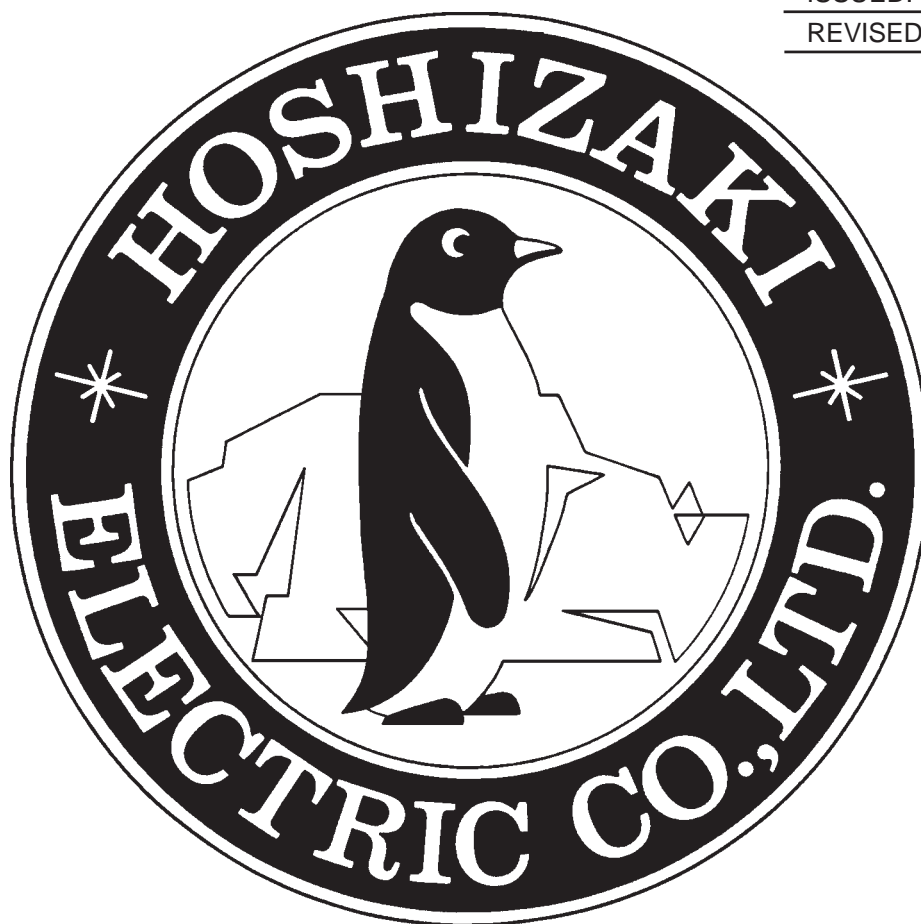


NO. 17EA-622 / 73106

ISSUED: FEB. 25, 2003

REVISED: JAN. 12, 2007



**HOSHIZAKI  
SELF-CONTAINED CUBER**

**MODEL      AM-100BAE  
                 AM-150BAF  
                 AM-150BWF**

**SERVICE MANUAL**

## **IMPORTANT**

Only qualified service technicians should attempt to service or maintain this icemaker. No such service or maintenance should be undertaken until the technician has thoroughly read this Service Manual.

HOSHIZAKI provides this manual primarily to assist qualified service technicians in the service and maintenance of the icemaker.

Should the reader have any questions or concerns which have not been satisfactorily addressed, please call or write to the HOSHIZAKI Technical Support Department for assistance.

HOSHIZAKI AMERICA, INC.  
618 Highway 74 South  
Peachtree City, GA 30269

Attn: HOSHIZAKI Technical Support Department

Phone: 1-800-233-1940 Technical Service  
(770) 487-2331  
Fax: (770) 487-3360

**NOTE:** To expedite assistance, all correspondence/communication **MUST** include the following information:

- Model Number
- Serial Number
- Complete and detailed explanation of the problem

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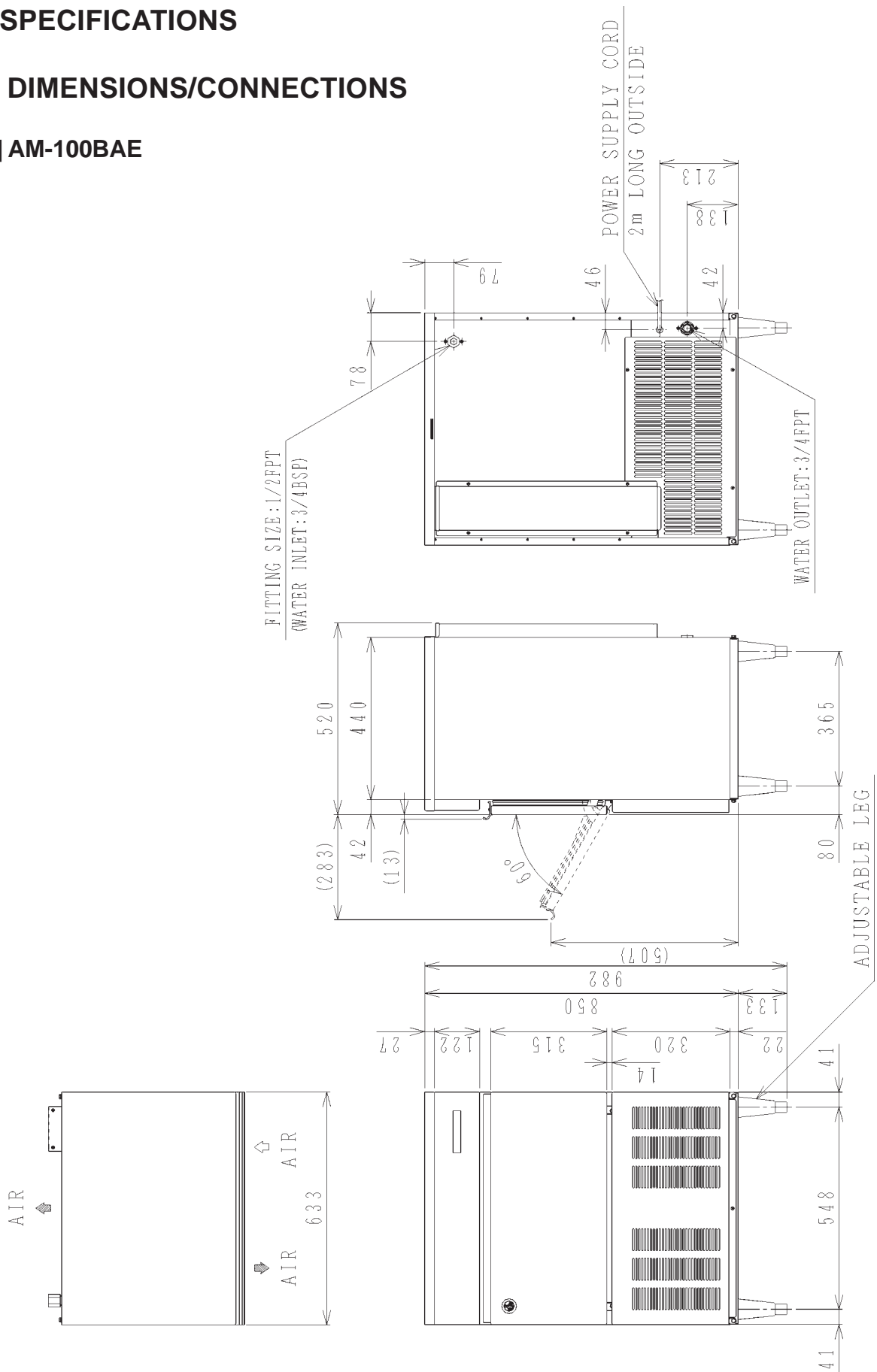
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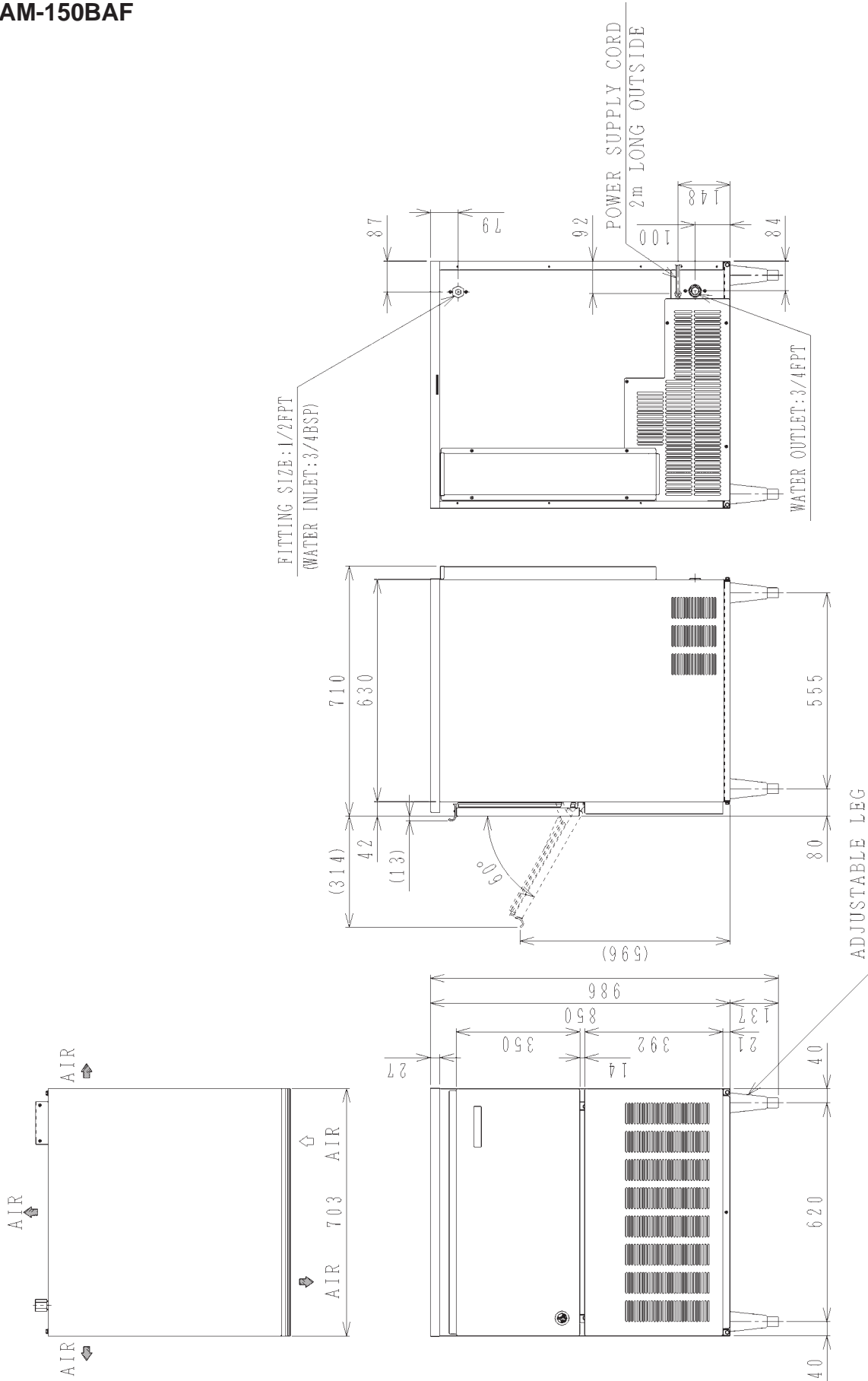
# I. SPECIFICATIONS

## 1. DIMENSIONS/CONNECTIONS

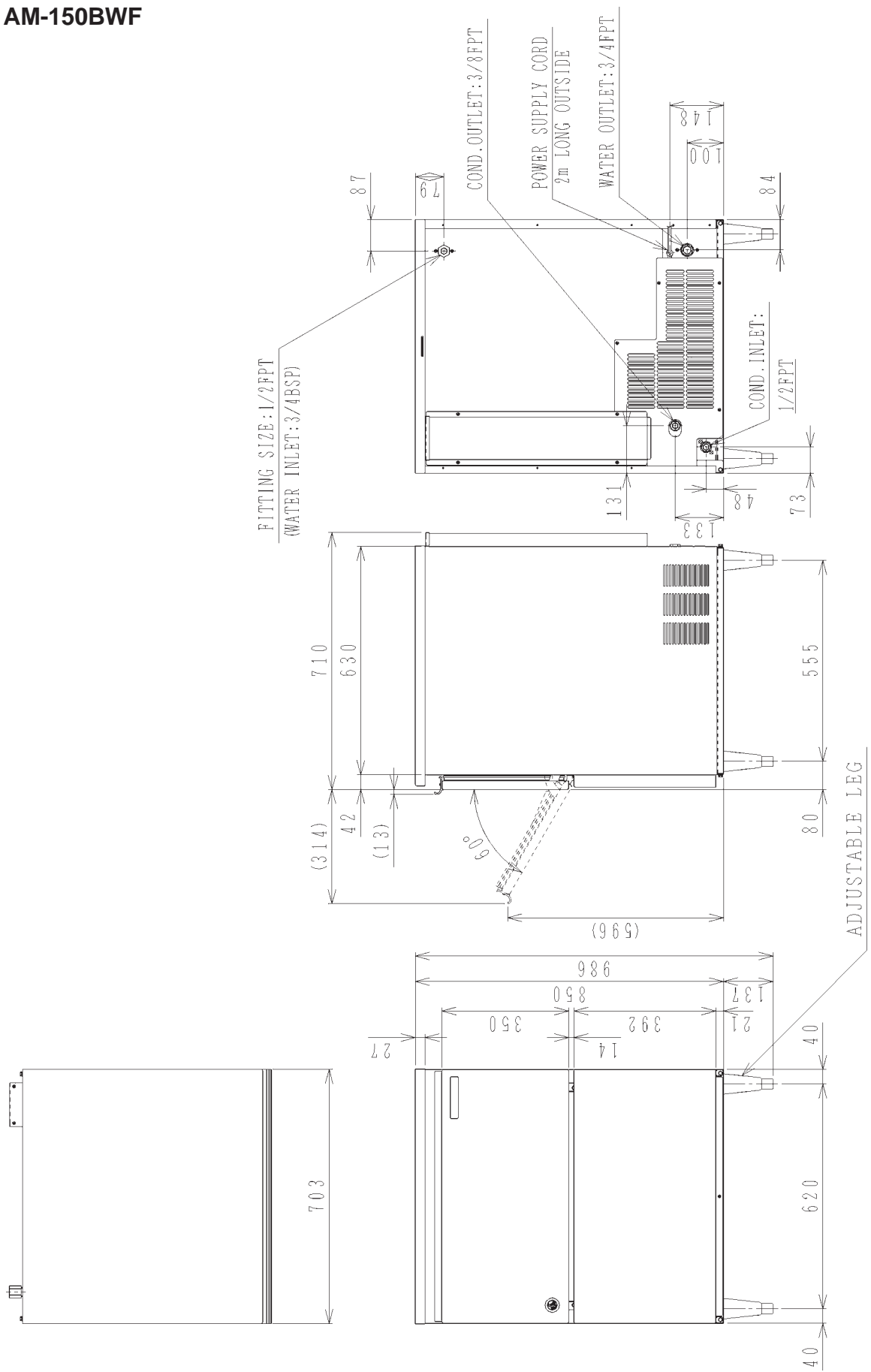
[a] AM-100BAE



[b] AM-150BAF



[c] AM-150BWF



## 2. SPECIFICATIONS

### [a] AM-100BAE

AC SUPPLY VOLTAGE	115/60/1		
AMPERAGE	6.5A (5 Min. Freeze AT 104°F/ WT 80°F)		
MINIMUM CIRCUIT AMPACITY	N/A		
MAXIMUM FUSE SIZE	N/A		
APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)	Ambient Temp. (°F)	Water Temp. (°F)	
		50	70
	70	105 (48)	103 (47)
	80	96 (44)	93 (42)
	90	86 (39)	83 (38)
	100	67 (31)	66 (30)
SHAPE OF ICE	Cube ø20 x H27mm		
ICE PRODUCTION PER CYCLE	1.54 lbs. (0.70 kg) 60 pcs.		
APPROXIMATE STORAGE CAPACITY	44 lbs.		
ELECTRIC & WATER CONSUMPTION	90°F/70°F	70°F/50°F	See details of
ELECTRIC W (KWH/100 lbs.)	490 (15.7)	430 (9.9)	PERFORMANCE DATA
WATER gal./24HR (gal./100 lbs.)	31 (38)	38 (37)	No. SS-01129
EXTERIOR DIMENSIONS (W x D x H)	24.9" x 20.5" x 38.7" (633 x 520 x 982mm)		
EXTERIOR FINISH	Includes 6" leg Stainless Steel, Galvanized Steel (Rear)		
WEIGHT	Net 110 lbs. (50 kg) Shipping 150 lbs. (68 kg)		
CONNECTIONS - ELECTRIC	Cord Connection		
- WATER SUPPLY	Inlet Fitting size is a 1/2" FPT (Water Inlet 3/4" BSP)		
- DRAIN	Outlet 3/4" FPT		
CUBE CONTROL SYSTEM	Thermistor, Timer		
HARVESTING CONTROL SYSTEM	Hot gas, Thermistor		
ICE MAKING WATER CONTROL	Timer		
COOLING WATER CONTROL	N/A		
BIN CONTROL SYSTEM	Thermostat		
COMPRESSOR	Hermetic, Model QA110K27CAU6		
CONDENSER	Air-cooled, Fin and Tube type		
EVAPORATOR	Tin-plated copper tube on sheet and cells		
REFRIGERANT CONTROL	Capillary Tube		
REFRIGERANT CHARGE	R134a 6.6 oz. (185 g)		
COMPRESSOR PROTECTION	Auto-reset Overload Protector		
ACCESSORIES - SUPPLIED	Ice Scoop, 6" Leg (4 pcs)		
- REQUIRED	N/A		
OPERATION CONDITIONS	VOLTAGE RANGE	104 - 127 V	
	AMBIENT TEMP.	50 - 100°F	
	WATER SUPPLY TEMP.	41 - 90°F	
	WATER SUPPLY PRESS.	7 - 113 PSIG	
DRAWING NO. (DIMENSIONS)	3X6975		

