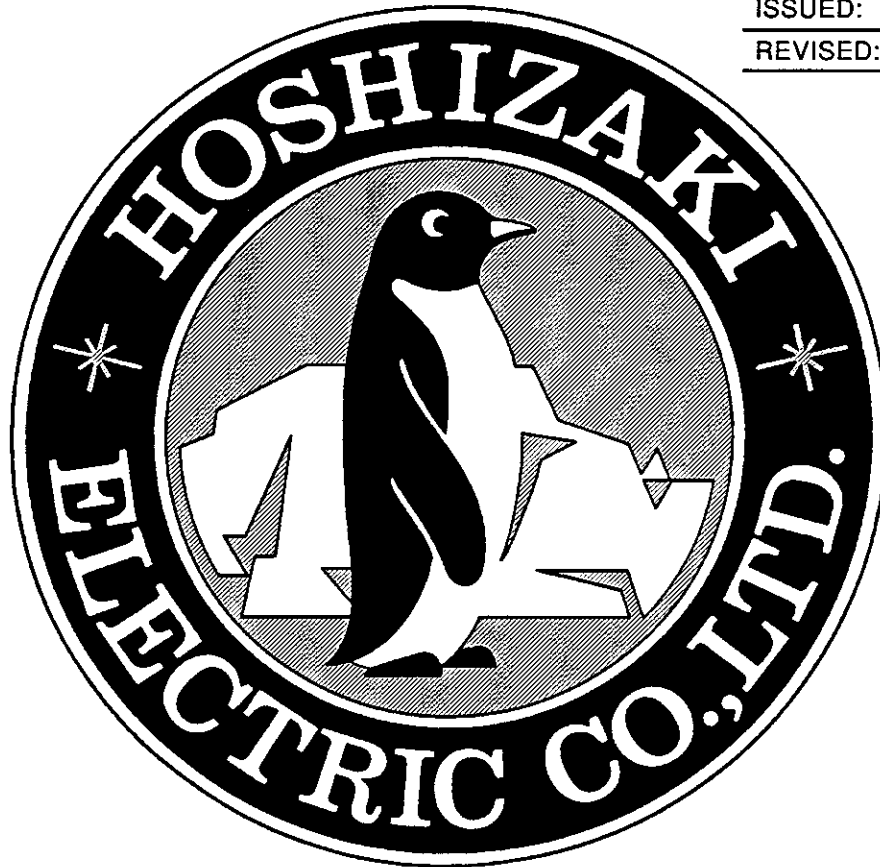


NO. U2MC-372
ISSUED: AUG. 31, 1995
REVISED: JAN. 26, 1996



**HOSHIZAKI
SELF-CONTAINED FLAKER**

MODEL F-250BAE

SERVICE MANUAL

FOREWORD

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 Care Department for assistance.

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

Attn: HOSHIZAKI Care 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

- Please review this manual. It should be read carefully before the icemaker is serviced or maintenance operations performed. Only qualified service technicians should service and maintain the icemaker. This manual should be made available to the technician prior to service or maintenance.

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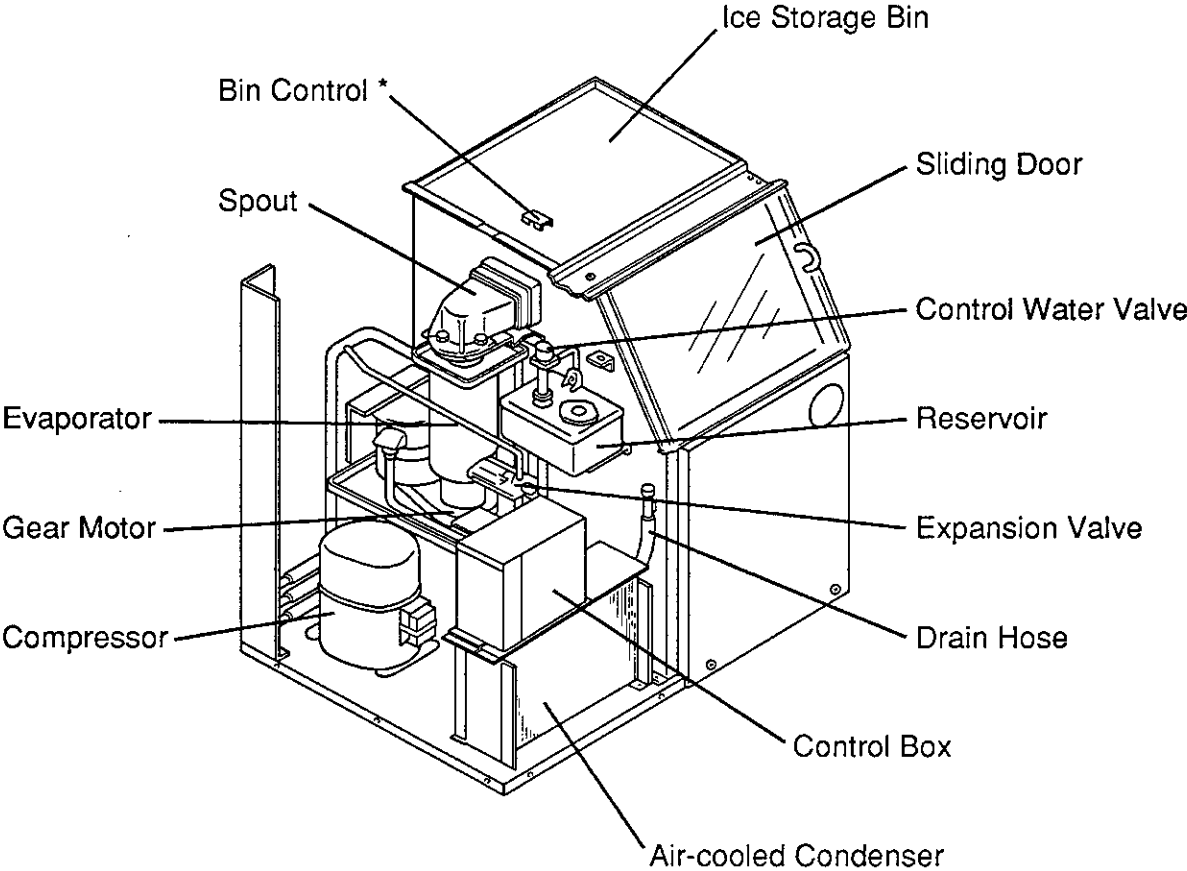
I. SPECIFICATIONS

AC SUPPLY VOLTAGE	115/60/1																							
AMPERAGE	5.6 A (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) Reference without *marks	<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. (° F)</th> <th colspan="3">Water Temp. (° F)</th> </tr> <tr> <th>50</th> <th>70</th> <th>90</th> </tr> </thead> <tbody> <tr> <td>70</td> <td>* 275(125)</td> <td>253(115)</td> <td>242(110)</td> </tr> <tr> <td>80</td> <td>253(115)</td> <td>242(110)</td> <td>220(100)</td> </tr> <tr> <td>90</td> <td>231(105)</td> <td>* 220(100)</td> <td>209 (95)</td> </tr> <tr> <td>100</td> <td>209 (95)</td> <td>198 (90)</td> <td>187 (85)</td> </tr> </tbody> </table>	Ambient Temp. (° F)	Water Temp. (° F)			50	70	90	70	* 275(125)	253(115)	242(110)	80	253(115)	242(110)	220(100)	90	231(105)	* 220(100)	209 (95)	100	209 (95)	198 (90)	187 (85)
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90	231(105)	* 220(100)	209 (95)																					
100	209 (95)	198 (90)	187 (85)																					
SHAPE OF ICE	Flake																							
ICE QUALITY	Approx. 70 % Ice (90/70° F, Conductivity 200 μ s/cm)																							
APPROXIMATE STORAGE CAPACITY	110 lbs.																							
ELECTRIC & WATER CONSUMPTION	90° F/ 70° F, 70° F/ 50° F,																							
ELECTRIC W (kWH/100 lbs.)	500 (5.5) 485 (4.2)																							
POTABLE WATER gal./24HR (gal./100lbs.)	26.4(12.0) 33.0(12.0)																							
EXTERIOR DIMENSIONS (WxDxH)	36" x 24" x 33" (914 x 610 x 838 mm)																							
EXTERIOR FINISH	Stainless Steel, Galvanized Steel(Rear)																							
WEIGHT	Net 172 lbs. (78 kg), Shipping 203 lbs. (92 kg)																							
CONNECTIONS - ELECTRIC	Cord Connection																							
- WATER SUPPLY	Inlet 1/2" FPT																							
- DRAIN	Overflow 27/32" DIA. Drain pan 27/32" DIA. Bin drain 27/32" DIA.																							
ICE MAKING SYSTEM	Auger type																							
HARVESTING SYSTEM	Direct driven Auger (80 W Gear Motor)																							
ICE MAKING WATER CONTROL	Float Switch																							
COOLING WATER CONTROL	N/A																							
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)																							
COMPRESSOR	Hermetic 300 W, Model CE110Y-1ZU																							
CONDENSER	Air-cooled, Fin and tube type																							
EVAPORATOR	Copper Tube on Cylinder																							
REFRIGERANT CONTROL	Thermostatic Expansion Valve																							
REFRIGERANT CHARGE	R134a , 8 oz. (230 g)																							
DESIGN PRESSURE	High 270 PSIG, Low 150 PSIG																							
COMPRESSOR PROTECTION	Auto-reset Overload Protector																							
GEAR MOTOR PROTECTION	Manual reset Circuit Breaker																							
REFRIGERANT CIRCUIT PROTECTION	Auto reset High Pressure Control Switch																							
LOW WATER PROTECTION	Float Switch and Timer																							
ACCESSORIES - SUPPLIED	Ice Scoop , Spare Fuse																							
- REQUIRED	Legs																							
OPERATING CONDITIONS	<table> <tr> <td>VOLTAGE RANGE</td> <td>104 - 127 V</td> </tr> <tr> <td>AMBIENT TEMP.</td> <td>41 - 100° F</td> </tr> <tr> <td>WATER SUPPLY TEMP.</td> <td>41 - 90° F</td> </tr> <tr> <td>WATER SUPPLY PRESS.</td> <td>10 - 113 PSIG</td> </tr> </table>	VOLTAGE RANGE	104 - 127 V	AMBIENT TEMP.	41 - 100° F	WATER SUPPLY TEMP.	41 - 90° F	WATER SUPPLY PRESS.	10 - 113 PSIG															
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* We reserve the right to make changes in specifications and design without prior notice.

