AM SERVICE TRAINING

Featuring the

AM-50BAE, AM-100BAE, AM-150BAF

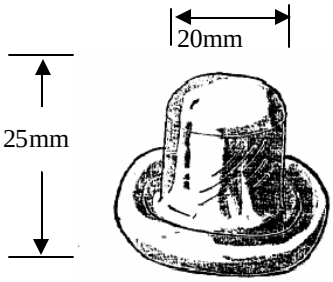
AM-50BAE

AM-100BAE

AM-150BAF

All AM models have similar sequence of operation. This manual is designed as a generic AM Training manual.

The Hoshizaki AM series ice machine uses a horizontal evaporator design which forms a unique cube shape.



The compact AM-50BAE unit is 14 7/8”w x 22 5/8”d x 33 1/2”h and is designed for counter-top, under-counter, or freestanding installations with up to 51 pounds of production and 30 pounds of storage

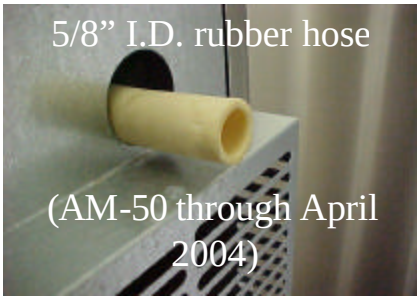
The AM-100 and AM-150 are for under counter or free standing applications.

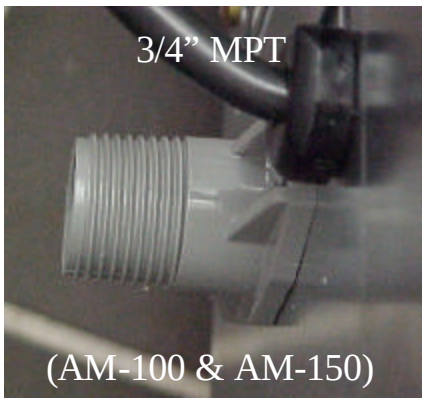
The AM-100 dimensions are 24 15/16”w x 20 1/2”d x 39”h with 6” legs and can produce up to 105 and pounds with 44 pounds of storage.

The AM150 measures 27 11/16”w x 27 15/16”d x 39”h with 6” legs and production up to 150 pounds with 88 pounds of storage.

WATER INLET CONNECTIONS

DRAIN CONNECTIONS





A standard 120-volt power cord provides the electrical connection. The unit is designed to operate on a separate 15-amp circuit.

Inlet Water Line Connection

- 1st production units had a 3/4" BSP connection directly to the inlet water valve. (DO not connect with 3/4" FIP)
- Fitting (4A3207-01) and gasket 413854-01 were used from May through July production. (Through August on the AM-100BAE and AM-150 BAF)
- Fitting (4A3240-01) and gasket 413854-01 were added in August 03 on the AM-50BAE and September 03 on the AM-100BAE and AM-150BAF.

If no fitting is included, order either fitting /gasket above or use 3/4" hose type fitting to make this connection.

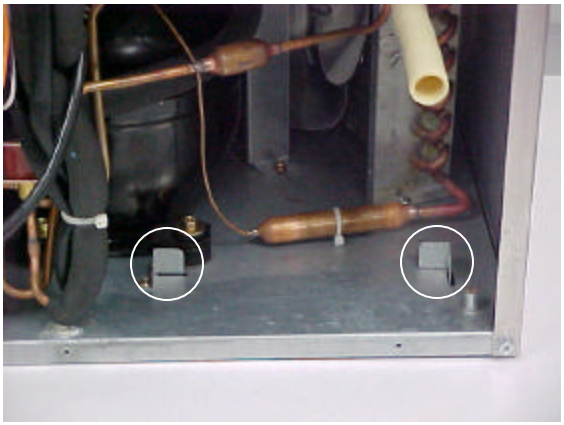
A minimum 3/8” water line is required for proper operation.

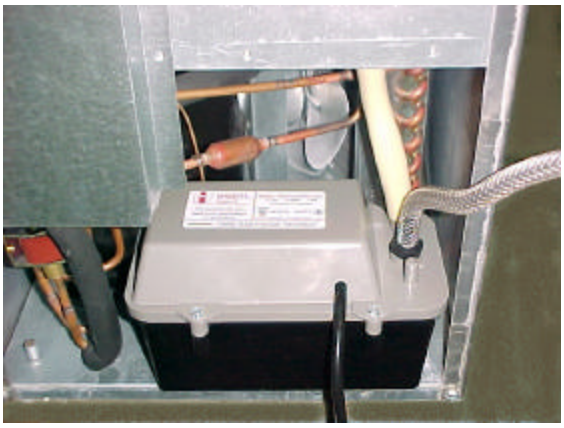
Drain line connection

The drain connection for the AM-50 was 5/8” I.D. hose until April of 2004 and was located on the left rear of the unit. A standard 3/4” male insert fitting can be used to connect this drain. From May 2004 the drain fitting is 1/2” FPT. A minimum 1/2” I.D. vented drain is required when making this connection.

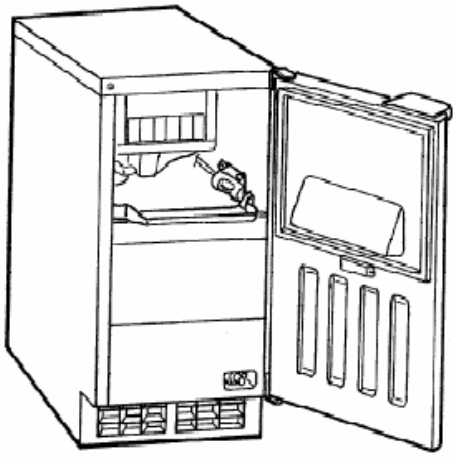
The drain for the AM-100 and AM-150 is a 3/4” MPT.

Since the unit will likely be enclosed, it is recommended to use flexible, supply and drain connections. This will allow easy removal if service is necessary.





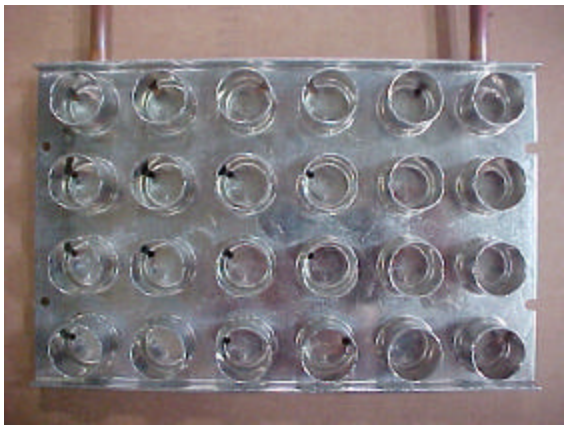
In the case of an AM-50 if a drain is not located in an area that will allow for the proper fall, there is an optional condensate pump available that can be installed directly into the unit. After removing the louvered rear panel the pump location is defined by the two metal tabs. This pump has a built in safety that will shut the AM-50 down in the event of a pump problem. This pump is available as an accessory through your local distributor. Simply follow the instructions included with the pump for details on the installation.



The AM-50 door can be field converted from the standard right hinged door to a left hinged door without the use of any additional hinge kits. The AM-100 and AM-150 use a spring loaded drop down door design therefore can not be reversed.

This procedure for reversing the AM-50 door is shown in the Instruction Manual provided with the unit. View this manual at www.hoshizaki.com.

(AM-50)

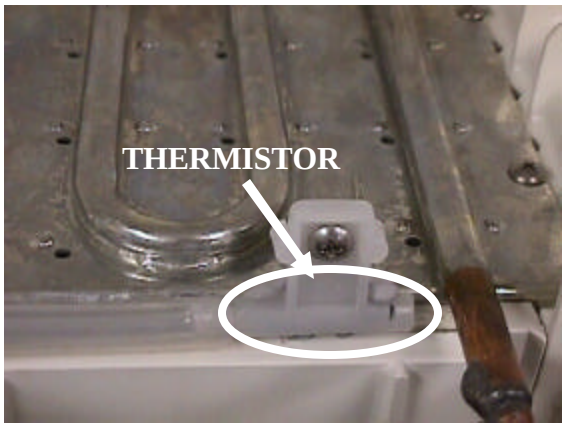


(AM-100 & AM-150)

The horizontal evaporator and water distribution system are unique to the Hoshizaki AM and IM series. The AM and the IM series are similar in the fact that they both make ice on a horizontal evaporator. The AM evaporator design however is different, as shown in the center picture. The moving IM water plate and associated parts are eliminated with this simple design.