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



**[b] AM-150BAF**

AC SUPPLY VOLTAGE	115/60/1			
AMPERAGE	8.8A (5 Min. Freeze AT 104°F/ WT 80°F)			
MINIMUM CIRCUIT AMPACITY	N/A			
MAXIMUM FUSE SIZE	N/A			
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)
SHAPE OF ICE	Cube ø20 x H27mm			
ICE PRODUCTION PER CYCLE	1.87 lbs. (0.85 kg) 60 pcs.			
APPROXIMATE STORAGE CAPACITY	88 lbs.			
ELECTRIC & WATER CONSUMPTION	90°F/70°F	70°F/50°F	See details of	
ELECTRIC W (KWH/100 lbs.)	710 (14.2)	660 (10.6)	PERFORMANCE DATA	
WATER gal./24HR (gal./100 lbs.)	36 (31)	44 (31)	No. SS-01131	
EXTERIOR DIMENSIONS (W x D x H)	27.7" x 28" x 38.8" (703 x 710 x 986mm)			
	Includes 6" leg			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 143 lbs. (65 kg)		Shipping 185 lbs. (84 kg)	
CONNECTIONS - ELECTRIC	Cord Connection			
- WATER SUPPLY	Inlet Fitting size is a 1/2" FPT (Water Inlet 3/4" BSP)			
- DRAIN	Outlet 3/4" FPT			
CUBE CONTROL SYSTEM	Thermistor, Timer			
HARVESTING CONTROL SYSTEM	Hot gas, Thermistor			
ICE MAKING WATER CONTROL	Timer			
COOLING WATER CONTROL	N/A			
BIN CONTROL SYSTEM	Thermostat			
COMPRESSOR	Hermetic, Model ASE24C3E			
CONDENSER	Air-cooled, Fin and Tube type			
EVAPORATOR	Tin-plated copper tube on sheet and cells			
REFRIGERANT CONTROL	Expansion Valve			
REFRIGERANT CHARGE	R404A 9.5 oz. (270 g)			
COMPRESSOR PROTECTION	Auto-reset Overload Protector			
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch			
ACCESSORIES - SUPPLIED	Ice Scoop, 6" Leg (4 pcs)			
- REQUIRED	N/A			
OPERATION CONDITIONS	VOLTAGE RANGE	104 - 127 V		
	AMBIENT TEMP.	50 - 100°F		
	WATER SUPPLY TEMP.	41 - 90°F		
	WATER SUPPLY PRESS.	7 - 113 PSIG		
DRAWING NO. (DIMENSIONS)	3X6976			

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

**[c] AM-150BWF**

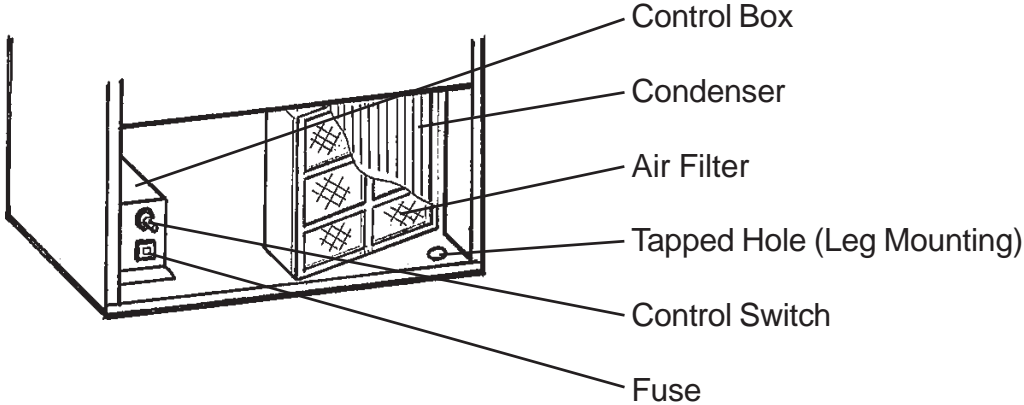
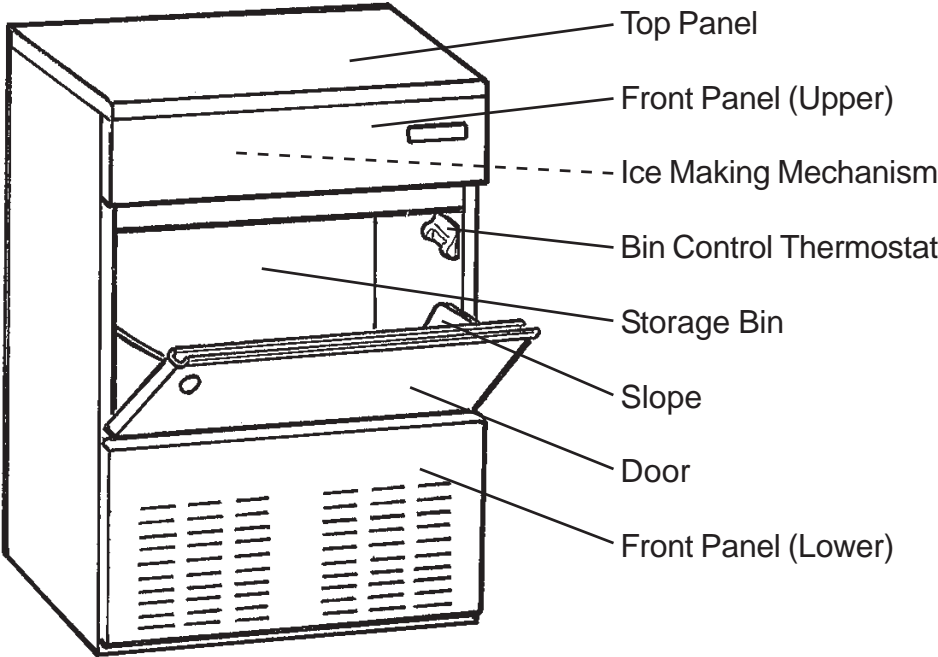
AC SUPPLY VOLTAGE	115/60/1			
AMPERAGE	7.0A (5 Min. Freeze AT 104°F/ WT 80°F)			
MINIMUM CIRCUIT AMPACITY	N/A			
MAXIMUM FUSE SIZE	N/A			
APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)	Ambient Temp. (°F)	Water Temp. (°F)		
		50	70	90
	70	150 (68)	140 (64)	130 (60)
	80	150 (68)	140 (64)	130 (60)
	90	145 (66)	140 (64)	130 (60)
	100	145 (66)	135 (62)	125 (58)
SHAPE OF ICE	Cube ø20 x H27mm			
ICE PRODUCTION PER CYCLE	1.78 lbs. (0.81 kg) 60 pcs.			
APPROXIMATE STORAGE CAPACITY	88 lbs.			
ELECTRIC & WATER CONSUMPTION	90°F/70°F	70°F/50°F	See details of	
ELECTRIC W (KWH/100 lbs.)	560 (9.5)	560 (9.0)	PERFORMANCE DATA	
WATER gal./24HR (gal./100 lbs.)	43 (31)	48 (31)	No. SS-01769	
WATER-COOLED CONDENSER	196 (140)	138 (92)		
EXTERIOR DIMENSIONS (W x D x H)	27.7" x 28" x 38.8" (703 x 710 x 986mm)			
	Includes 6" leg			
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)			
WEIGHT	Net 138 lbs. (63 kg)		Shipping 180 lbs. (82 kg)	
CONNECTIONS - ELECTRIC	Cord Connection			
- WATER SUPPLY	Inlet Fitting size is a 1/2" FPT (Water Inlet 3/4" BSP)			
- DRAIN	Outlet 3/4" FPT			
- COOLING WATER	Inlet 1/2" FPT		Outlet 3/8" FPT	
CUBE CONTROL SYSTEM	Thermistor, Timer			
HARVESTING CONTROL SYSTEM	Hot gas, Thermistor			
ICE MAKING WATER CONTROL	Timer			
COOLING WATER CONTROL	N/A			
BIN CONTROL SYSTEM	Thermostat			
COMPRESSOR	Hermetic, Model ASE24C3E			
CONDENSER	Water-cooled, Tube in Tube type			
EVAPORATOR	Tin-plated copper tube on sheet and cells			
REFRIGERANT CONTROL	Expansion Valve			
REFRIGERANT CHARGE	R404A 9.5 oz. (270 g)			
COMPRESSOR PROTECTION	Auto-reset Overload Protector			
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch			
ACCESSORIES - SUPPLIED	Ice Scoop, 6" Leg (4 pcs)			
- REQUIRED	N/A			
OPERATION CONDITIONS	VOLTAGE RANGE	104 - 127 V		
	AMBIENT TEMP.	50 - 100°F		
	WATER SUPPLY TEMP.	41 - 90°F		
	WATER SUPPLY PRESS.	7 - 113 PSIG		
DRAWING NO. (DIMENSIONS)	3X6976			

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

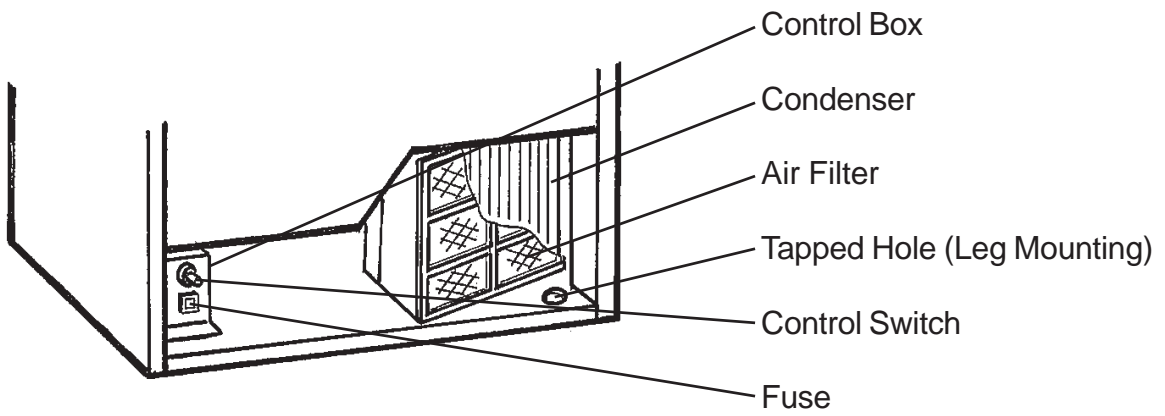
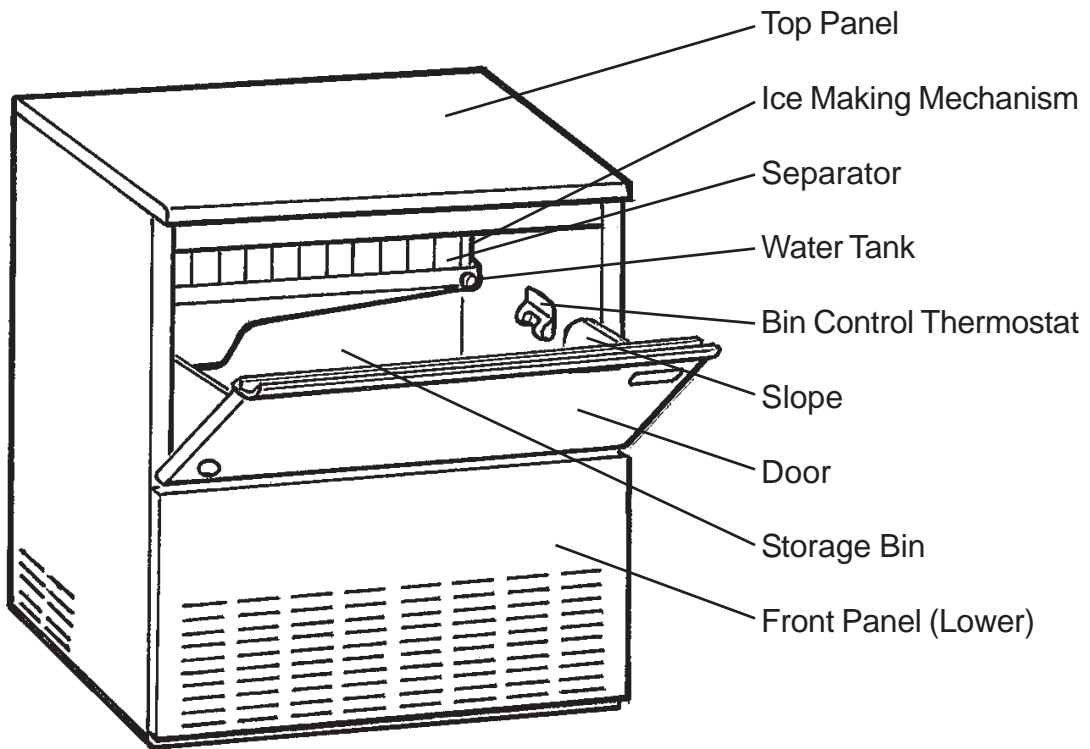
**II. GENERAL INFORMATION**

**1. CONSTRUCTION**

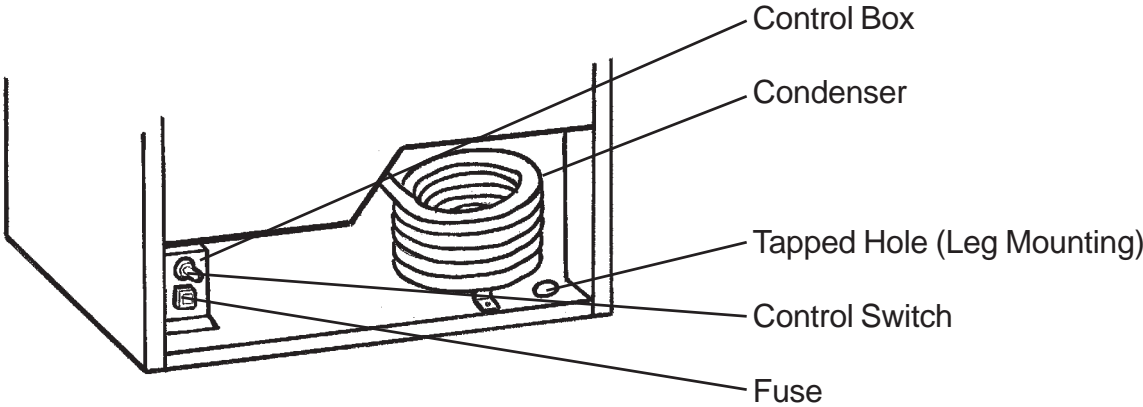
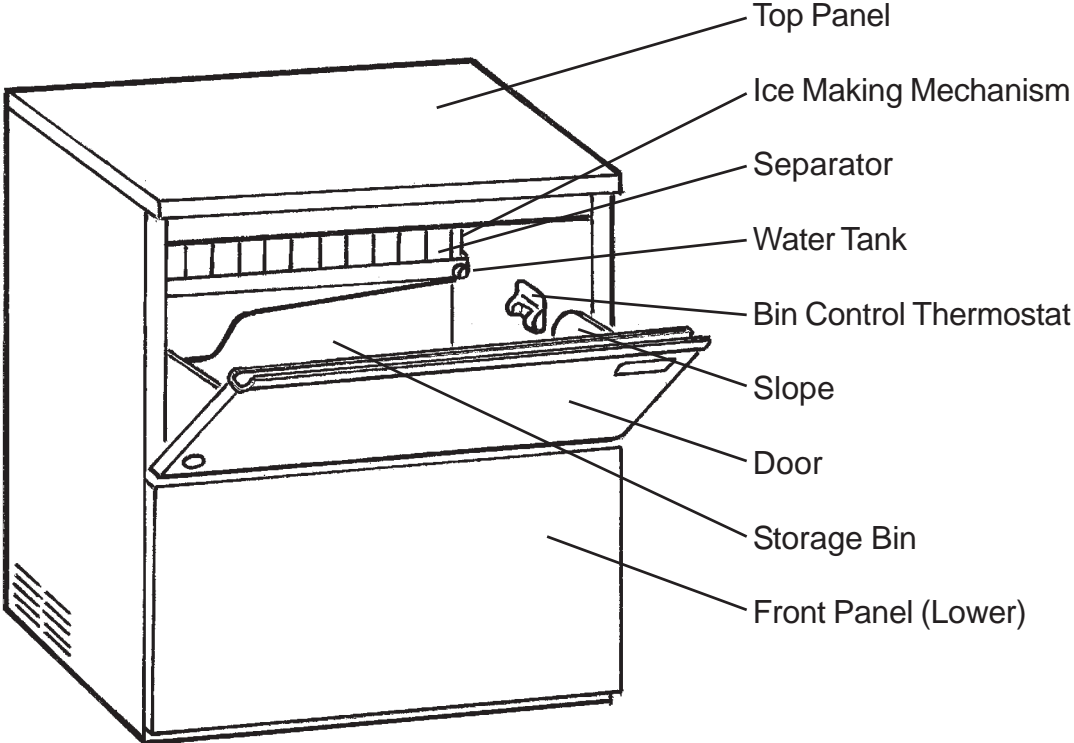
[a] AM-100BAE