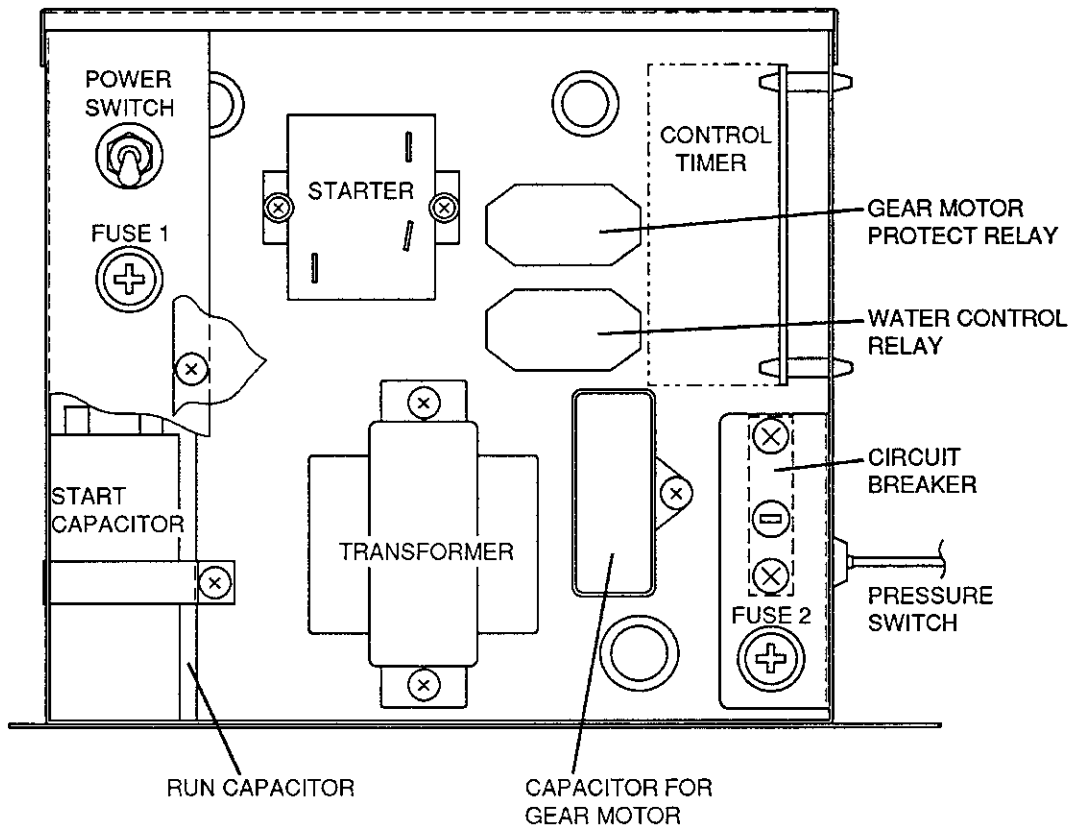
II. GENERAL INFORMATION

1. CONSTRUCTION



Note: * The switch activator is located in the Ice Storage Bin.