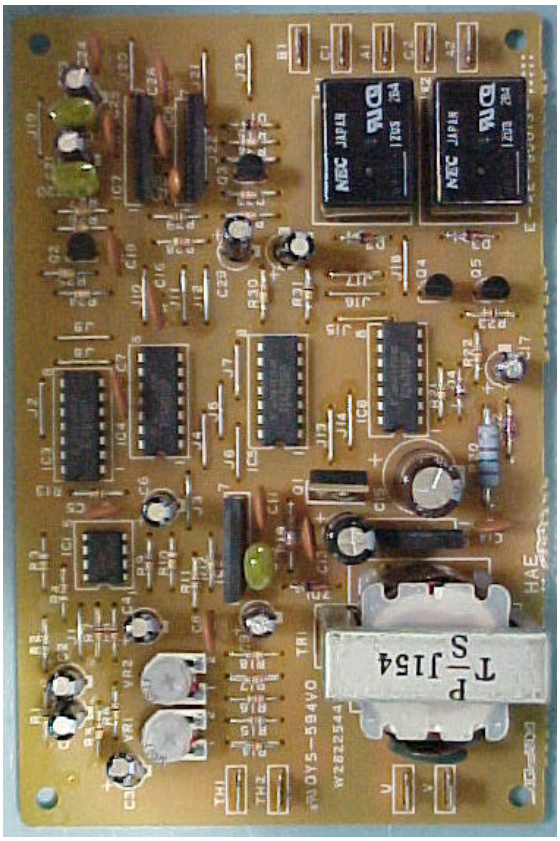
The AM-50BAE produces 24 cubes and .60 pounds per cycle. The AM-100BAE and AM-150BAF produce 60 cubes and 1.54 pounds per cycle.

The AM series sequence of operation is also different. The sequence of operation for the AM series will be explained in the following pages.



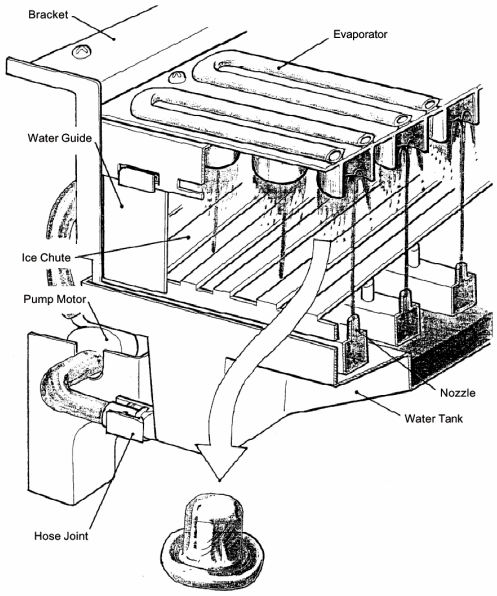
The AM series uses a combination thermistor and control board to control the sequence of operation. When the toggle switch is placed in the "ON" position and the bin control calls for ice, the unit will begin in the initial harvest cycle. Starting the unit in harvest allows the compressor to start in an unloaded condition, greatly extending the life of the compressor. This operation is common among all Hoshizaki cube icemakers.

During the initial harvest, the compressor, hot gas valve and water valve will be energized. The initial harvest is a timed harvest. After 50 seconds, the control board will energize the X1 board relay to start the pump motor and condenser fan motor, switching the unit into the freeze cycle.



After the initial harvest, the X2 board relay will remain energized during the freeze cycle. This allows the water valve to feed fresh water for an additional 50 seconds. This extended fill, only takes place when the unit has restarted from a power interruption or when the bin control calls for ice. During the normal harvest cycle the water valve will de-energize at the beginning of freeze or in the event of long harvest the valve will have a maximum open time of 102 seconds. This could occur in the event of operation in low water and ambient temperatures. During normal operating conditions the unit will run approximately 2~4 minutes in the harvest cycle.

2. ICEMAKING COMPARTMENT



Note:

*A thermistor temperature of 26.6°F (-3°C) will start 8 minute freeze completion timer.

*****A thermistor temperature of 44.6°F (7°C) will start the 50 second defrost completion timer.

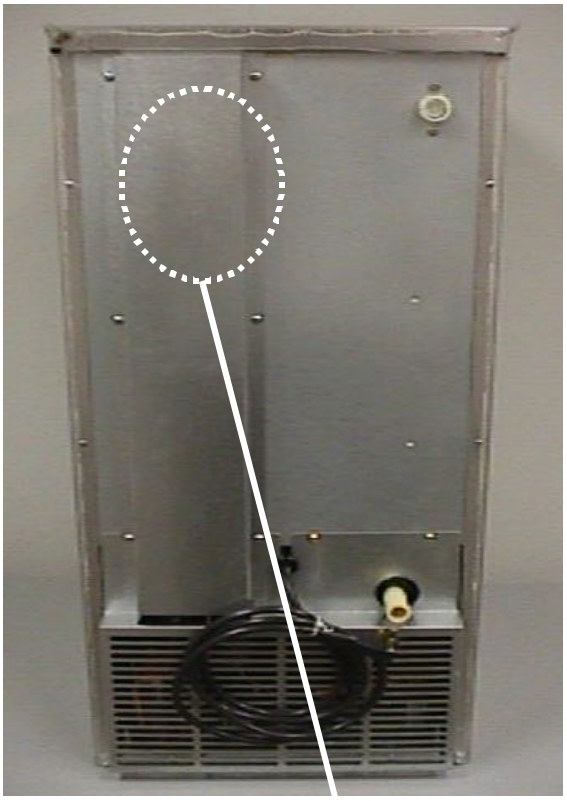
* 26.6°F (-3°C) = 6.8KΩ thermistor resistance.

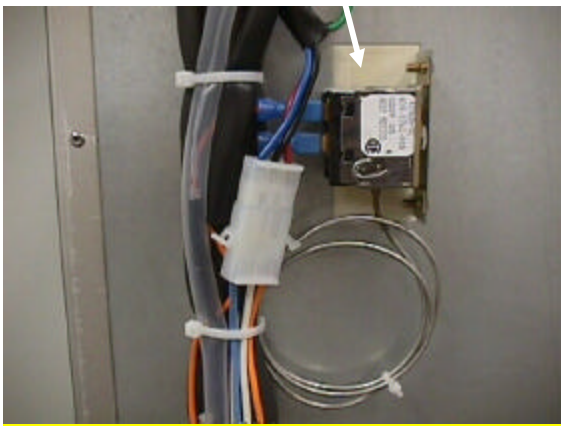
* 44.6°F (+7°C) = 4.5KΩ thermistor resistance.

Throughout the freeze cycle, which normally last 14~33 minutes, depending on model and operating conditions, the unit will continue to circulate the water from the reservoir to the horizontal evaporator, through the spray tubes. When the temperature of the evaporator has reached approximately 26.6°F (-3°C) and the thermistor signals approximately 6.8KΩ the freeze completion timer will start and count down 8 minutes.

The control board will then switch to normal harvest, re-energize the X2 relay and de-energize the X1 relay. This opens the hot gas valve and water valve and de-energizes the condenser fan motor and water pump. A normal harvest is temperature and time terminated and uses the same thermistor used to terminate the freeze cycle. After the evaporator warms to approximately 44.6°F (+7°C) the thermistor signals the control board with a resistance of approximately 4.5KΩ. The control board then starts the harvest completion timer, which is set at 50 seconds. When this timer completes 50 seconds, it ends the harvest cycle and begins freeze.

The unit will continue to cycle between freeze and harvest until the bin control opens, signaling a full bin or until power is interrupted





The AM series uses a thermostatic bin control located on the right rear side of the ice storage compartment. This control will open when ice touches the sensing bulb and the unit will shut down

This control includes a small heater to eliminate the control opening due to low ambient temperatures in the bin.

Access the control by removing the wiring channel from the rear of the unit.

The thermostatic bin control is factory set and should shut down the unit within 10 seconds after ice contacts the bulb. Adjustment may be necessary in higher altitudes.

(AM-50BAE)

(AM-100 & AM-150)

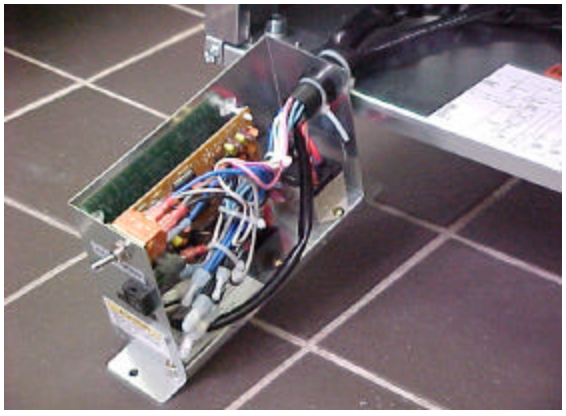
AM-50BAE: The control switch is marked "ICE- OFF-WASH" and is located on the lower right front of the unit.