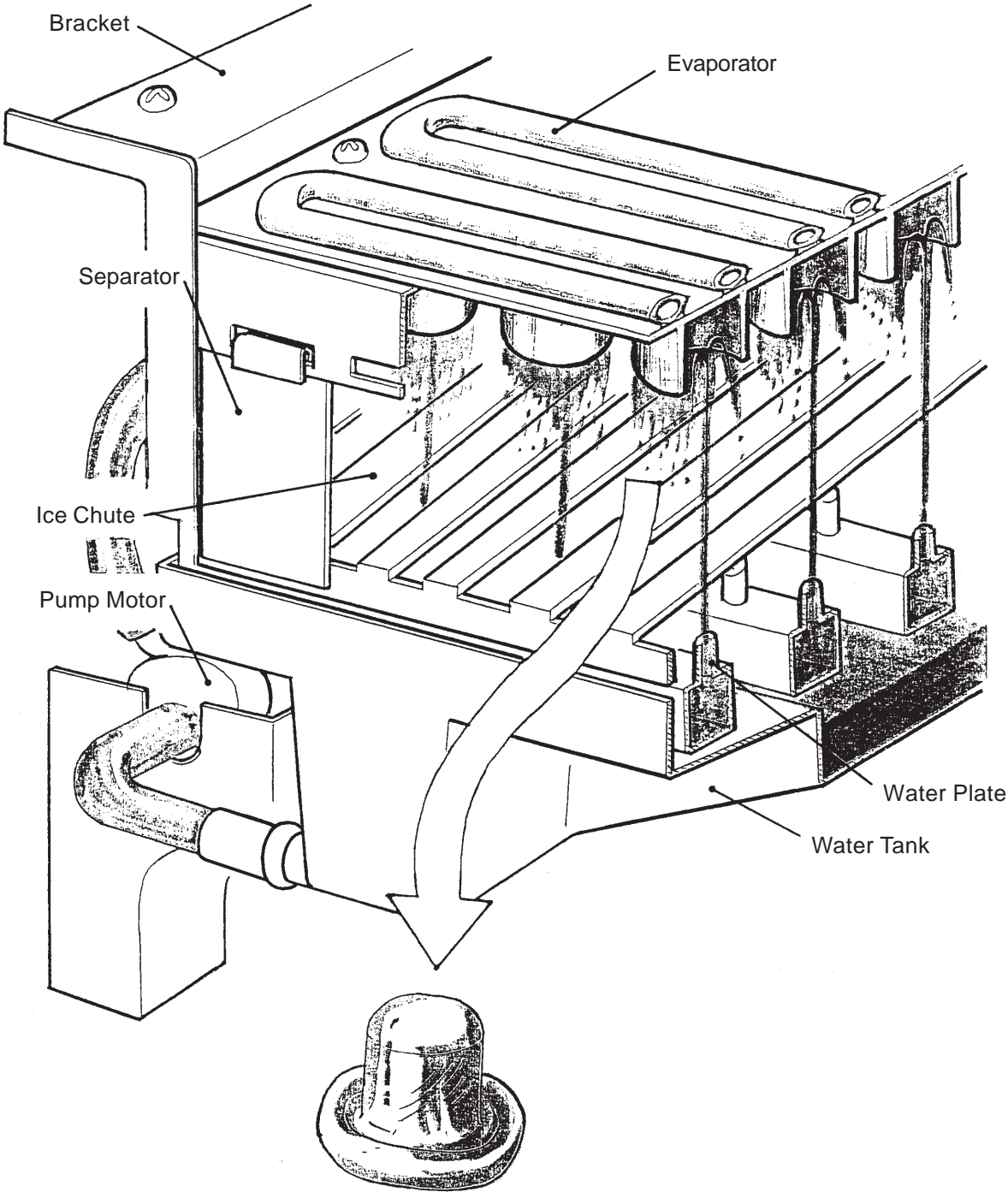
[b] AM-150BAF



[c] AM-150BWF



# 2. ICEMAKING COMPARTMENT



### III. INSTALLATION AND OPERATING INSTRUCTIONS

#### 1. CHECKS BEFORE INSTALLATION

\* Visually inspect the exterior of the shipping container, and any severe damage noted should be reported to the carrier.

#### WARNING

1. Remove shipping tape(s) and packing as follows. If any left in the icemaker, it will not work properly.
2. Do not lift or carry the unpacked icemaker by using the brass fitting for water supply at the rear of the unit. The plastic threads may be damaged.

#### IMPORTANT

1. Remove the shipping tapes holding the Door and Separator.
2. Ensure all components, fasteners and thumbscrews are securely in place.

\* Remove the package containing accessories.

\* Check that refrigerant lines do not rub or touch lines or other surfaces.

\* Check that the Compressor is snug on all mounting pads.

\* See the Nameplate on the upper right part of the Left Side Panel, and check that your voltage supplied corresponds with the voltage specified on the Nameplate.

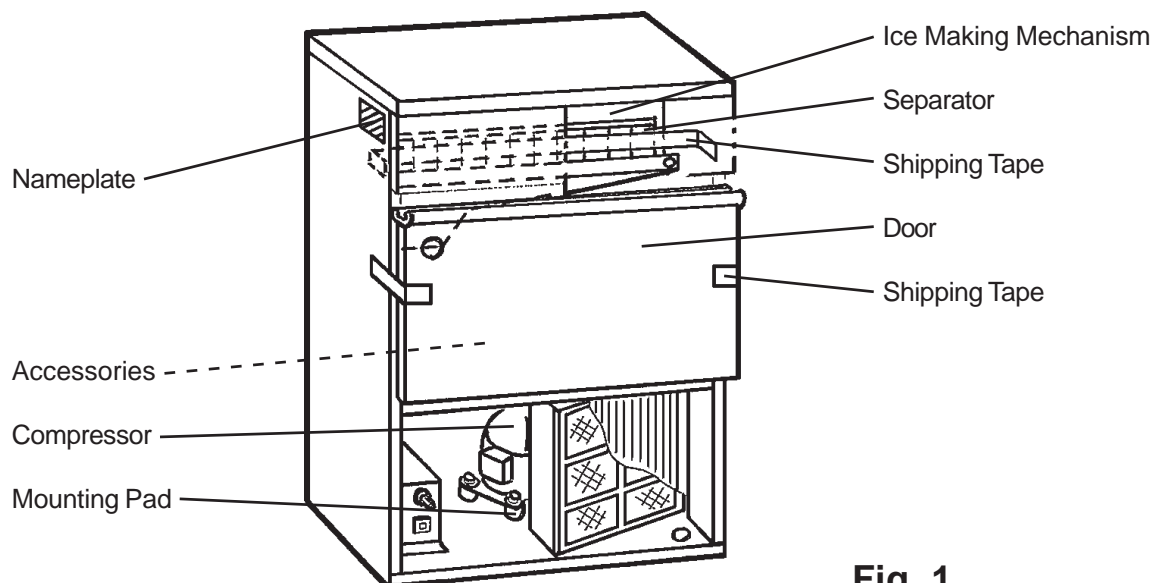


Fig. 1

## 2. LOCATION

### WARNING

This icemaker is not intended for outdoor use. Normal operating ambient temperature should be within 50°F (10°C) to 100°F (38°C); Normal operating water temperature should be within 41°F (5°C) to 90°F (32°C). Operation of the icemaker, for extended periods, outside of these normal temperature ranges may affect production capacity.

For best operating results:

- \* The icemaker should not be located next to ovens, grills or other high heat producing equipment.
- \* The location should provide a firm foundation for the equipment. Level the icemaker from side to side and front to rear.
- \* Avoid a site where dripping is not allowed.
- \* This icemaker will not work at subfreezing temperatures. To prevent damage to the water supply line, drain the icemaker when air temperature is below zero.
- \* The AM-100BAE icemaker requires no clearance at either side. But allow enough space at rear for water supply and drain connections and at least 12" (approx. 30 cm) clearance at front.
- \* The AM-150BAF icemaker requires 2" (approx. 5 cm) clearance at either side. Allow enough space at rear for water supply and drain connections and at least 12" (approx. 30 cm) clearance at front.



### 3. SET UP

#### IMPORTANT

Do not place heavy objects exceeding 33 lbs (15 kg) on the Top Panel.

- 1) Unpack the icemaker, and remove all shipping cartons, tapes and packing BEFORE operating the unit.
- 2) Position the icemaker in a selected site. Clean the interior with soap and water and rinse thoroughly.
- 3) Level the icemaker in both the left-to-right and the front-to-rear directions (when installed with or without legs). See Fig. 2.
- 4) When installing the unit without legs, the perimeter where the machine touches the counter should be sealed with silicone to prevent water from leaking under the icemaker.
- 5) When installing the unit with legs on the bottom, use the four accessory legs adjustable from 6" (15.2 cm) to 7" (17.8 cm). Screw the legs tightly into the tapped holes in the base (see Fig. 3). Handle the icemaker carefully not to damage the exterior.

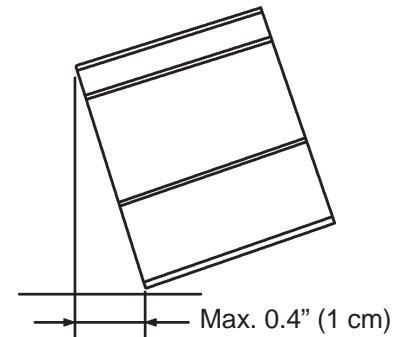


Fig. 2

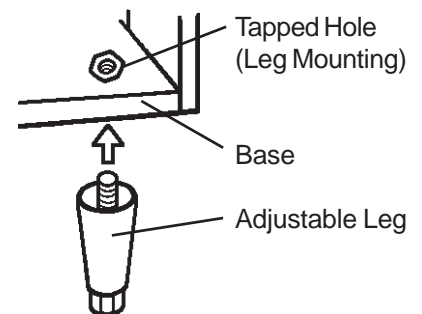


Fig. 3

### 4. ELECTRICAL CONNECTIONS

#### WARNING

##### **THIS APPLIANCE MUST BE GROUNDED.**

This icemaker requires a ground that meets the national and local electrical code requirements. To prevent possible severe electrical shock injury to individuals or extensive damage to equipment, install a proper ground wire to this icemaker. Remove the plug from the mains socket before any maintenance, repairs or cleaning is undertaken.

\* This icemaker must be plugged into the separated power receptacle which has enough capacity. The maximum allowable voltage variation should not exceed  $\pm 10$  percent of the nameplate rating. See the Nameplate.

\* Usually an electrical permit and services of a licensed electrician are required.

## 5. WATER SUPPLY AND DRAIN CONNECTIONS

### WARNING

To prevent damage to the freezer mechanism, do not operate this icemaker when the water supply is OFF, or if the pressure is below 10 PSIG (0.7 bar), the recommended water pressure. Stop the icemaker until proper water pressure is resumed.

### CAUTION

1. A brass fitting for the water supply line connection is attached to the 3/4" BSP plastic threads to avoid cross-threading of the Water Valve possibly resulting in leaks. The brass fitting allows connection of a 1/2" FPT that should be connected to the potable water supply line.
2. While making the water supply line connection, use a wrench to hold the brass fitting still to prevent overtightening and damage to the plastic threads.

\* Water supply inlet for the icemaker is 1/2" female pipe thread (FPT).

Note: On water-cooled model, two water supply inlets are provided. One is for the icemaker (1/2" FPT), and the other is for the water-cooled condenser (1/2" FPT).

\* The brass fitting is attached as shown in Fig. 4. The fitting size is a 1/2" FPT and must be connected only to a potable water supply.

\* A water supply line shut-off valve and drain valve must be installed.

\* Water supply pressure should be a minimum of 10 PSIG (0.7 bar) and a maximum of 113 PSIG (7.5 bar). If the pressure exceeds 113 PSIG (7.5 bar), use a pressure reducing valve.

\* Drain outlet for icemaker dump is 3/4" FPT.

Note: On water-cooled model, a 3/8" FPT is provided for the condenser drain outlet. The icemaker drain and the condenser drain piping connections must be made separately.

\* Drain must be 1/4" fall per foot (2 cm fall per meter) on horizontal runs to get good flow.

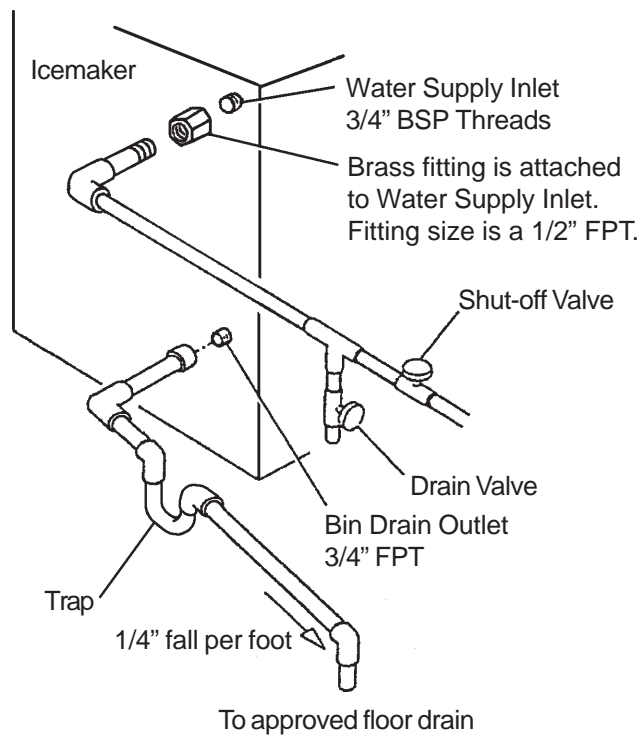
\* Keep a more than 2 vertical inch (5 vertical cm) air gap between the drain pipe end and the sink.

\* The drain pipe must be so laid as to prevent a backflow into the Storage Bin. Provide a trap in the bin drain line to prevent odor from flowing back into the Storage Bin.

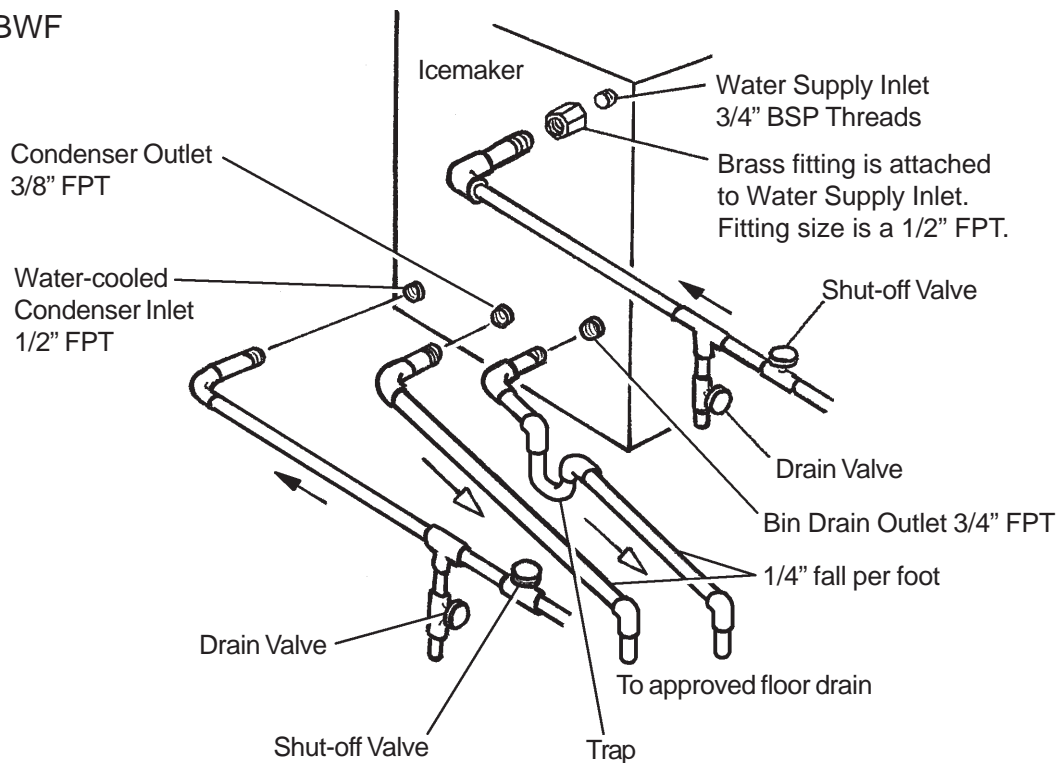
\* A plumbing permit and services of a licensed plumber may be required in some areas.