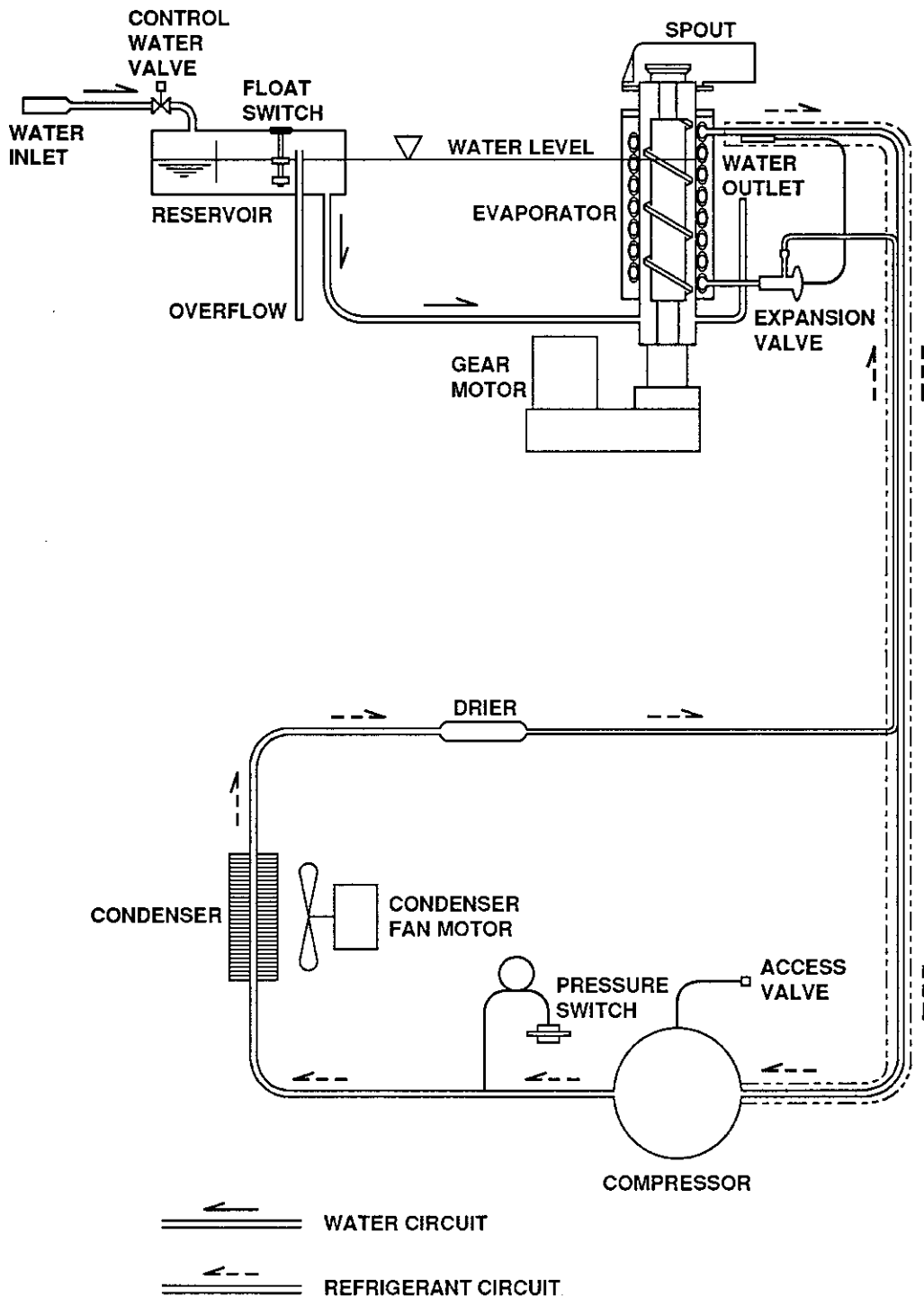
2. CONTROL BOX LAYOUT



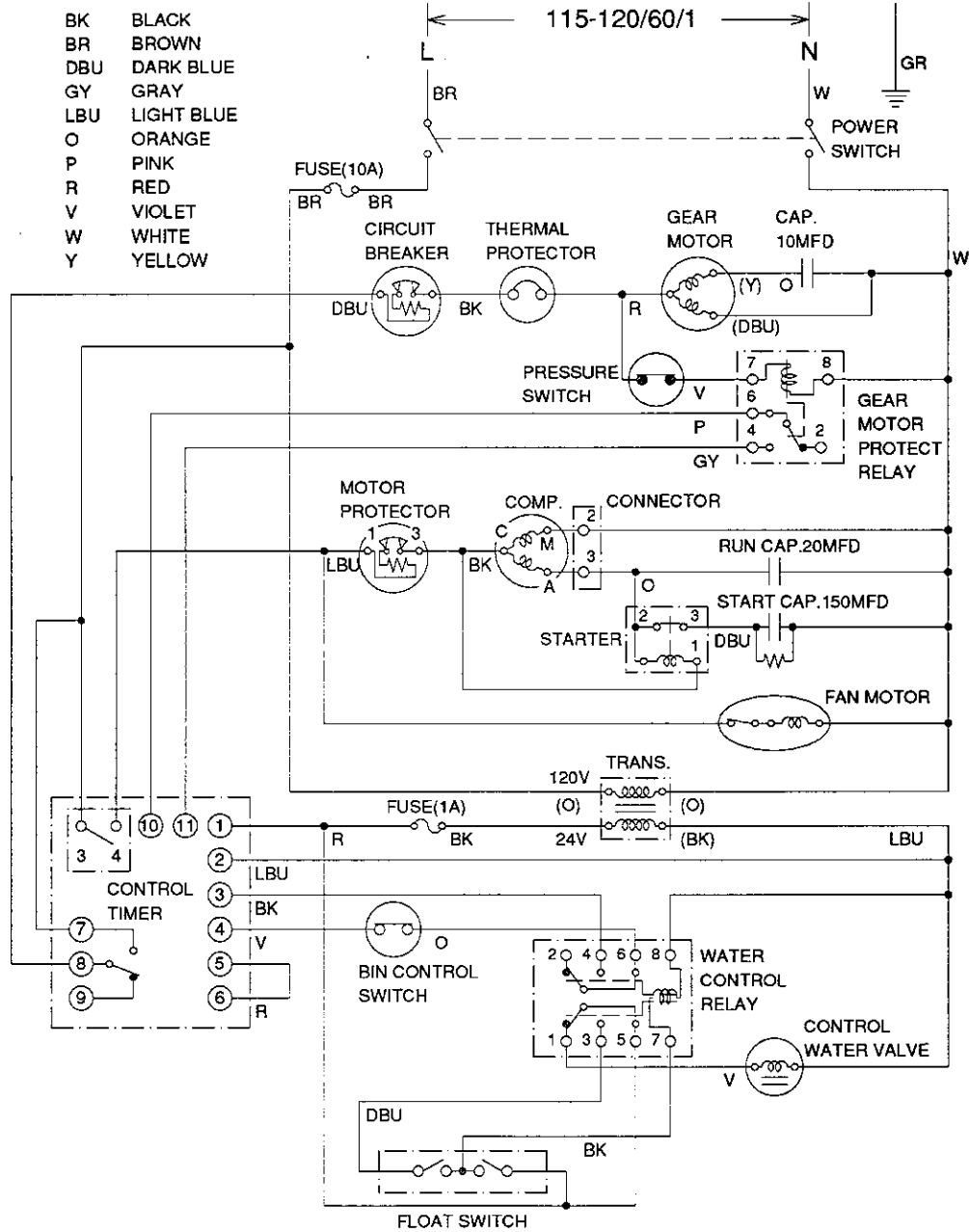
Note: The above component names are identical with the Wiring Label, but not with the Parts List.