AM-100 & AM-150: The control switch is located on the control box which is located behind the front panel on the left hand side of the unit.

If it is necessary to gain access to the control box, the louvered panel must be removed. **AM-50BAE:** This can be done by removing the two screws from the lower portion of the front panel and pulling the panel down slightly to dis-engage the mounting tabs.

AM-100 & AM-150: Remove the middle screw at the bottom of the front panel and lift off.

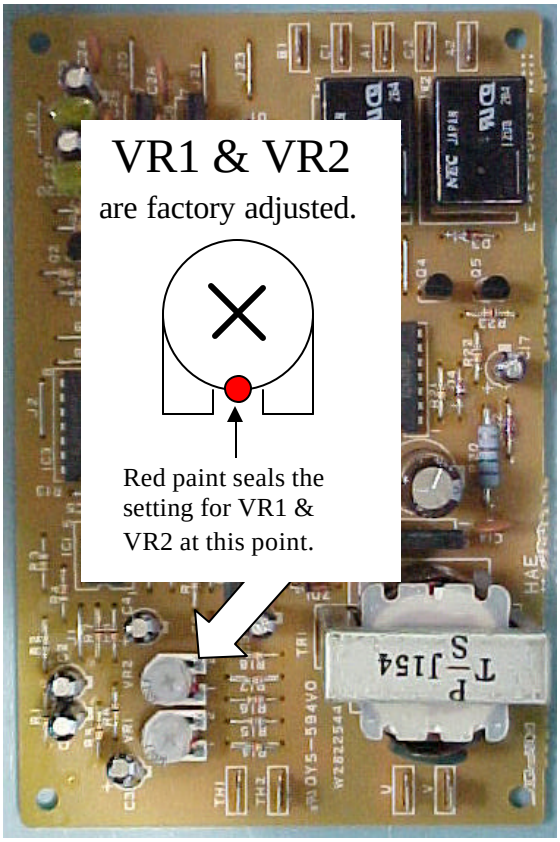
(AM-50BAE)



(AM-100 & AM-150)

The control box is held in place with 2 hex head bolts. Once the bolts are removed, **AM-50BAE:** The control box can be rotated approximately 45° CCW allowing easier access to the control box cover and control board.

AM-100 & AM-150: The control box can be pulled out to the front of the unit after the two bolts have been removed.



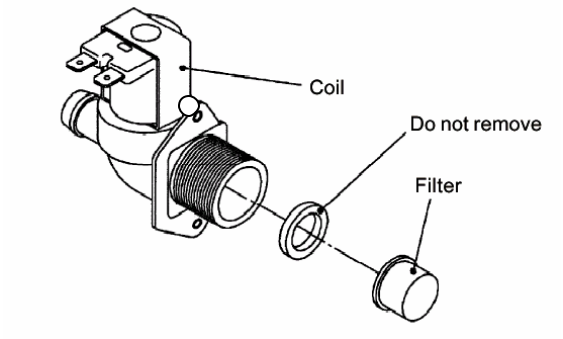
CONTROL BOARD:
A solid state board controls the AM operation. The control board is factory adjusted to produce consistent ice in all ambient conditions.

"NO SEASONAL ADJUSTMENTS ARE REQUIRED"

There are no adjustments needed, however there are two variable resistors on the control board. The first resistor VR1 is used to fine tune the harvest termination temperature adjustment when the control board is manufactured. The adjustment is sealed with red paint and should always remain in the factory setting.

VR2 is set from the factory so that the ice machine will perform at the optimum level. This resistor adjusts the freeze cycle termination setting so the proper cube size is obtained. The VR2 setting is also sealed with red paint and should not be changed.

If you find that the red seal is broken, the board will need to be replaced since these settings cannot be correctly adjusted in the field. The replacement board will be factory set and sealed for proper operation.



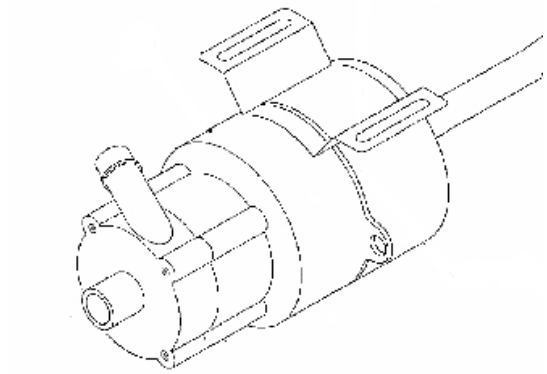
Preventative maintenance for the AM is simple. Follow these steps to allow the unit to operate efficiently.

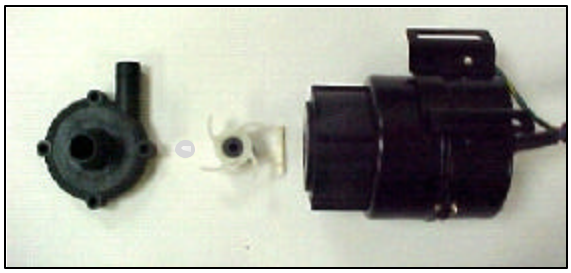
1. Clean the condenser once a year using a brush or vacuum.
2. Check and clean the inlet water valve screen as needed to assure proper water flow.

***Remember that the original fitting is a 3/4" BSP and the use of a standard MPT fitting will damage the threads. In May of 2003, this fitting was changed to 3/8" male flare. After August and September of 2003, this fitting was changed to a 1/2" FPT.**

3. Clean and sanitize the water distribution system annually using the recommended cleaner. (See the next page for detailed information on cleaning the water system)

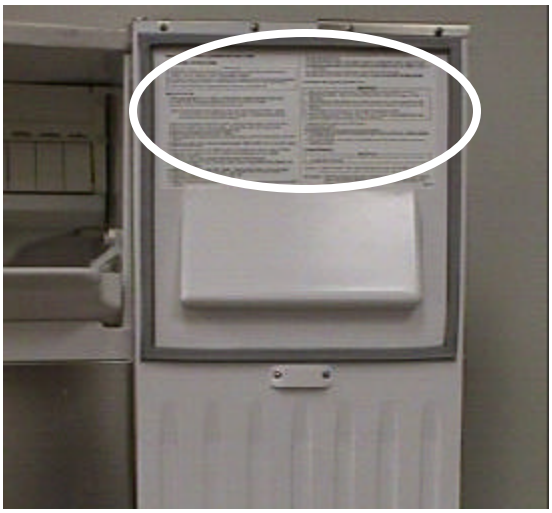
4. Wipe down the exterior using a soft cloth and neutral cleaner.





The AM series uses a magnetic pump. This style of pump allows the water portion of the pump to be completely sealed from the motor. This eliminates the need for a mechanical seal and eliminates the possibility of water entering the pump through the pump end.

If the pump does not pump and is being energized then remove the four screws from the front of the pump and check for any debris that may be binding the impeller

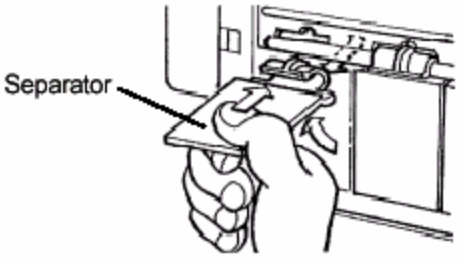


Cleaning tips:

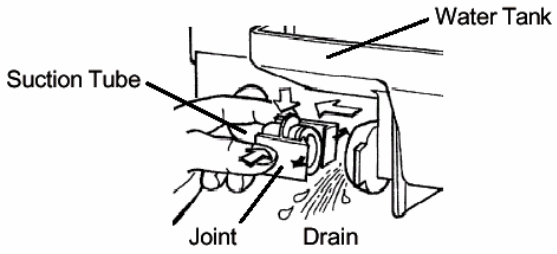
- A detailed cleaning label is located on the back of the icemaker door of the AM-50BAE or on the back of the bin baffle of the AM-100 & AM-150. More detailed instructions are included in the customers Instruction Manual or in the product Service Manual. This manuals can be viewed at www.hoshizaki.com
- Always follow the cleaning instructions and use the recommended ice machine cleaner.

Water circuit disassembly

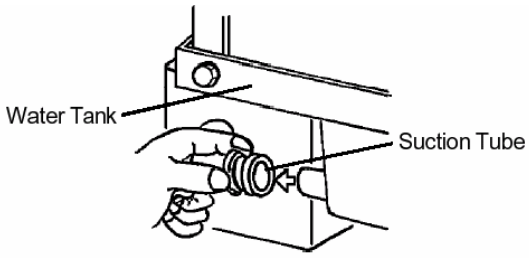
The following instructions provide information on the disassembly of the water circuit. Before starting these steps it will be necessary to remove the hinged slope from the pins at the front edge of the bin.



