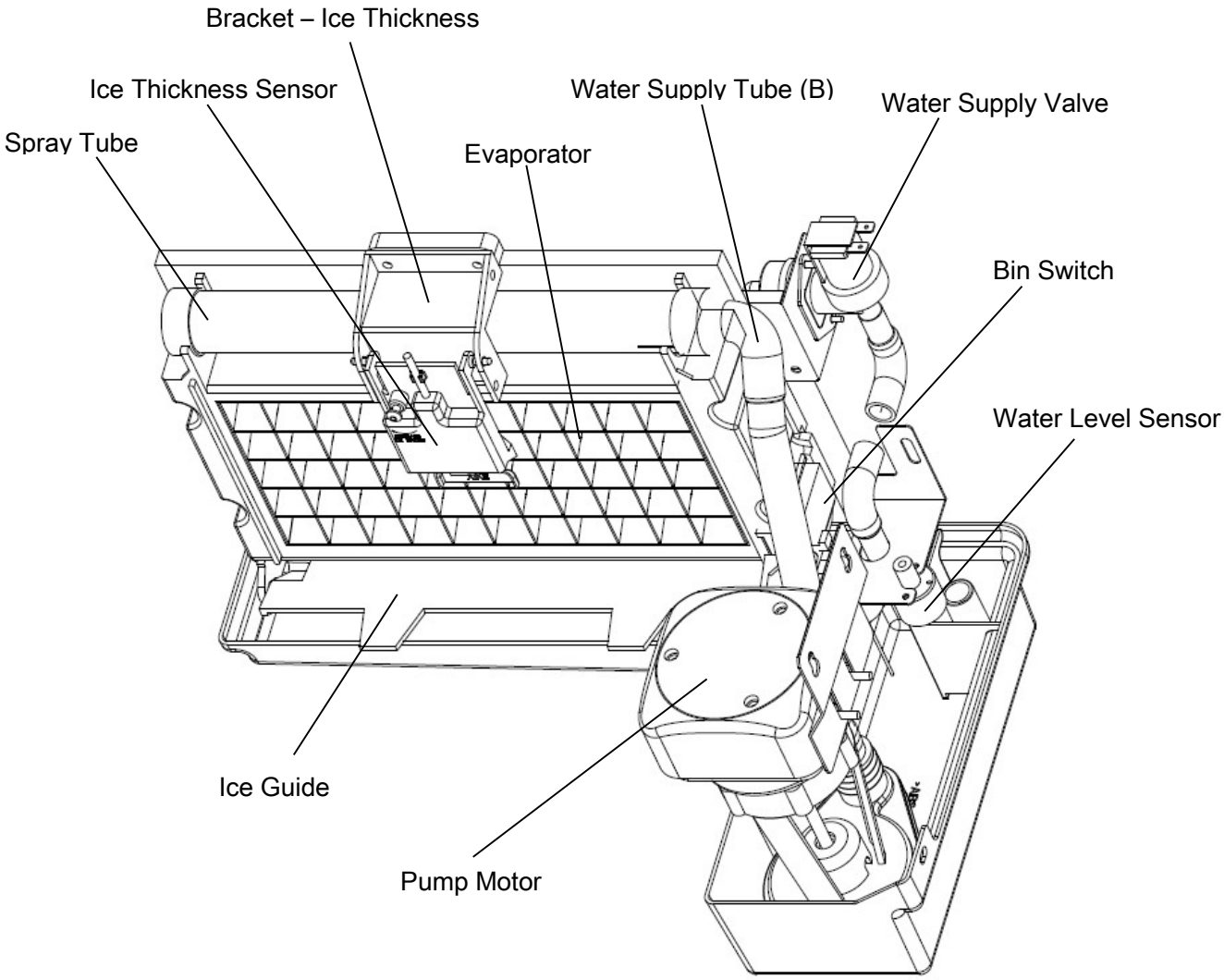



Front View




Rear View

## [d] ICE MAKING MECHANISM

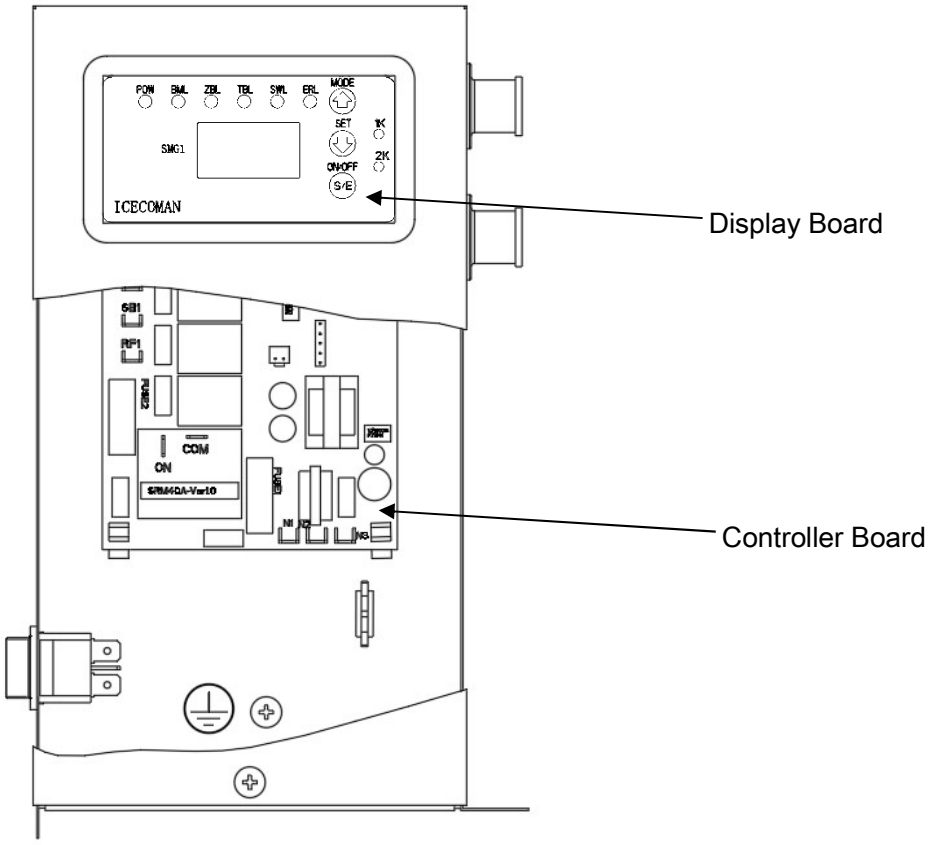


## 2. CONTROLLER BOARD

* SRM series of commercial self-contained rhombic ice maker are generally controlled by solid state circuits in the domestic market.
* All types of machines have been completely commissioned before leaving the factory.

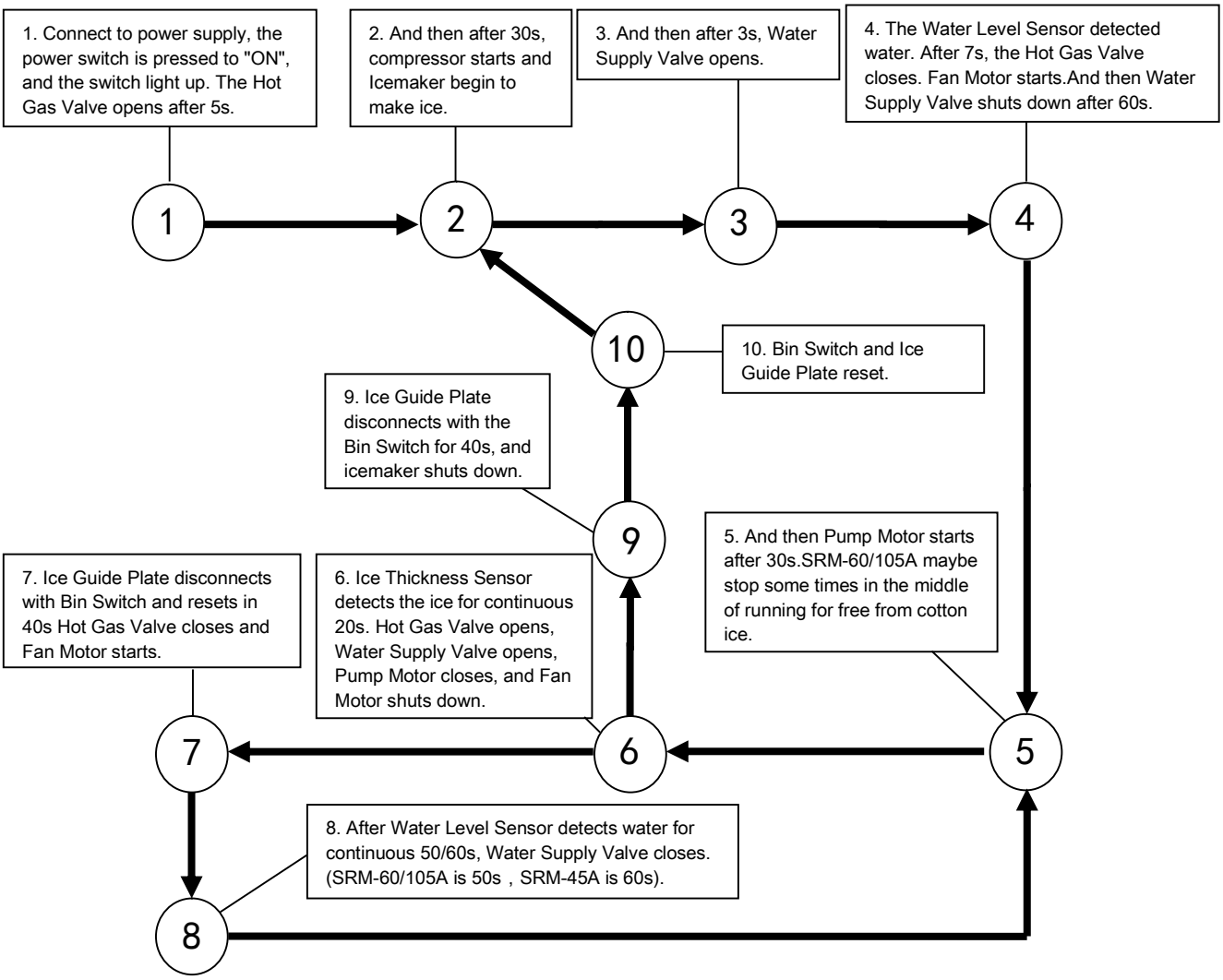
| IMPORTANT |
|---|
| If receiving a service call, ask the user to turn off the power of the ice maker and turn it on again, while watching the icemaker. This will reset the controller, and in some cases normal operation will resume. |

| NOTICE |
|---|
| 1. The controller board is fragile, handle with care. |
| 2. The controller board is equipped with an integrated circuit, which may cause a failure due to a static electricity. In order to avoid generating static electricity, do not touch the metal part on the controller board when repairing or replacing the controller board. This point is very important. |
| 3. Do not touch controller board and electronic components on the back of the controller board to prevent damage to the controller board. When you take it, you can only hold the edge of the controller board. |
| 4. Do not change the wires and connection. |
| 5. Do not repair the electronic components or parts on the controller board at the job site (except for replacement of the fuse).<br>Please replace the whole controller board when the controller board is malfunction. |
| 6. Do not short-circuit the power supply when the voltage is tested. And never short the terminal or modify the terminal. |
| 7. Do not miss the ground wire assembly when the controller board is replaced. |




Control Box

## [a] RUNNING ORDER



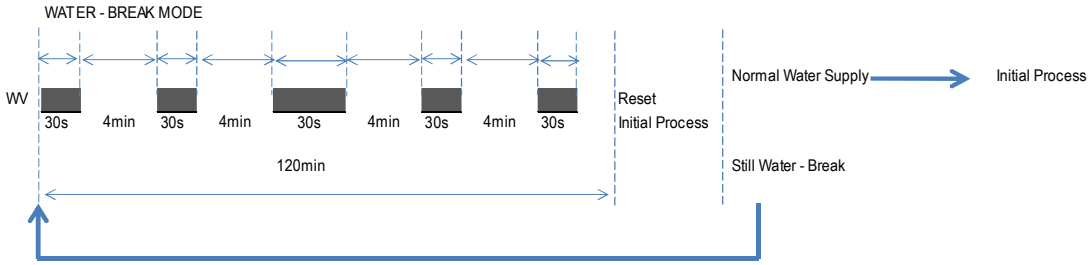

| IMPORTANT |
|---|
| 1. Water Supply Valve opens and continuously inlets water for 5 minutes. If Water Level Sensor cannot detect the water, the machine will shut down. |
| 2. Ice Thickness Sensor does not work in 6 minutes before the ice making process. |
| 3. If in Harvest process (not initial process), Bin Switch does not move, the maximum Harvest time is no more than 5 minutes (Harvest time can be set). |
| 4. If Ice Thickness Sensor cannot detect ice during the ice making process, the maximum icemaking time is no more than 40 minutes (icemaking time can be set). |
| 5. In the process of ice making, Fan Motor will stop when the outlet temperature of the condenser is below 10.5℃, and Fan Motor will run when the condenser outlet temperature is higher than 11℃. |
| 6. At the end of the ice making, the setting temperature of condenser outlet is: 30℃ (When the value is less than 30℃, the maximum delay time of the fan motor is 30s before the Harvest process finishes.) |
| 7. In Harvest process, Fan Motor runs when the outlet temperature of the condenser is higher than 38℃, and Fan Motor stops when the outlet temperature of the condenser is below 35 C. |
| 8. When the outlet temperature of the condenser is higher than 70℃, the machine will shut down and performs high temperature protection. |
| 9. If air temperature is too low, Item 7. 8 will reverse. |
| 10. In the ice making process, the Evap. Sensor can control Pump Motor's on-off by detecting temperature. |

*Please refer to the sequence diagram "III.5" in details.

【Note: Item 10 just apply to SRM-60/105A.】

## [b] CONTROL FUNCTION

1) Harvest Control Timer
   If Harvest Process takes more than 5min accumulatively over 3 times, Harvest Control Timer will turn the icemaker down. The icemaker can automatically repower or reset after 120 min.
2) Icemaking Control Timer
   If icemaking process takes more than setting time (40 minutes) accumulatively over 3 times, Icemaking Control Timer will turn Icemaker down. The icemaker can automatically repower or reset after 120 min.
3) Water shortage Protection Timer
   If during Harvest Process, Water Supply Tube opens more than the setting time (5 min), Water Level Sensor cannot detect the water, Ice maker will enters Water shortage Protection Timer. In that case, during the shutdown process, Water Supply Valve will open for 30s each 4 min until the water in tank is detected and the machine enters the Initial Process. If no water gets into water tank during the shutdown process, the machine will automatically enter the initial process after 120min.