III. TECHNICAL INFORMATION

1. WATER CIRCUIT AND REFRIGERANT CIRCUIT

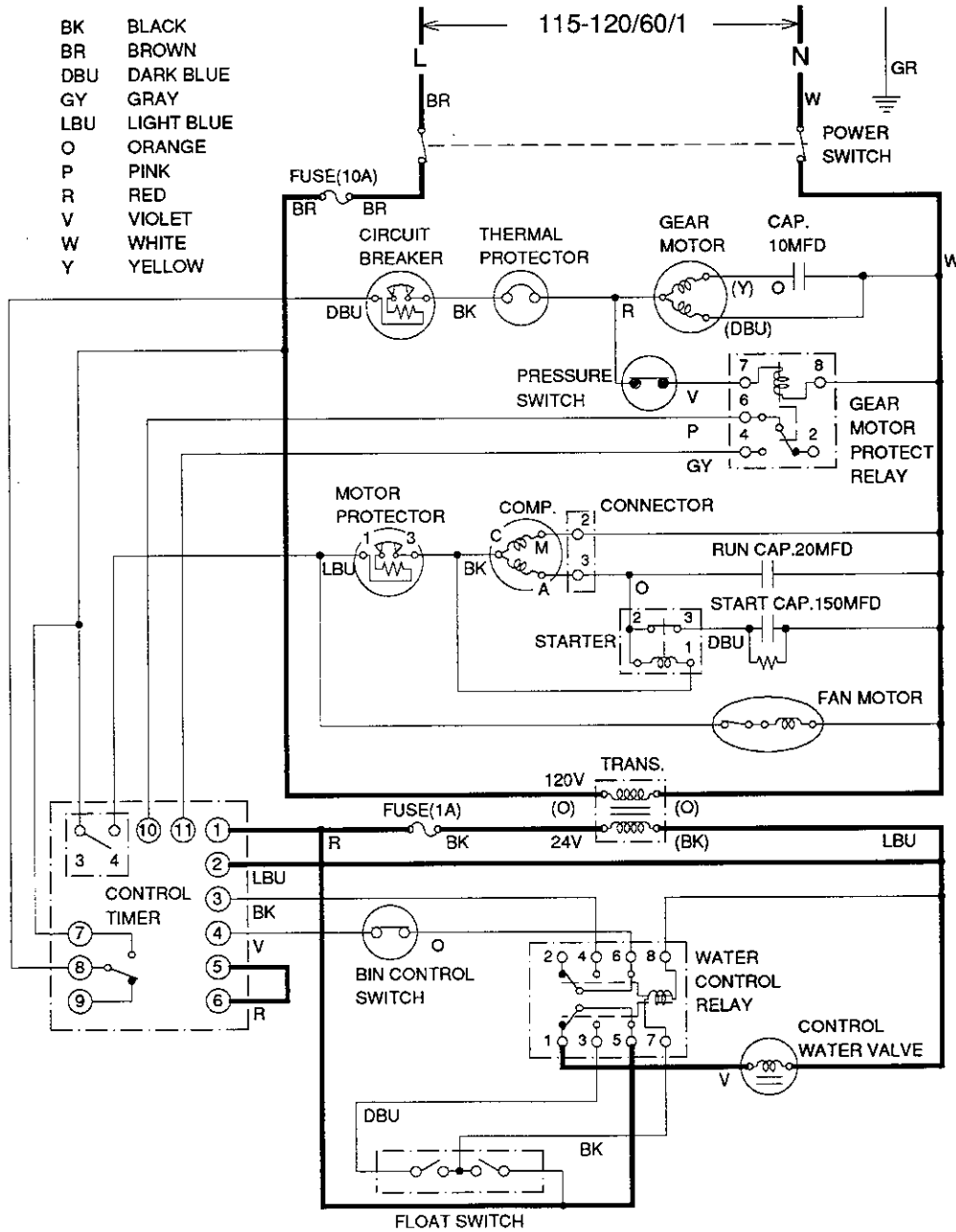


2. WIRING DIAGRAM

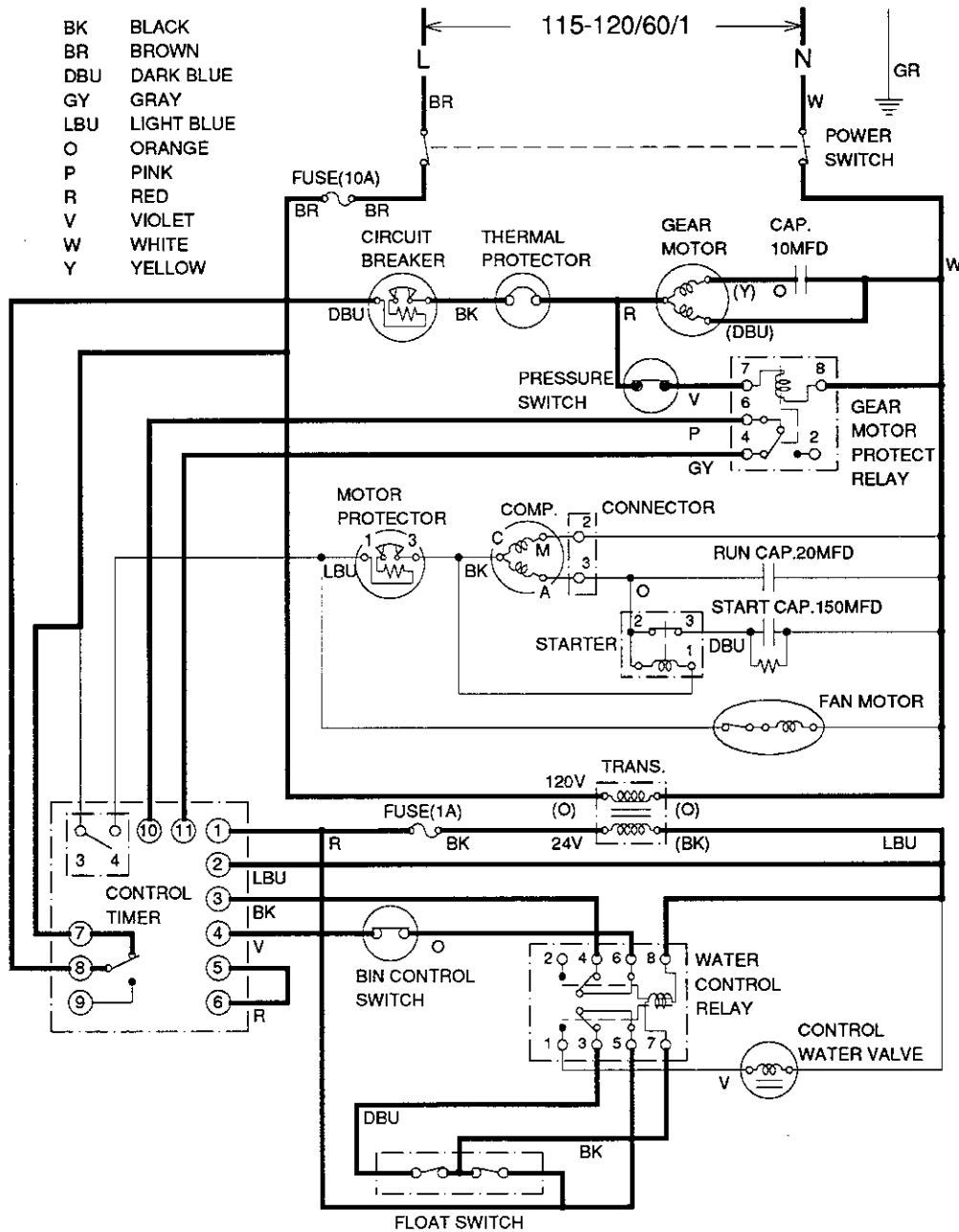


3. SEQUENCE OF ELECTRICAL CIRCUIT

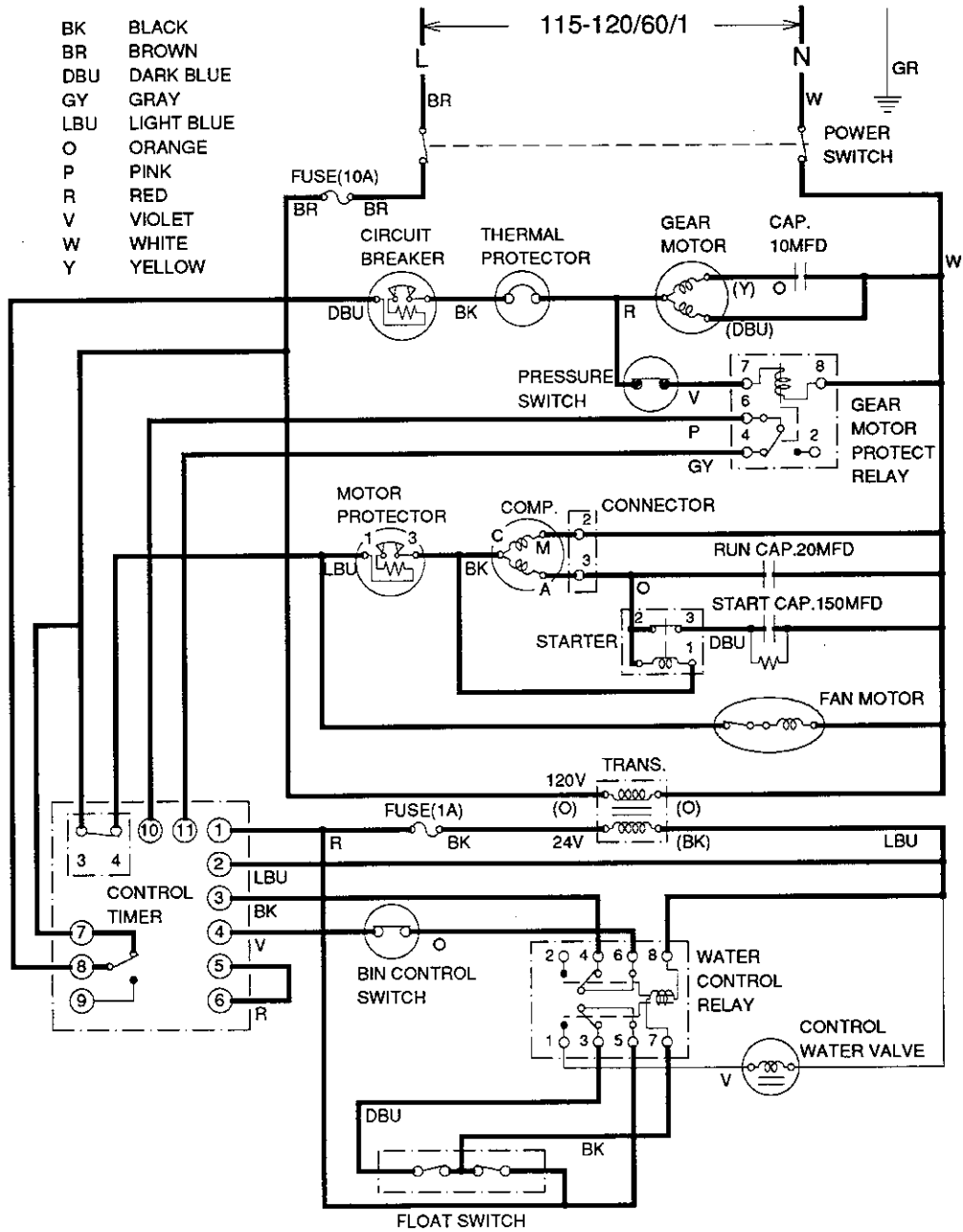
[a] When Power Switch is moved to "ON" position, water starts to be supplied to Reservoir.



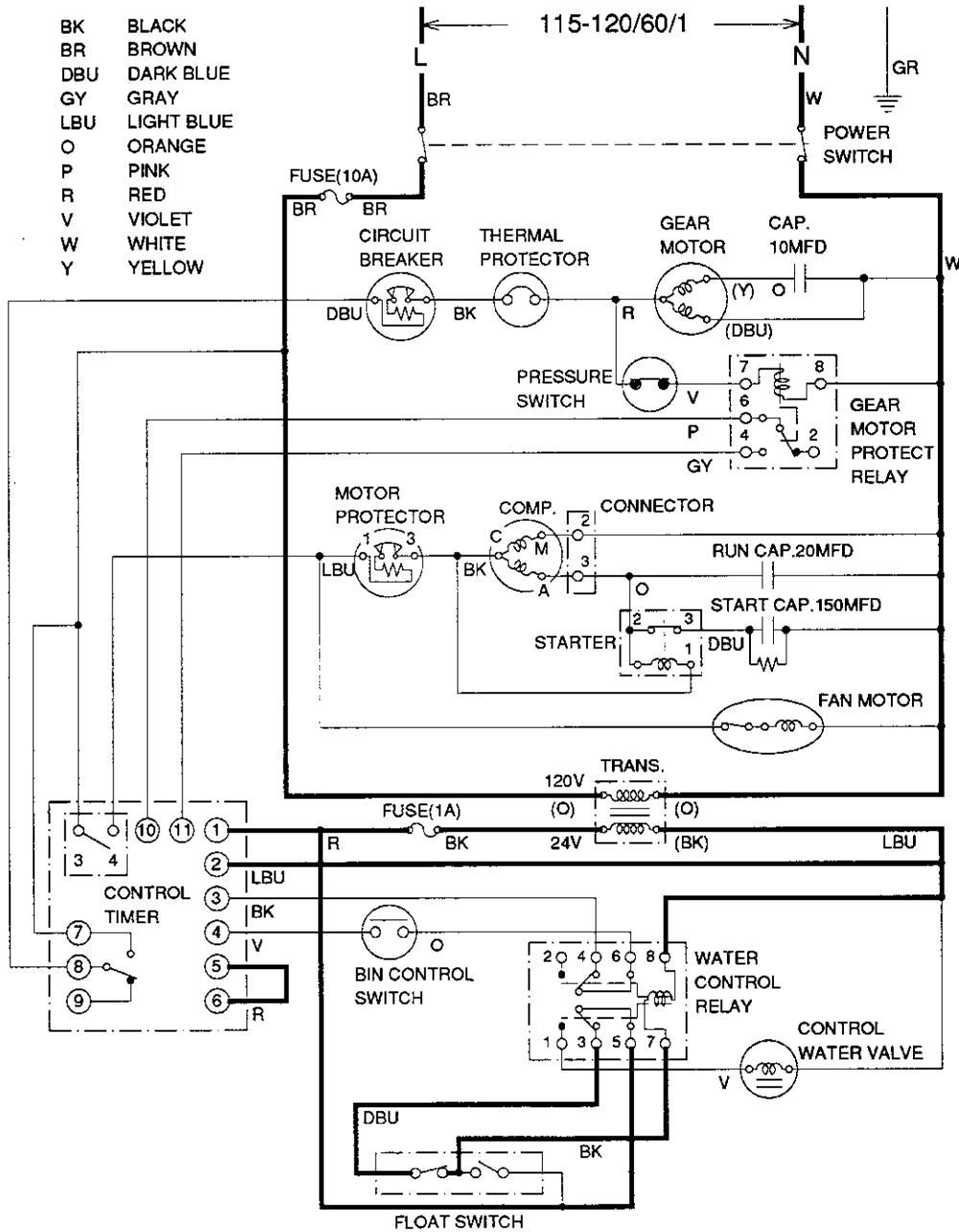
[b] When Reservoir has been filled up, Gear Motor starts immediately.