Remove each Separator by lifting it to the horizontal position and pushing it hard inward. Remove all the separators the same way, clean and sanitize them



(AM-50)

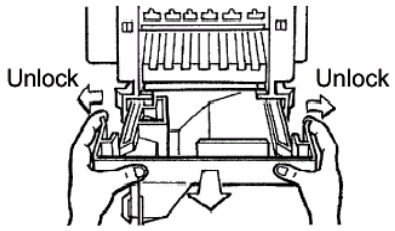


(AM-100 & AM-150)

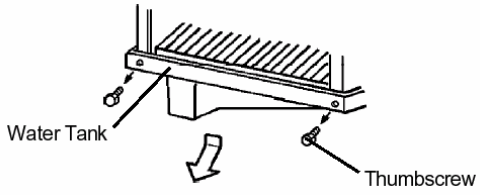
Disconnect the suction tube that connects the pump motor to the sump tank.

The AM-50BAE has a locking tabs that can be released by compressing both plastic tabs to unlock the joint in the direction of the black arrows and pulling the pipe clear to drain the Tank.

AM-100BAE & AM-150BAF simply pull the pipe of the connector



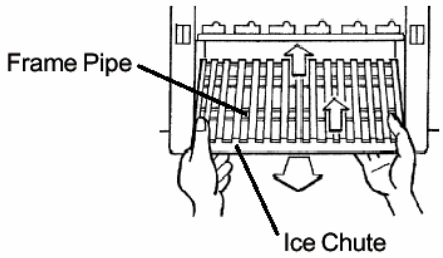
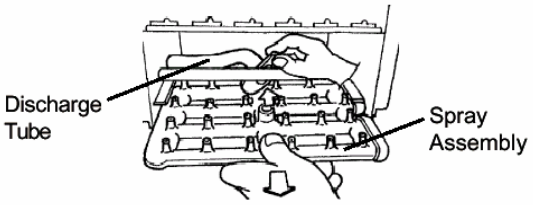
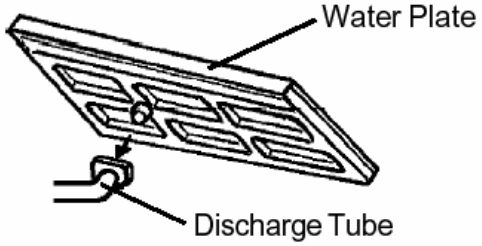
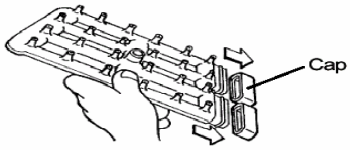
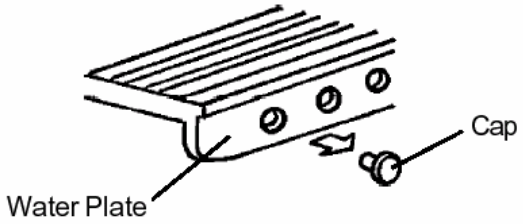
(AM-50BAE)

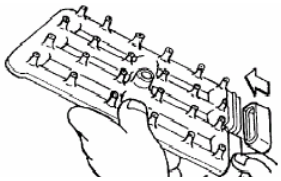


(AM-100 & AM-150)

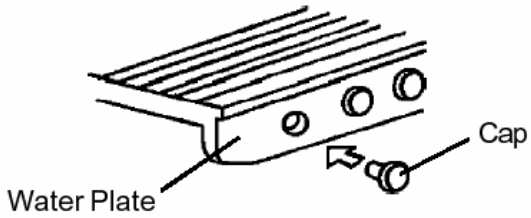
AM-50: Spread out the tabs on both sides to unlock the water tank, and pull it out toward you. Clean and sanitize the water tank.

AM-100 & AM-150: Remove the thumbscrews on both sides of the water tank and pull it out toward you. Clean and sanitize the water tank

	**AM-50BAE:** Lift off the ice chute from the front frame pipe and then from the rear frame pipe clean and sanitize the ice chute **The AM-100 & AM-150:** ice chute is incorporated into the water plate and will be removed as one assembly in the next step. Check to see if cube guide pulls out with sump tank
 **(AM-50)**  **(AM-100 & AM-150)**	Pull the discharge tube from the spray assembly. Remove the assembly by pulling it toward you.
 **(AM-50)**  **(AM-100 & AM-150)**	Remove the caps to clean and sanitize the spray assembly. If the nozzles are clogged, clean them with a small wire or suitable brush.

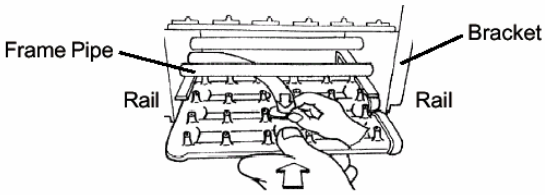


(AM-50)



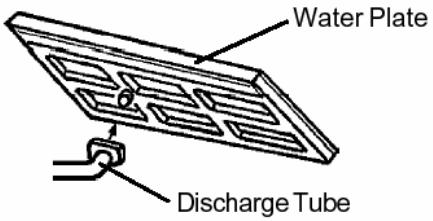
(AM-100 & AM-150)

Refit the caps on the cleaning outlets to seal them off.



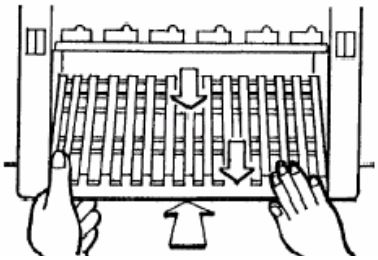
(AM-50)

AM-50: Slide in the spray assembly along the rails on the right and left brackets. Refit the discharge tube securely on the spray outlet. Note: A loose fitting may cause a water leak and improper water spray during freeze.



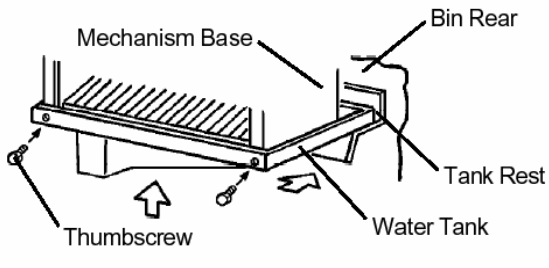
(AM-100 & AM-150)

AM-100 & AM-150: Slide the water plate along the mechanism base. Refit the discharge tube securely on the spray outlet. A loose fitting may cause a water leak.



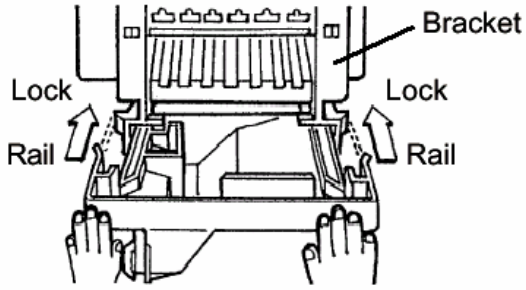
(AM-50)

AM-50: Position and lock the ice chute on to the front and rear frame pipes by pushing the chute down until it clicks

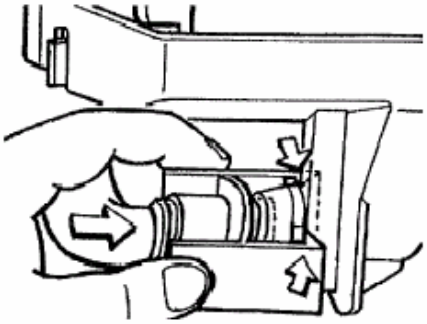
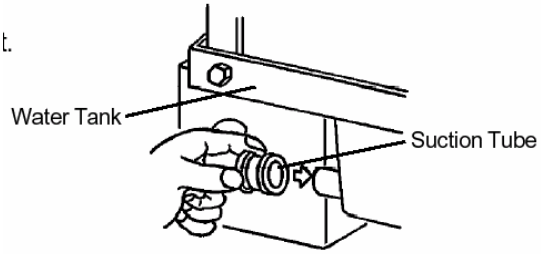
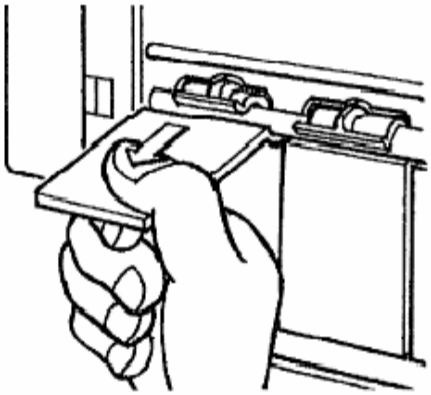


(AM-100 &AM-150)

AM-100 & AM-150: Place the rear of the water tank on the water tank rest at the back of the storage bin. Use the thumbscrews to secure the front of the water tank to the mechanism base.