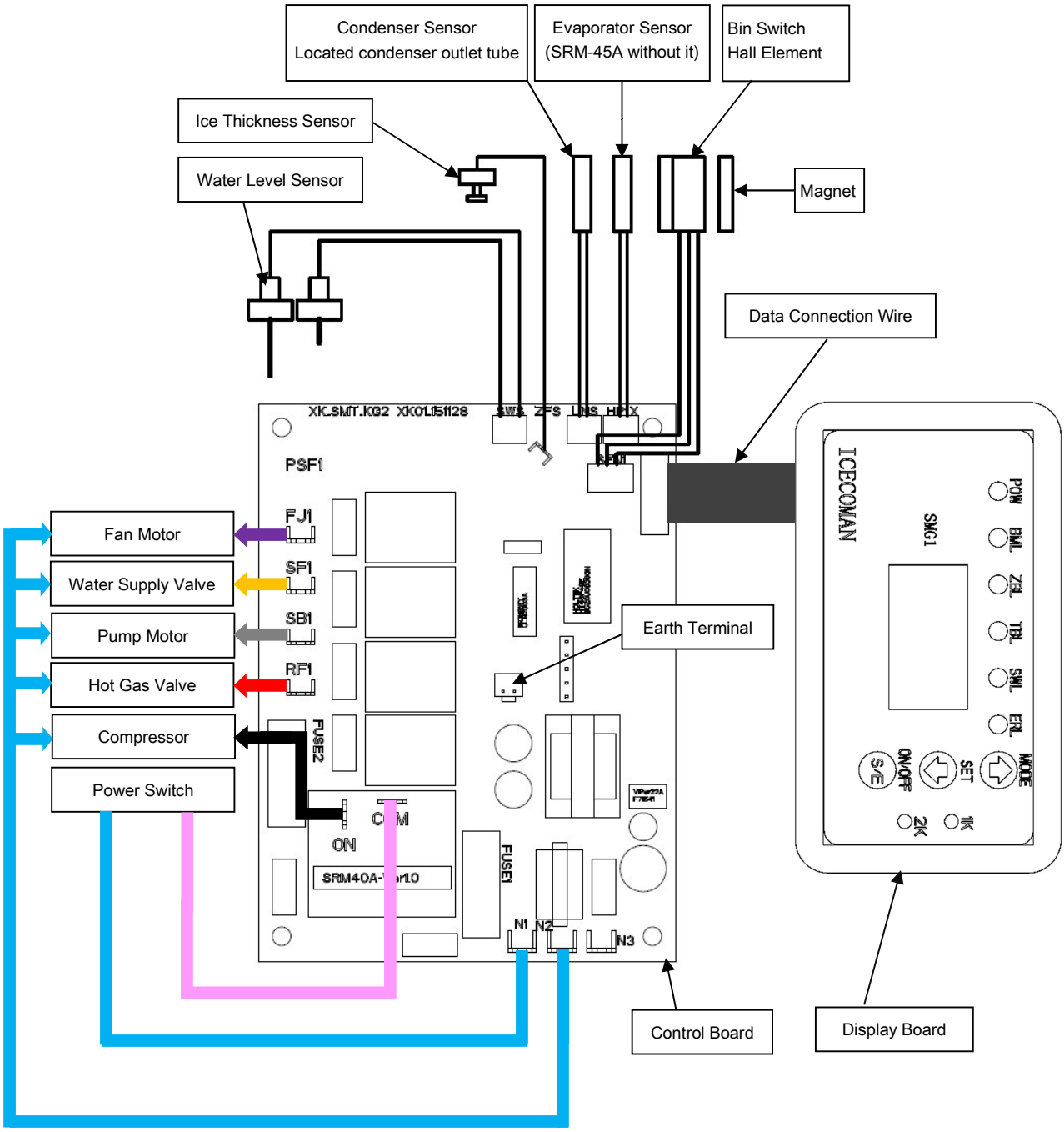

4) Full ice Protection Timer
   Full ice Protection Timer will turn machine down if Ice Guide Plate opens more than 40s and does not reset. If Ice Guide Plate resets, the machine will start automatically.
5) Overload Protection
   The load in the refrigeration circuit is controlled by the compressor overload protector and the condenser outlet thermistor (70℃). The compressor can be prevented by overload protector. If Air Inlet is obscured, air temperature exceeds the maximum working temperature or the refrigeration circuit is blocked, the icemaker will shut down automatically. If compressor overload protector closes, Air Inlet is unsheltered, and air temperature and refrigeration circuit recoveries, icemaker will restart automatically. If icemaker shuts down due to condenser outlet temperature is too high, continue to power on 120 min and machine can restart automatically and get into the initial process. Push the “MODE” key on Display Board or turn off Power Switch and turn on it again can restart the machine.

*Above related settings are set before the product is out of the factory, and just trained professionals can adjust the settings.

| Item | Judge Condition |
|---|---|
| The end of icemaking | 1. Ice Thickness sensor detects ice for 20s without interruption.<br>2. Condenser outlet setting temperature: 30℃ (If the value is less than that value, the maximum delay time of the fan motor OFF before Harvest process is 30s) |
| Icemaking process | When the condenser outlet temperature ≤10.5℃: Fan Motor stops;<br>When the condenser outlet temperature ≥11℃: Fan Motor runs; |
| Harvest process | When the condenser outlet temperature ≥38℃: Fan Motor runs;<br>When the condenser outlet temperature ≤35℃: Fan Motor stops; |
| Failure cycle mode | A. When the accumulative triggering times of Standby Timer in Icemaking process are =10 times, Icemaker stops for protection.<br>B. When the accumulative triggering times of Spare Timer in Harvest process are =3 times, the machine is stopped for protection.<br>A, B count independently;<br>Power reset and restart, counter resets zero, enter the initial process. |

| | |
|---|---|
| High temperature protection | When the condenser outlet temperature ≥70℃, Icemaker stops for protection. |
| During shutdown protection, the reset method: | 1. 2 hours after shutdown protection;<br>2. Repower |

## [c] CONTROLLER BOARD LATOUT




【Note: HP\X on SRM-45A's control board is without plastic connector】

## [d] CONTROL AND ADJUSTMENT

1) Control Program

Control Program has been debugged before leaving the factory. For some reasons, it is necessary to debug the control program (egg: if the water quality is too bad, it needs to increase influent amount to improve the quality of ice), or the failure of the icemaker needs to know the cause of the failure. You can use display board to adjust the control program manually.

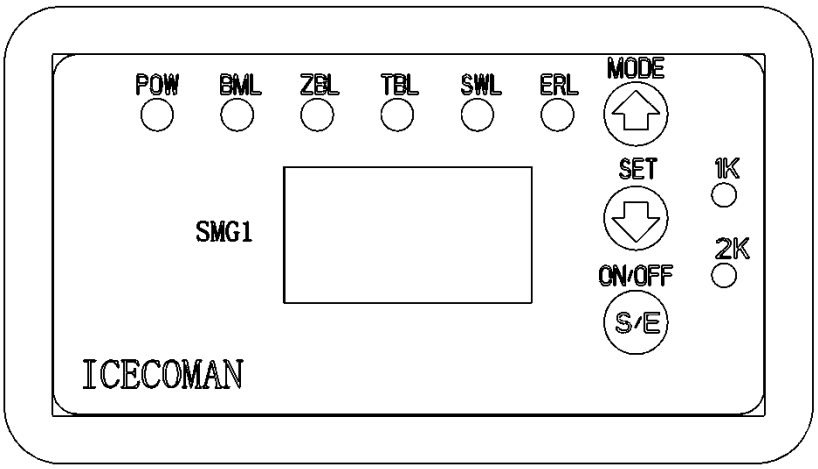
The control and debugging of the icemaker consists Control Board and Display Board. These two parts are transmitted by a six-core wire.

Definition of display board buttons:

MODE: Mode/setup plus button, it is a mode function in normal state, and push button ends the current state.

SET: Set/set subtraction.

ON/OFF: Switch / set / exit button, push the button to turn on/off icemaker during normal state.




The indicator on Display Board and its function definition:

| | POW | BML | ZBL | TBL | SWL | REL | 1k | 2k |
|---|---|---|---|---|---|---|---|---|
| Definition of indicator | Power | Full ice | Ice making | Harvest | Water level | Fault | Time 1000s | Time 2000s |
| Color | Green | Red | Green | Yellow | White red | Red | Red | Red |

## [e] WORKFLOW TABLE

| Working State | Accessing conditions | Indicator light | Digital display | Working load | Duration | Instructions |
|---|---|---|---|---|---|---|
| Initialization | Supply power | All turn on | 888 | --- | 1s | Just on 1s and then off |
| Sensor self-inspection: If all sensors are normal | Power, reset or OFF state, push ON/OFF and turn on the machine | All turn off | E05 always on: water level is ok.<br>E12 always on: ice thickness is ok<br>E07 always on: condenser sensor is ok<br>E9A always on: evaporator sensor is ok<br>E01 always on: bin switch is ok | | 5s | The digital tubes take turns to show E05-E12-E78-E9A-E01, and the characters are always on.<br>(Note:SRM-45A is without E9A) |
| Sensor self-inspection: If the sensor are abnormal | Power, reset or OFF state, push ON/OFF and turn on the machine | All turn off | E05 blinks: water is not enough in tank.<br>E12 blinks: Ice thickness sensor earths or short circuit<br>E07 blinks: The condenser sensor is in open circuit<br>E08 blinks: The condenser sensor is in short circuit<br>E09 blinks: The evaporator sensor is in short circuit<br>E10 blinks: The evaporator sensor is In open circuit<br>E01 blinks: The bin switch is open. | | 25s | The digital tubes take turns to show E05-E12-E07-E08-E09-E10-E01, and constant lighting of characters indicates normal; blink of characters indicates exception.<br>(Note:SRM-45A is without E09 and E10) |
| Soft start | Self-inspection completion | POW & TBL turn on | Display Board times | RF | 30s | High and low pressure balance |
| Initial process | Soft start ends | POW & TBL turn on | Display Board times | RF、YSJ、SF | The pressure balance time reaches 30s. Hot Gas Valve closes after 7s when Water Level Sensor detects water. Water Supply Valve closes after 60s when Water Level Sensor detects water. | |
| Pre - cooling process | After Hot Gas Valve closes | POW & ZBL turn on | Display Board times | YSF、FJ、SB | After 30s when Water Supply Valve closes，Pump Motor turn on and pre-cooling process finish. Fan Motor works according with setting temperature. | |
| Basic icemaking process | Pre - cooling process ends | POW & ZBL turn on | Display Board times | YSF、FJ、SB | Default is 6 minutes | Ice Thickness Sensor cannot work in this time. And Fan Motor works according with setting temperature. |
| Icemaking process | Basic icemaking process ends | POW & ZBL turn on. When Ice thickness Sensor can touch water flow, ZBL blinks | Display Board times | YSF、FJ、SB | The longest ice making time is 40 minutes. | Ice Thickness Sensor can work in this time. And Fan Motor works according with setting temperature. |
| Ice thickness detection process | In Icemaking process | POW & ZBL turn on. When Ice thickness Sensor can touch water flow, ZBL blinks | Display Board times. When the starting of Harvest process，Display board become 0. | YSF、FJ、SB | 20s | Ice Thickness Sensor touches water flow for continuous 20s. |
| Harvest process | After Ice Thickness Sensor detect the end of icemaking process | POW & TBL turn on | Harvest times | YSJ、RF、SF | The longest time can be set. Default is 5 minutes | In Harvest process, Water Supply Valve opens. After 60s when Water Level Sensor detects water, Water Supply Valve closes. |
| Full ice detection process | End of Harvest process | POW & ZBL turn on | Harvest times | YSJ、RF、SF | 40s | If Ice Guide Plate opens more than 40s ,program turns into Full ice detection process. If Ice Guide Plate happen to reset in 40s，icemaker will get into pre-cooling process. |
| Full ice process | Full ice signal | POW & BML turn on | FU1 | All loads close | Until end full ice process | Ice Guide Plate opens more than 40s and don't happen to reset in 40s |

## [f] FAULT CODE AND ANALYSIS

| Fault code | Content | Fault phenomenon | Indicator lights on | Loads close | Analysis | Checking points, treatment |
|---|---|---|---|---|---|---|
| E01 | Full ice error | Ice Guide Plate or Bin Switch are abnormal | Fault | YES | 1. Ice Guide Plate absence<br>2. Pole of magnet is opposite.<br>3. Bin switch is broken | Check and repair. |
| E02 | Icemaking error | Cumulative 10 times of icemaking exceeds the maximum setting time (40 minutes), it will happen overtime fault of icemaking. | Fault | YES | 1. High ambient temperature<br>2. Condenser clogging<br>3. Refrigerant leakage<br>4. Water shortage in tank | Check whether the condenser cooling system or icemaking system leaks. Check Spray Tube and whether water tank leaks. |
| E03 | Harvest error | Cumulative 3 times of icemaking exceeds the maximum setting time (5 minutes), it will happen overtime fault of Harvest. | Fault | YES | 1. Hot gas valve failure<br>2.Condensation temperature is too low<br>3. Ice thickness is too thick or too thin<br>4. Water in tank is too little | Check hot gas circuit, ice thickness sensor and water circuit |
| E04 | High temperature error | Temperature which condenser sensor detects is higher than setting limit of70℃. | Fault | YES | 1. The ambient temperature too high<br>2.Fan motor damage is breakdown<br>3. Condenser clogging | Check the related parts |
| E05 | Water supply error | Fault in water lack | Fault | YES | 1. Water Supply Valve unopened<br>2. Low inlet water pressure<br>3. Water Supply Valve failure<br>4. Tank leakage | 1. Check the water supply pressure，Water Supply Valve，and Water Tank.<br>2.Adjust the parts which installed badly and change the broken parts |
| E07 | Condenser sensor error | Condenser sensor is in un-open | Fault | YES | 1. Sensor is breakdown<br>2. Connector has problems | 1. Change the sensor<br>2. Check connection of the sensor |
| E08 | Condenser sensor error | Condenser sensor is in short circuit | Fault | YES | 1. Short circuit of the sensor<br>2. There is dust on the connector | 1. Change the sensor<br>2. Cleaning connector |
| E12 | Ice Thickness sensor error | Ice thickness sensor is in short circuit | --- | --- | 1. Adjustment gap between Ice thickness sensor and Evaporator is 0. | Adjust the gap by adjusting the screw on Ice thickness sensor |

When the machine shutdown due to faults，display board will show the fault code. Push MODE，or let machine restart automatically after120min.

If the machine stops due to water lack, machine can automatically reset when water supply return to normal.