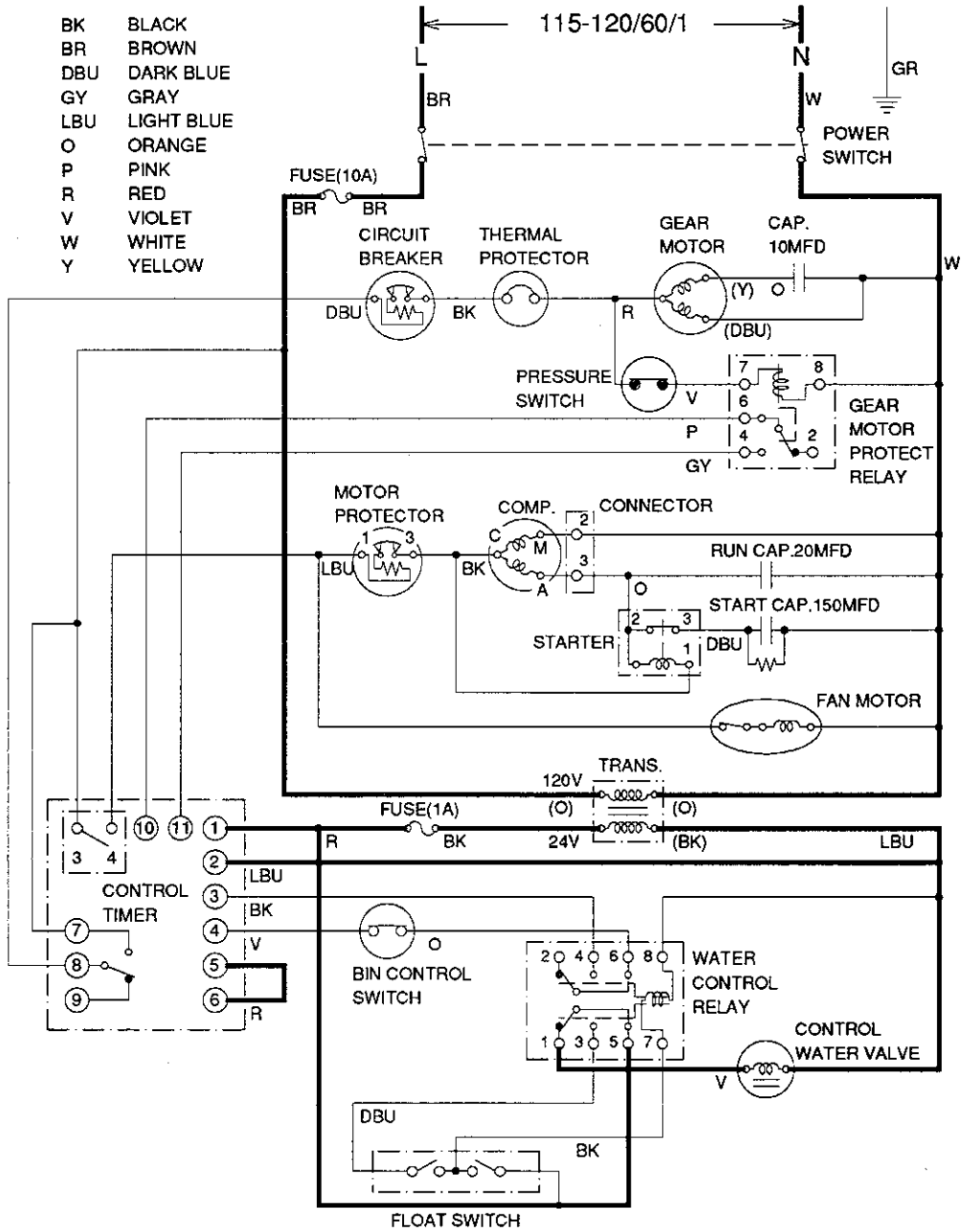
[c] Compressor starts about 60 sec. after Gear Motor starts.



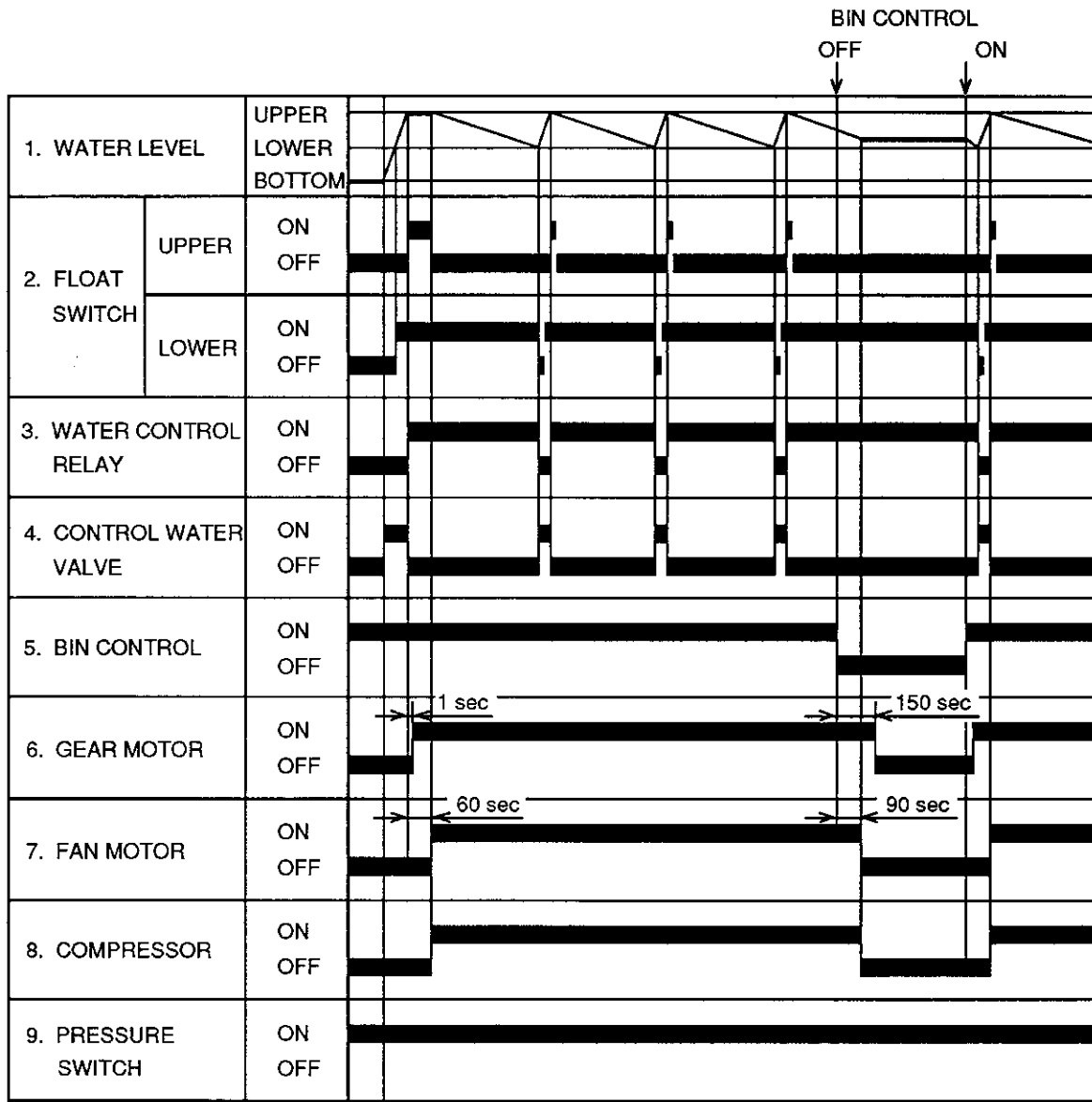
[d] Compressor stops about 90 sec. after Bin Control operates. Gear Motor stops about 60 sec. later.