AM-50: Slide in the water tank along the rails at the bottom of the right and left brackets until it clicks into place

 (AM-50)  (AM-100 & AM-150)	AM-50BAE: Refit the suction tube on to the water tank inlet by pushing the joint to lock it securely in the arrow directions. The AM-100 & AM-150 uses a simple push on suction hose. Note: A loose fitting may cause a water leak.
	Hook each separator on the rail and pull it hard toward you until it locks in place with a click. Refit all the separators in the same way.
	Refit the bin slope in its correct position

AM-50BAE

PERFORMANCE DATA

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)	Ambient Temp. (°F)	Water Temp. (°F) 50	70	90
	70	53 (24)	50 (23)	40 (18)
	80	49 (22)	44 (20)	38 (17)
	90	44 (20)	40 (18)	37 (17)
	100	37 (17)	34 (16)	30 (14)
APPROXIMATE ELECTRIC CONSUMPTION Watts	70	225	225	225
	80	225	230	240
	90	235	235	245
	100	250	255	260
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal./day (m^3/day)	70	39 (0.15)	34 (0.13)	31 (0.12)
	80	31 (0.12)	29 (0.11)	29 (0.11)
	90	26 (0.10)	23 (0.09)	21 (0.08)
	100	21 (0.08)	18 (0.07)	16 (0.06)
FREEZING CYCLE TIME min.	70	16	18.5	19
	80	18	21	22
	90	22	24	26.5
	100	25.5	28	33
HARVEST CYCLE TIME min.	70	2.4	2.4	2.3
	80	2.2	2.1	2.2
	90	2.0	2.0	2.1
	100	1.8	1.8	1.8
HEAD PRESSURE PSIG (kg/cm^2G)	70	155 (10.7)	155 (10.7)	167 (11.5)
	80	178 (12.3)	185 (12.8)	191 (13.2)
	90	236 (16.3)	208 (14.4)	218 (15.0)
	100	237 (16.4)	241 (16.6)	254 (17.5)
SUCTION PRESSURE PSIG (kg/cm^2G)	70	22 (1.5)	23 (1.6)	25 (1.7)
	80	25 (1.7)	28 (1.9)	29 (2.0)
	90	28 (1.9)	29 (2.0)	32 (2.2)
	100	30 (2.2)	33 (2.3)	35 (2.4)
TOTAL HEAT OF REJECTION	1640 BTU/h (AT 90°F /WT 70°F)			

Note: The data without *marks should be used for reference.

AM-100BAE

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)	Ambient Temp. (°F)	Water Temp. (°F) 50	70	90
	70	105 (48)	103 (47)	96 (44)
	80	96 (44)	93 (42)	86 (39)
	90	86 (39)	83 (38)	76 (35)
	100	67 (31)	66 (30)	61 (28)
APPROXIMATE ELECTRIC CONSUMPTION Watts	70	430	440	450
	80	460	470	480
	90	490	490	500
	100	510	510	520
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal./day (m^3/day)	70	38 (0.15)	36 (0.14)	35 (0.14)
	80	36 (0.14)	35 (0.14)	33 (0.13)
	90	32 (0.13)	31 (0.12)	30 (0.12)
	100	28 (0.11)	27 (0.11)	26 (0.10)
FREEZING CYCLE TIME min.	70	17	18	19
	80	19	20	21
	90	22	23	24
	100	26.5	27.5	28.5
HARVEST CYCLE TIME min.	70	4	4	4
	80	3	3	3
	90	3	3	3
	100	2.5	2.5	2.5
HEAD PRESSURE PSIG (kg/cm^2G)	70	125 (0.86)	128 (0.88)	129 (0.89)
	80	155 (1.07)	156 (1.08)	158 (1.09)
	90	177 (1.22)	178 (1.23)	180 (1.24)
	100	216 (1.49)	217 (1.50)	220 (1.52)
SUCTION PRESSURE PSIG (kg/cm^2G)	70	16 (0.11)	17 (0.12)	20 (0.14)
	80	19 (0.13)	20 (0.14)	23 (0.16)
	90	20 (0.14)	22 (0.15)	25 (0.17)
	100	25 (0.17)	26 (0.18)	29 (0.20)
TOTAL HEAT OF REJECTION	2400 BTU/h (AT 90°F /WT 70°F)			

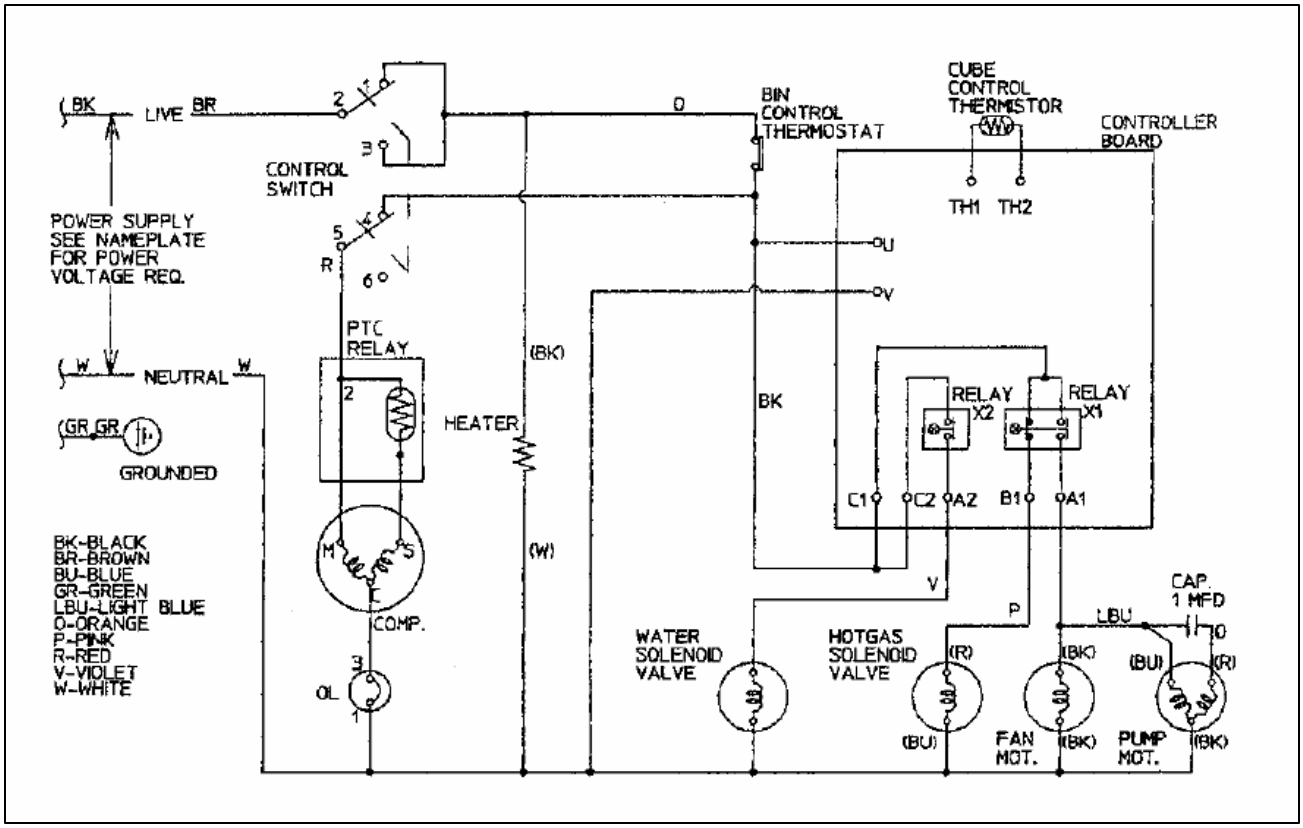
Note: The data without *marks should be used for reference.