## [g] SETTABLE ITEMS ON CONROLLER BOARD

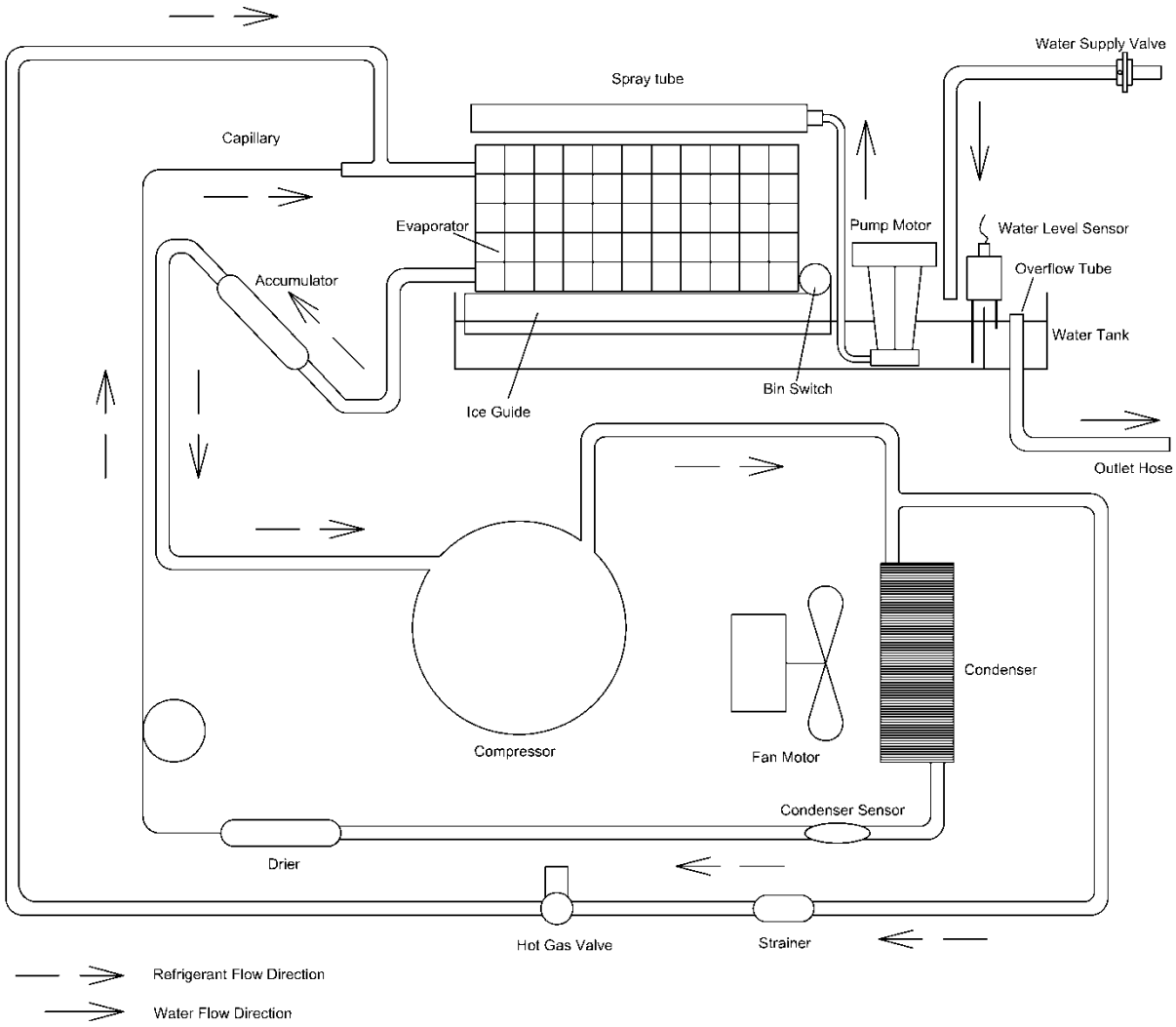
| Settable item | Channel | Display data | Corresponding parameters scope | Default | Note |
|---|---|---|---|---|---|
| Sensitivity of ice thickness sensor | 1 | 00 ~ 19 | Grade 00 ~ 19 | 110<br>Grade 10 | Setting different sensitivities according to different water quality:<br>Grade 0 the lowest sensitivity (shallow well water)<br>Grade 10 middle sensitivity (urban tap water)<br>Grade 19 the highest sensitivity (pure water 20μs/cm) |
| The longest time of ice making | 2 | 10 ~ 90 | 10 ~ 90 min | 240<br>40 min | If icemaking time is more than this time , the machine can automatically get into Harvest process. ( **No change** ) |
| The longest time of Harvest | 3 | 01 ~ 09 | 1 ~ 9 min | 305<br>5 min | If Harvest time is more than this time , the machine can automatically get into icemaking process. ( **No change** ) |
| The up-limited temperature of pump motor stop. | 4 | 00 ~ 21 | 0 ~ -21℃ | 407<br>-7℃ | If the temperature which Evap. Sensor detects is between the up-limited and low-limited temperature , Pump Motor stops.<br>SRM-60A setting: 407, 509<br>SRM-105A setting: 406, 510 |
| The low-limited temperature of pump motor stop. | 5 | 00 ~ 21 | 0 ~ -21℃ | 509<br>-9℃ | |
| Condenser temperature before Harvest | 6 | 26 ~ 35 | 26 ~ 35℃ | 630<br>30℃ | If the temperature is lower the setting value before Harvest , Fan Motor will stop for 30s ( **No change** ) |
| Reaction time of Evap. Sensor | 7 | 00 ~ 60 | 0 ~ 60s | 705<br>5s | The time which Evap. Sensor detecting temperature is lower the setting value in icemaking process. |
| Stop time of pump motor | 8 | 00 ~ 60 | 0 ~ 60s | 820<br>20s | In the ice making process, the stop time of pump motor each time |
| Water shortage protection time | 9 | 00 ~ 09 | 00 ~ 15s | 905<br>5 min | Continuous water supply time exceeds the setting time, water shortage protection.<br>(**No change**) |
| Stop times of pump motor | | 00 ~ 15s | 00 ~ 15 times | 905<br>5 times | In the ice making process, the most stop times of pump motor |
| Initial water inlet delay | A | 00 ~ 90 | 00 ~ 90s | A60<br>60s | At the start of power , the continues adding time after Water Level Sensor detects water |
| Water inlet delay | P | 00 ~ 90 | 00 ~ 90s | SRM-60/105A:<br>P50 ( 50s )<br>SRM-45A :<br>P60(60s) | In Harvest process , the continues adding time after Water Level Sensor detects water ( **if water hardness is too high or water impurity is too much ,it can be improved by change more water inlet delay time** ) . |

*The above items have been set before production leaving factory. If need adjustment , please operate under the guidance of the trained professionals.

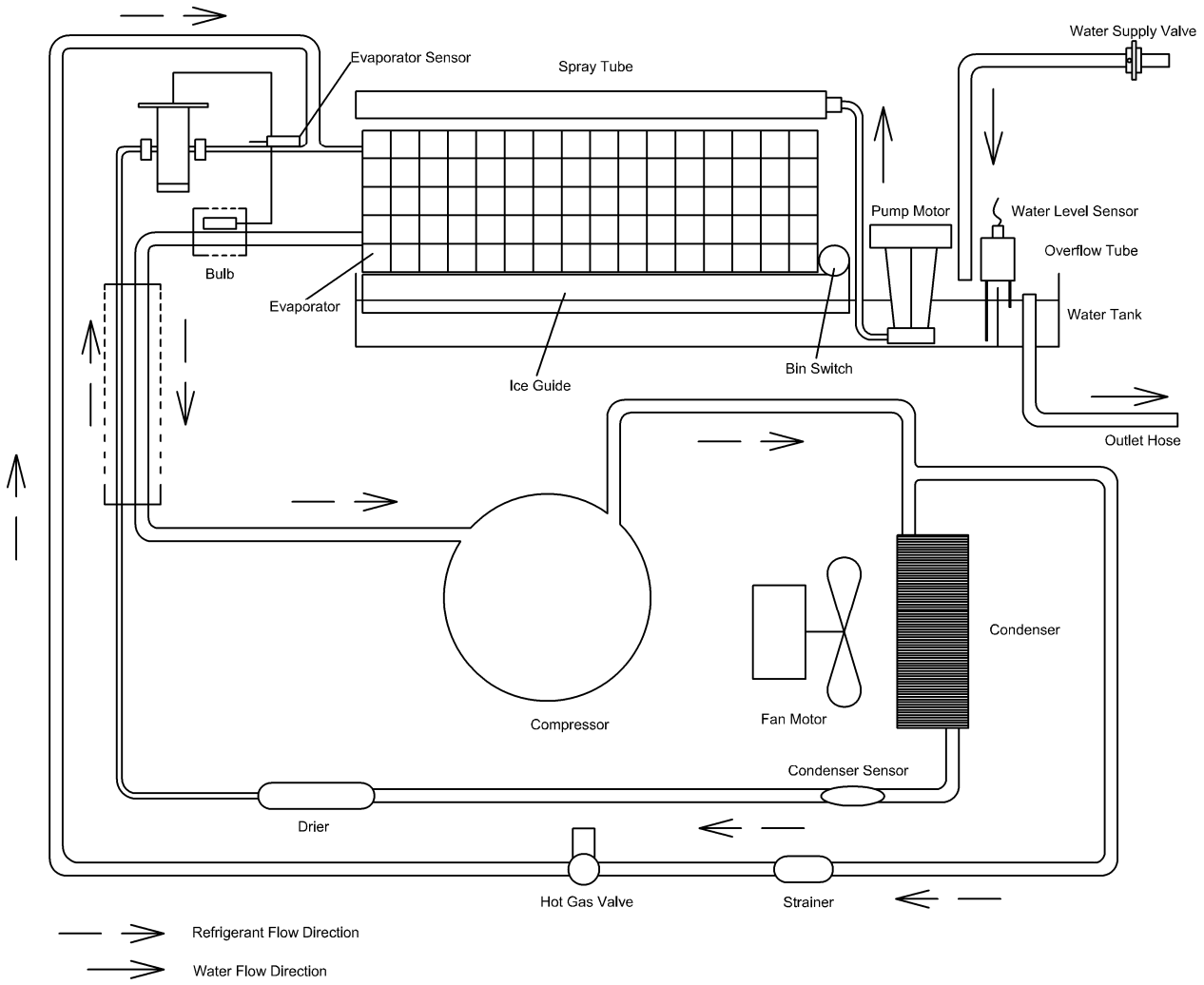
【Note: 4 , 5 , 7 , 8 channels are only for SRM-60/105A】

# III. TECHNICAL INFORMATION

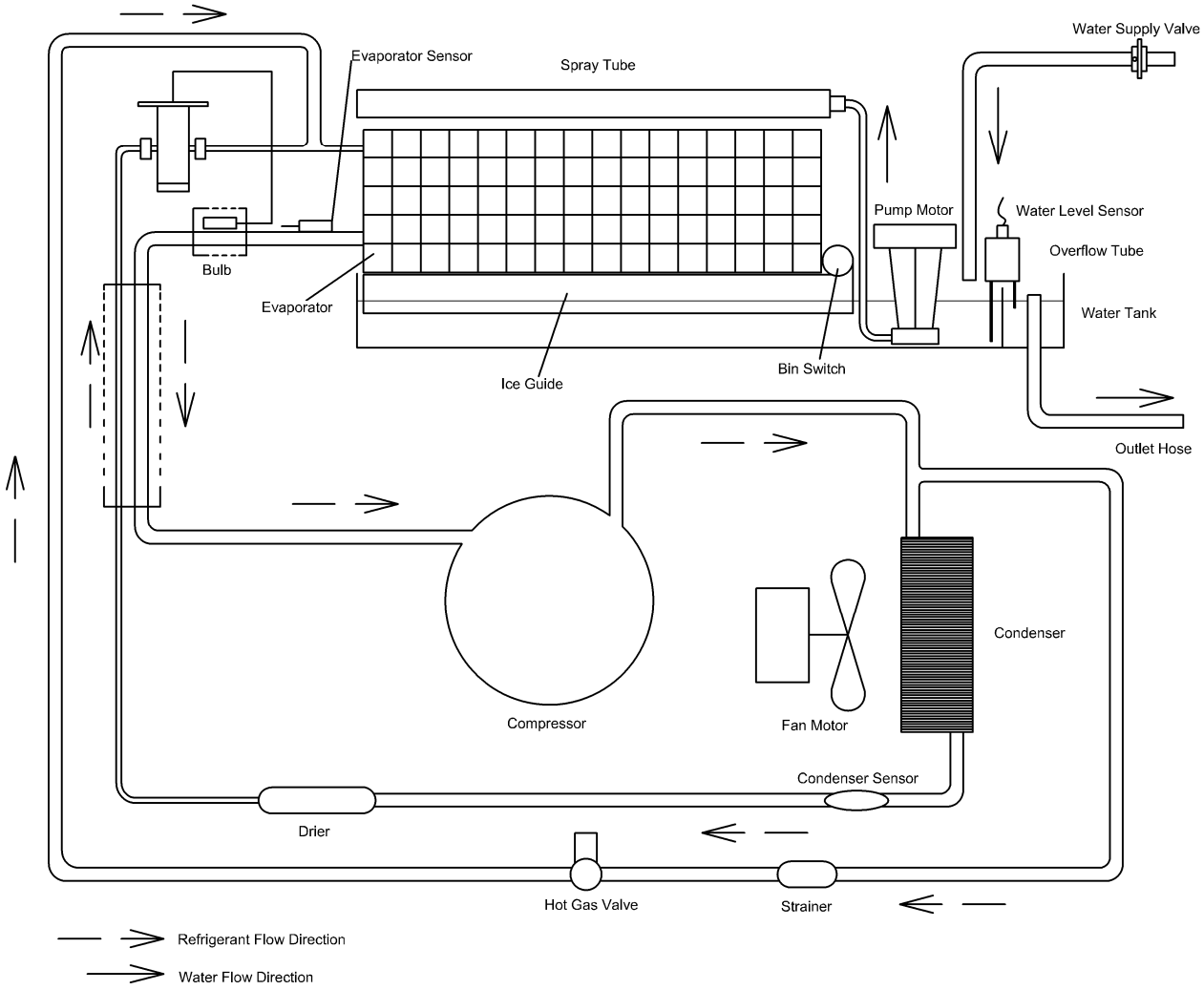
## 1. SRM-45A WATER CIRCUIT AND REFRIGERATION CIRCUIT



## 2. SRM-60A WATER CIRCUIT AND REFRIGERATION CIRCUIT

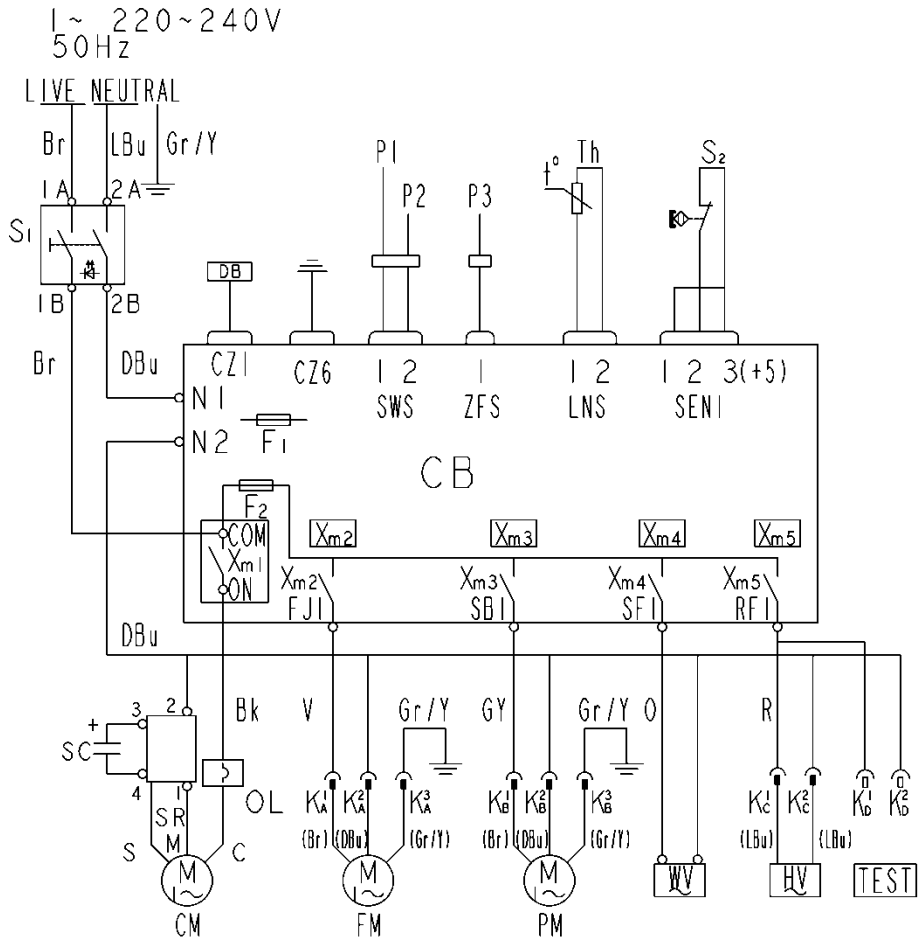


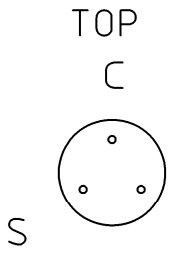
# 3. SRM-105A WATER CIRCUIT AND REFRIGERATION CIRCUIT