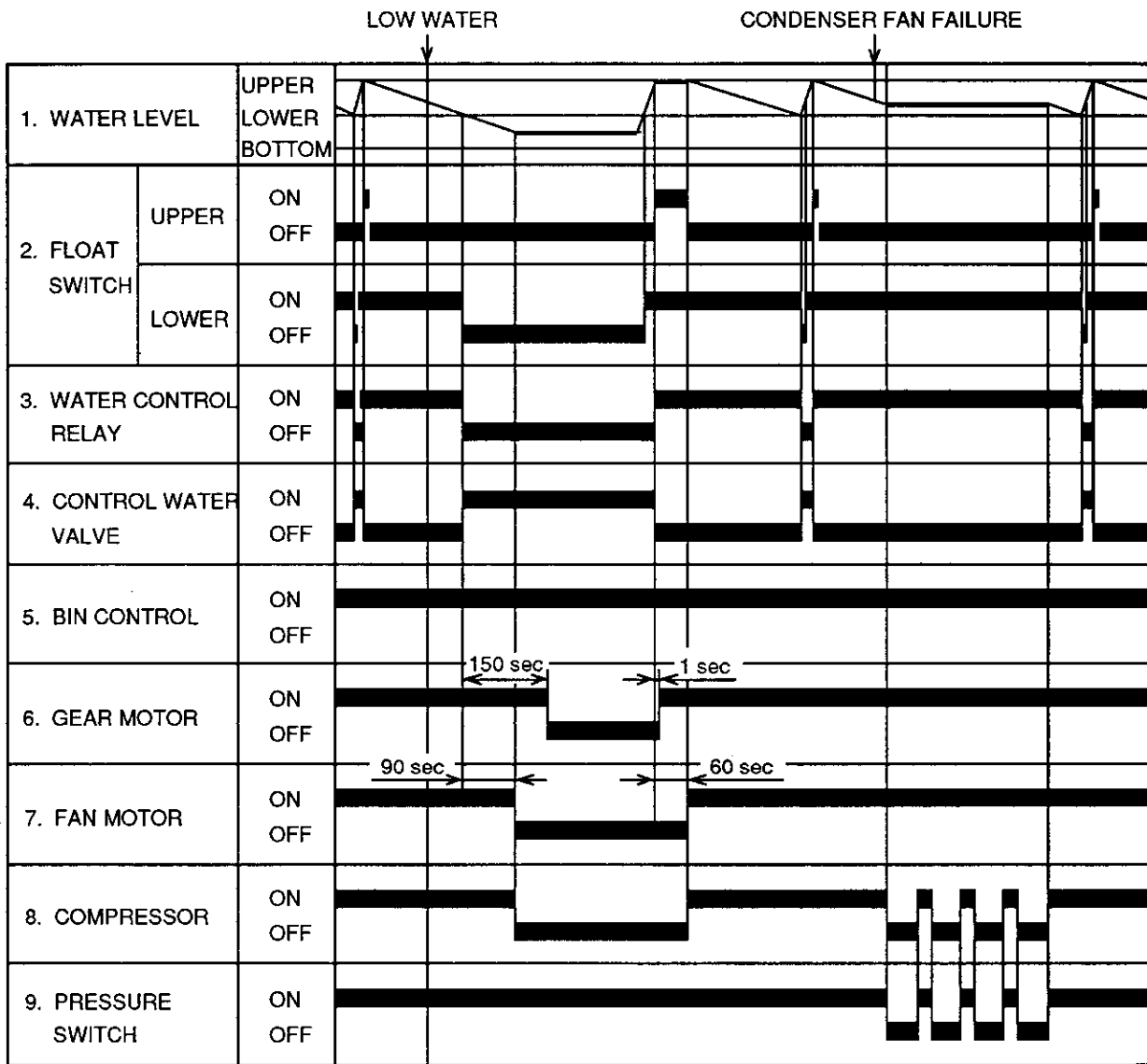


[e] Low Water



4. TIMING CHART





5. PERFORMANCE DATA

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient	Water Temp. (° F)		
	Temp. (° F)	50	70	90
lbs./day (kg/day)	70	* 275(125)	253(115)	242(110)
	80	253(115)	242(110)	220(100)
	90	231(105)	* 220(100)	209 (95)
	100	209 (95)	198 (90)	187 (85)
APPROXIMATE ELECTRIC CONSUMPTION	70	* 485	490	500
watts	80	500	490	500
	90	510	* 500	510
	100	550	530	530
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70	33.0(125)	30.4(115)	29.1(110)
gal./day (ℓ/day)	80	30.4(115)	29.1(110)	26.4(100)
	90	27.7(105)	26.4(100)	25.1 (95)
	100	25.1 (95)	23.8 (90)	22.5 (85)
EVAPORATOR OUTLET TEMP.	70	8.6~15.8 (-13~-9)	8.6~16.7 (-13~-8.5)	8.6~16.7 (-13~-8.5)
	80	10.4~16.7 (-12~-8.5)	10.4~17.6 (-12~-8)	10.4~17.6 (-12~-8)
	90	12.2~17.6 (-11~-8)	12.2~17.6 (-11~-8)	12.2~18.5 (-11~-7.5)
° F (° C)	100	13.1~19.4 (-10.5~-7)	13.1~19.4 (-10.5~-7)	13.1~20.3 (-10.5~-6.5)
HEAD PRESSURE	70	125 (8.8)	125 (8.8)	125 (8.8)
PSIG (kg/cm ² G)	80	149(10.5)	149(10.5)	149(10.5)
	90	173(12.2)	173(12.2)	173(12.2)
	100	203(14.3)	203(14.3)	203(14.3)
SUCTION PRESSURE	70	7.1(0.5)	7.1(0.5)	7.1(0.5)
PSIG (kg/cm ² G)	80	8.5(0.6)	8.5(0.6)	8.5(0.6)
	90	8.5(0.6)	8.5(0.6)	10.0(0.7)
	100	10.0(0.7)	10.0(0.7)	10.0(0.7)
TOTAL HEAT OF REJECTION	4350 BTU/h (AT 90° /WT 70° F)			

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

IV. SERVICE DIAGNOSIS

1. NO ICE PRODUCTION

PROBLEM	POSSIBLE CAUSE		REMEDY
[1] The icemaker will not start.	a) Power Supply	1. OFF position.	1. Move to ON position.
		2. Loose connections.	2. Tighten.
		3. Bad contacts.	3. Check for continuity and replace.
		4. Blown fuse.	4. Replace.
	b) Power Switch (Control Box)	1. OFF position.	1. Move to ON position.
		2. Bad contacts.	2. Check for continuity and replace.
	c) Fuse (Control Box)	1. Blown out.	1. Check for short circuit and replace.
d) Transformer	1. Coil winding opened.	1. Replace.	
e) Control Water Valve	1. Coil winding opened.	1. Replace.	
f) Shut-off Valve	1. Closed.	1. Open.	
	2. Water failure.	2. Wait till water is supplied.	
[2] Water does not stop, and the icemaker will not start.	a) Water Control Relay	1. Contacts fused.	1. Replace.
		2. Coil winding opened.	2. Replace.
	b) Float Switch	1. Bad contacts.	1. Check for continuity and replace.
		2. Float does not move freely.	2. Clean or replace.
c) Hoses	1. Disconnected.	1. Connect.	
[3] Water has been supplied, but the icemaker will not start.	a) Water Control Relay	1. Bad contacts.	1. Check for continuity and replace.
	b) Bin Control	1. Bad contacts.	1. Check for continuity and replace.
		2. Activator does not move freely.	2. Clean Axle and its corresponding holes or replace Bin Control.
	c) Gear Motor Protector (Circuit Breaker)	1. Tripped.	1. Find out the cause, get rid of it, and press Reset Button on Circuit Breaker.
	d) Control Timer (Printed Circuit Board)	1. Broken.	1. Replace.
	e) Gear Motor Protect Relay	1. Coil winding opened.	1. Replace.
2. Bad contacts.		2. Check for continuity and replace.	
[4] Gear Motor starts, but Compressor will not start or operates intermittently.	a) Pressure Switch	1. Dirty Air Filter or Condenser.	1. Clean.
		2. Ambient or condenser water temperature too warm.	2. Get cooler.
		3. Fan not rotating.	3. See "3. [1] a) Fan Motor."
		4. Refrigerant overcharged.	4. Recharge.

PROBLEM	POSSIBLE CAUSE		REMEDY
		5. Refrigerant line or components plugged.	5. Clean and replace drier.
		6. Bad contacts.	6. Check for continuity and replace.
		7. Loose connections.	7. Tighten.
	b) X2 Relay on Control Timer	1. Bad contacts.	1. Check for continuity and replace Timer.
		2. Coil winding opened.	2. Replace Timer.
	c) Starter	1. Bad contacts.	1. Check for continuity and replace.
		2. Coil winding opened.	2. Replace.
		3. Loose connections.	3. Tighten.
	d) Start Capacitor or Run Capacitor	1. Defective.	1. Replace.
	e) Compressor	1. Loose connections.	1. Tighten.
		2. Motor winding opened or grounded.	2. Replace.
3. Motor Protector tripped.		3. Find out the cause of overheat or overcurrent.	
f) Power Supply	1. Circuit Ampacity too low.	1. Install a larger-sized conductor.	
[5] Gear Motor and Compressor start, but no ice is produced.	a) Refrigerant Line	1. Gas leaks.	1. Check for leaks with a leak detector. Reweld leak, replace drier and charge with refrigerant. The amount of refrigerant is marked on Nameplate or Label.
		2. Refrigerant line clogged.	2. Replace the clogged component.

2. LOW ICE PRODUCTION

PROBLEM	POSSIBLE CAUSE		REMEDY
[1] Low ice production	a) Refrigerant Line	1. Gas leaks.	1. See "1. [5] a) Refrigerant Line."
		2. Refrigerant line clogged.	2. Replace the clogged component.
		3. Overcharged.	3. Recharge.
	b) High-side Pressure Too High	1. Dirty Air Filter or Condenser.	1. Clean.
		2. Ambient or condenser water temperature too warm.	2. Get cooler.
		3. Fan rotating too slow.	3. See "3. [1] a) Fan Motor."
	c) Expansion Valve (not adjustable)	1. Low-side pressure too low.	1. Replace.
		2. Low-side pressure too high.	2. See if Expansion Valve Bulb is mounted properly, and replace the valve if necessary.