AM-150BAF

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)	Ambient Temp. (°F)	Water Temp. (°F) 50	70	90
	70	150 (68)	140 (64)	130 (59)
	80	140 (64)	130 (59)	120 (55)
	90	130 (59)	120 (55)	110 (50)
	100	110 (51)	105 (48)	100 (45)
APPROXIMATE ELECTRIC CONSUMPTION Watts	70	660	670	690
	80	670	690	710
	90	680	710	730
	100	700	720	750
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal./day (m^3/day)	70	44 (0.17)	46 (0.16)	43 (0.15)
	80	43 (0.16)	43 (0.15)	36 (0.14)
	90	40 (0.15)	36 (0.14)	34 (0.13)
	100	36 (0.14)	34 (0.13)	30 (0.12)
FREEZING CYCLE TIME min.	70	14	15	16
	80	15.5	17.5	18
	90	17	18.5	19.5
	100	17.5	19	20
HARVEST CYCLE TIME min.	70	3.8	3.8	3.8
	80	3	3	3
	90	2.5	2.5	2.5
	100	2	2	2
HEAD PRESSURE PSIG (kg/cm^2G)	70	240 (1.65)	243 (1.67)	244 (1.68)
	80	269 (1.85)	270 (1.86)	273 (1.88)
	90	299 (2.06)	301 (2.07)	303 (2.08)
	100	339 (2.33)	340 (2.34)	342 (2.35)
SUCTION PRESSURE PSIG (kg/cm^2G)	70	75 (0.52)	78 (0.54)	80 (0.55)
	80	90 (0.62)	91 (0.63)	93 (0.64)
	90	108 (0.74)	109 (0.75)	111 (0.76)
	100	126 (0.87)	128 (0.88)	130 (0.89)
TOTAL HEAT OF REJECTION	2460 BTU/h (AT 90°F /WT 70°F)			

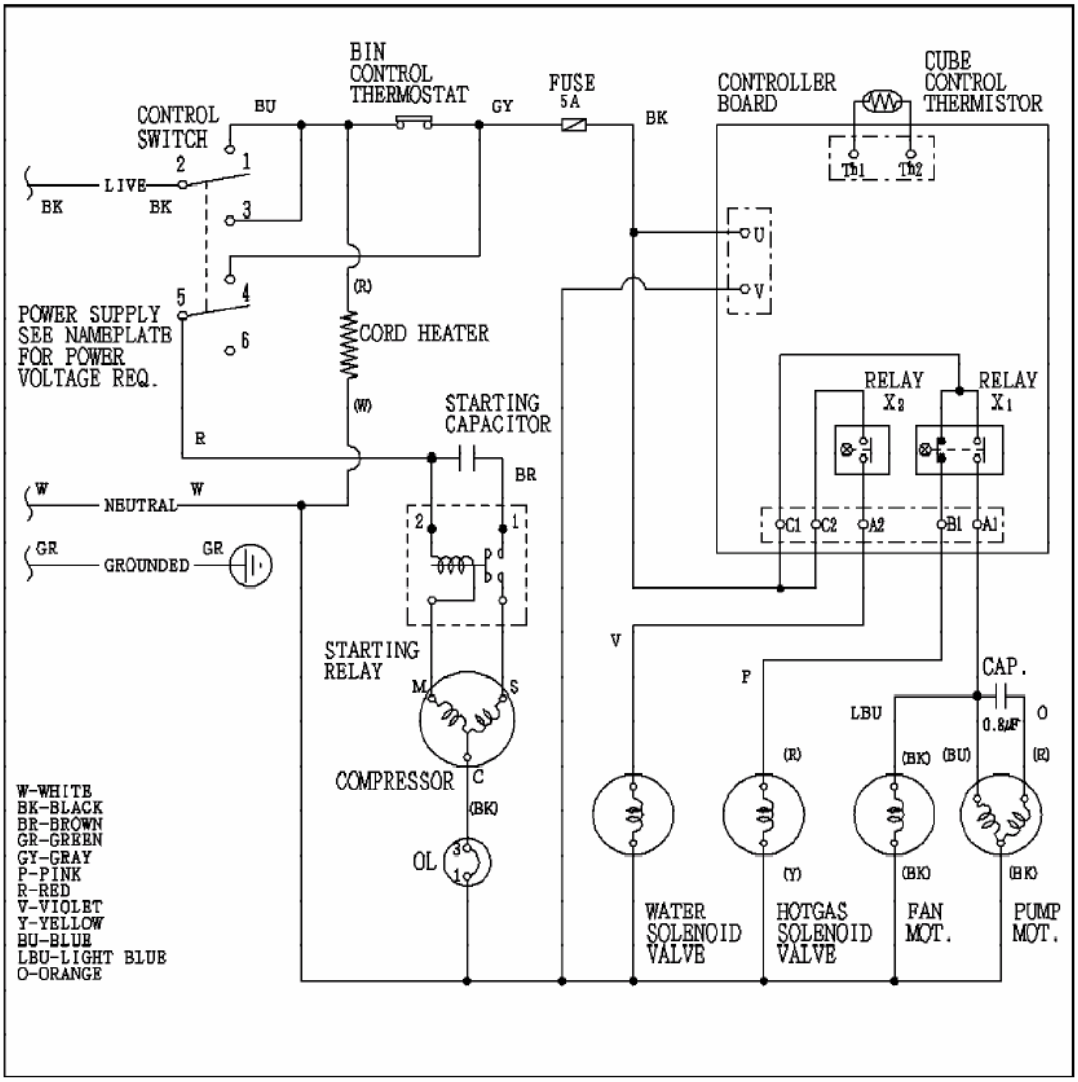
Note: The data without *marks should be used for reference.

AM-50BAE



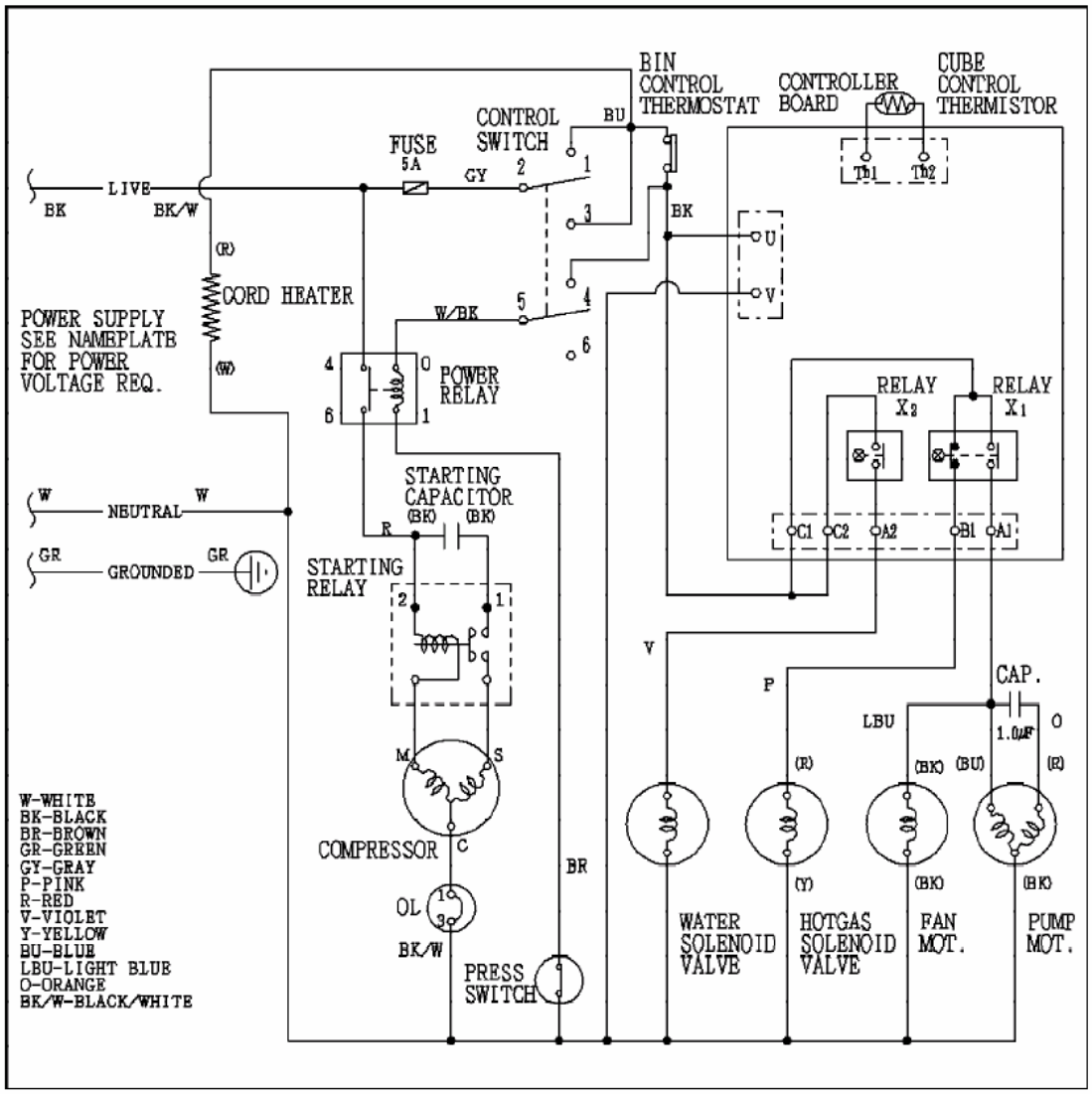
Electrical Specifications:
The unit is 115 volt/ 60 hz. /1ph.
The AM-Series should be connected to a separate 15Amp circuit.