# 4. WIRING DIAGRAM

## [a] SRM-45A

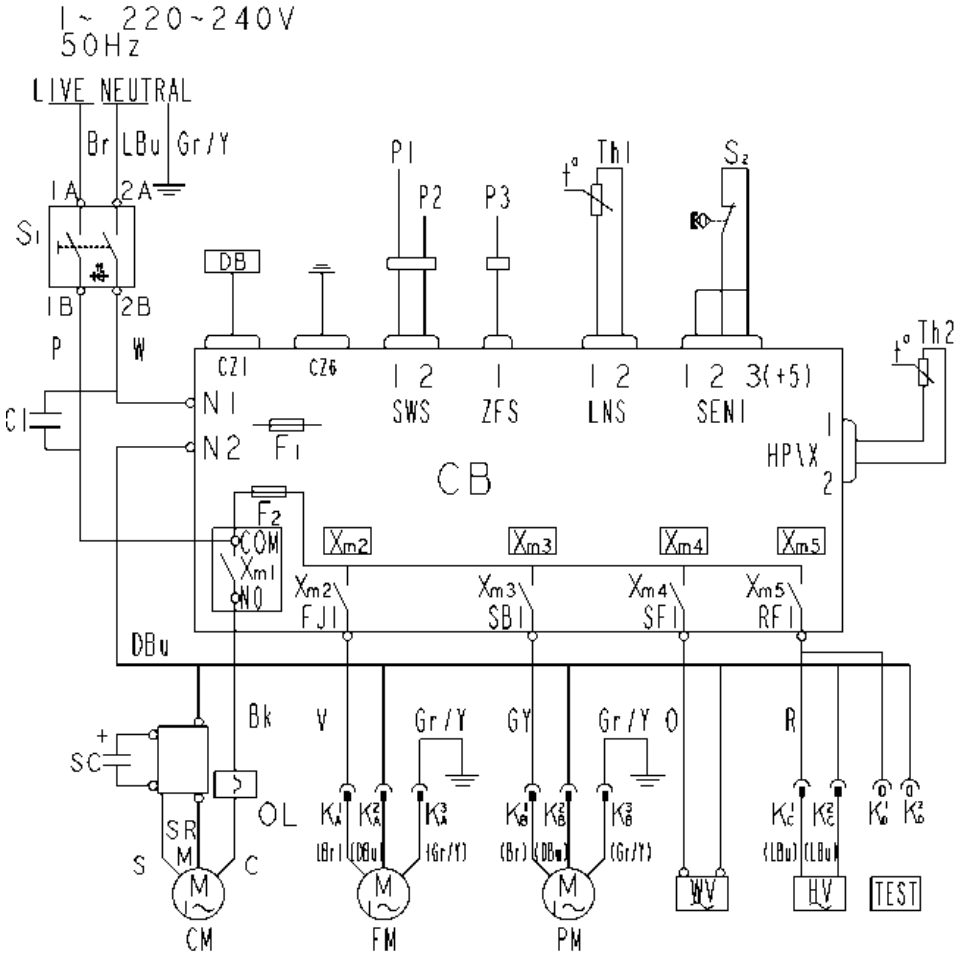


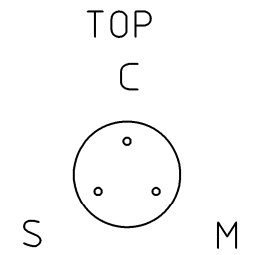




| | |
|---|---|
| R-RED | Y-YELLOW |
| GY-GRAY | Bk-BLACK |
| P-PINK | Br-BROWN |
| W-WHITE | DBu-DARK BLUE |
| O-ORANGE | LBu-LIGHT BLUE |
| V-VIOLET | Gr/Y-GREEN/YELLOW |

CM Terminal Schematic

[b] SRM-60/105A



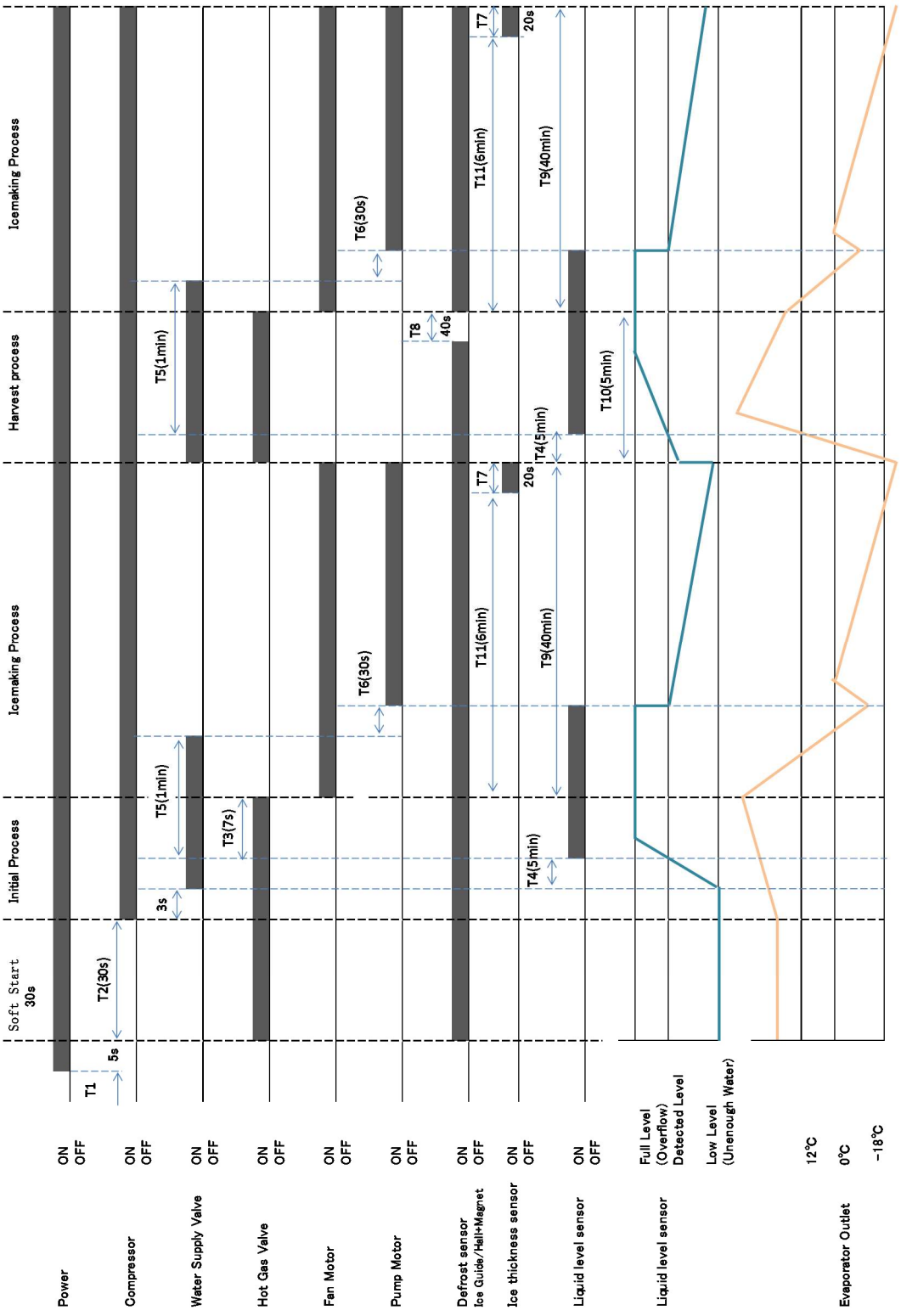




| | |
|---|---|
| R-RED | Y-YELLOW |
| GY-GRAY | Bk-BLACK |
| P-PINK | Br-BROWN |
| W-WHITE | DBu-DARK BLUE |
| O-ORANGE | LBu-LIGHT BLUE |
| V-VIOLET | Gr/Y-GREEN/YELLOW |

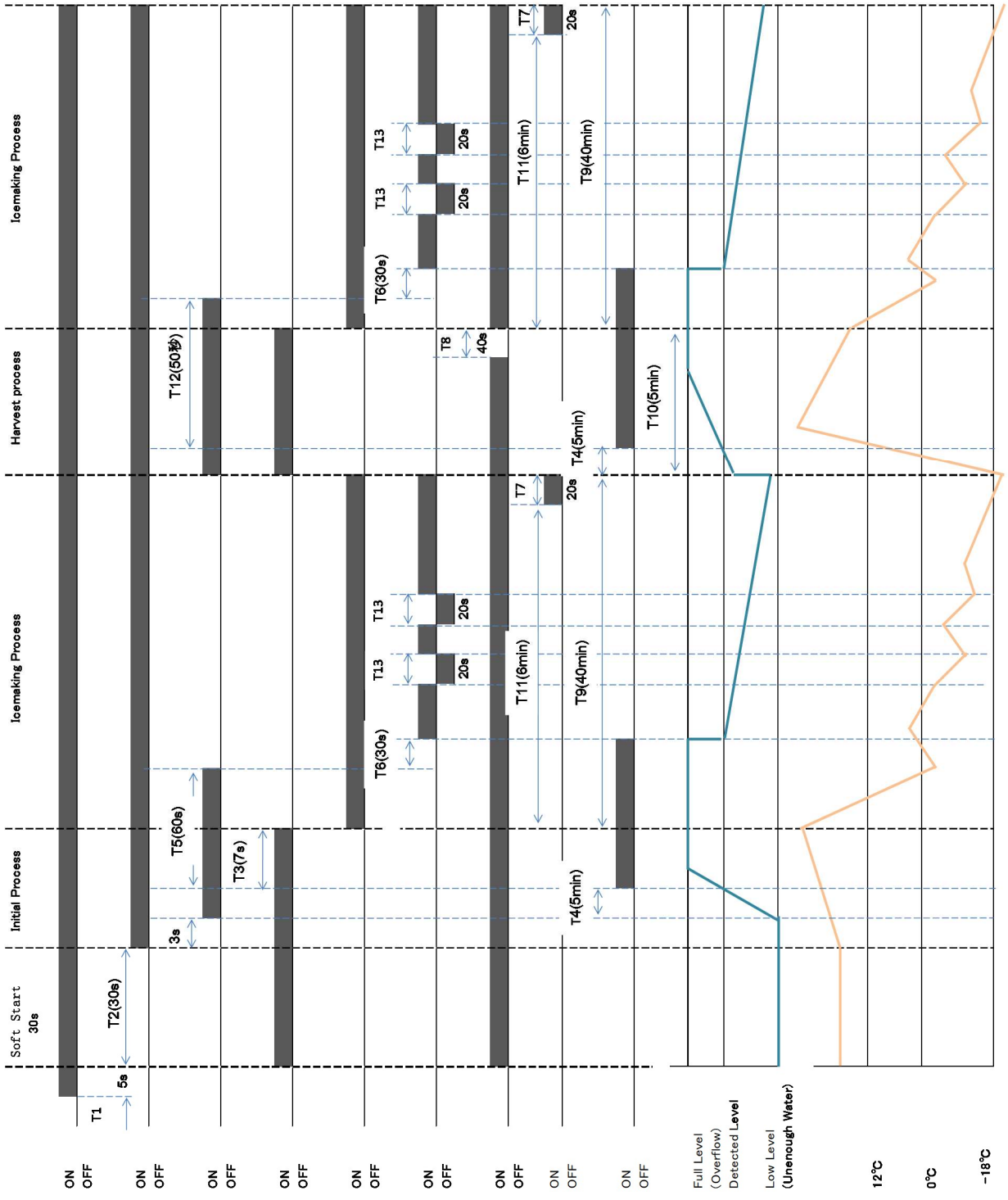
CM Terminal Schematic

# 5. TIMER CHART

## [a] ICEMAKING PROCESS AT ROOM TEMPERATURE

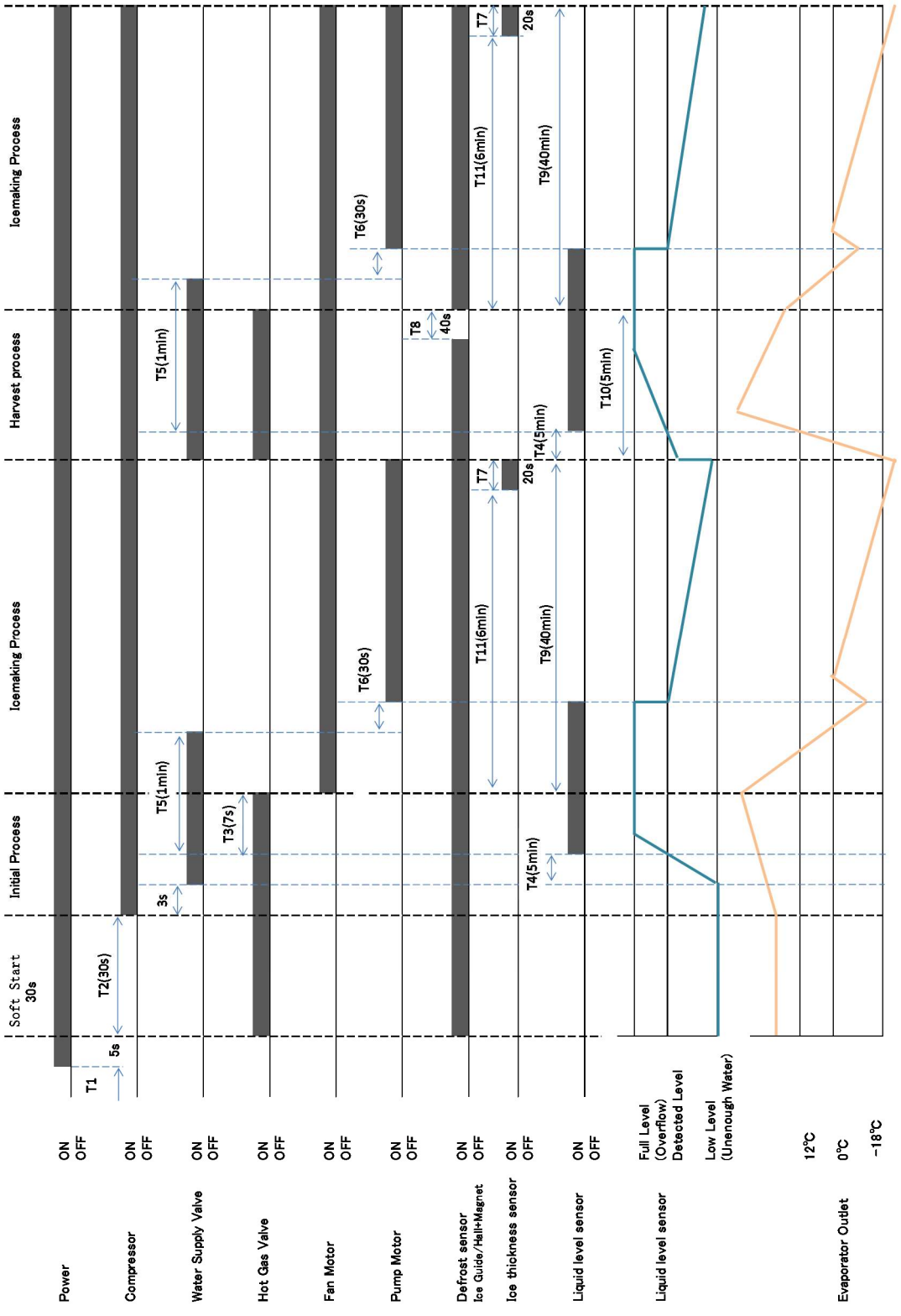



[SRM-45A]