\* This icemaker should be installed in accordance with applicable national, state and local regulations.

AM-100BAE  
AM-150BAF



AM-150BWF



**Fig. 4**

## 6. FINAL CHECK LIST

- 1) Is the icemaker level?
- 2) Is the icemaker in a site where the ambient temperature is within 50°F (10°C) to 100°F (38°C) and the water temperature within 41°F (5°C) to 90°F (32°C) all year around?
- 3) Have all shipping tape(s), string and packing been removed from the icemaker?
- 4) Are all components, fasteners and thumbscrews securely in place?
- 5) Have all electrical and piping connections been made?
- 6) Has the power supply voltage been tested or checked against the nameplate rating?  
Has a proper earth been installed to the icemaker?
- 7) Are the Water Supply Line Shut-off Valve and Drain Valve installed? Has the water supply pressure been checked to ensure a minimum of 10 PSIG (0.7 bar) and a maximum of 113 PSIG (7.5 bar)?
- 8) Have the Compressor hold-down bolts and all refrigerant lines been checked against vibration and possible failure?
- 9) Has the Bin Control Thermostat been checked for correct operation? When the icemaker is running, cool the Detector of the Bin Control Thermostat. The icemaker should stop within 10 seconds.
- 10) Has the user been given the Instruction Manual and instructed on how to operate the icemaker and the importance of periodic maintenance recommended?
- 11) Has the user been given the name and telephone number of the Authorized Service Agency?

## 7. START UP

\* Check that shipping tape(s), string and packing are removed before starting the icemaker.

- 1) Clean inside the Storage Bin and Door.
- 2) Open the Water Supply Line Shut-off Valve and plug in the icemaker.
- 3) Remove the Front Panel (Lower), and move the Control Switch on the Control Box to the "ICE" position.

\* The freezing cycle will start automatically.

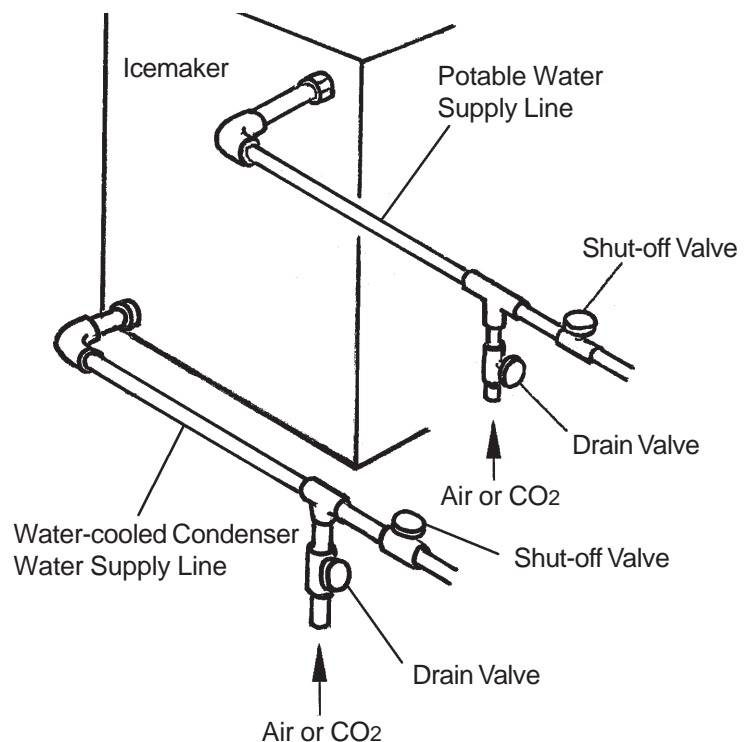
## 8. PREPARING THE ICEMAKER FOR LONG STORAGE (more than 1 day)

### WARNING

Drain the icemaker to prevent damage to the water supply line at subfreezing temperatures, using air or carbon dioxide. Shut off the icemaker until proper air temperature is resumed.

[1] On water-cooled model only, first remove the water from the water-cooled condenser:

- 1) Remove the Front Panel (Lower).
- 2) Move the Control Switch, on the Control Box, to the "OFF" position.
- 3) Wait 3 minutes.
- 4) Move the Control Switch to the "ICE" position.
- 5) Allow 5 minutes for the icemaker to fill with water and the Water Pump to start operating.
- 6) Close the Water-cooled Condenser Water Supply Line Shut-off Valve.
- 7) Open the Drain Valve for the water-cooled condenser water supply line.



**Fig. 5**

- 8) Allow the line to drain by gravity.
- 9) Attach compressed air or carbon dioxide supply to the Condenser Water Line Drain Valve.
- 10) Blow the water-cooled condenser out using compressed air or carbon dioxide until water stops coming out.

[2] Remove the water from the potable water supply line and the Water Tank:

- 1) Close the Water Supply Line Shut-off Valve, and open the Drain Valve.
- 2) Remove the Front Panel (Lower), and move the Control Switch, on the Control Box, to the "OFF" position.

3) Blow out the water supply line.

Note: This procedure is necessary to protect the icemaker from freezing up at subfreezing temperature.

4) Unplug the icemaker.

5) Remove all ice from the Storage Bin, and clean the Bin.

6) Drain and clean the Water Tank. See “IV. 1. [b] STORAGE BIN, SLOPE, SCOOP, ETC.”

7) Refit the Front Panel (Lower) in its correct position.

8) Close the Drain Valve.

## IV. MAINTENANCE AND CLEANING INSTRUCTIONS

### IMPORTANT

Ensure all components, fasteners and thumbscrews are securely in place after any maintenance or cleaning is done to the equipment.

## 1. CLEANING INSTRUCTIONS

### WARNING

1. HOSHIZAKI recommends cleaning this unit at least once a year. More frequent cleaning, however, may be required in some existing water conditions.
2. To prevent injury to individuals and damage to the icemaker, do not use ammonia type cleaners.
3. Always wear liquid-proof gloves for safe handling of the cleaning and sanitizing solutions. This will prevent irritation in case the solution comes into contact with skin.

### [a] WATER SYSTEM

- 1) Dilute approximately 5 fl. oz. (148 ml) of recommended cleaner Hoshizaki "Scale Away" or "LIME-A-WAY" (Economics Laboratory, Inc.) with 1 gal. (3.8 lit.) of water.
- 2) Remove all ice from the Evaporator and the Storage Bin.

Note: To remove cubes on the Evaporator, remove the Front Panel (Lower), move the Control Switch on the Control Box to the "OFF" position and move it back to the "ICE" position after 3 minutes. The defrost cycle starts and the cubes will be removed from the Evaporator.

- 3) Move the Control Switch to the "OFF" position. Close the Water Supply Line Shut-off Valve.
- 4) Remove the Water Tank to drain the water. Refit the Water Tank in its correct position.
- 5) Slowly pour the cleaning solution into the Water Tank.
- 6) Move the Control Switch to the "WASH" position.
- 7) After circulating the cleaning solution for about 30 minutes, move the Control Switch to the "OFF" position.

- 8) Remove the Water Tank to drain the cleaning solution. Refit the Water Tank in its correct position.
- 9) Open the Shut-off Valve.
- 10) Move the Control Switch to the "WASH" position to circulate clean water for about 5 minutes.
- 11) Move the Control Switch to the "OFF" position and immediately back to the "WASH" position to rinse water.
- 12) Repeat the above rinse procedure three more times to rinse thoroughly.
- 13) Dilute approximately 0.5 fl. oz. (14.8 ml) of 5.25% Sodium Hypochlorite (Chlorine Bleach) with 1 gal. (3.8 lit.) of water.
- 14) Move the Control Switch to the "OFF" position. Close the Water Supply Line Shut-off Valve.
- 15) Remove the Water Tank to drain the water. Refit the Water Tank in its correct position.
- 16) Slowly pour the sanitizing solution into the Water Tank.
- 17) Move the Control Switch to the "WASH" position.
- 18) After circulating the sanitizing solution for about 15 minutes, move the Control Switch to the "OFF" position.
- 19) Remove the Water Tank to drain the sanitizing solution. Refit the Water Tank in its correct position.
- 20) Open the Shut-off Valve.
- 21) Move the Control Switch to the "WASH" position to circulate clean water for about 5 minutes.
- 22) Move the Control Switch to the "OFF" position and immediately back to the "WASH" position to rinse water.
- 23) Repeat the above rinse procedure two more times to rinse thoroughly.
- 24) Move the Control Switch to the "ICE" position, and start the automatic icemaking process. Refit the Front Panel (Lower) in its correct position.

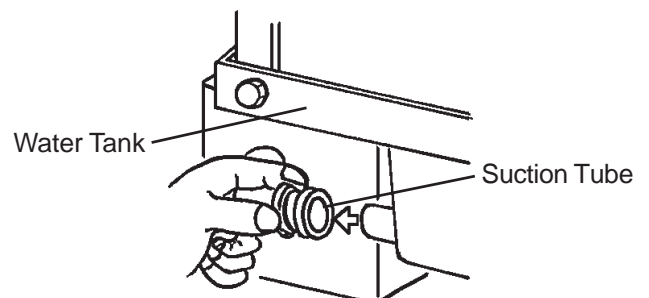
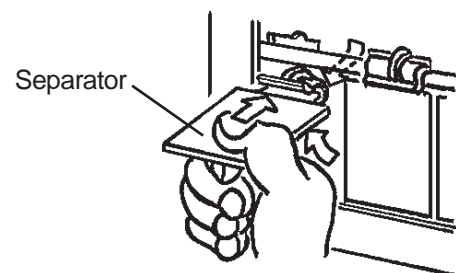


## [b] STORAGE BIN, SLOPE, SCOOP, ETC.

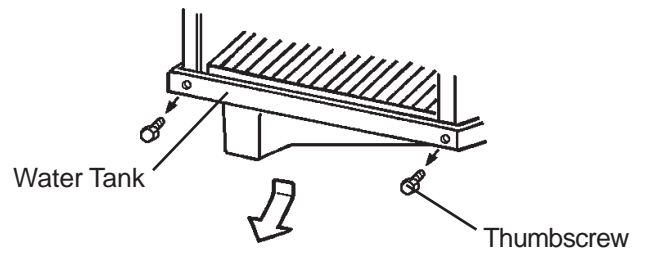
### IMPORTANT

1. Wash your hands before removing ice. Use the Plastic Scoop provided to remove ice.
2. Keep the Scoop clean. Clean it by using a neutral cleaner at least once a day, and rinse thoroughly.
3. Close the Bin Door after removing ice to prevent entrance of dirt, dust or insects into the Bin.
4. Clean the Bin Liner at least once a month by using a neutral cleaner. Rinse thoroughly after cleaning.
5. The Storage Bin is for ice use only. Do not store anything else in the Bin.
6. Keep the area around the icemaker clean. Dirt, dust or insects in the icemaker could cause electrical damage to the equipment or harm to individuals.

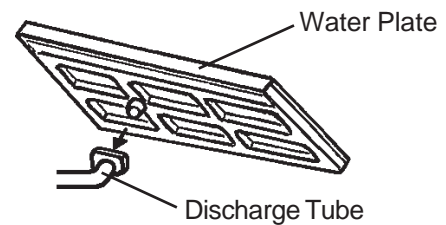
- 1) Remove the Front Panel (Lower), and move the Control Switch on the Control Box to the "OFF" position.
- 2) Unplug the icemaker.
- 3) Open the Bin Door, and remove ice from the Storage Bin.
- 4) Remove the Slope by bending its center carefully and releasing it from the two Slope Shafts. Take out the Slope from the Storage Bin.
- 5) Thoroughly clean and sanitize the Storage Bin, Slope, Scoop and any parts normally accessible from the Storage Bin.
- 6) Remove each Separator by lifting it to the horizontal position and pushing it hard inward. Remove all the Separators in the same way, and clean and sanitize them.
- 7) Disconnect the Suction Tube from the Water Tank to drain the Tank.



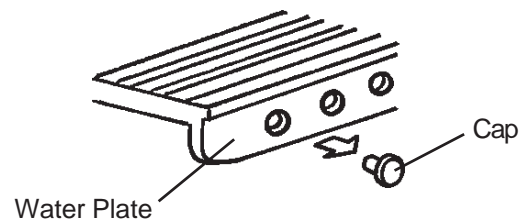
8) Remove the Thumbscrews on both sides of the Water Tank, and pull it out toward you. Clean and sanitize the Water Tank.



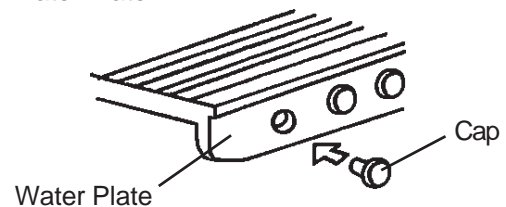
9) Pull the Discharge Tube from the Water Plate. Remove the Water Plate by pulling it toward you.



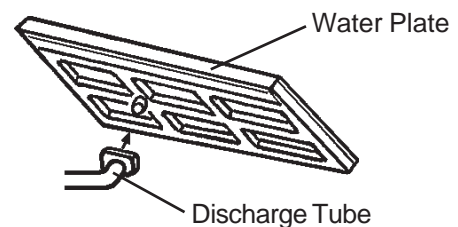
10) Remove the Caps to clean and sanitize the Water Plate. If the Nozzles are clogged, clean them with a wire or a suitable brush.



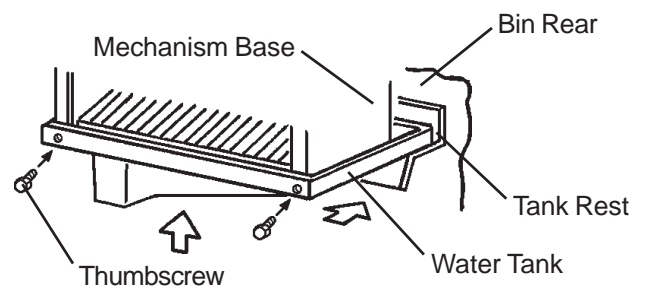
11) Refit the Caps on the Cleaning Outlets to seal them off.



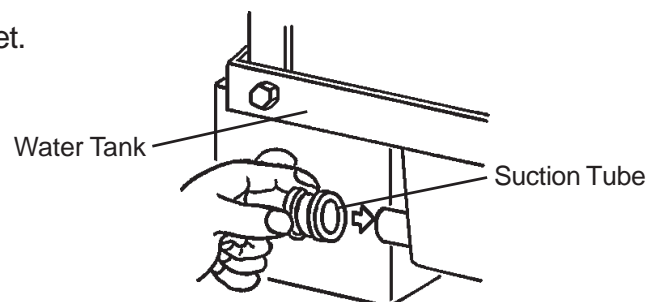
12) Slide in the Water Plate along the Mechanism Base. Refit the Discharge Tube securely on the Spray Outlet. A loose fitting may cause a water leak.



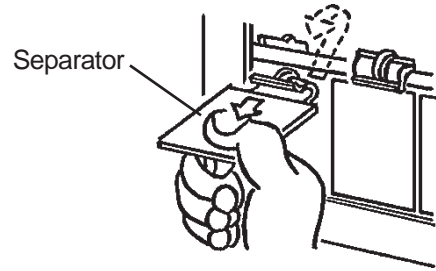
13) Place the rear of the Water Tank on the Water Tank Rest at the back of the Storage Bin. Use the Thumbscrews to secure the front of the Water Tank to the Mechanism Base.



14) Refit the Suction Tube on to the Water Tank Inlet. A loose fitting may cause a water leak.



15) Hook each Separator on to the Mechanism Base, and pull it hard toward you until it locks in place with a click. Refit all the Separators in the same way.



16) Refit the Slope in its correct position.

17) Plug in the icemaker, and move the Control Switch on the Control Box to the "ICE" position to start the automatic icemaking process.

18) Refit the Front Panel (Lower) in its correct position.

## 2. MAINTENANCE

### IMPORTANT

This icemaker must be maintained individually, referring to the instruction manual and labels provided with the icemaker.

#### 1) Exterior

To keep the exterior clean, wipe occasionally with a clean and soft cloth. Use a damp cloth containing a neutral cleaner to wipe off all oil or dirt build-up.