AM-100BAE



Electrical Specifications:
The unit is 115 volt/ 60 hz. /1ph.
The AM-Series should be connected to a separate 15Amp circuit.

AM-150BAF



Electrical Specifications:

The unit is 115 volt/ 60 hz./1ph.

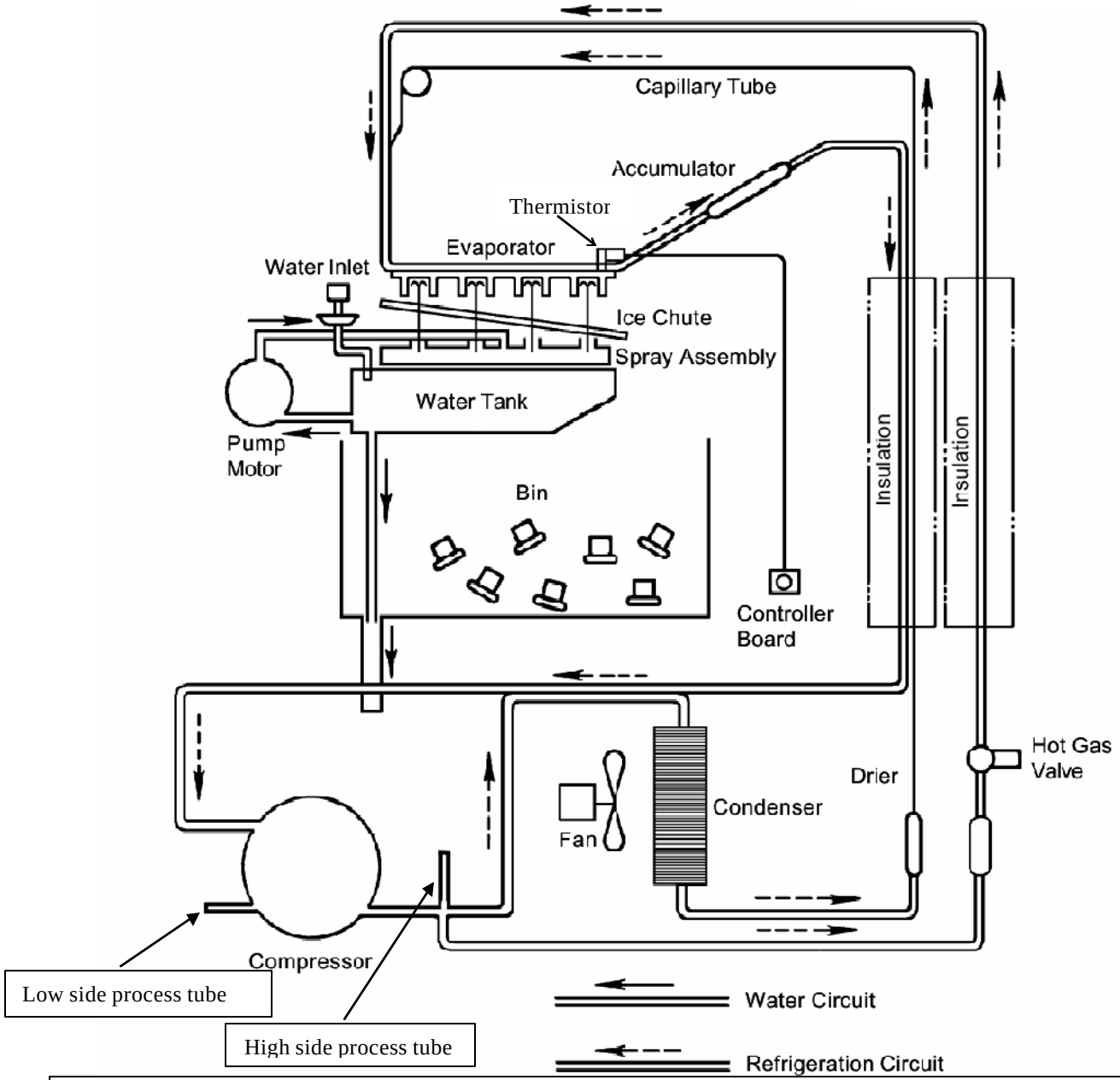
The AM-Series should be connected to a separate 15Amp circuit.

AM-50BAE & AM-100BAE

WATER CIRCUIT AND REFRIGERANT CIRCUIT

AM-50BAE R-134a 4.2 oz

AM-100BAE R-134a 6.6 oz

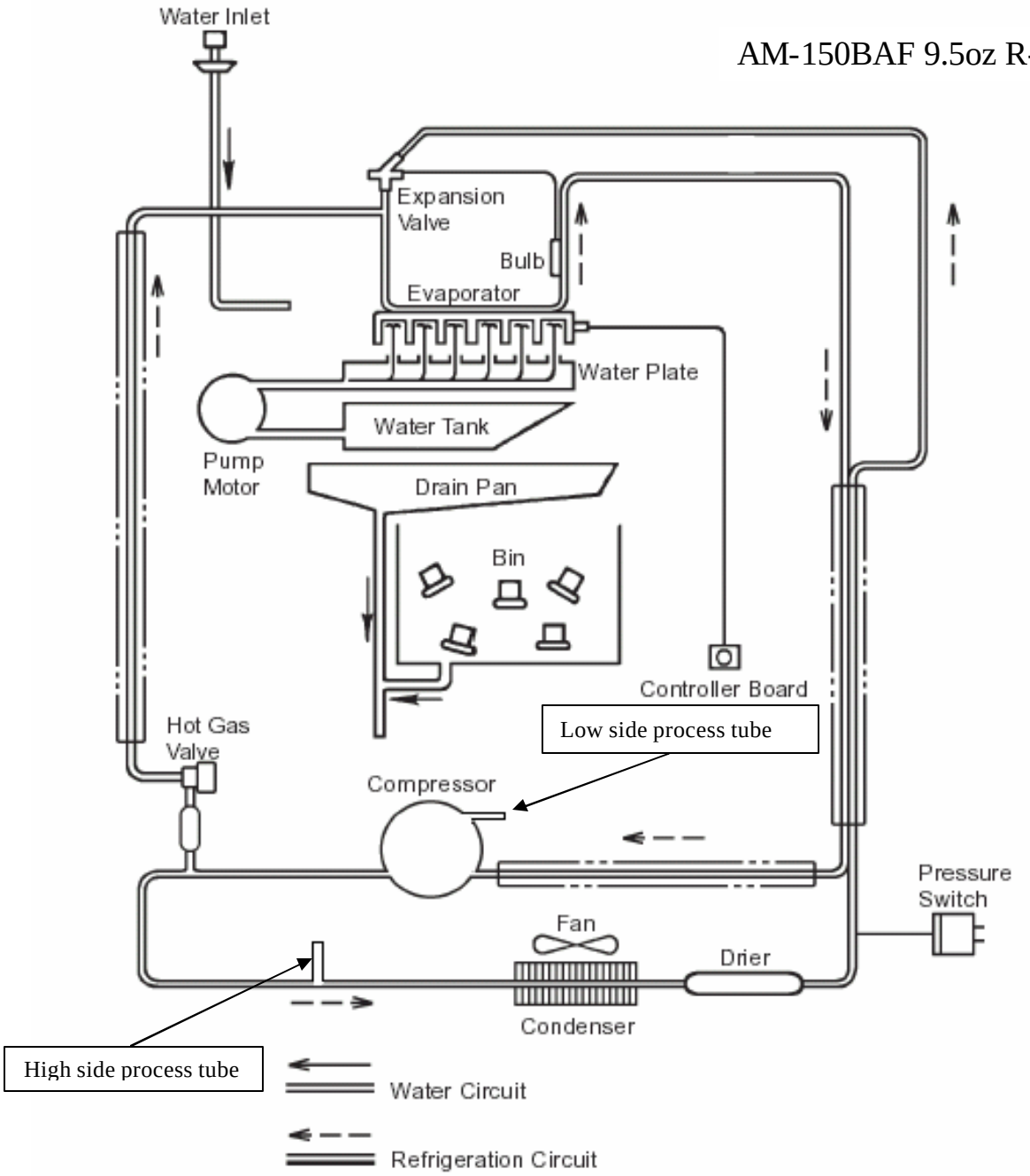


Note: All Hoshizaki ice machines are critically charged. Since the AM-series have small refrigeration circuits and the AM-100 and AM-150 use cap tube systems this is especially true. The AM-series does not come from the factory with any type of refrigeration system access. In the event that the system must be accessed for troubleshooting it will be necessary to install piercing type "saddle valve" on the system. These valves should only be installed on the process tubes provided on the low side and high side of the system. After the repair has been made to the unit, sweat type schraders should be installed in place of the piercing valves.