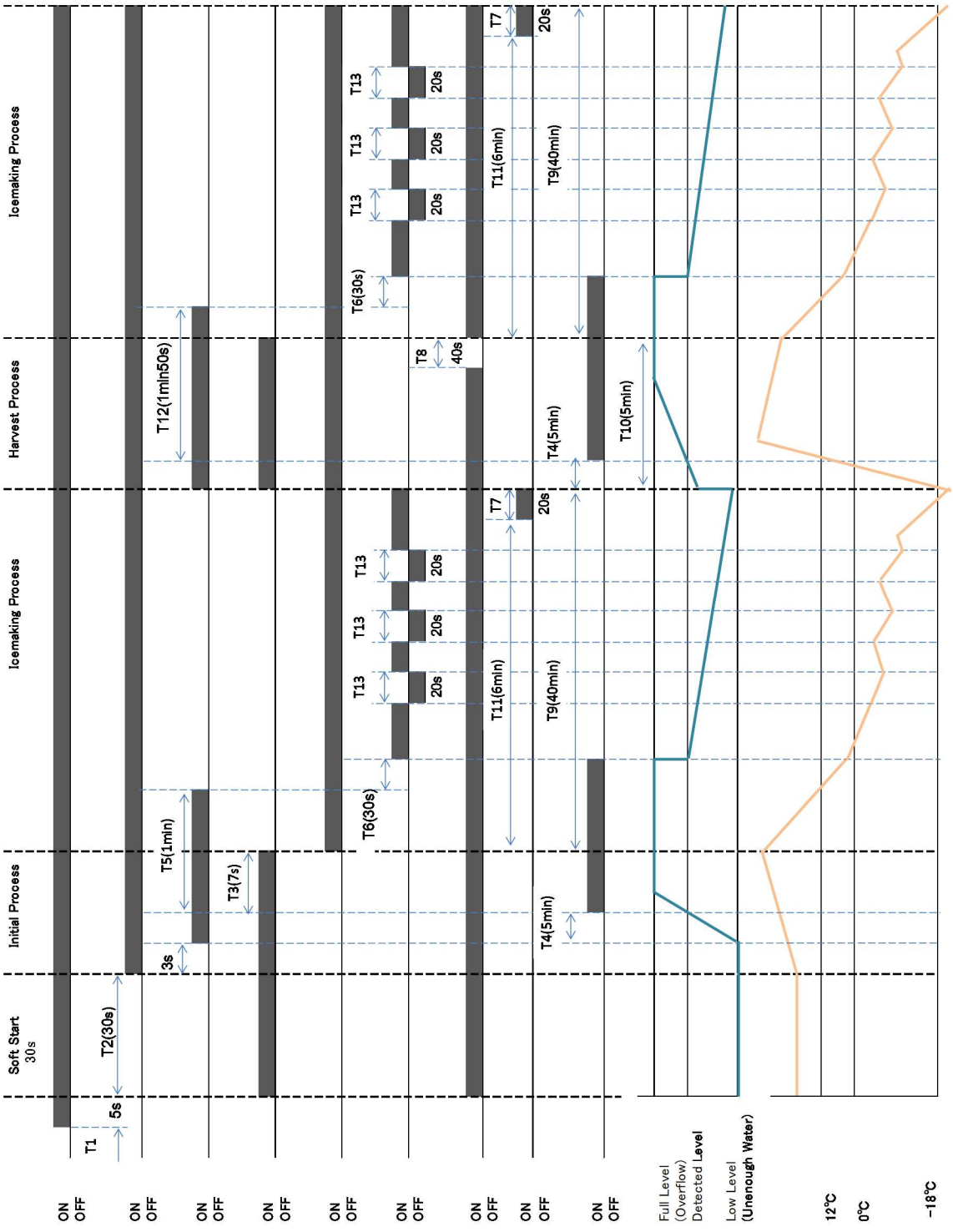

Soft Start
30s
Initial Process
Icemaking Process
Harvest process
Icemaking Process
T1
5s
T2(30s)
3s
T5(60s)
T3(7s)
T12(50%)
T6(30s)
T13
20s
T8
40s
T11(6min)
T7
T4(5min)
T9(40min)
T10(5min)
ON
OFF
Full Level
(Overflow)
Detected Level
Low Level
(Unenough Water)
12°C
0°C
-18°C

[SRM-60/105A]

[b] ICEMAKING PROCESS AT HIGH TEMPERTURE (AMBIENT TEMPERATURE IS ABOVE 32℃)

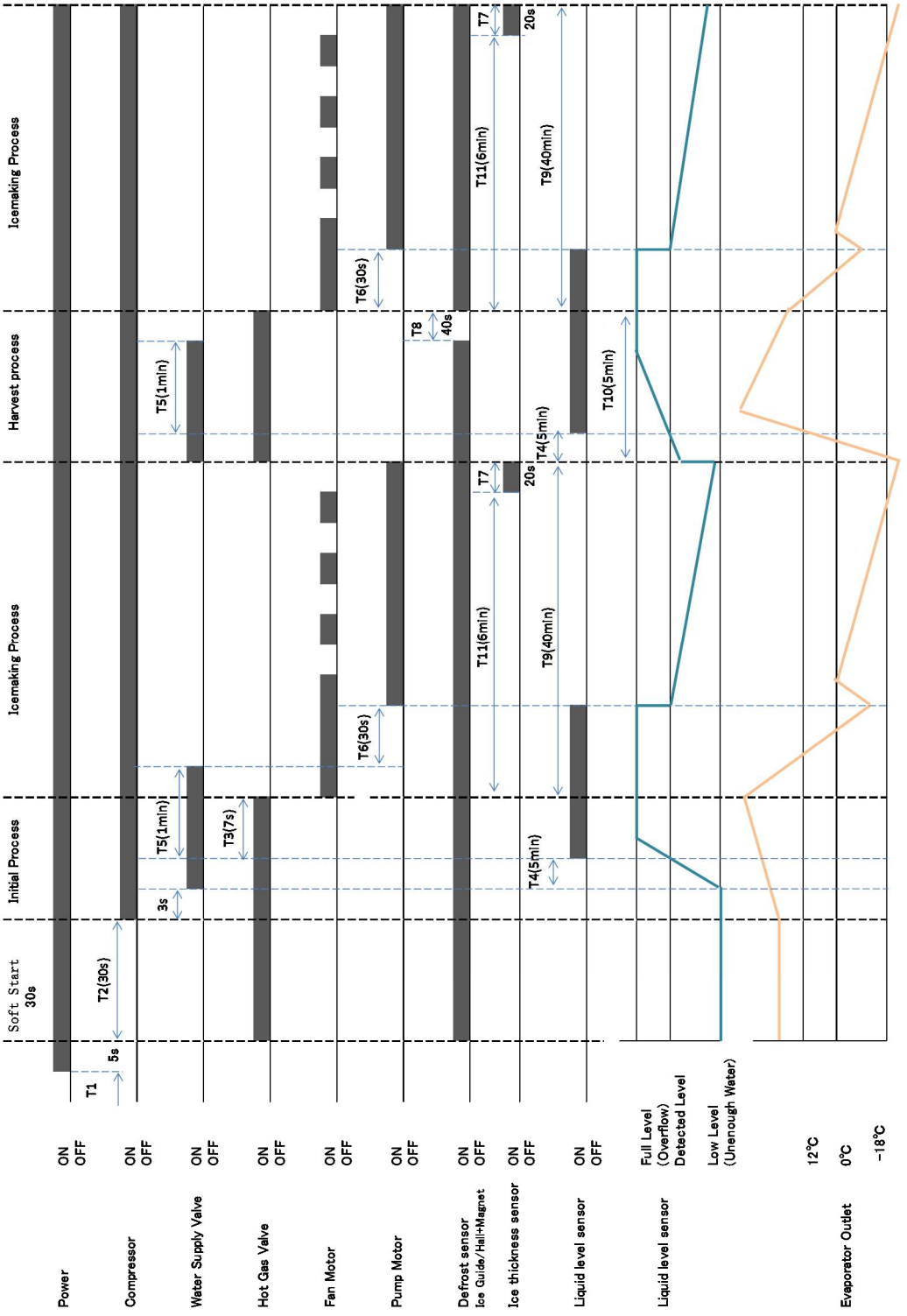



[SRM-45A]

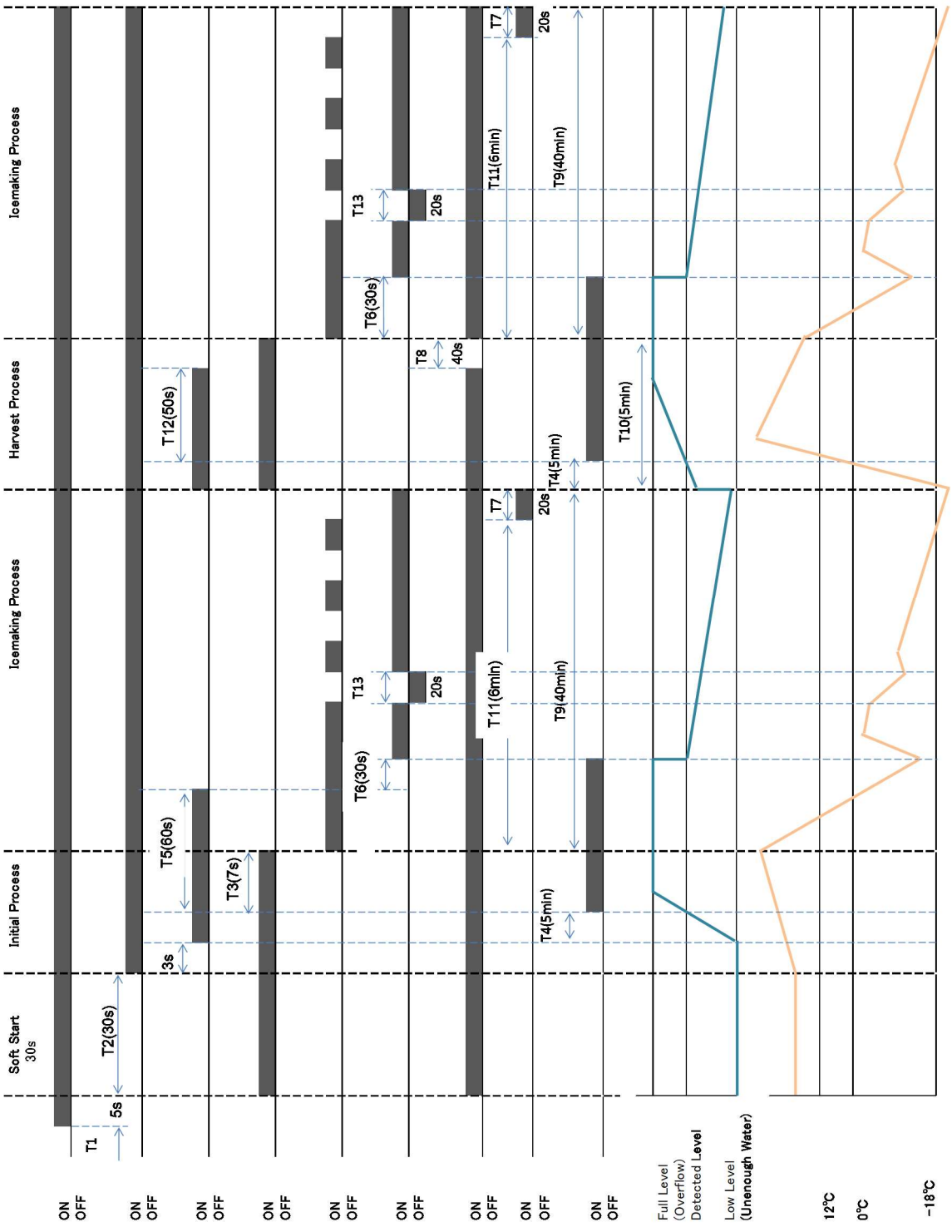

Soft Start
30s
Initial Process
Icemaking Process
Harvest Process
Icemaking Process
T1
5s
T2(30s)
3s
T5(1min)
T3(7s)
T12(1min50s)
T6(30s)
T13
20s
T8
40s
T11(6min)
T7
T9(40min)
T4(5min)
T10(5min)
ON
OFF
Full Level
(Overflow)
Detected Level
Low Level
(Unenough Water)
12℃
0℃
-18℃

[SRM-60/105A]

## [c] ICEMAKING PROCESS AT LOW TEMPERATURE (AMBIENT TEMPERATURE BELOW 5℃)

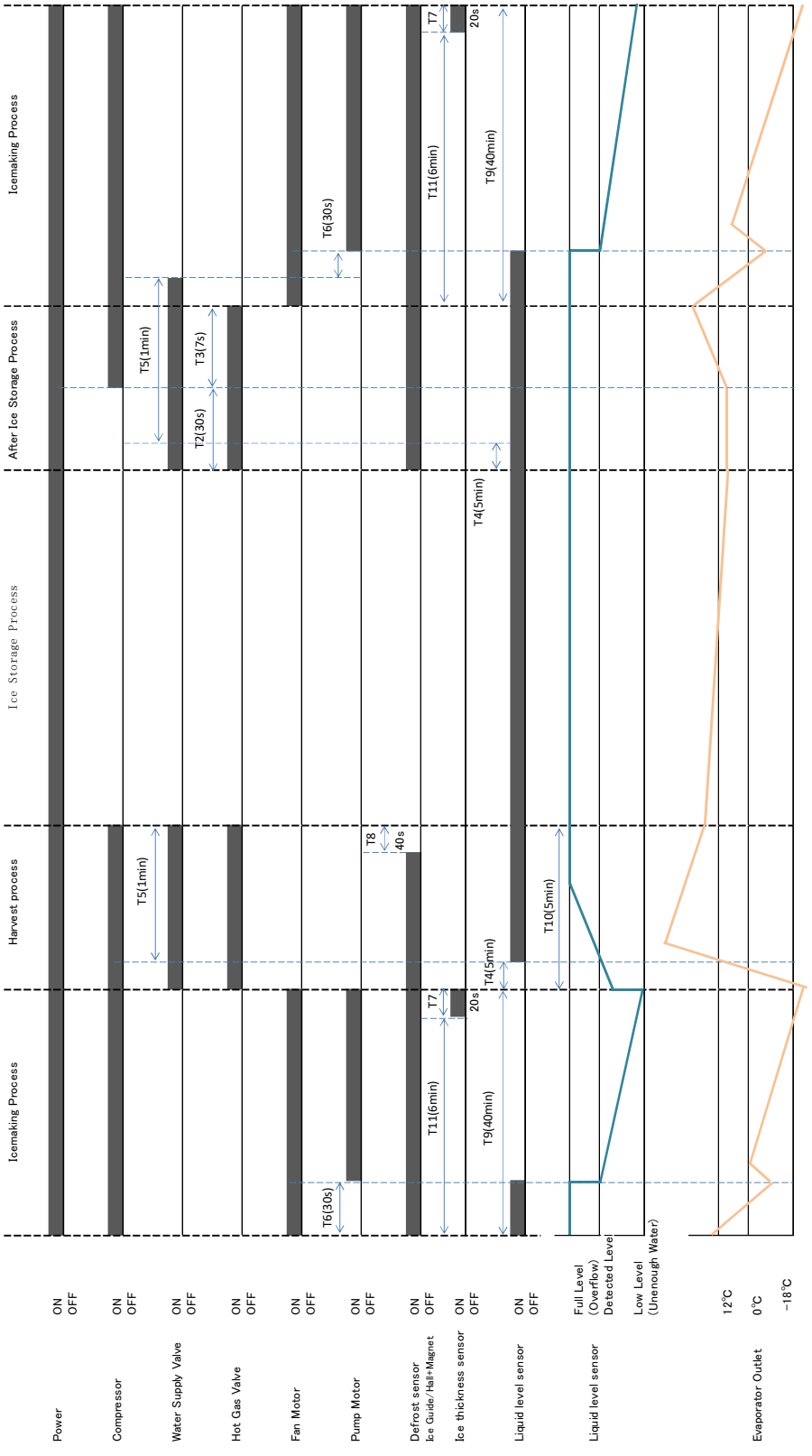



[SRM-45A]