#### 2) Air Filter

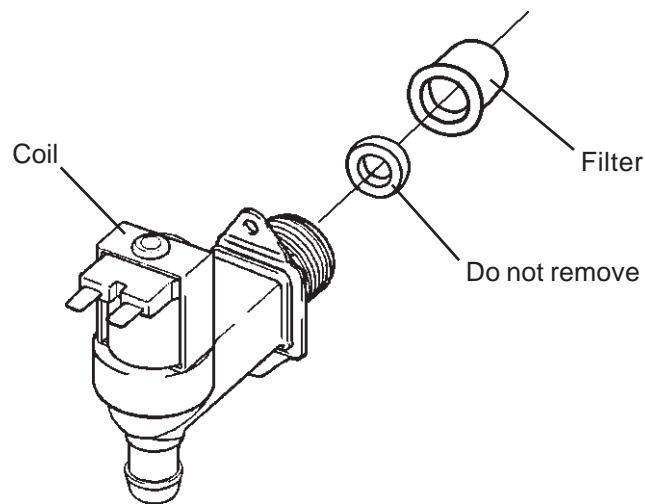
A plastic mesh air filter removes dirt or dust from the air, and keeps the Condenser from getting clogged. As the filter gets clogged, the icemaker's performance will be reduced. Check the filter at least twice a month. When clogged, use warm water and a neutral cleaner to wash the filter.

#### 3) Condenser

Check the Condenser once a year, and clean if required by using a brush or vacuum cleaner. More frequent cleaning may be required depending on the location of the icemaker.

### 3. WATER VALVE

- 1) Unplug the icemaker or disconnect the power source.
- 2) Close the water supply tap.
- 3) Remove the Top Panel and Door.
- 4) Disconnect the Water Supply Inlet from the Water Valve.
- 5) Remove the Mesh Filter from the Water Valve.
- 6) Clean the Mesh using a brush.
- 7) Refit the Mesh and Water Supply Inlet in their correct positions.
- 8) Open the water supply tap.
- 9) Plug in the icemaker or connect the power source.
- 10) Check for leaks.
- 11) Refit the panels in their correct positions.



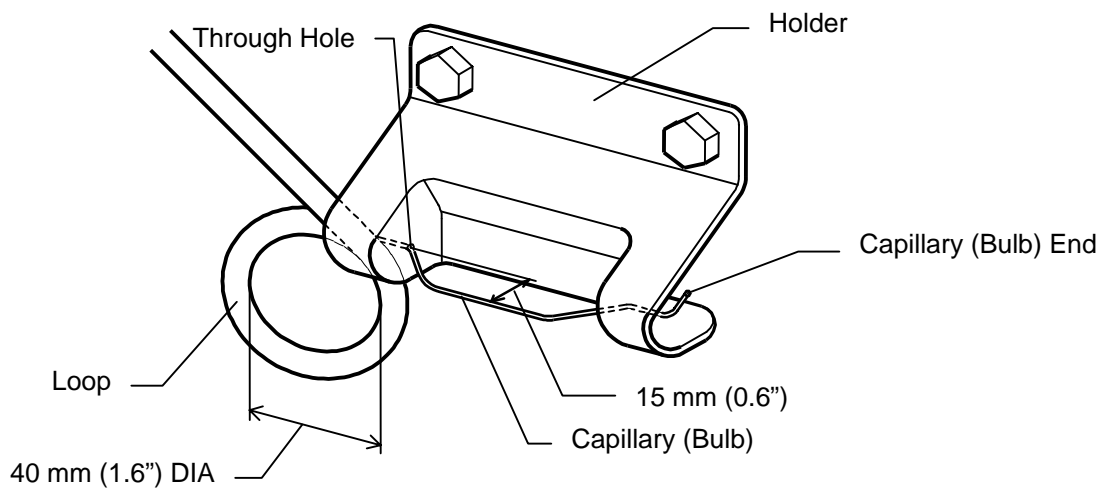
**Fig. 6**

## 4. BIN CONTROL THERMOSTAT

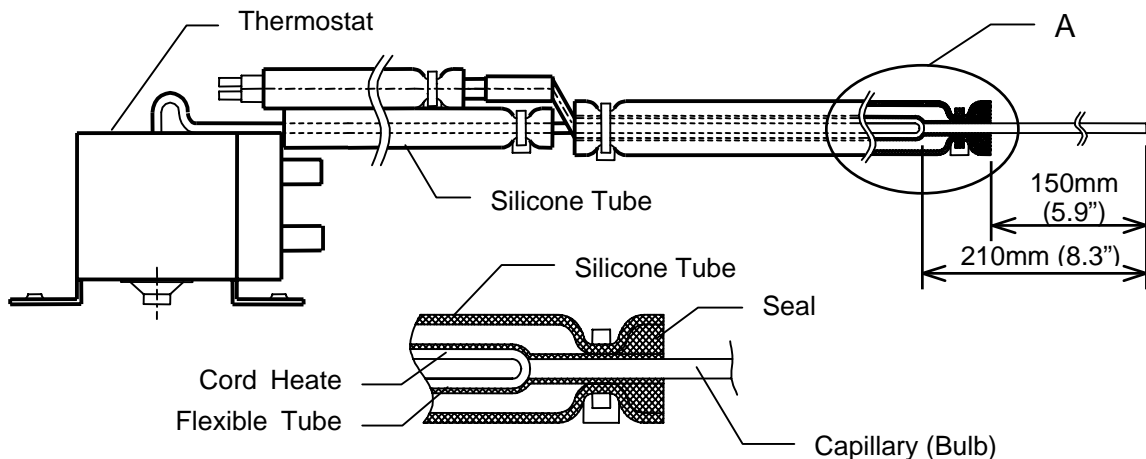
### Bin Control Thermostat Replacement Procedure

To ensure proper operation, follow the instructions below:

- 1) Make a 40 mm (1.6") diameter loop.
- 2) Locate the loop below the Thermostat Capillary (Bulb).
- 3) Manually bend the Capillary to keep it 15 mm (0.6") forward from the through hole position on the Holder.
- 4) Turn up the end of the Capillary.



### Bin Control Thermostat Assembly Details



#### DETAIL A

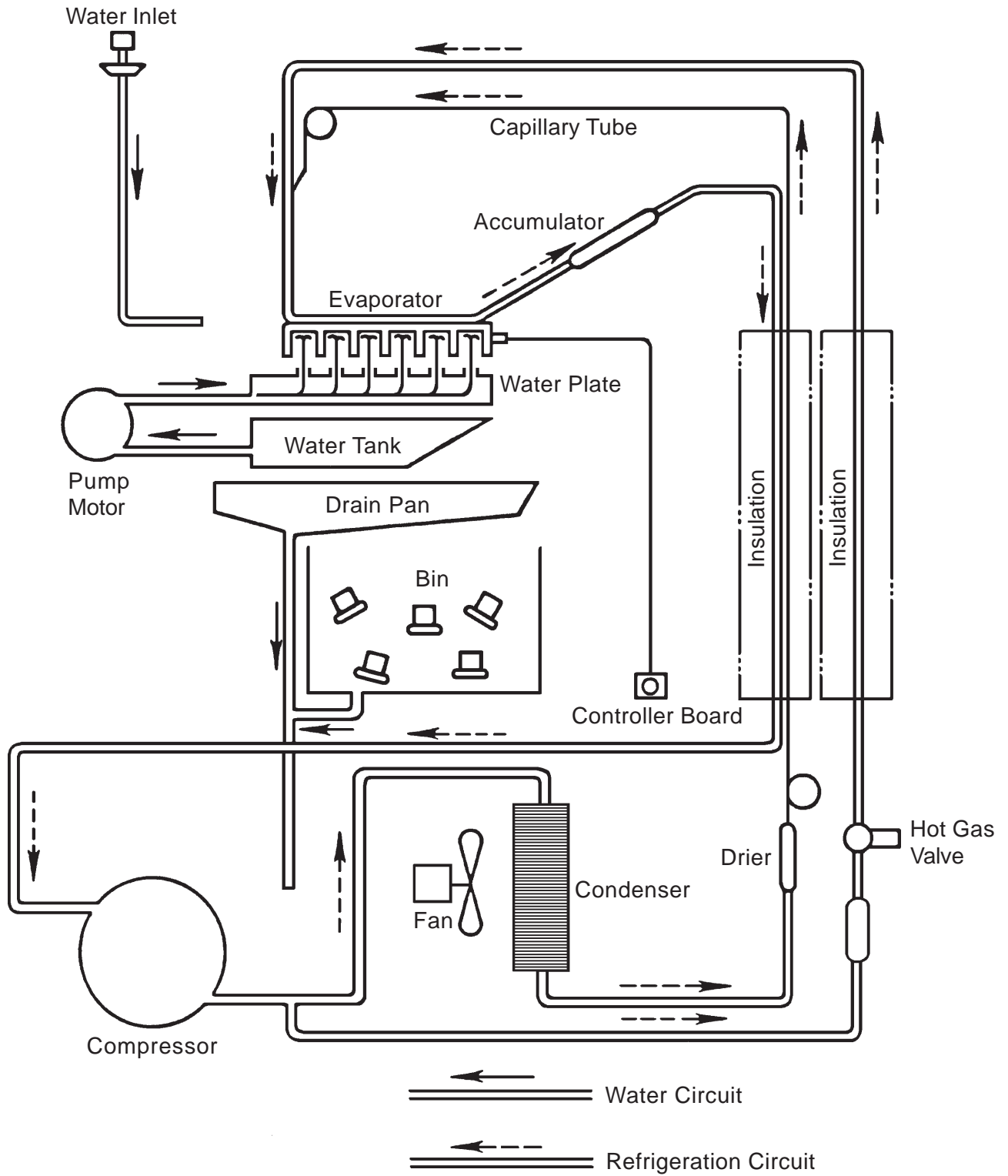
[NOTE]

- 1) Run Cord Heater along with Capillary of Thermostat and bind them tightly with Aluminum Tape (Form end to end of Cord Heater).
- 2) Do not overheat Flexible Tube during shrinking process.