3. OTHERS

PROBLEM	POSSIBLE CAUSE		REMEDY
[1] Abnormal noise	a) 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.
	b) Compressor	1. Bearings worn out, or cylinder valve broken.	1. Replace.
		2. Mounting pad out of position.	2. Reinstall.
	c) Refrigerant Lines	1. Rub or touch lines or other surfaces.	1. Replace.
d) Gear Motor (Ice Making)	1. Bearing or Gear worn out/damaged.	1. Replace.	
e) Evaporator	1. Too much pressure loss.	1. Replace.	
	2. Scale on inside wall of Freezing Cylinder.	2. Remove Auger. Use "LIME-A-WAY" solution to clean periodically. If the water is found hard by testing, install a softener.	
[2] Overflow from Reservoir (Water does not stop.)	a) Water Supply	1. Water pressure too high.	1. Install a Pressure Reducing Valve.
	b) Control Water Valve	1. Diaphragm does not close.	1. Clean or replace.
	c) Float Switch	1. Bad contacts.	1. Check for continuity and replace.
[3] Gear Motor Protector operates frequently.	a) Power Supply Voltage	1. Too high or too low.	1. Connect the unit to a power supply of proper voltage.
	b) Evaporator Assy	1. Bearings or Auger worn out.	1. Replace Bearing or Auger.
	c) Bin Control	1. Bad contacts.	1. Check for continuity and replace.
		2. Activator does not move freely.	2. Clean Axle and its corresponding holes or replace Bin Control.

V. REMOVAL AND REPLACEMENT OF COMPONENTS

1. SERVICE FOR REFRIGERANT LINES

[a] SERVICE INFORMATION

1) Allowable Compressor Opening Time and Prevention of Lubricant Mixture [R-134a]

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 R-134a, except when they use the same lubricant.

2) Treatment for Refrigerant Leak [R-134a]

If a refrigerant leak occurs in the low side of an ice maker charged with R-134a, 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 easily absorbs a lot of moisture. If an ice maker charged with R-134a has possibly drawn in air, the drier must be replaced. Be sure to use a drier designed for R-134a.

3) Handling of Handy Flux [R-134a]

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 [R-134a]

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 and let it into the tubing, or wax contained in the oil will clog the capillary tubing.

5) Service Parts for R-134a

Some parts used for refrigerants other than R-134a are similar to those for R-134a. But never use any parts unless they are specified for R-134a because their endurance against the refrigerant have not been evaluated. Also, for R-134a, do not use any parts that have been used for other refrigerants. Otherwise, wax and chlorine remaining on the parts may adversely affect R-134a.

6) Replacement Copper Tubing [R-134a]

The copper tubes currently used are acceptable for R-134a. But do not use them if they are oily inside. The residual oil in the 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 [R-134a]

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 R-134a.

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 electric detector. Do not use air or oxygen instead of nitrogen for this purpose, or rise in pressure as well as in temperature may cause R-134a 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. The icemaker unit is provided with a Refrigerant Access Valve on the low-side line. Install an Access Valve on the high-side line, if it has none. Recover the refrigerant from these two Access Valves, and store it in an approved container. Do not discharge the refrigerant into the atmosphere.

[c] EVACUATION AND RECHARGE

- 1) Attach Charging Hoses, a Service Manifold and a Vacuum Pump to the system.
- 2) Turn on the Vacuum Pump.
- 3) Allow the Vacuum Pump to pull down to a 29.9" Hg vacuum. Evacuating period depends on pump capacity.
- 4) Close the Low-side Valve on the Service Manifold.
- 5) Disconnect the Vacuum Pump, and attach a Refrigerant Service Cylinder to the low-side line. Remember to loosen the connection, and purge the air from the Hose. See the Nameplate for the required refrigerant charge and type. Hoshizaki recommends only virgin refrigerant or reclaimed refrigerant which meets ARI Standard No. 700-88 be used.

- 6) Open the Low-side Valve. Do not invert the Service Cylinder. A liquid charge will damage the Compressor.
- 7) Turn on the icemaker when charging speed gets slow. Turn off the icemaker when the Low-side Gauge shows approximately 0 PSIG. Do not run the icemaker at negative pressures. Close the Low-side Valve when the Service Cylinder gets empty.
- 8) Repeat the above steps 4) through 7), if necessary, until the required amount of refrigerant has entered the system.
- 9) Close the Refrigerant Access Valve, and disconnect the Hoses and Service Manifold.
- 10) Cap the Access Valve to prevent a possible leak.

2. BRAZING

DANGER

1. Refrigerant R-134a itself is not flammable, explosive or poisonous. However, when exposed to an open flame, the refrigerant creates hydrogen fluoride gas, hazardous in large amounts.
2. If required by an applicable law, always recover the refrigerant and store it in an approved container. Do not discharge the refrigerant into the atmosphere.
3. Do not use silver alloy or copper alloy containing arsenic.
4. In its liquid state, the refrigerant can cause frostbite because of the low temperature.

3. REMOVAL AND REPLACEMENT OF COMPRESSOR

IMPORTANT

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

- 1) Unplug the icemaker, and remove the panels.
- 2) Remove the Terminal Cover on the Compressor, and disconnect the Compressor Wiring.
- 3) Recover the refrigerant and store it in an approved container, if required by an applicable law.
- 4) Remove the Discharge, Suction and Access Pipes from the Compressor using brazing equipment.

WARNING

When repairing a refrigerant system, be careful not to let the burner flame contact any electrical wires or insulation.

- 5) Remove the Bolts and Rubber Grommets.
- 6) Slide and remove the Compressor. Unpack the new Compressor package. Install the new Compressor.
- 7) Attach the Rubber Grommets of the prior Compressor.
- 8) Sandpaper the Discharge, Suction and Access Pipes.
- 9) Place the Compressor in position, and secure it using the Bolts.
- 10) Remove plugs from the Discharge, Suction and Access Pipes.
- 11) Braze the Access, Suction and Discharge lines (Do not change this order), while purging with nitrogen gas flowing at the pressure of 3 - 4 PSIG.
- 12) Install the new Drier.
- 13) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 14) Evacuate the system, and charge it with refrigerant. See the Nameplate for the required refrigerant charge and type.
- 15) Connect the Terminals to the Compressor, and replace the Terminal Cover in its correct position.
- 16) Replace the panels in their correct position, and plug in the icemaker.

4. REMOVAL AND REPLACEMENT OF DRIER

IMPORTANT

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

- 1) Unplug the icemaker, and remove the panels.
- 2) Recover the refrigerant and store it in an approved container, if required by an applicable law.
- 3) Remove the Drier using brazing equipment.
- 4) Install the new Drier with the arrow on the Drier in the direction of the refrigerant flow. Use nitrogen gas at the pressure of 3 - 4 PSIG when brazing the tubings.
- 5) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 6) Evacuate the system, and charge it with refrigerant. See the Nameplate for the required refrigerant charge and type.
- 7) Replace the panels in their correct position, and plug in the icemaker.

5. REMOVAL AND REPLACEMENT OF EXPANSION VALVE

IMPORTANT

Sometimes moisture in the refrigerant circuit exceeds the Drier capacity and freezes up at the Expansion Valve. Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repairs or replacement have been made.

- 1) Unplug the icemaker, and remove the panels.
- 2) Recover the refrigerant and store it in an approved container, if required by an applicable law.
- 3) Remove the Expansion Valve Bulb at the Evaporator outlet.
- 4) Remove the Expansion Valve Cover, and remove the Expansion Valve using brazing equipment.
- 5) Braze the new Expansion Valve with nitrogen gas flowing at the 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 250°F.

- 6) Install the new Drier.
- 7) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 8) Evacuate the system. Charge it with refrigerant. See the Nameplate for the required refrigerant charge and type.
- 9) Attach the Bulb to the suction line. Be sure to secure the Bulb using a band and to insulate it.
- 10) Place the new set of Expansion Valve Covers in position.
- 11) Replace the panels in their correct position, and plug in the icemaker.

6. REMOVAL AND REPLACEMENT OF EVAPORATOR ASSEMBLY

- 1) Unplug the icemaker.
- 2) Remove the panels.
- 3) Drain the water from the Evaporator by using the Drain Hose provided.
- 4) Remove the three Thumbscrews and take off the Spout from the Evaporator.

CUTTER

- 5) Loosen the Cutter by a wrench and remove it.
- 6) Remove the Cylinder Gasket at the top of the Evaporator.

EXTRUDING HEAD

- 7) Remove the three Socket Head Cap Screws and lift off the Extruding Head.
- 8) Replace the Bearing inside the Extruding Head, if it exceeds the wear tolerance of 0.02" or is scratched.

Note: Replacing the Bearing requires a bearing press adaptor. If it is not available, replace the whole Extruding Head.

AUGER

- 9) Lift off the Auger. If the area in contact with the Bearing is worn out or the Blade scratched, replace the Auger.

EVAPORATOR

Note: Skip the following steps 10) through 12) when the Evaporator does not need replacement.

- 10) Recover the refrigerant and store it in an approved container, if required by an applicable law.

IMPORTANT

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

- 11) Remove the Bulb of the Expansion Valve.
- 12) Disconnect the brazing-connections of the Expansion Valve and the Copper Tube - Low Side from the Evaporator, using brazing equipment.
- 13) Remove the two Truss Head Machine Screws and the Bracket securing the Evaporator.
- 14) Disconnect the three Hoses from the Evaporator.
- 15) Remove the four Socket Head Cap Screws securing the Evaporator with the Bearing-Lower.
- 16) Lift off the Evaporator.

BEARING-LOWER AND MECHANICAL SEAL

- 17) The Mechanical Seal consists of two parts. One moves along with the Auger, and the other is fixed on the Bearing-Lower. If the contact surfaces of these two parts are worn or scratched, the Mechanical Seal may cause water leaks and should be replaced.
- 18) Remove the O-ring on the Bearing-Lower.
- 19) Remove the four Bolts and the Bearing-Lower from the Gear Motor. Replace the Bearing inside the Bearing-Lower, if it exceeds the wear tolerance of 0.02" or is scratched.