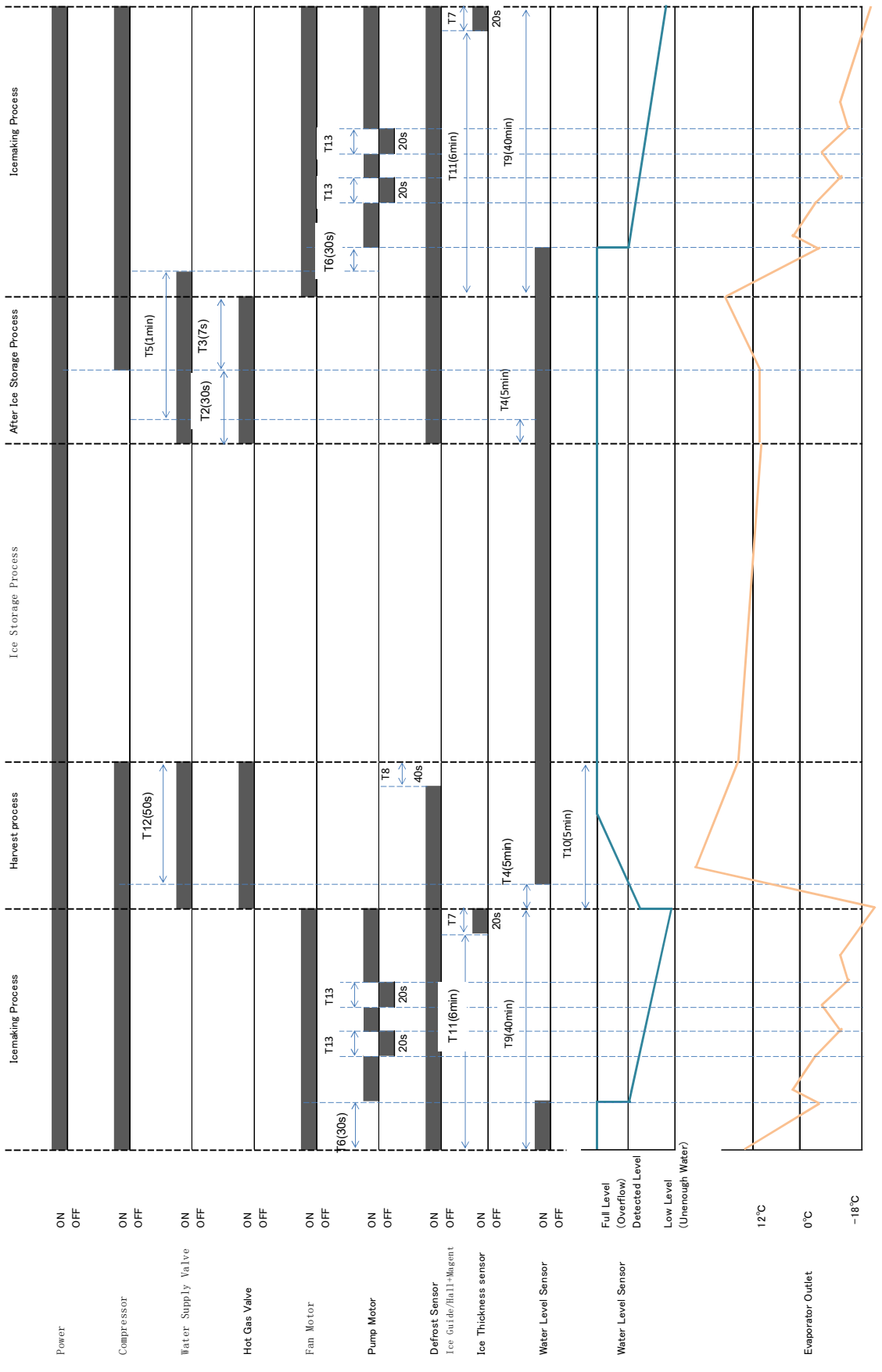

Soft Start
30s
Initial Process
Icemaking Process
Harvest Process
Icemaking Process
T1
5s
T2(30s)
3s
T5(60s)
T3(7s)
T12(50s)
T6(30s)
T13
20s
T8
40s
T11(6min)
T7
20s
T9(40min)
T4(5min)
T10(5min)
ON
OFF
Full Level
(Overflow)
Detected Level
Low Level
(Unenough Water)
12℃
0℃
-18℃

[SRM-60/105A]

## [d] CONTROL PROCESS OF ICE STORAGE




[SRM-45A]


Icemaking Process
Harvest process
Ice Storage Process
After Ice Storage Process
Icemaking Process
Power
Compressor
Water Supply Valve
Hot Gas Valve
Fan Motor
Pump Motor
Defrost Sensor
Ice Guide/Hall-Magent
Ice Thickness sensor
Water Level Sensor
Water Level Sensor
Evaporator Outlet
ON
OFF
T5(1min)
T3(7s)
T2(30s)
T12(50s)
T6(30s)
T13
20s
T8
40s
T11(6min)
T7
T4(5min)
T9(40min)
T10(5min)
Full Level
(Overflow)
Detected Level
Low Level
(Unenough Water)
12℃
0℃
-18℃

[SRM-60/105A]

[e] TIMER

| Item | Time | Note |
|---|---|---|
| T1: Power On Self-Test | 5s | |
| T2: Soft start, high and low pressure balance | 30s | |
| T3: Initial Process- Hot Gas Valve | 7s | |
| T4: The initial process of the OFF timer - sensor for water cutting(spare timer for water inlet) | 5 min | After water inlet stops，icemaker gets into water broken mode，Water Supply Valve opens 30s each 4min，and Water Level Sensor detect water and judge if water inlet is normal. It continues for 120min. |
| T5: Initial dilution water outlet–Water Supply Valve delays closure | 1 min | |
| T6: Pump Motor delay start | 30s | |
| T7: Ice Thickness Sensor (detect completion of icemaking) | 20s | |
| T8: Bin Switch | 40s | |
| T9: Spare timer for icemaking process | 40 min | |
| T10: Spare timer for Harvest process | 5 min | |
| T11: Prohibition time of ice making end | 6 min | |
| T12: Dilution water outlet – Water Supply Valve delays closure | 50s | |
| T13: Pump motor stop timer | 20s | |

【NOTE: T12 ，T13 are only for SRM-60/105A】

# IV. FAULT DIAGNOSIS

## 1. NO ICE MAKING

| Fault Phenomenon | Probable Cause | | Processing Method |
|---|---|---|---|
| [1] Ice maker does not start | a) Power Supply | 1. “OFF” position | 1. Push Power Switch“ON” |
| | | 2. Connection loose | 2. Fasten connector |
| | | 3. Poor contact | 3. Check the conduction and replace the broken parts |
| | | 4. Excessive voltage | 4. Check and use the proposed voltage |
| | | 5. No connect plug | 5. Connect the plug |
| | b ) Bin Switch | 1. Work when Bin storage is full | 1. Take out the ice |
| | | 2. Fault of Bin Switch | 2. Check the conduction and replace the broken parts |
| | c) Ice Guide Plate | 1. Magnetism of magnet in the Plate becomes weaken | 1. Replace the Plate |
| | d)Connection of Control Board | 1.Wires loose or electric circuit opens | 2. Check the conduction and replace the broken parts |
| | e) Control Board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [2] Water continuously flow into, but the ice maker can't start | a ) Water circuit | 1. Water Supply close，no water flow in. | 1. Check Water Supply system and connect right water pressure. Check Water Supply state. |
| | | 2. Water leakage or water pressure is low. | 2. Check and connect to normal water pressure. |
| | b) Water Supply Valve | 1. Filter or Inlet are blocked，water cannot get into the machine normally. | 1. Clean<br>2. Change Water Supply Valve if necessary |
| | | 2. Coil winding opens | 2. Replace |
| | | 3. Water Supply Valve connection. | 3. Check connection of Water Supply Valve wires. Change the broken parts. |
| | c) Water Level Sensor | 1. Connector opens | 1. Return to the original position |
| | | 2. Circuit open or Power Switch breakdown | 2. Check and replace |
| | d ) Water Tank | 1. Water leakage | 1. Check the Tank rubber plug and Ice Guide Plate. Change the part if necessary. |
| | e) Control Board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [3]Compressor does not start or run continuously | a) Overload protector | 1. Poor contact | 1. Check the conduction and replace the broken parts |
| | | 2. Excessive low voltage | 2. Increase voltage |
| | | 3. Refrigerant is too much or not enough | 3. Refill refrigerant |
| | b ) Starter | 1. Poor contact | 1. Check and replace |
| | | 2. Coil winding opens | 2. Replace |
| | c ) Starting capacitor | 1. Fault | 1. Replace |
| | d ) Power relay | 1. Poor contact | 1. Check and replace |
| | | 2. Coil winding opens | 2. Replace |
| | e ) Compressor | 1. Compressor connection | 1. Check the connection and change the broken parts |
| | | 2. Fault | 2. Replace |
| | | 3. Protector works | 3. Reduce temperature and find out reason |
| | f ) Condenser, Air filter | 1. Clogged with dirt | 1. Cleaning |
| | g) Drier, Capillary | 1. Clogging | 1. Replace and refill refrigerant |
| | h) Control Board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [4] Water supply does not stop during icemaking process | a) Water Supply Valve | 1. Diaphragm of Water Supply Valve does not close | 1. Check the leakage during icemaking process. Change parts if necessary. |
| | b) Control Board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [5] No water from spray tube. | a ) Water supply circuit | 1. Water pressure is too low，water in tank is too little. | 1. Check and connect proper water pressure |

| | | | |
|---|---|---|---|
| Pump Motor does not start or icemaking time is too short. | | 2. Water leakage | 2. Check connector. Change parts if necessary. |
| | | 3. Clogging | 3. Cleaning |
| | b) Water supply valve | 1. Filter or inlet is blocked. Water in tank is too little. | 1. Cleaning |
| | | 2. Coil open circuit or bad terminal contact | 2. Check the conduction and replace the broken parts |
| | c) Pump motor | 1. Coil winding opens | 1. Replace |
| | | 2. Bearing wear | 2. Replace |
| | | 3. Pump motor connection | 3. Check the connection and change the broken parts |
| | | 4. The blade is entangled or in malfunction | 4. Replace and clean |
| | b) Control board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| | e) Screw on Ice thickness sensor | 1. Length of Ice thickness sensor screw is too short | 1. Adjust the length of ice thickness sensor screw. |
| [6] Fan motor does not start or run normally. | a ) Fan motor | 1. Coil winding opens | 1. Replace |
| | | 2. Bearing wear | 2. Replace |
| | | 3. Fan motor connection | 3. Check the connection and change the broken parts |
| | | 4. The blade is entangled (locking fan motor) | 4. Check and replace |
| | b) Control board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [7] All components can run, but no icemaking | a) Refrigerant | 1. not enough | 1. Check leakage and refill it |
| | | 2 Air or moisture | 2. Refill the refrigerant after replacing the drier |
| | b) Compressor | 1. Fault | 1. Replace |
| | c) Hot Gas Valve | 1. Hot Gas Valve cannot close during icemaking process | 1. Check and replace |

## 2. EVAPORATOR FREEZING

| Fault Phenomenon | Probable Cause | | Processing Method |
|---|---|---|---|
| [1] Ice making time is too long | a) Ice thickness sensor | 1. Ice thickness sensor connection loose or open | 1. Check the connection and change the broken parts |
| | | 2. Length of Ice thickness sensor screw is too long | 2. Adjust length of Ice thickness sensor screw |
| | b) Water Supply Valve | 1. Diaphragm of Water Supply Valve does not close | 1. Check the water leakage of the ice maker in the shutdown state<br>2. Change the inlet valve as required |
| | | 2. Filter or Inlet are blocked , water cannot get into the machine normally | 2. Clean or change as required |
| | c ) Water Tank | 1. Tank leakage | 1. Check Tank and change if necessary |
| | d ) Water pressure | 1. Low water supply pressure | 1. Connect normal water pressure |
| | e) Control board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [2] Not all ice drop during Harvest process | a) Evaporator. | 1. Form scale deposit | 1. Cleaning |
| | b) Ambient temperature and / or water temperature | 1. Too low | 1. Raise the temperature. |
| | c) The water supply circuit | 1. Water pressure is too low. Water in tank is too little. | 1. Check and connect to normal water pressure. |
| | | 1. Filter or inlet is blocked.<br>2. Water level is too low. | 2. Clean |
| | d) Ice thickness sensor | 1. Length of ice thickness sensor screw is too long | 1. Adjust length of Ice thickness sensor screw |
| [3] Others | a) Spray tube | 1. Clogging | 1. Cleaning |
| | | 2. Dislocation | 2. Return to correct position |
| | b) Water circuit | 1. Dirt | 1. Cleaning |
| | c) Refrigerant | 1. Not enough | 1. Check leakage and refill it |
| | d) Hot Gas Valve | 1. Coil winding opens | 1. Replace |
| | | 2. The plunger does not move | 2. Replace |
| | e) Place | 1. The ice maker was not leveled. | 1. Level the icemaker. |

## 3. LOW ICE PRODUCTION

| Fault Phenomenon | Possible Reasons and Processing Method |
|---|---|
| [1] Ice making time is too long | a) See 1-[3] and check Compressor and its accessories, Air filter and Condenser, Drier, and Control board |
| | b) See 2-[1] part, check Ice thickness sensor，Water supply valve, Water tank, water pressure and Control board. |
| [2] Harvest time is too long | a) See 2-[2] part, check Evaporator, ambient temperature and water temperature, Water supply circuit, Ice thickness sensor |

## 4. ABNORMAL ICE

| Fault Phenomenon | Probable Cause | | Processing Method |
|---|---|---|---|
| [1] Ice size is too small | a) Ice guide plate, Water tank | 1. Dislocation, water spraying in storage | 1. Check assembled location of Ice guide plate. Check if tank is firmly fixed in storage |
| | b) See1-[5] part, check Water supply, Water supply valve, Pump motor, Control board and Ice thickness sensor screw. | | |
| | c) Ice thickness sensor | 1. Length of Ice thickness sensor screw is too short | 1. Adjust Ice thickness sensor screw ( Clockwise rotation can increase thickness of connect ice. |
| [2] Ice is opaque or in irregular shape | b) See partial content of 2-[1]、[3], check Ice thickness sensor, Water supply valve, Water tank, water pressure, Control board, Spray tube, water circuit, refrigerant filling quantity, level set | | |
| | b) Spray tube | 1. Dirt | 1. Cleaning |
| | c) Water quality | 1. Hardness is too high or Water contains impurities. | 1. Install Water cleaner. |

## 5. OTHERS

| Fault Phenomenon | Probable Cause | | Processing Method |
|---|---|---|---|
| [1] Icemaker cannot stop after storage full | a) Bin switch | 1. Bin switch wire is in short circuit | 1. Replace |
| | | 2. Magnetism disappearance | 2. Replace |
| | b) Control board | 1. Fault | 1. Refer to “II.2[d]CONTROL AND ADJUSTMENT” |
| [2] Too much noise | a) Pump motor | 1. Bearing wear | 1. Replace |
| | b) Fan motor | 1. Bearing wear | 1. Replace |
| | | 2. Fan blade deformation | 2. Replace fan blade |
| | | 3. Fan blade cannot rotate normally | 3. Replace |
| | c) Compressor | 1. Bearing wear or valve damage | 1. Replace |
| | | 1. Gasket is removed or lack of fixed bolts | 2. Reinstallation |
| | d) Refrigeration circuit | 1. Friction or touch to copper tubes or other surface | 1. Return to the original position |
| [3] Ice melting speed in storage is too fast | a) Ice storage bin drain water. | 1. Clogging | 1. Cleaning |
| | b) Door of ice storage bin | 1. Door opens | 1. Close the door |

# V . REMOVAL AND REPLACEMENT

## 1. REPAIR OF REFRIGERATION CIRCUIT

### [a] SERVICE INFORMATION

**1) Allowable Compressor Opening Time and Prevention of Lubricant Mixture**
[R134a/R404A]

The compressor must not be opened more than 30min in replacement or service. The changed compressor must be the same type with the original.