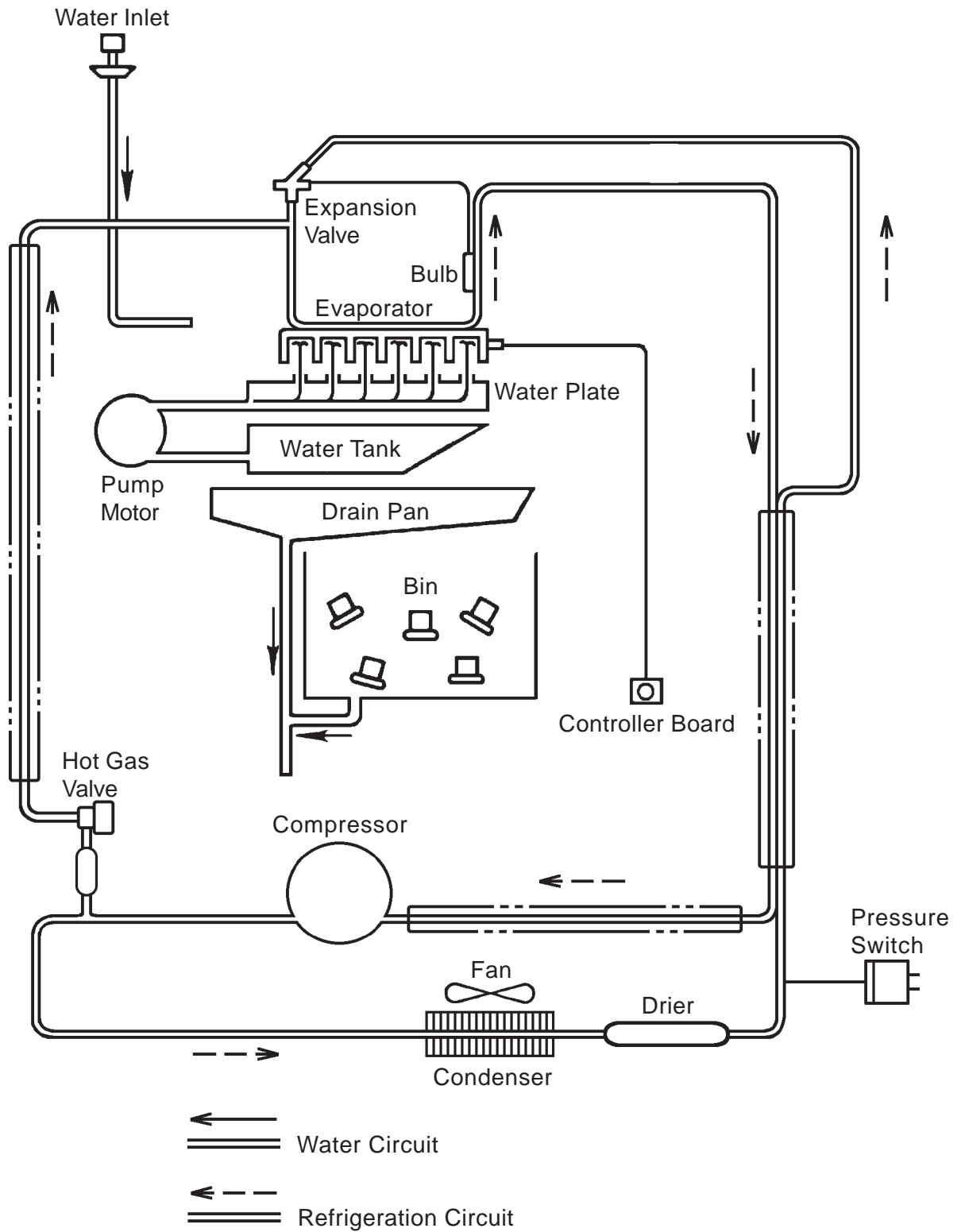
# V. TECHNICAL INFORMATION

## 1. WATER CIRCUIT AND REFRIGERANT CIRCUIT

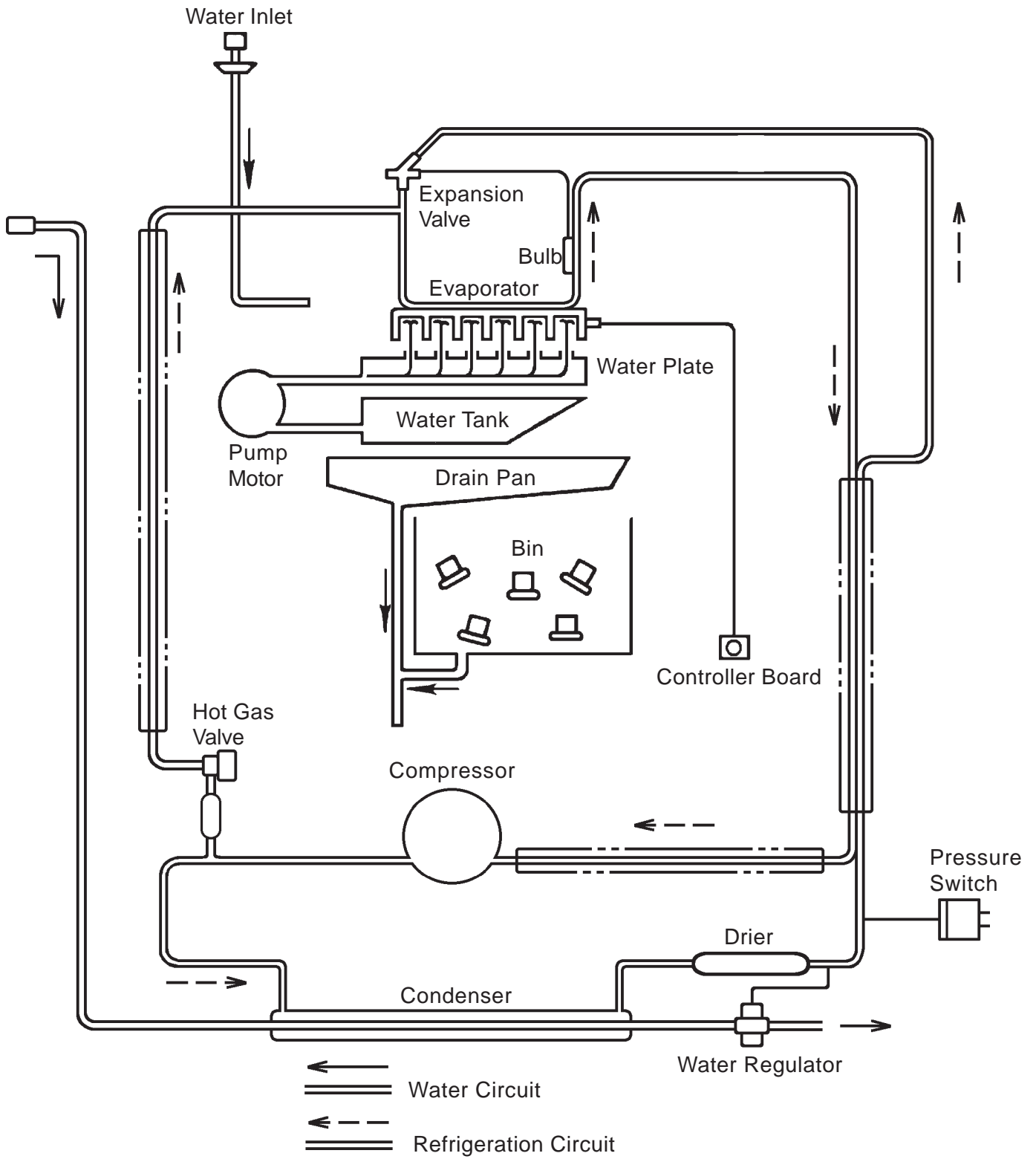
[a] AM-100BAE



[b] AM-150BAF



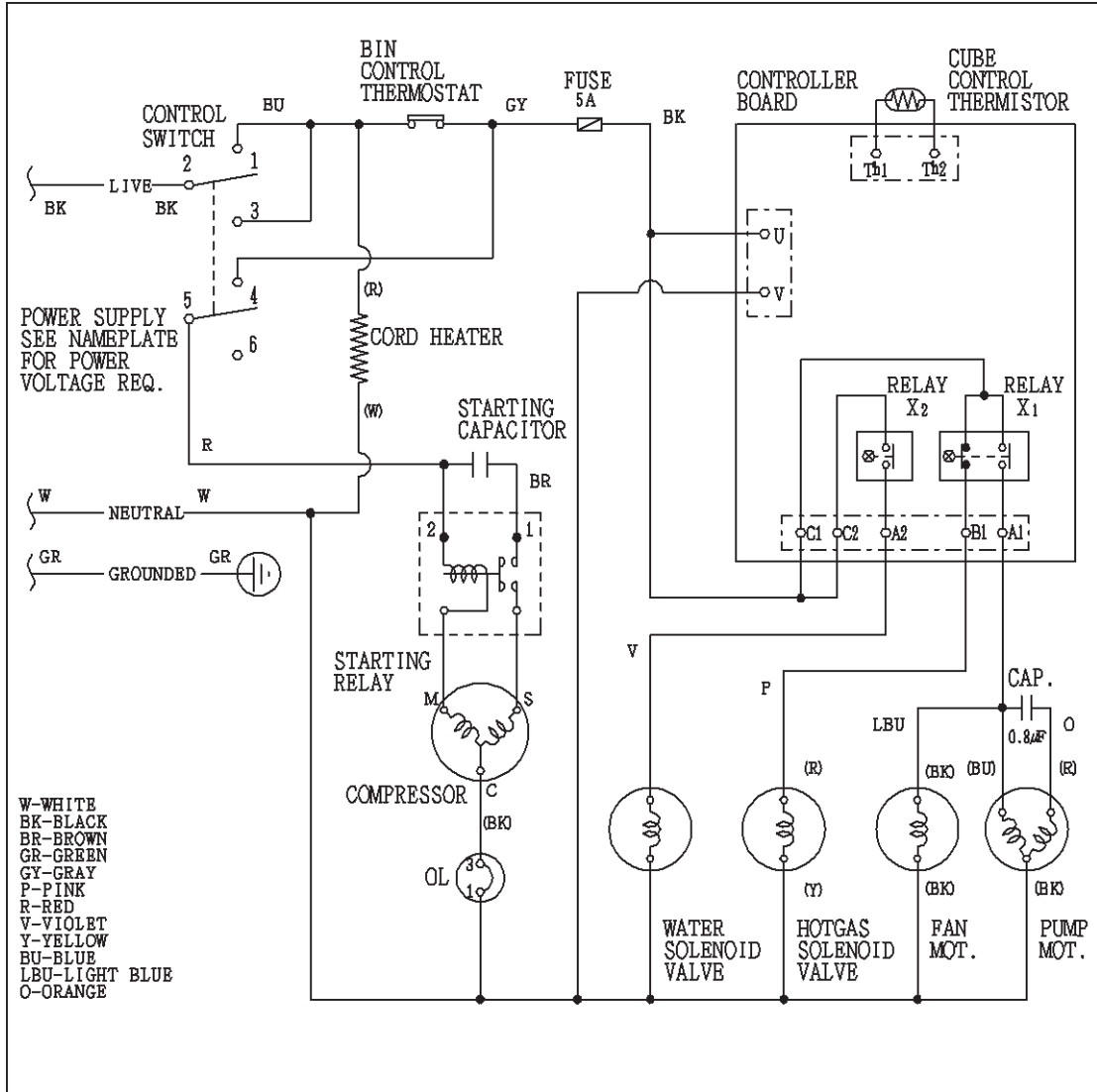
[c] AM-150BWF



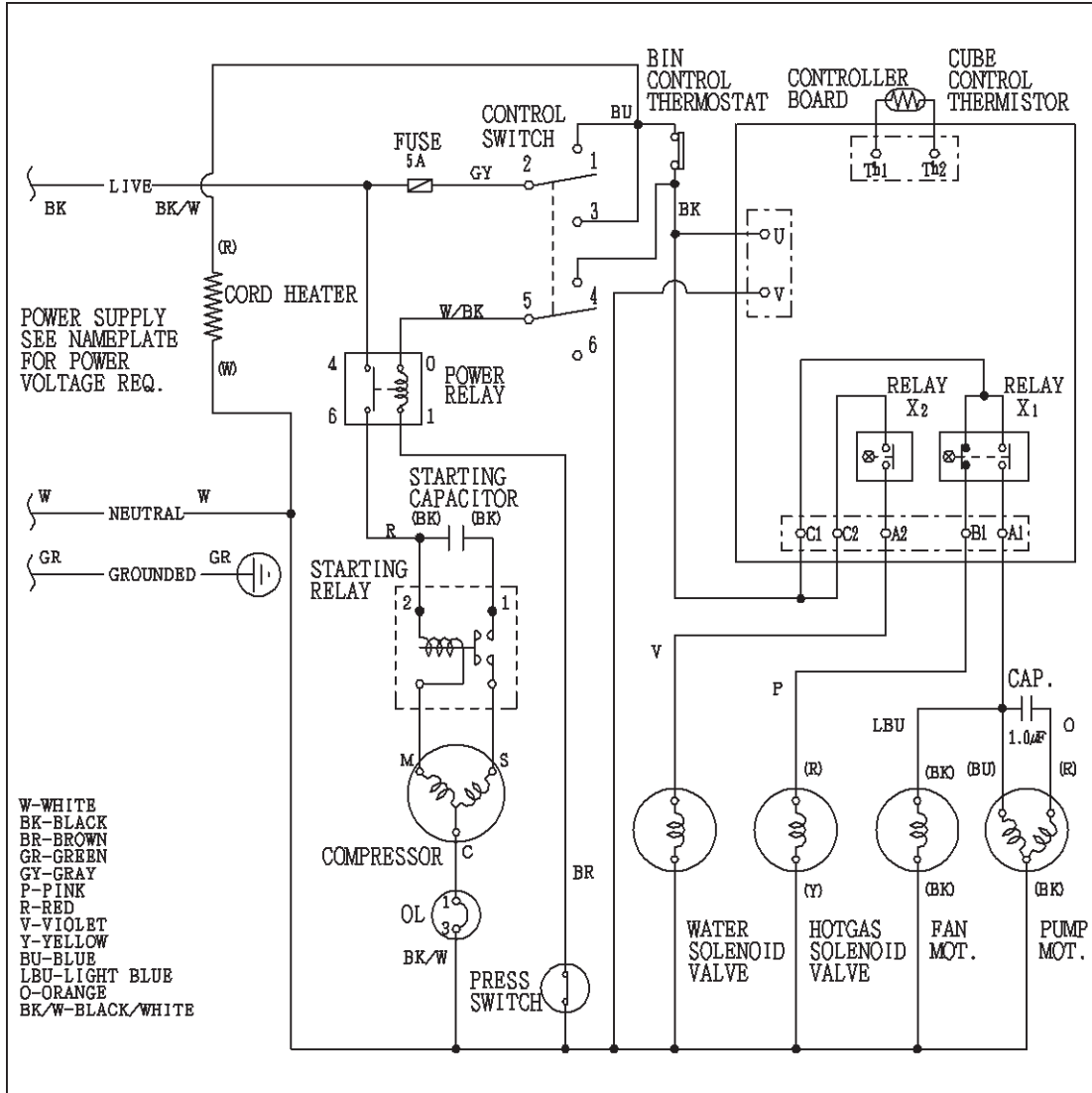


## 2. WIRING DIAGRAM

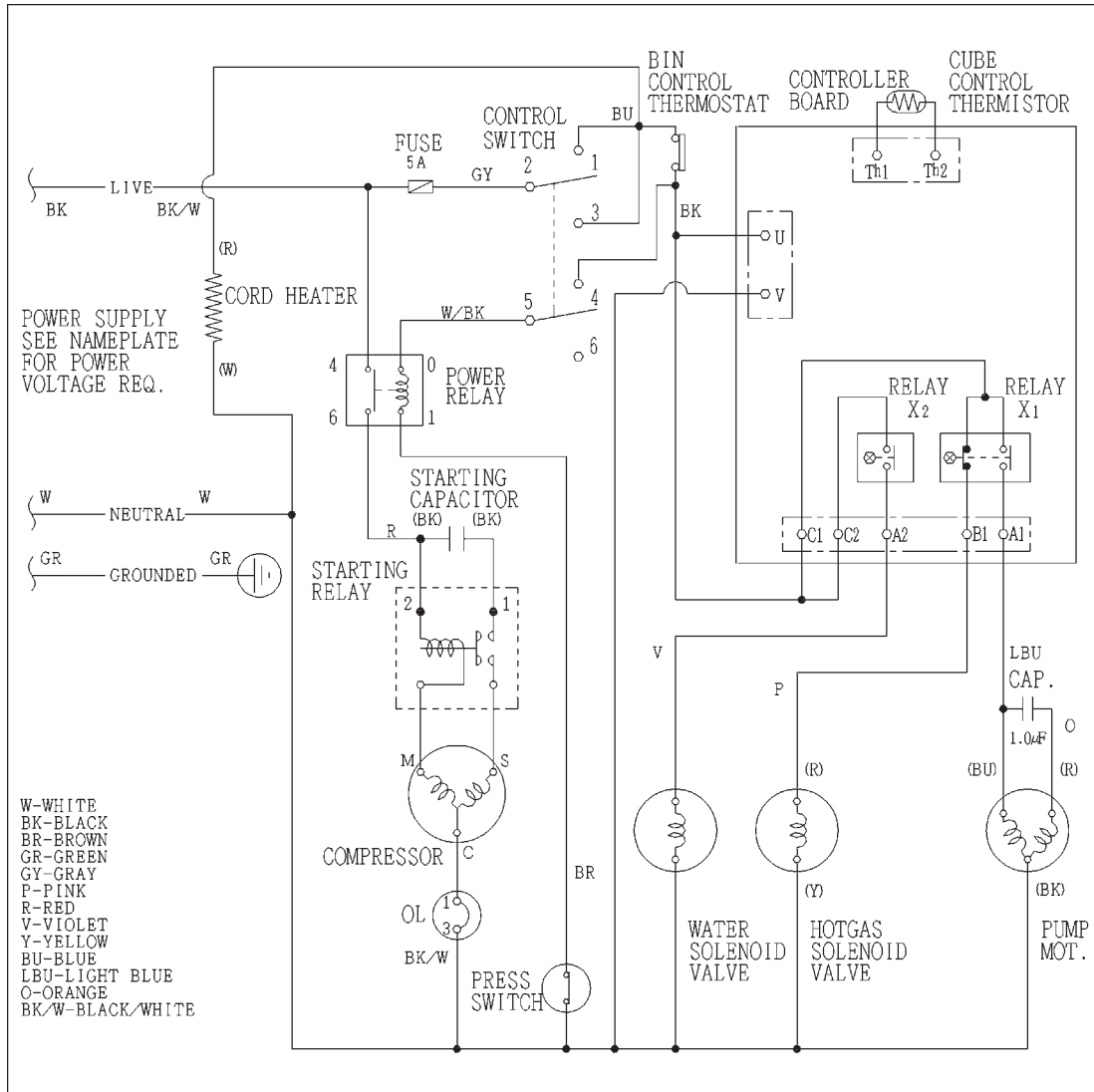
### [a] AM-100BAE



[b] AM-150BAF



[c] AM-150BWF



### 3. CONTROLS

#### [a] ICEMAKING CONTROL

The freeze and defrost cycles are controlled by the combination of a Thermistor and an Electronic Controller.

When the Evaporator cools down to a specific temperature (around 27°F), the Thermistor attached to the Evaporator senses the temperature and signals to the Electronic Controller. After the built-in Timer counts 8 minutes from the signal input, the Controller switches the contact of the built-in Relays (X1 and X2) to stop the Pump Motor and Fan Motor and to open the Hot Gas Valve and Water Valve. This completes the freeze cycle and starts the defrost cycle.

#### [b] DEFROST CONTROL

The ice cubes formed inside the Icemaking Cells are released by hot gas warming the Evaporator. When a small portion of the ice melts on the Icemaking Cell interior, the ice drops by its own weight and slides down the Ice Guide into the Storage Bin. When the Evaporator is warmed further (to around 45°F), the Thermistor senses the temperature rise and signals to the Electronic Controller. After the built-in Timer counts 50 seconds from the signal input, the Controller switches the contact of the built-in Relays to start the Pump Motor and Fan Motor and to close the Hot Gas Valve and Water Valve. This completes the defrost cycle and starts the freeze cycle.

At low temperature conditions where the defrost cycle exceeds 102 seconds, the Water Valve will close after 102 seconds.

In the initial cycle at startup or after shutdown for bin control, water is supplied for 102 seconds. This means the Water Valve closes (approx. 50 seconds) after the freeze cycle starts.

#### [c] NO ADJUSTMENT REQUIRED

The Thermistor and Electronic Controller are factory adjusted to produce constant ice all the year around, not affected by changes in the ambient and water temperatures.

No adjustment is required for any ambient temperature.

#### [d] ADJUSTMENT AT PART REPLACEMENT

The Thermistor and Electronic Controller are designed for optimum ice production. If adjustment is desired, follow the instructions below.

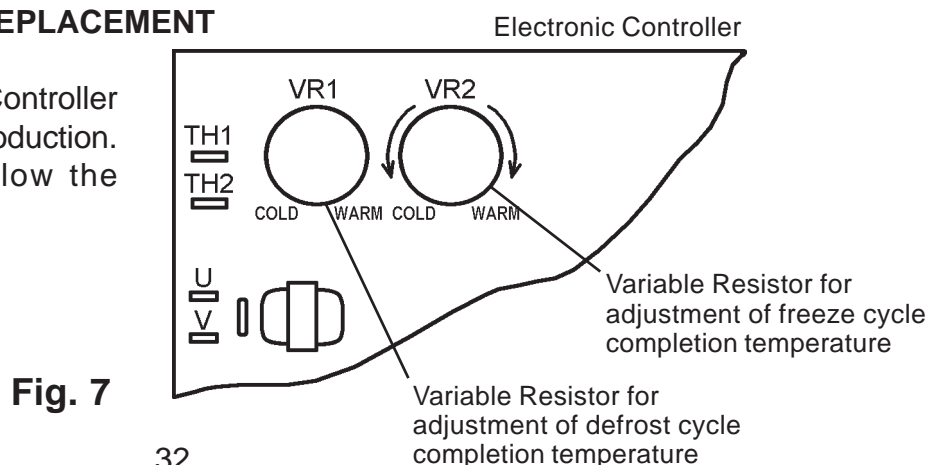


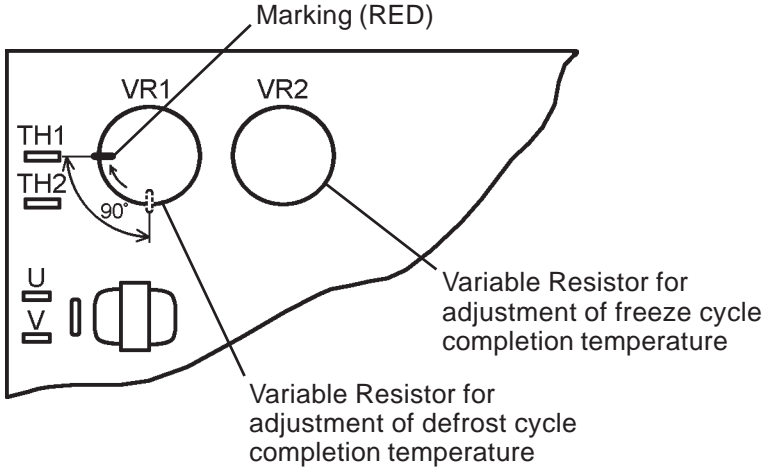
Fig. 7

The Variable Resistor VR1 is for a fine adjustment of the defrost cycle completion temperature.

The Variable Resistor VR2 is for a fine adjustment of the freeze cycle completion temperature. Turn VR2 clockwise for a higher temperature (WARM), i.e. ice cubes with larger diameter holes and counterclockwise for a lower temperature (COLD), i.e. ice cubes with smaller diameter holes.