Again, these units are critical charged. Every precaution should be taken to insure that the exact charge of **R134a for the AM-50 and AM-100 and R-404a for the AM-150** is weighed into the system. Due to the very small charge of these units, extra care must be taken to avoid any refrigerant loss when removing gauges.

AM-150BAF

WATER AND REFRIGERATION CIRCUIT



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Again, these units are critical charged. Every precaution should be taken to insure that the exact charge of **R134a for the AM-50 and AM-100 and R-404a for the AM-150** is weighed into the system. Due to the very small charge of these units, extra care must be taken to avoid any refrigerant loss when removing gauges.

4. TIMING CHART

Freeze time = Thermistor reads 26.6ºF (-3ºC) then completes 8 minute Freeze cycle completion timer.

Harvest time = Thermistor reads 44.6ºF (+7ºF) then completes 50 second defrost completion timer.

SERVICE DIAGNOSIS

1. NO ICE PRODUCTION

PROBLEM	CHECK	POSSIBLE CAUSE	REMEDY
[1] The icemaker will not start.	a) Control Switch	1. OFF position.	1. Move to ON position.
		2. Loose connections.	2. Tighten.
		3. Bad contacts.	3. Check for continuity and replace.
	b) Power Cord	1. Loose connection.	1. Tighten.
		2. Open circuit - damaged.	2. Repair or replace.
	c) Fuse	1. Blown out.	1. Replace.
	d) Bin Control Thermostat	1. Tripped with Bin filled with ice.	1. Remove ice.
		2. Out of position.	2. Place in position.
		3. Fused contacts.	3. Check for continuity and replace.
	e) High Pressure Control (AM-150BAF)	1. Bad contacts.	1. Check for continuity and replace.
	f) Wiring to Controller Board	1. Loose connections or open.	1. Check for continuity and repair or replace.
	g) Water Solenoid Valve	1. Mesh filter or orifice gets clogged and water supply cycle does not finish.	1. Clean.
		2. Coil winding opened.	2. Replace.
		3. Wiring to Water Valve.	3. Check for loose connection or open, and replace.
	h) Controller Board	1. Defective.	1. Replace.
[2] Compressor will not start, or operates intermittently.	a) High Pressure Control (AM-150BAF)	1. Refrigerant overcharged.	2. Recharge.
	b) Overload Protector	1. Bad contacts.	1. Check for continuity and replace.
		2. Voltage too low.	2. Check for recommended voltage.
		3. Refrigerant overcharged or undercharged.	3. Recharge.
	c) Starter	1. Defective.	1. Replace.
	d) Start Capacitor	1. Defective.	1. Replace.
	e) Power Relay (AM-150BAF)	1. Bad contacts.	1. Check for continuity and replace.
		2. Coil winding opened.	2. Replace.
	f) Compressor	1. Wiring to Compressor.	1. Check for loose connection or open, and repair or replace.
		2. Defective.	2. Replace.
	g) Air Filter, Condenser	1. Clogged.	1. Clean.
[3] Compressor runs, but other components will not start.	a) Control Circuit	1. Loose connection or broken wire.	1. Repair or replace.

PROBLEM	CHECK	POSSIBLE CAUSE	REMEDY
[4] Fan Motor or Pump Motor will not run.	a) Wiring	1. Loose connection or broken wire.	1. Repair or replace.
	b) Controller Board	1. Defective.	1. Replace.
[5] Water continues to be supplied in freeze cycle.	a) Water Solenoid Valve	1. Diaphragm does not close.	1. Check for water leaks with icemaker OFF.
	b) Controller Board	1. Defective.	1. Replace.
[6] Water does not circulate.	a) Water Supply Line	1. Water pressure too low and water level in Water Tank too low.	1. Check for recommended pressure.
	b) Water Solenoid Valve	1. Dirty mesh filter or orifice and water level in Water Tank too low.	1. Clean.
	c) Water System	1. Water leaks.	1. Check connections for water leaks, and repair.
		2. Clogged.	2. Clean.
	d) Pump Motor	1. Motor winding opened.	1. Replace.
		2. Bearing worn out.	2. Replace.
		3. Wiring to Pump Motor.	3. Check for loose connection or open, and replace.
	e) Controller Board	1. Defective.	1. Replace.
	f) Discharge Tube	1. Clogged.	1. Clean.
		2. Out of position.	2. Place in position.
[7] All components run, but no ice is produced.	a) Refrigerant	1. Undercharged.	1. Check for leaks and recharge.
		2. Air or moisture trapped.	2. Replace Drier, and recharge.
	b) Compressor	1. Defective valve.	1. Replace Compressor.
	c) Hot Gas Solenoid Valve	1. Continues to open in freeze cycle.	1. Check and replace.
	d) Expansion Valve (AM-150BAF)	1. Continues to close in freeze cycle.	1. Check and replace.

2. LOW ICE PRODUCTION

PROBLEM	CHECK	POSSIBLE CAUSE	REMEDY
[1] Freeze cycle time is too long.	a) Water Supply	1. Low pressure.	1. Check for recommended pressure.
	b) Water Temperature	1. Too high.	1. Check for recommended water temperature.
	c) Water Quality	1. High hardness or contains impurities.	1. Install a water filter or scale treatment.
		2. Lime is deposited inside Cooling Water Tubing.	2. Clean.
	d) Refrigerant Charge	1. Overcharged or undercharged.	1. Recharge correctly and check for leaks.
	e) Refrigerant Circuit	1. Excessive moisture.	1. Replace Drier and recharge correctly.
	f) Air Filter, Condenser	1. Clogged.	1. Clean.

3. ABNORMAL ICE

PROBLEM	CHECK	POSSIBLE CAUSE	REMEDY
[1] Large-hole cubes.	a) Water Supply Line	1. Low pressure.	1. Check for recommended pressure.
	b) Ambient or Water Temperature	1. Too high.	1. Check for recommended temperatures.
	c) Air Filter, Condenser	1. Clogged.	1. Clean.
	d) Water Valve	1. Clogged.	1. Clean.
	e) Pump Motor	1. Leaks.	1. Repair or replace.
		2. Mechanical Seal worn out.	2. Replace.
	f) Refrigerant Charge	1. Undercharged.	1. Check for leaks and recharge correctly.
	g) Expansion Valve (AM-150BAF)	1. Poorly adjusted.	1. Readjust.
[2] Cloudy cubes.	a) Water Supply Line	1. Low pressure.	1. Check for recommended pressure.
		2. Clogged.	2. Check Strainer and clean.
	b) Water Quality	1. High hardness or contains impurities.	1. Install a water filter or scale treatment.
		2. Lime is deposited inside Cooling Water Tubing.	2. Clean.
	c) Water Valve	1. Clogged.	1. Clean.
	d) Water System	1. Scaled up.	1. Clean or remove scale.
	e) Water Plate	1. Jet hole clogged.	1. Clean.
	f) Pump Motor	1. Leaks.	1. Replace.
		2. Bearings worn out.	2. Replace.

4. OTHERS

PROBLEM	CHECK	POSSIBLE CAUSE	REMEDY
[1] Icemaker will not stop when Bin is filled with ice.	a) Bin Control Thermostat	1. Fused contacts.	1. Check for continuity and replace.
	b) Controller Board	1. Defective.	1. Replace.
[2] Abnormal noise	a) Pump Motor	1. Bearing worn out.	1. Replace.
	b) Fan Motor	1. Bearings worn out.	1. Replace.
		2. Fan Blade deformed.	2. Replace Fan Blade.
		3. Fan Blade does not move freely.	3. Replace.
	c) Compressor	1. Mounting pad out of position.	1. Reinstall.
	d) Refrigerant Lines	1. Rubbing or touching on other surfaces.	1. Secure or reset pipes.
[3] Ice in Storage Bin often melts.	a) Bin Drain	1. Plugged.	1. Clean.

AM SERIES REVIEW QUIZ

Choose the best answer for each question below.

1. The AM control board is located in the rear or the unit.

☐ **True** ☐ **False**

2. The AM unit uses a thermostatic bin control.

☐ **True** ☐ **False**

3. The bin control switch must **OPEN** or **CLOSE** to shut the unit down?

4. The AM-150BAF series uses **R-404a** or **R-134a** refrigerant.

5. The AM Series only uses one thermistor located on the evaporator?

☐ **True** ☐ **False**

6. The freeze cycle is temperature and time terminated.

☐ **True** ☐ **False**

7. On the initial freeze cycle the water valve will remain open for 50 seconds.

☐ **True** ☐ **False**

8. The water valve will remain energized for the entire harvest cycle regardless of how long.

☐ **True** ☐ **False**

9. The AM-50BAE makes a square cube.

☐ **True** ☐ **False**

NOTE: Quiz answers are at the bottom of next page.

(NOTES)

Quiz answers:
1.False, 2. True, 3. Open, 4. R-404a, 5. True, 6. True, 7. True, 8. False., 9. False