2) Treatment for Refrigerant Leak [R134a/R404A]

If a refrigerant leak occurs in the low side of an ice maker, air may be drawn in. Even if the low side pressure is higher than the atmospheric pressure in normal operation, a continues refrigerant leak will eventually reduce the low side pressure below the atmospheric pressure and will cause air suction. Air contains a large amount of moisture, and ester oil easily absorbs a lot of moisture. If an ice maker charged with R134a/R404A has possibly drawn in air, the drier must be replaced. Be sure to use a drier designed for R134a/R404A.

3) Use Portable Welder [R134a/R404A]

Repair of the refrigeration circuit needs weld, and a general portable welding machine can be used. But when welding the circuit, must avoid Access valve.

4) Oil for Processing of Copper Tubing [R134a/R404A]

When processing the copper tubing for service, wipe off oil, if any used, by using alcohol or the like. Do not use too much oil or let it into the tubing, as wax contained in the oil will clog the capillary tubing.

5) Service Parts for R134a/R404A

Some parts used for refrigerants other than R134a/R404A are similar to those for R134a/R404A. But never use any parts unless they are specified for R134a/R404A because their endurance against the refrigerant has not been evaluated. Also, for R134a/R404A, do not use any parts that have been used for other refrigerants. Otherwise, wax and chlorine on the parts may adversely affect the R134a/R404A.

6) Replacement Copper Tube[R134a/R404A]

The copper tubes currently in use are suitable for R134a/R404A. But do not use them if oily inside. The residual oil in copper tubes should be as little as possible.

7) Evacuation, Vacuum pump and Refrigerant Charge [R134a/R404A]

Never allow the oil in the vacuum pump to flow backward. The vacuum level and vacuum pump may be the same as those for the current refrigerants. However, the rubber hose and gauge manifold to be used for evacuation and refrigerant charge should be exclusively for R134a/R404A

8) Refrigerant Leak Check

Refrigerant leaks can be detected by charging the unit with a little refrigerant, raising the pressure with nitrogen and using an electronic detector. Do not use air or oxygen instead of nitrogen for this purpose, or rise in pressure as well as in temperature may cause R134a/R404A to suddenly react with oxygen and explode and refrigerant charge should be exclusively R134a/R404A.

[Note] R134a: SRM-45A, SRM-60A R404A: SRM-105A

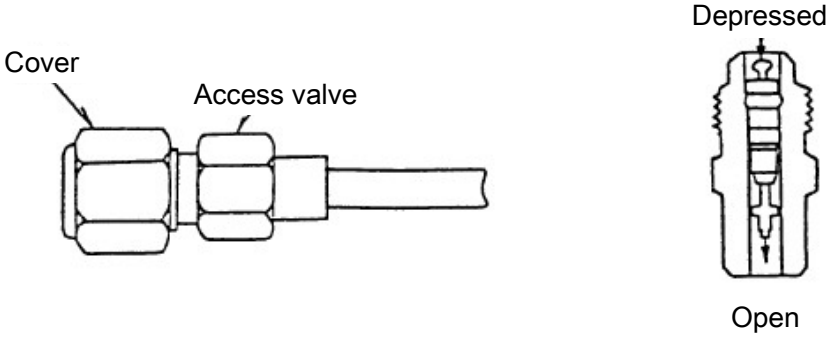
### [b] REFRIGERANT RECOVERY

There is a correct Access valve which is on the low-side (such as Copper tube – process)

of refrigeration circuit in icemaker. Recover the refrigerant by this Charge port and set the refrigerant into one suitable container. Do not discharge the refrigerant into the atmosphere.

### [c] EVACUATION AND RECHARGE

1) Attach a charging hose of gauge manifold to a vacuum pump and the low-side access valve.
2) Open the low-side valve on the gauge manifold, and turn on the vacuum pump.
3) Allowing the vacuum pump to pull down to a 760mmHg vacuum. Evacuating period depends on the pump capacity
4) Close the low-side on the gauge manifold.
5) Disconnect the vacuum pump, and attach a refrigerant charging cylinder, must purge any air from the charging hose. See the nameplate for the required refrigerant charge.
6) Open low-side valve. Do not place refrigerant charging upside down, otherwise the filled liquid may damage the compressor.
7) After refrigerant filling speed drop down, power icemaker. When low pressure gauge displays 0 bar, turn icemaker down. Do not turn on the machine at vacuum pressure. After charging pump is full of vacuum, close the low-side valve.
8) Repeat steps 4 to 7 as required until sufficient refrigerants are filled in the system.
9) Close the refrigerant access valve, disconnect the hose and gauge manifold.
10) Cover the access valve to prevent the refrigerant leakage.




## 2. WELDING

| ⚠ DANGER |
|---|
| 1. Refrigerant R134a/R404A is not explosive and nontoxic. However, when it contacts the high temperature (flame), the R134a/R404A can decompose into harmful substances. |
| 2. Must recover the refrigerant and put it into the suitable container, and do not discharge the refrigerant into the atmosphere directly. |
| 3. Do not use the silver alloy or copper alloy within arsenic. |
| 4. Do not use R134a/R404a within high pressure air to detect leakage. Charge a little refrigerant and use nitrogen to make high pressure to detect leakage. |

# 3. COMPRESSOR

| ⚠ WARNING |
| --- |
| The compressor terminal protection cover must be installed in the correct position. Otherwise, when the ice maker operates under high temperature and high humidity conditions, it may trigger electric shock, short circuit, fire, or shorten the life of the machine. |

| IMPORTANT |
| --- |
| Must change drier to new one when open the closed refrigeration system each time. Do not change drier to new one before change all other parts. |

1) Unplug the icemaker or disconnect the power source.
2) Remove the rear panel and rear cover.
3) Recover the refrigerant and store it in a proper container, if required by an applicable law (see 1. [b]"REFRIGERANT RECOVERY").
4) Remove the terminal cover on the compressor, and disconnect terminals.
5) Disconnect the discharge and suction pipes using brazing equipment.
6) Remove the hold-down bolts, washers and rubber grommets.
7) Slide and remove the compressor. Unpack the new compressor package.
8) Attach the rubber grommets of the previous compressor.
9) Clean the suction and discharge pipes with an abrasive.
10) Place the compressor in position, and secure it using the bolts and washers.
11) Remove plugs from the compressor suction and discharge pipes.
12) Blowing into the nitrogen at air pressure of 0.2-0.3 bar, welding connection pipes, discharge and suction pipes at same time (do not change the order of the pipes connection).
13) Install the new drier (see "4. DRIER").
14) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
15) Connect the terminal and install the terminal protection cover to the correct position.
16) Evacuating the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
17) Replace the panels in their correct positions.
18) Plug in the icemaker or connect the power source.

Note: The manufacturer recommends that compressor starting electrics are always replaced at the same time as the compressor.

## 4. DRIER

| IMPORTANT |
| --- |
| Must change drier to new one when open the closed refrigeration system each time. Do not change drier to new one before change all other parts. |

1) Unplug the icemaker or disconnect the power source.
2) Remove the rear panel and rear cover.
3) Recover the refrigerant and store it in a proper container, if required by an applicable law (see 1. [b] "REFRIGERANT RECOVERY").
4) Remove the drier holder, if any, and pull the drier toward you for easy service.
5) Remove the drier using welding equipment.
6) Welding the new drier with the arrow on the drier in the direction of the refrigerant flow. Use nitrogen gas at the pressure of 0.2 – 0.3 bar when welding pipes.
7) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
8) Evacuating the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
9) Replace the panels in their correct positions.
10) Plug in the icemaker or connect the power source.

Note: Always use a drier of the correct capacity and refrigerant type.

## 5. HOT GAS VALVE

| NOTICE |
| --- |
| Must use the same length and diameter hot gas valve copper tube to make sure the icemaker can operate at the best state, when change the copper tube for hot gas valve. |

| IMPORTANT |
| --- |
| Must change drier to new one when open the closed refrigeration system each time. Do not change drier to new one before change all other parts. |

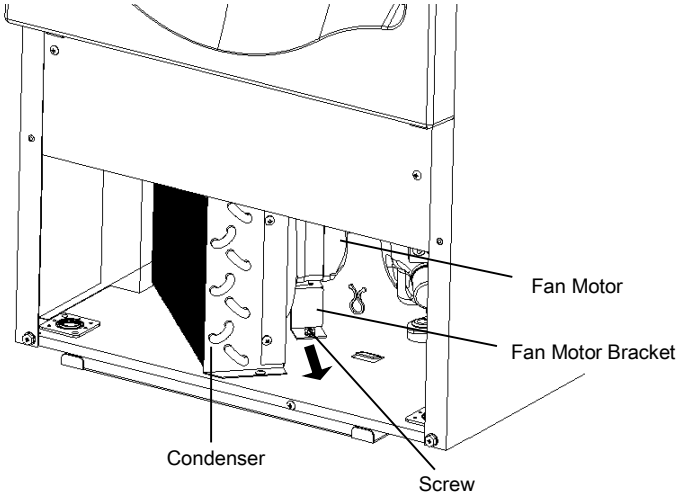
1) Unplug the icemaker or disconnect the power source.
2) Remove the rear panel and rear cover.
3) Recover the refrigerant and store it in a proper container, if required by an applicable law (see 1. [b] "REFRIGERANT RECOVERY").
4) Disconnect the hot gas valve leads.
5) Remove the screw and the solenoid coil.
6) Remove the hot gas valve and the drier using welding equipment.
7) Welding the new hot gas valve with nitrogen gas flowing at the pressure of 0.2 – 0.3 bar.

| ⚠ WARNING |
| --- |
| Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not weld the valve body exceeding 120℃. |

8) Install the new drier (see "4. DRIER").
9) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
10) Evacuating the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
11) Attach the solenoid coil to the valve body, and secure it with the screw.
12) Connect the leads.
13) Replace the panels in their correct positions.
14) Plug in the icemaker or connect the power source.

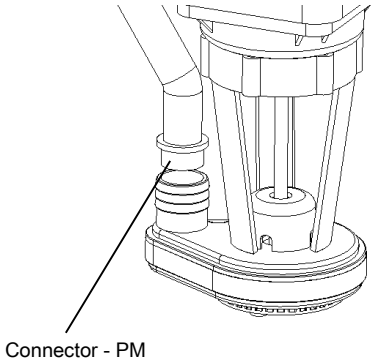
## 6. FAN MOTOR

1) Unplug the icemaker or disconnect the power source.
2) Disconnect the connector of fan motor.
3) Remove the fixed screws of fan motor bracket, pull out the fan motor in arrow direction. Pulling does not touch the condenser or other parts to protect the fan blade not deformation.
4) Install the new fan motor in the opposite order of disassembly.
5) Plug in the icemaker or connect the power source.

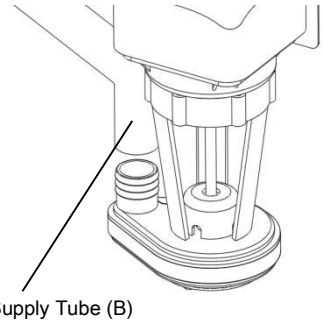



## 7. PUMP MOTOR

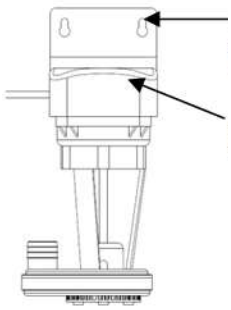
1) Unplug the icemaker or disconnect the power source.
2) Remove the top panel, rear panel, rear cover and the fixed screw in the storage.
3) Disconnect the connector of pump motor.
4) Pull out the pump motor connection tube and take the pump motor out of the tank.




[SRM-45A]




[SRM-60/105A]



1. Use the tool to remove the two screws of the fixed pump motor, lift up the pump motor and bracket, and take the pump motor off.

2. Do not soak the motor part of the pump motor in the cleaning agent or the disinfectant.

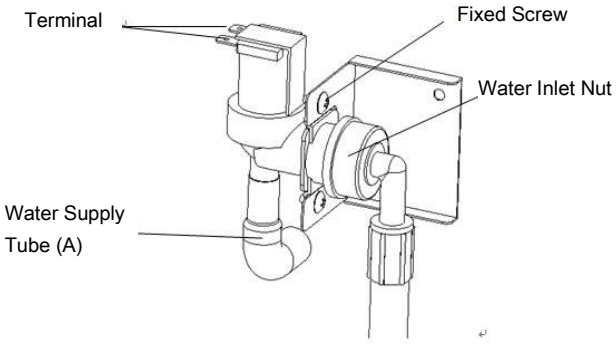
Pump motor disassembly steps

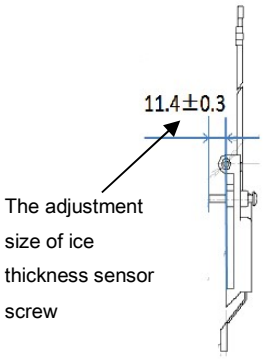
[NOTE: The content without special description commonly applicable to SRM-45/60/105A]

5) Install the new pump motor in the opposite order of disassembly.
6) Plug in the icemaker or connect the power source and check leakage.
7) Replace the panels in their correct positions.

## 8. WATER SUPPLY VALVE

1) Unplug the icemaker or disconnect the power source.
2) Turn off the tap.
3) Remove the fixed screws for the top panel, rear panel and cover.
4) Disconnect the Terminal.
5) Hold and pull the water supply tube (A) down.
6) Remove the Inlet Hose from the water supply valve. Use a towel to catch the overflow of water.
7) Remove the water inlet nut and remove the Inlet hose from the water supply valve. Do not lose the gasket.
8) Remove 2 fixed screws.
9) Install the water supply valve in the opposite order of disassembly.
10) Tighten the inlet nut with the torque of 7.85N·m (±5%) to prevent leakage.
11) Open the tap.
12) Plug in the icemaker or connect the power source.
13) Check leakage.
14) Replace the panels in their correct positions.