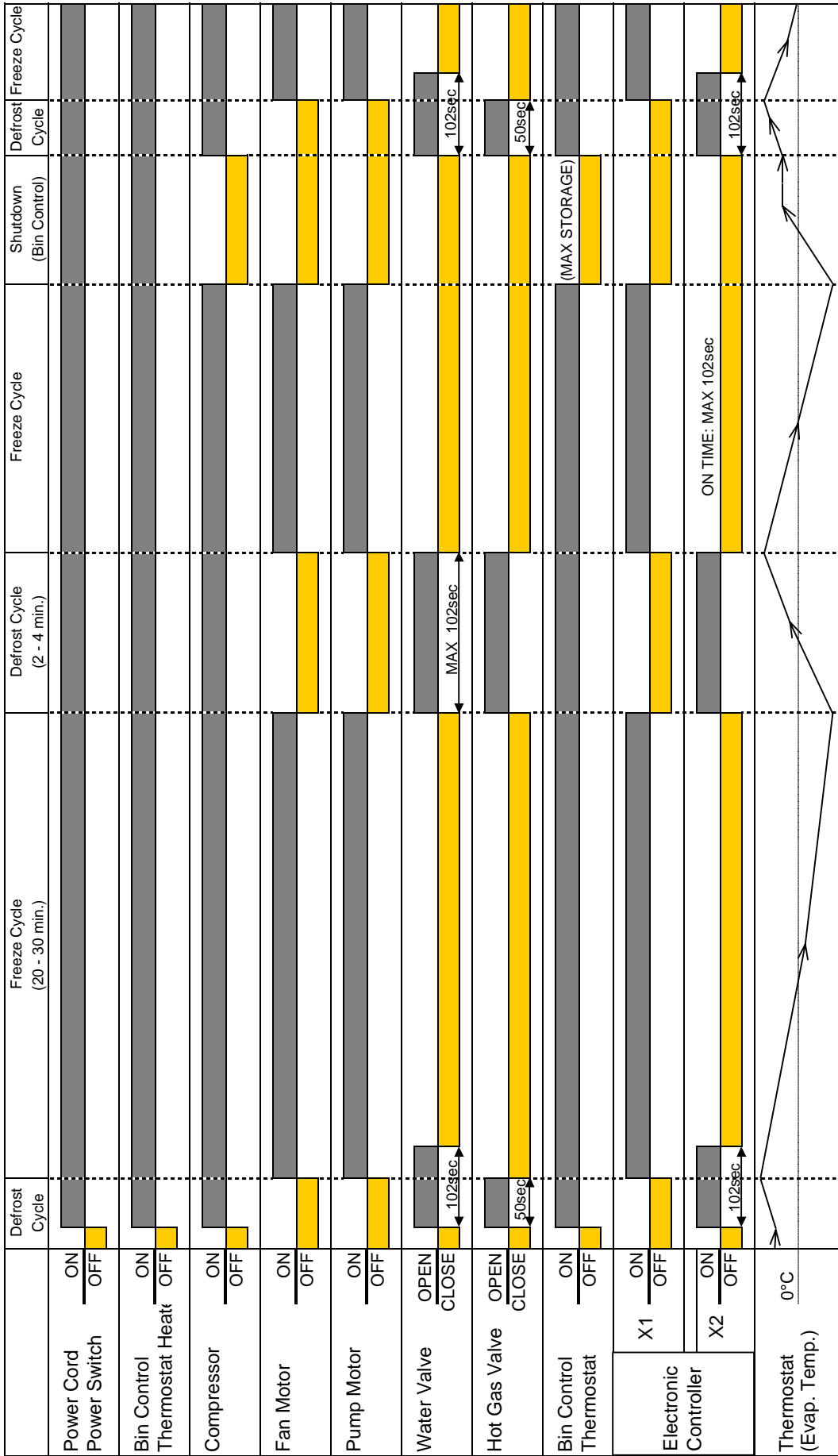
Note: Do not adjust VR2 to the lowest temperature. It will cause excessive ice production resulting in defrost failure.

When replacing the Controller Board, turn the Variable Resistor VR1 by 90° clockwise, and leave VR2 as it is. See Fig. 8.



**Fig. 8**

# 4. TIMING CHART



## 5. PERFORMANCE DATA

### [a] AM-100BAE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (°F)	Water Temp. (°F)		
		50	70	90
lbs./day (kg/day)	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	70	430	440	450
Watts	80	460	470	480
	90	490	490	500
	100	510	510	520
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70	38 (0.15)	36 (0.14)	35 (0.14)
gal./day (m <sup>3</sup> /day)	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	70	17	18	19
min.	80	19	20	21
	90	22	23	24
	100	26.5	27.5	28.5
HARVEST CYCLE TIME	70	4	4	4
min.	80	3	3	3
	90	3	3	3
	100	2.5	2.5	2.5
HEAD PRESSURE	70	125 (0.86)	128 (0.88)	129 (0.89)
PSIG (kg/cm <sup>2</sup> G)	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	70	16 (0.11)	17 (0.12)	20 (0.14)
PSIG (kg/cm <sup>2</sup> G)	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.

**[b] AM-150BAF**

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (°F)	Water Temp. (°F)		
		50	70	90
lbs./day (kg/day)	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	70	660	670	690
	80	670	690	710
	90	680	710	730
Watts	100	700	720	750
APPROXIMATE WATER CONSUMPTION PER 24 HR.	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)
gal./day (m <sup>3</sup> /day)	100	36 (0.14)	34 (0.13)	30 (0.12)
FREEZING CYCLE TIME	70	14	15	16
	80	15.5	17.5	18
	90	17	18.5	19.5
min.	100	17.5	19	20
HARVEST CYCLE TIME	70	3.8	3.8	3.8
	80	3	3	3
	90	2.5	2.5	2.5
min.	100	2	2	2
HEAD PRESSURE	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)
PSIG (kg/cm <sup>2</sup> G)	100	339 (2.33)	340 (2.34)	342 (2.35)
SUCTION PRESSURE	70	58 (0.40)	58 (0.40)	58 (0.40)
	80	59 (0.41)	59 (0.41)	59 (0.41)
	90	61 (0.42)	61 (0.42)	61 (0.42)
PSIG (kg/cm <sup>2</sup> G)	100	62 (0.43)	62 (0.43)	62 (0.43)
TOTAL HEAT OF REJECTION	2460 BTU/h (AT 90°F /WT 70°F)			

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



**[c] AM-150BWF**

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (°F)	Water Temp. (°F)		
		50	70	90
lbs./day (kg/day)	70	150 (68)	140 (64)	130 (60)
	80	150 (68)	140 (64)	130 (60)
	90	145 (66)	140 (64)	130 (60)
	100	145 (66)	135 (62)	125 (58)
APPROXIMATE ELECTRIC CONSUMPTION	70	560	560	560
	80	560	560	570
	90	560	560	570
	100	560	570	570
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70	186 (0.70)	225 (0.85)	524 (1.98)
	80	186 (0.70)	234 (0.89)	550 (2.08)
	90	188 (0.71)	239 (0.90)	587 (2.22)
	100	190 (0.72)	246 (0.93)	610 (2.31)
FREEZING CYCLE TIME	70	14	15	16.5
	80	14.5	15	16.5
	90	15	15	16.5
	100	15	15.5	17
HARVEST CYCLE TIME	70	3	3	2.5
	80	3	2.5	2.5
	90	2.5	2.5	2.5
	100	2.5	2.5	2.5
HEAD PRESSURE	70	266 (1.84)	270 (1.86)	274 (1.89)
	80	268 (1.85)	270 (1.86)	274 (1.89)
	90	270 (1.86)	271 (1.87)	274 (1.89)
	100	270 (1.86)	271 (1.87)	274 (1.89)
SUCTION PRESSURE	70	65 (0.45)	64 (0.44)	64 (0.44)
	80	67 (0.46)	65 (0.45)	65 (0.45)
	90	67 (0.46)	67 (0.46)	65 (0.45)
	100	67 (0.46)	65 (0.45)	65 (0.45)
TOTAL HEAT OF REJECTION		2720 BTU/h (AT 90°F /WT 70°F)		

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

## VI. 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 ICE 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. Fused contacts.	2. Check for continuity and replace.
	e) High Pressure Control (150BAF/BWF)	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) Thermistor	1. Leads short-circuit.	1. Replace.
	h) Hot Gas Solenoid Valve	1. Continues to open in freeze cycle.	1. Check for power OFF in freeze cycle and replace.
	i) Water Supply Line (water-cooled)	1. Water supply OFF and water supply cycle does not finish.	1. Check for recommended pressure.
2. Condenser water pressure too low or OFF and Pressure Control opens and closes frequently.		2. Check for recommended pressure.	
j) 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.	
k) Controller Board	1. Defective.	1. Replace.	
[2] Compressor will not start, or operates intermittently.	a) High Pressure Control (150BAF/BWF)	1. Condenser water temperature too warm (water-cooled).	1. Check for recommended temperature.
		2. Refrigerant overcharged.	2. Recharge.
		3. Condenser water pressure too low or OFF (water-cooled).	3. Check for recommended pressure.
	b) Water Regulator (water-cooled)	1. Set too high.	1. Adjust lower.
		2. Clogged or defective.	2. Clean or replace.
	c) Overload Protector	1. Bad contacts.	1. Check for continuity and replace.
		2. Voltage too low.	2. Check for recommended voltage.

PROBLEM	CHECK	POSSIBLE CAUSE	REMEDY
[2] (Continued)		3. Refrigerant overcharged or undercharged.	3. Recharge.
	d) Starter	1. Defective.	1. Replace.
	e) Start Capacitor	1. Defective.	1. Replace.
	f) Power Relay (150BAF/BWF)	1. Bad contacts.	1. Check for continuity and replace.
		2. Coil winding opened.	2. Replace.
	g) Compressor	1. Wiring to Compressor.	1. Check for loose connection or open, and repair or replace.
2. Defective.		2. Replace.	
h) 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.
[4] Fan Motor will not run.	a) Wiring	1. Loose connection or broken wire.	1. Repair or replace.
	b) Thermistor, 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.
		2. Clogged.	2. Clean.
	b) Water Solenoid Valve	1. Dirty mesh filter or orifice and water level in Water Tank too low.	1. Clean.
		2. Clogged.	2. Clean.
	c) Water System	1. Water leaks.	1. Check connections for water leaks, and repair.
		2. Clogged.	2. Clean.
		3. Wiring to Pump Motor.	3. Check for loose connection or open, and replace.
		4. Defective or bound impeller.	4. Replace and clean.
	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 (150BAF/BWF)	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) Thermistor, Controller Board	1. Defective.	1. Replace.
g) 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.
	f) Refrigerant Charge	1. Undercharged.	1. Check for leaks and recharge correctly.
	g) Thermistor, Controller Board	1. Defective.	1. Replace.
	h) Expansion Valve (150BAF/BWF)	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.
g) Thermistor, Controller Board	1. Defective.	1. 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.

## VII. ADJUSTMENT

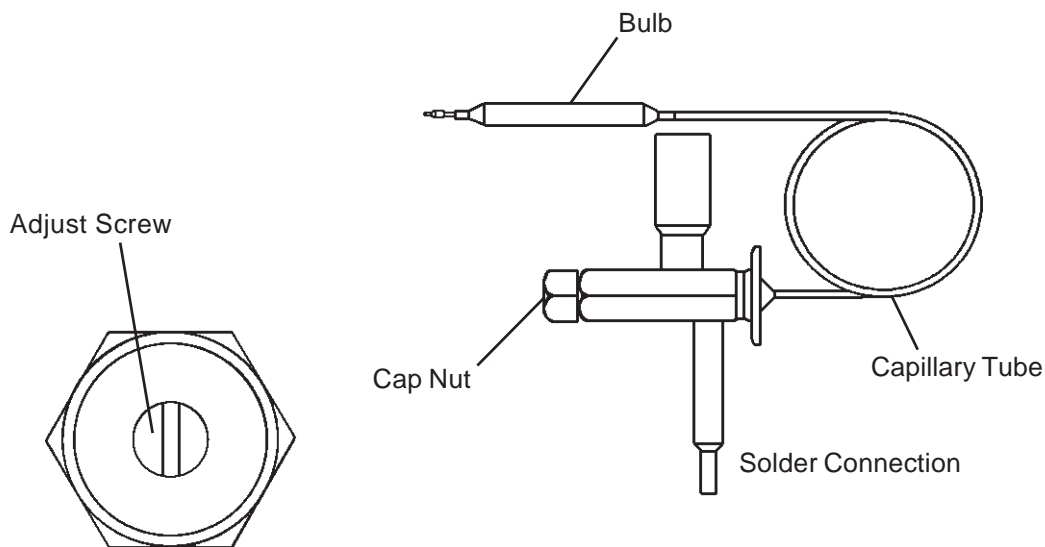
### 1. EXPANSION VALVE - AM-150BAF/BWF ONLY

The Expansion Valve is factory-adjusted. Do not adjust it except at replacement or service. Adjust the valve setting, if necessary, as follows:

- 1) Remove the Cap Nut.
- 2) Use a flat-blade screwdriver to rotate the Adjust Screw.
- 3) Watch holes of ice cubes produced. Standard setting is that Evaporator inlet side and outlet side cubes have almost the same diameters. To make the inlet side larger, rotate 90 - 180° clockwise. Smaller, counterclockwise. Do not rotate more than 180° at a time.

#### CAUTION

Over adjustment of the valve may result in liquid refrigerant return causing freezing to the suction line and severe damage to the Compressor.

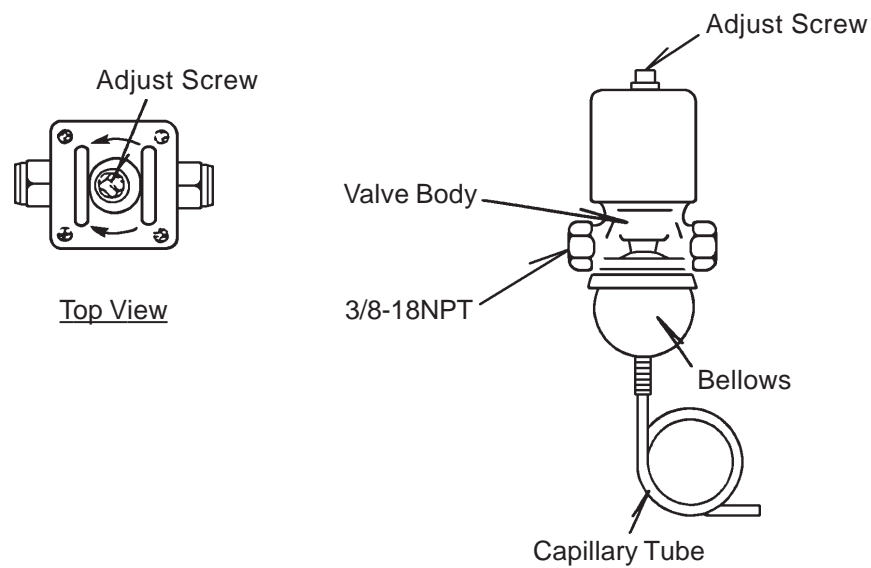


**Fig. 9**

## 2. WATER REGULATING VALVE - WATER-COOLED MODEL ONLY

The Water Regulating Valve is factory-adjusted. Do not adjust it except at replacement or service. Adjust the valve setting, if necessary, as follows:

- 1) Attach a pressure gauge to high-side line, or prepare a thermometer to check Condenser drain temperature.
- 2) Rotate the Adjust Screw using a flat blade screwdriver so that the pressure gauge shows 270 PSIG, or the thermometer reads 104 - 115°F, 5 minutes after Freeze Cycle starts. When the pressure or temperature exceeds the above, rotate the Adjust Screw counterclockwise.
- 3) Check that the pressure or temperature holds.



**Fig. 10**

## VIII. REMOVAL AND REPLACEMENT

### 1. SERVICE FOR REFRIGERANT LINES

#### [a] SERVICE INFORMATION

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

The compressor must not be opened more than 30 minutes in replacement or service. Do not mix lubricants of different compressors even if both are charged with the same refrigerant, except when they use the same lubricant.

#### 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 continuous refrigerant leak will eventually lower 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) Handling of Handy Flux [R134a/R404A]

Repair of the refrigerant circuit needs brazing. It is no problem to use the same handy flux that has been used for the current refrigerants. However, its entrance into the refrigerant circuit should be avoided as much as possible.

#### 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 have not been evaluated. Also, for R134a/R404A, do not use any parts that have been used for other refrigerants. Otherwise, wax and chlorine remaining on the parts may adversely affect R134a/R404A.

#### 6) Replacement Copper Tubing [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. (Low residual oil type copper tubes are used in the shipped units.)



## **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 or R404A to suddenly react with oxygen and explode. Be sure to use nitrogen to prevent explosion.

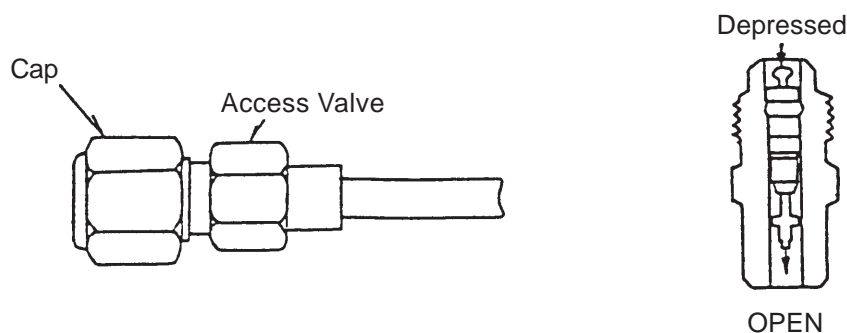
## **[b] REFRIGERANT RECOVERY**

The refrigerant must be recovered if required by an applicable law. No refrigerant Access Valve is provided in the unit. Install a proper Access Valve on the low-side line (ex. Compressor Process Pipe). Recover the refrigerant from the Access Valve, and store it in a proper container. Do not discharge the refrigerant into the atmosphere.

When replacing the Drier, take the opportunity to also fit a High-side Access Valve for ease of charging liquid refrigerant.

## [c] EVACUATION AND RECHARGE

- 1) Attach Charging Hoses, a Service Manifold and a Vacuum Pump to the system. If possible, use Quick Release Connectors onto the Access Valves (especially on the high side).
  - 2) Turn on the Vacuum Pump.
  - 3) Allow the Vacuum Pump to pull down to a 29.9"Hg vacuum. Evacuating period depends on the pump capacity.
  - 4) Close the Low-side and High-side Valves on the Service Manifold.
  - 5) Disconnect the Vacuum Pump, and attach a Refrigerant Charging Cylinder to accurately weigh in the liquid charge. Remember to purge any air from the Charging Hose. See the Nameplate for the required refrigerant charge.
  - 6) Open the High-side Valve on the Gauge Manifold, and accurately measure in the liquid charge. Close the valve on the Charging Cylinder before closing the High-side Manifold Valve. Any remaining liquid in the line can be charged into the low side.
- Note: Always charge in the liquid stage, as many refrigerants are blends and vapour charging will affect the blend consistency (eg. R404A).
- 7) Turn on the icemaker. Release the High-side Access Connector, and allow pressure in the charging line to slowly enter the low side of the system. Cap off the High-side Access Valve. When pressure reduces on the low side, disconnect the low side charging line and cap off the Access Valve.
  - 8) Always cap the Access Valves to prevent a refrigerant leak.
  - 9) Always thoroughly leak test all joints and valve caps.
  - 10) Avoid charging large quantities of liquid into the low side in case of damage to the Compressor.



**Fig. 11**

## 2. COMPRESSOR

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Rear Mesh and Front Panel..
- 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 Solderless 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 cloth/paper.
- 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) Braze or solder the Access, Suction and Discharge lines (Do not change this order), with nitrogen gas flowing at a pressure of 3 - 4 PSIG.
- 13) Install the new Drier (See "3. DRIER").
- 14) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 15) Evacuate the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
- 16) Connect the Solderless Terminals and replace the Terminal Cover in its correct position.
- 17) Refit the panels in their correct positions.
- 18) Plug in the icemaker or connect the power source.

Note: Hoshizaki recommends that Compressor starting electrics are always replaced at the same time as the Compressor.

### **3. DRIER**

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Rear Mesh and Front Panel.
- 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 brazing equipment.
- 6) Braze or solder the new Drier, with the arrow on the Drier in the direction of the refrigerant flow. Use nitrogen gas at a pressure of 3 - 4 PSIG when brazing tubings. Braze in an Access Valve using a tee if necessary.
- 7) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 8) Evacuate the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
- 9) Refit 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.

## 4. EVAPORATOR

### IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacement has been made.

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Rear Mesh, Door, Top and Front Panels.
- 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 Water Tank and Water Plate, referring to “IV. 1. CLEANING.”
- 5) Remove the Thermistor Holder and Thermistor from the Evaporator.
- 6) Disconnect the solder connections on the Evaporator using brazing equipment. Protect the surrounding components from heat damage.
- 7) Remove the four screws holding the Evaporator.
- 8) Install the new Evaporator, and secure it with the four original screws.
- 9) Remove and replace the Drier (See “3. DRIER”).
- 10) Braze pipes, with nitrogen gas flowing at a pressure of 3 - 4 PSIG.
- 11) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 12) Refit the Thermistor (See “10. THERMISTOR FOR CUBE CONTROL”).
- 13) Evacuate the system and charge it with refrigerant (See “1. [c] EVACUATION AND RECHARGE”).
- 14) Refit the panels in their correct positions.
- 15) Plug in the icemaker or connect the power source.

## 5. HOT GAS VALVE

### IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacement has been made.

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Rear Mesh and Front Panel.
- 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 valve and Drier using brazing equipment.
- 7) Braze the new Hot Gas Valve with nitrogen gas flowing at a pressure of 3 - 4 PSIG.

### WARNING

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 248°F.

- 8) Install the new Drier (See "3. DRIER").
- 9) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 10) Evacuate 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) Refit the panels in their correct positions.
- 14) Plug in the icemaker or connect the power source.

## **6. PUMP MOTOR**

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Top Panel, Door and Front Panel.
- 3) Disconnect the Pump Motor leads behind the Evaporator.
- 4) Drain the Water Tank by compressing the plastic tabs on the Suction Tube to release the Joint.
- 5) Spread the tabs on both sides of the Water Tank and pull it toward you.
- 6) Carefully remove the plastic housing by releasing the retaining screws.
- 7) Disconnect the Pump Suction and Discharge Tubings.
- 8) Release the pump retaining screws to remove the Pump.
- 9) Install the new motor in the reverse order of the removal procedure.
- 10) Plug in the icemaker or connect the power source, and check for leaks.
- 11) Refit the panels in their correct positions.

## **7. FAN MOTOR**

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Front Panel.
- 3) Disconnect the Connector of the Fan Motor.
- 4) Remove the Fan Motor Bracket and the Fan Motor.
- 5) Cut the leads of the Fan Motor allowing enough lead length to reconnect using closed end connectors.
- 6) Install the new Fan Motor in the reverse order of the removal procedure.
- 7) Refit the panels in their correct positions.
- 9) Plug in the icemaker or connect the power source.

## **8. WATER VALVE**

- 1) Close the water supply tap.
- 2) Unplug the icemaker or disconnect the power source.
- 3) Remove the Top Panel and Front Panel.
- 4) Disconnect the Receptacle (leads) from the Water Valve.
- 5) Remove the Valve Outlet tubing.
- 6) Remove the Water Supply Inlet and Water Valve by releasing the two retaining screws.
- 7) Install the new valve in the reverse order of the removal procedure.
- 8) Open the water supply tap.
- 9) Plug in the icemaker or connect the power source.
- 10) Check for leaks.
- 11) Refit the panels in their correct positions.

Note: When replacing parts, disassemble as shown in Fig. 6 (page 24) and replace the defective parts.

## **9. CONTROLLER BOARD**

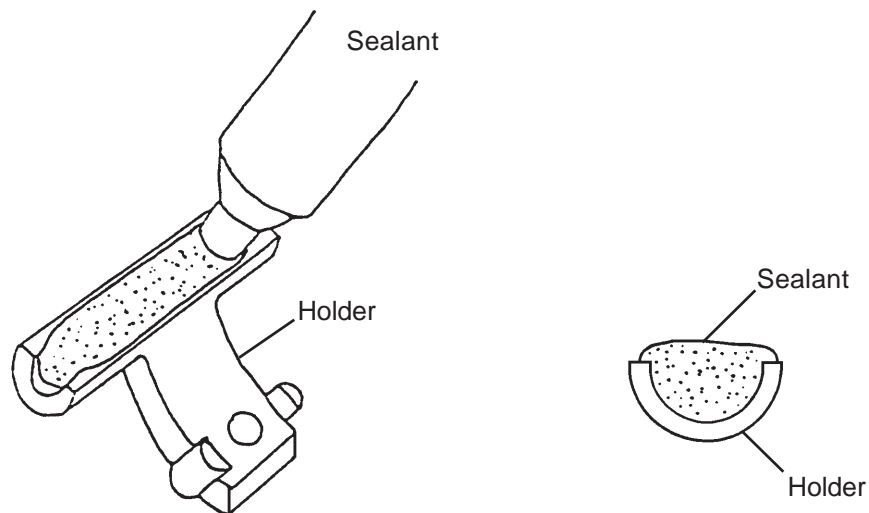
- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Front Panel.
- 3) Remove screws and the Control Box Cover.
- 4) Pull out the Control Box from the machine compartment, and disconnect the Connectors on the Controller Board.
- 5) Pull out and remove the Controller Board from the Control Box.
- 6) Install the new Controller Board and reassemble the Control Box in the reverse order of the removal procedure.
- 7) Refit the panel in its correct position.
- 8) Plug in the icemaker or connect the power source.



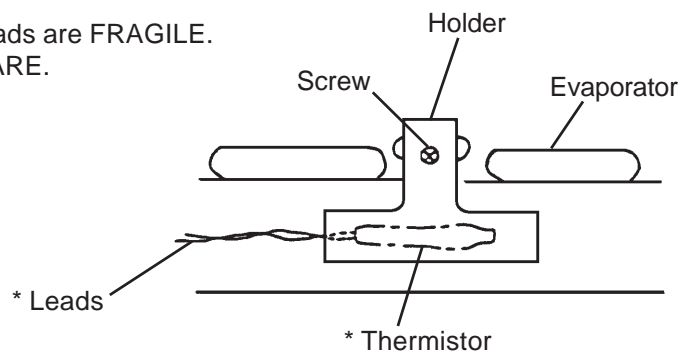
## 10. THERMISTOR FOR CUBE CONTROL

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Top and Front Panels, Pipe Cover (Rear) and Control Box Cover.
- 3) Remove the Connectors on the Controller Board, referring to "9. CONTROLLER BOARD."
- 4) Unscrew and remove the Thermistor Holder and Thermistor, located on the Evaporator.
- 5) Install the new thermistor in the reverse order of the removal procedure, by using a sealant (High-thermal Conduct Type). See Fig. 12.

Note: Recommended sealant is KE4560RTV, manufactured by SINETSU SILICON. When other type of sealant used, the cube size and performance will be changed. Do not use silicone sealant as this will insulate the Thermistor.



\* Thermistor and Leads are FRAGILE.  
HANDLE WITH CARE.

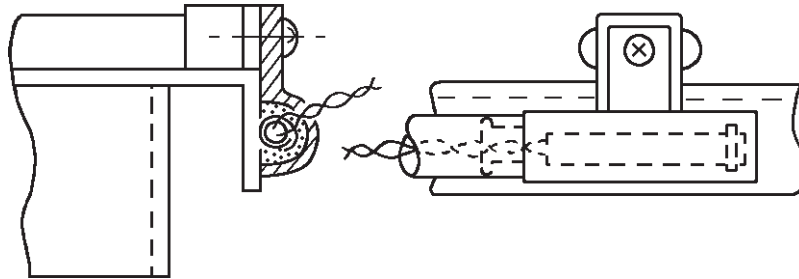
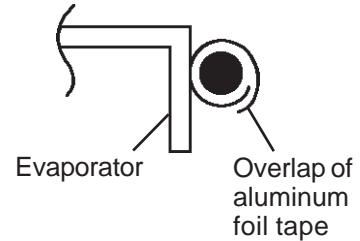


**Fig. 12**

## IMPORTANT

When replacing the Thermistor, wrap the Thermistor Bulb with aluminum foil tape [1"(25mm) W x 0.6"(15mm) L].

- 1) Wrap a turn with an overlap of 0.1 - 0.2" (3 - 5mm).
- 2) Make the aluminum foil tape tightly stick to the Thermistor Bulb.
- 3) Keep the overlap of the aluminum foil tape away from the Evaporator.



## 11. BIN CONTROL THERMOSTAT

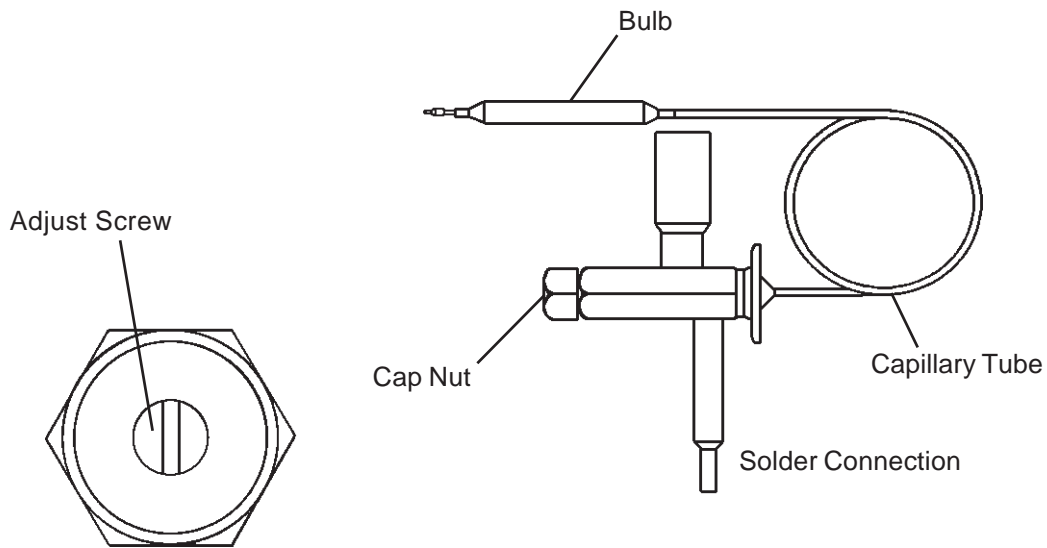
- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Top Panel, Door and Pipe Cover (Rear).
- 3) Remove the Thermostat Holder from the Storage Bin, and disconnect the the Bin Control Thermostat Bulb.
- 4) Remove the Bin Control Thermostat from the icemaker body (rear).
- 5) Install the new Bin Control Thermostat in the reverse order of the removal procedure.
- 6) Refit the panels in their correct positions.
- 7) Plug in the icemaker or connect the power source.

## 12. EXPANSION VALVE - AM-150BAF/BWF ONLY

### IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacement has been made.

- 1) Unplug the icemaker or disconnect the power source.
- 2) Remove the Top, Front and Rear Mesh Panels.
- 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 Expansion Valve using brazing equipment. Protect the Evaporator and pipes from excessive heat with damp cloths or similar.
- 5) Remove the Expansion Valve Sensor (Bulb).
- 6) Remove the Drier using brazing equipment.
- 7) Braze in the new Expansion Valve. Protect the body of the valve from excessive heat, and use nitrogen at a pressure of 3 - 4 PSIG when brazing.
- 8) Braze or solder the new Drier (See "3. DRIER").
- 9) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 10) Evacuate the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
- 11) Attach the Bulb to the suction line in position. Be sure to secure it using a wire or clamp and replace the insulation.
- 12) Replace the panels in their correct positions.
- 13) Plug in the icemaker or connect the power source.



**Fig. 13**

### **13. WATER REGULATING VALVE - WATER-COOLED MODEL ONLY**

#### **[a] VALVE BODY**

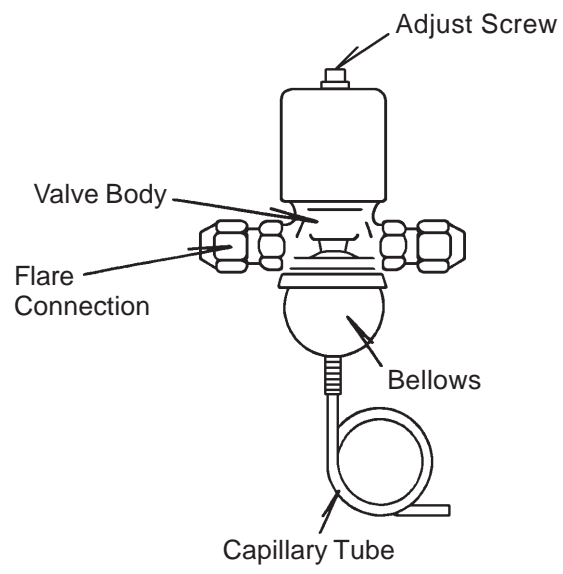
- 1) Unplug the icemaker or disconnect the power source.
- 2) Close the water supply tap.
- 3) Remove the Rear Mesh and Front Panel.
- 4) Disconnect the flare connections of the Water Regulating Valve.
- 5) Remove the valve from the Bracket.
- 6) Install a new Water Regulating Valve.
- 7) Connect the flare connections.
- 8) Open the water supply tap.
- 9) Check for water leaks.
- 10) Replace the Rear Mesh and Front Panel in their correct positions.
- 11) Plug in the icemaker or connect the power source.

## [b] WHOLE VALVE

### IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacement has been made.

- 1) Unplug the icemaker or disconnect the power source.
- 2) Close the water supply tap.
- 3) Remove the Rear Mesh and Front Panel.
- 4) Recover the refrigerant and store it in a proper container, if required by an applicable law (See "1. [b] REFRIGERANT RECOVERY").
- 5) Remove the Capillary Tube from the Copper Tube using brazing equipment.
- 6) Disconnect the flare connections from the Bracket.
- 7) Remove the screws and the valve from the Bracket.
- 8) Install the new valve, and insert the Capillary Tubes into the Copper Tube.
- 9) Web the Copper Tube end, and braze or solder the Copper Tube and Capillary Tubes together.
- 10) Install the new Drier (See "3. DRIER").
- 11) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 12) Evacuate the system and charge it with refrigerant (See "1. [c] EVACUATION AND RECHARGE").
- 13) Connect the flare connections.
- 14) Open the water supply tap.
- 15) Check for water leaks.
- 16) Replace the panels in their correct positions.
- 17) Plug in the icemaker or connect the power source.



**Fig. 14**

# **HOSHIZAKI**

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