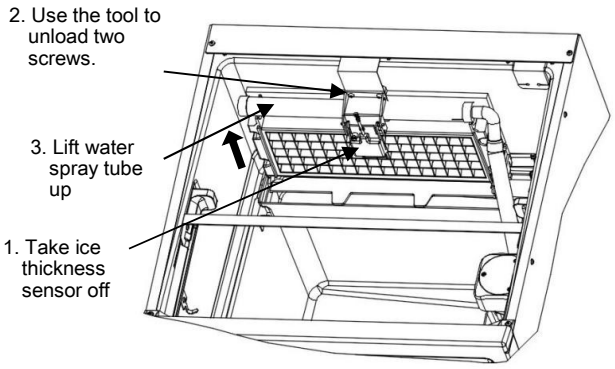


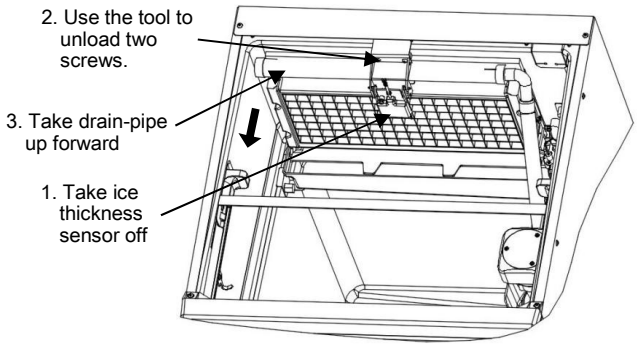

Ice Thickness Sensor

# 9. ICE THICKNESS SENSOR

1) Unplug the icemaker or disconnect the power source.
2) Remove top panel, louver, rear panel and the control box.
3) Disconnect the ice thickness sensor lead.
4) Install the new ice thickness sensor in the opposite order of disassembly. (Note: Confirm adjustment size of ice thickness sensor screw)
5) Plug in the icemaker or connect the power source.



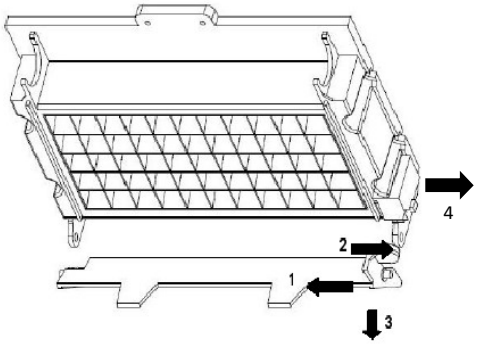

[SRM-45/60A]




[SRM-105A]

# 10. BIN SWITCH

1) Unplug the icemaker or disconnect the power source.
2) Remove top panel, louver, rear panel and the control box.
3) Disconnect the bin switch lead and take bin switch out.
4) Install the bin switch in the opposite order of disassembly.
5) Plug in the icemaker or connect the power source.

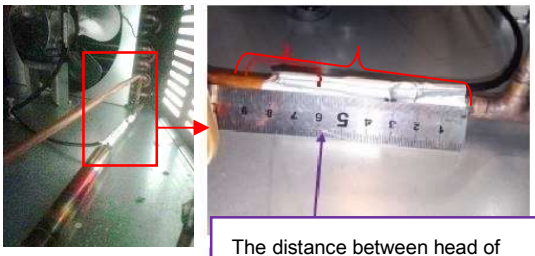



Disassembly steps of bin switch

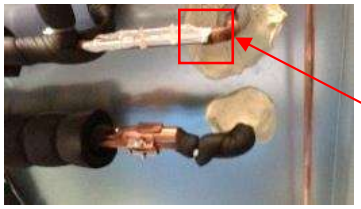
1. Catch the left side of the ice guide plate.
2. Press the right guide plate support.
3. Pull the ice plate forward until it is removed from the left side hole.
4. Pull out the bin switch

## 11. SENSOR (Condenser sensor, evaporator sensor)

1) Unplug the icemaker or disconnect the power source.
2) Remove louver and control box.
3) Open the control box and disconnect sensors leads.
4) Cut off the sensor fixed tie and remove sensors.
5) Install the new sensors in the opposite order of disassembly.
6) Plug in the icemaker or connect the power source.



The distance between head of condenser sensor and tee should be 60~90mm. Use the aluminum tape to wrap the sensor and fixed by ties.



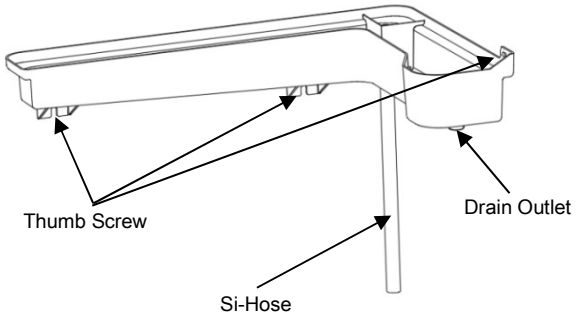
The distance between Evap. Sensor and elbows should be 10~20mm.

## 12. CONTROL BOARD

1) Unplug the icemaker or disconnect the power source.
2) Remove louver and control box.
3) Remove the control box cover and pull out the connection terminal on the control board.
4) Connecting the terminal in the opposite order of disassembly, and must make sure correct connection (connect terminal refer III.4 WIRING DIAGRAM)
5) When reinstalling the control board, screw it in the horizontal direction after it is pushed to the inside.

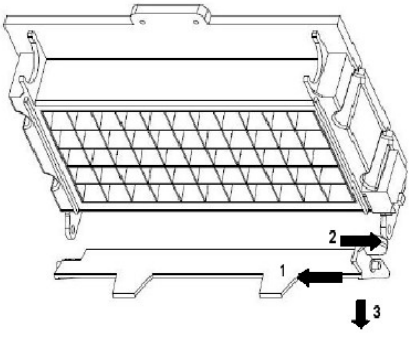
## 13. WATER TANK

1) Unplug the icemaker or disconnect the power source and take out all the ice in storage.
2) Remove the Si-hose and rubber plug from the bottom of the tank and remove the Si-hose from the bottom of the bin. Evacuating the water in the tank.
3) Remove 3 six thumb screws of the fixed tank and remove the tank.
4) Install the tank in the opposite order of disassembly.
5) Plug in the icemaker or connect the power source.




## 14. ICE GUIDE PLATE

1) Unplug the icemaker or disconnect the power source.
2) Remove the top panel.
3) Press the right guide plate support and take off the guide plate.
4) Install the ice guide plate in the opposite order of disassembly.
5) Plug in the icemaker or connect the power source.

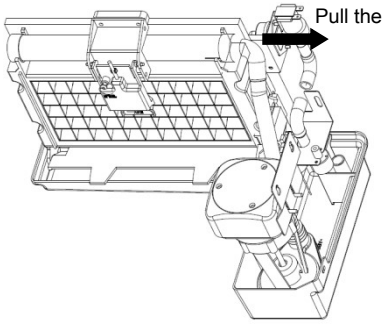


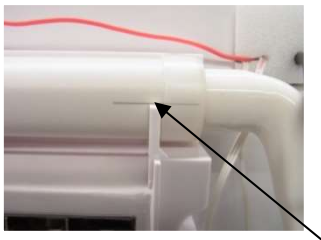

Disassembly steps of Ice guide plate

1. Catch the left side of the ice guide plate.
2. Press the right guide plate support.
3. Pull the ice plate forward until it is removed from the left side hole.

## 15. SPRAY TUBE

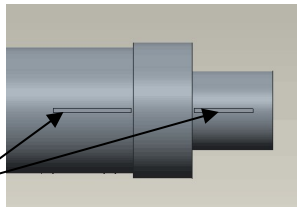
1) Unplug the icemaker or disconnect the power source.
2) Remove top panel, rear cover and ice thickness sensor bracket.
3) Pinch one side of the spray tube and pull out the connecting pipe.
4) Install the spray tube after cleaning
5) Install ice thickness sensor bracket
6) Plug in the icemaker or connect the power source.
7) Check leakage.



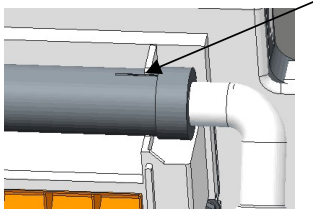



[SRM-45/60A]

The mark line on the spray tube should be at the same location of evaporator support.



Those two lines must be at the same line when assembly the spray tube.

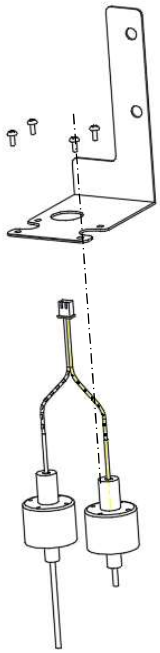


[SRM-105A]

| IMPORTANT |
| --- |
| Must firmly assembly the spray tube at the correct location and the mark line on the spray tube must at the same line with the evaporator support. Otherwise, ice may be bad or the capacity of the machine may be weaken. |

## 16. WATER LEVEL SENSOR

1) Unplug the icemaker or disconnect the power source.
2) Remove top panel, louver, rear cover and control box.
3) Unscrew the two thumb screws fixed the water level sensor.
   And lift up the water level sensor assembly.
4) Remove four M3 x 6 screws from the water level sensor assembly.
5) Disconnect the water level sensor terminal from control board.
   And take out the water level sensor.
6) Install the new water level sensor in the opposite order of disassembly.
7) Plug in the icemaker or connect the power source.



# VI . CLEANING AND MAINTENANCE INSTRUCTIONS

| IMPORTANT |
| --- |
| After any maintenance for icemaker, must make sure all components, fasteners and screws firmly fixed at the correct position. |

| ⚠ WARNING |
| --- |
| 1. Must plug in the icemaker or connect the power source when clean or maintenance. |
| 2. Forbid use water jet to wash the icemaker. |

| NOTICE |
| --- |
| When using a neutral solution or sodium hypochlorite solution, please fully read and understand the incidental instructions to prevent potential health problems. |

## 1. CLEANING

| ⚠ WARNING |
| --- |
| 1. The manufacturer recommends ice maker should be cleaned least twice every year. Clean more times at some areas due to water quality. |
| 2. Do not use cleaning agent with ammonia to avoid damage the machine or injury the operator. |
| 3. Wear anti solvent gloves during operating, prevent skin from cleaning agent or disinfection. |
| 4. In order to ensure safety and maximize the effect, cleaners and disinfectants are used immediately after diluted. |
| 5. Do not put plastic parts into water more than 40℃ or dishwasher to protect the parts. |
| 6. Ice maker can use after water clean all cleaning agent and disinfectant. |

### [a] CLEANING PROCEDURE

1) After all ice dropped at the end of Harvest process, unplug the power and stop water in, open the door of storage, remove the top panel and rear cover and remove all the ice.

| NOTICE |
| --- |
| 1. Do not use any tool to remove the ice on the evaporator to protect the evaporator. |
| 2. Do not use the liquid with alcohol to clean or disinfect the icemaker to protect plastic parts. |

2) Open the drain outlet, empty the water in the tank and water circuit system, and then remove the water supply tube (a), the pump connection tubeand the overflow pipe (Si-hose) in the ice storage bin.

3) Remove ice thickness sensor, spray tube and overflow pipe,pump motor, bin switch, tank and so on.

4) Use soft brush soaked in a neutral detergent, a sponge or a clean cloth to carefully clean the surface of the dismantled parts (inner surface of water tube also should be cleaned). Then clean them with clean water.

| NOTICE |
| --- |
| 1. During cleaning spray tube, the inner tube must be taken out. Use soft brush dipped in a neutral detergent, cleaning cloth or sponge to clean and then rinsed with water. |
| 2. The evaporator can't be disassembled. Use the soft brush, sponge or clean cloth soaked by the neutral detergent to clean it carefully. |
| 3. Just clean the components included water circuit system of pump motor, ice thickness sensor, water level sensor and bin switch. All the electrical parts cannot be immersed in the cleaning agent. Please avoid them carefully. |
| 4. Cleaning agents must be the food class or recommended by the manufacturer. |
| 5. Some solutions may damage the inner surface of the ice machine or corrode the metal parts. Cleaning liquid should be cleaned at any time unless specified instruction by the manufacturer. |

### [b] DISINFECTION STEPS – DISINFECTION AFTER CLEANING

1) Pure 3L water into suitable container and mixed 11mL concentration of 5.25% sodium hypochlorite solution or a disinfectant recommended by the manufacturer. Dip the removed parts (ice thickness, spray tube, overflow tube, pump motor, water level sensor, bin switch and water tank and so on) into the disinfection to disinfect and keep them in disinfection 10min.

| NOTICE |
| --- |
| All the electrical parts cannot be immersed in the cleaning agent. Please avoid them carefully. |

2) Use a clean sponge or cloth soaked in a solution to wipe inner surface and door of storage.
3) After the disinfection, rinse thoroughly with clean water to confirm that there is no residual disinfectant.
4) Install all parts in the opposite order of disassembly, finally close the door, restore the water supply and power supply.

| NOTICE |
| --- |
| In general, just disassembly water tank and overflow tube to clean. |

## 2. MAINTENANCE

### [a] TOP LANEL AND SIDE PANELS

To prevent rust, clean with clean soft cloth. Use a wet cloth with a neutral detergent to wipe the grease and dust on it.

| NOTICE |
| --- |
| 1. Do not use hard brushes, wire brushes, nor detergents, gasoline, banana water, acetone and other organic solvents. Do not use boiling water or acid and alkali cleaners to clean the machine. |
| 2. Do not rinse with spray water when cleaning, so as not to affect the insulation of electrical appliances. |

### [b] STORAGE AND SCOOP

1) Wash your hands before you take the ice. Use the specific scoop (accessory) to take ice.
2) Storage only for store ice. Do not place other things in storage.
3) Keep scoop clean. Totally wash the scoop with spray water after using neutral detergent.
4) Totally wash the bin storage with spray water after using neutral detergent.

### [c] AIR FILTER

The plastic air filter can filter dirt or dust in the air to prevent clog condenser. If air filter is clogged, the capacity of ice maker will decrease. Wash the filter at least twice every month.

1) Extract the air filter from the louver.
2) Use vacuum cleaner to clean the air filter. If the air filter is seriously blocked, please clean it with warm water and neutral detergent.
3) Thoroughly rinse and dry air filter.

| NOTICE |
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| After cleaning, replace the air filter. |

[d] CONDENSER

Air – cool condenser usually is cleaned once to twice every year. Use soft brush or cleaner with brush to brush the condenser in direction of fin to protect the condenser.

## 3. NO ICE MAKING FOR A LONG TIME

| IMPORTANT |
| --- |
| When no ice making for a long time, take the ice in storage out, drain all water in water circuit system. Wash and dry the storage. Use air or CO2 to drain all water in the machine to prevent damage the water circuit system when air temperature is below 0℃. Turn the power off until proper air temperature comes. |

If icemaker no use just for two or three days, please push the power switch to “OFF”.
( except air temperature is below 0℃)

1) Push the power switch to “OFF” after Harvest process finished. Unplug the icemaker or disconnect the power source.
2) Turn off the tap and remove the water inlet hose.
3) Take out all the ice in the storage and clean the storage.
4) Remove the rubber plug at the bottom of the water tank and drain all the water in tank.
5) After draining all the water, close door of storage.