Note: Replacing the Bearing requires a bearing press adaptor. If it is not available, replace the whole Bearing-Lower.

GEAR MOTOR

- 20) Remove the Coupling-Spline on the Gear Motor Shaft.
- 21) Remove the three Bolts securing the Gear Motor.
- 22) Assemble the removed parts in the reverse order of the above procedure.

WARNING

Be careful not to scratch the surface of the O-ring, or it may cause water leaks. Handle the Mechanical Seal with care not to scratch nor to contaminate its contact surface.

23) When replacing the Evaporator;

(a) Braze the new Evaporator with nitrogen gas flowing at the pressure of 3 - 4 PSIG.

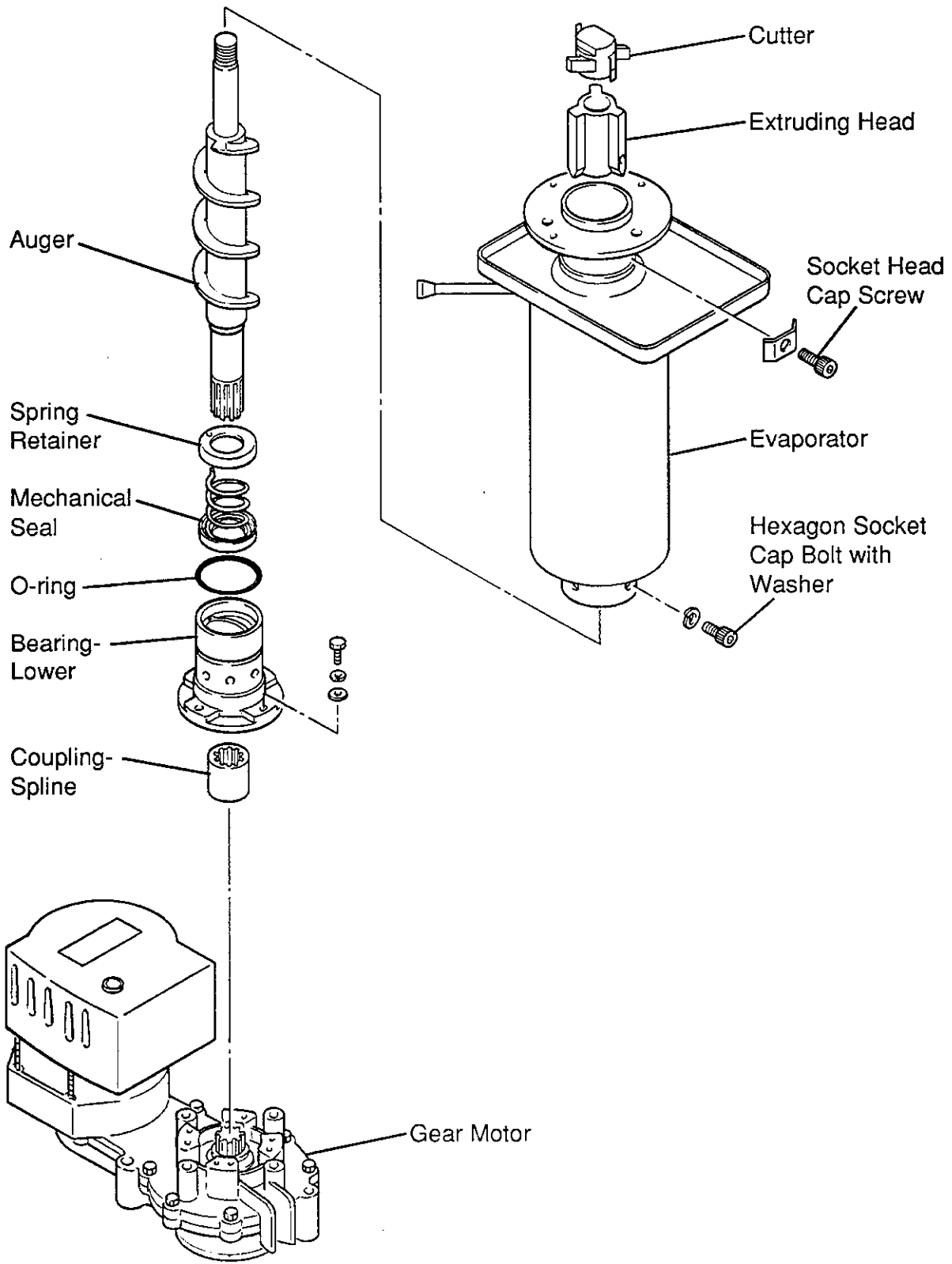
(b) Replace the Drier.

(c) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

(d) Evacuate the system. Charge it with refrigerant. See the Nameplate for required refrigerant charge and type.

24) Replace the panels in their correct position.

25) Plug in the icemaker.



7. REMOVAL AND REPLACEMENT OF FAN MOTOR

- 1) Unplug the icemaker and remove the panels.
- 2) Remove the wire connectors from the Fan Motor leads.
- 3) Remove the Fan Motor Bracket and Fan Motor.
- 4) Install the new Fan Motor.
- 5) Replace the Fan Motor Bracket and the wire connectors.
- 6) Replace the panels in their correct position, and plug in the icemaker.

8. REMOVAL AND REPLACEMENT OF CONTROL WATER VALVE

- 1) Unplug the icemaker, remove the panels and close the Water Supply Line Shut-off Valve.
- 2) Disconnect the Terminals from the Control Water Valve.
- 3) Loosen the Fitting Nut on the Control Water Valve Inlets, and remove the Control Water Valve. Do not lose the Packings inside the Fitting Nut.
- 4) Remove the Water Supply Hose from the Control Water Valve.
- 5) Install the new Control Water Valve.
- 6) Assemble the removed parts in the reverse order of the above procedure.
- 7) Open the Water Supply Line Shut-off Valve.
- 8) Check for water leaks.
- 9) Replace the panels in their correct position, and plug in the icemaker.

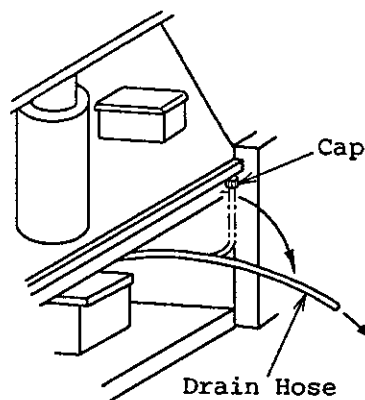
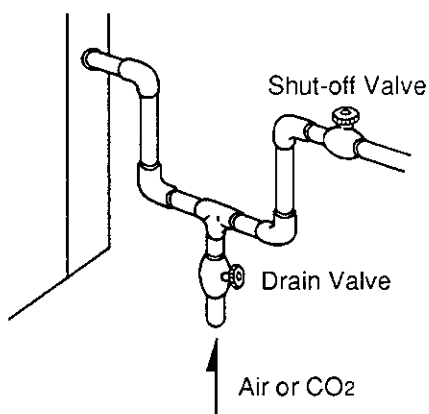
VI. MAINTENANCE AND CLEANING INSTRUCTIONS

1. PREPARING THE ICEMAKER FOR LONG STORAGE

WARNING

When shutting off the icemaker for an extended time, drain out all water from the water line and remove the ice from the Storage Bin. The Storage Bin should be cleaned and dried. Drain the icemaker to prevent damage to the water supply line at sub-freezing temperatures, using air or carbon dioxide. Shut off the icemaker until the proper ambient temperature is resumed.

- 1) Run the icemaker with the Water Supply Line Shut-off Valve closed.
- 2) Open the Drain Valve and blow out the water inlet line by using air pressure.
- 3) Unplug the icemaker.
- 4) Remove the Front Panel.
- 5) Turn off the Power Switch on the Control Box.
- 6) Unhook the Drain Hose, and remove the Cap on the hose end to drain the water system.
- 7) Replace the Front Panel in its correct position.
- 8) Close the Drain Valve.
- 9) Remove all ice from the Storage Bin, and clean the bin.



2. 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 solution. This will prevent irritation in case the solution contacts with skin.

[a] WATER SYSTEM

- 1) Dilute approximately 9.6 fl. oz. of recommended cleaner, "LIME-A-WAY" manufactured by Economics Laboratory, Inc., with 1.6 gal. of water.
- 2) Remove all ice from the Storage Bin.
- 3) Remove the Front Panel (Left) and Sliding Door.
- 4) Close the Water Supply Line Shut-off Valve.
- 5) Turn off the Power Switch on the Control Box.
- 6) Unhook the Drain Hose and remove the Cap on the hose end to drain the water system. Replace the Drain Hose in its correct position.
- 7) Remove the Reservoir Cover.
- 8) Pour the cleaning solution into the Reservoir. Be careful not to overflow.
- 9) Replace the Reservoir Cover in its correct position.
- 10) Wait for 10 minutes before starting icemaking process. Then turn on the Power Switch. Run the icemaker until it stops automatically.
- 11) Turn off the Power Switch, and drain the water system. See the above step 6).
- 12) Open the Water Supply Line Shut-off Valve.
- 13) Turn on the Power Switch to rinse the cleaning solution.

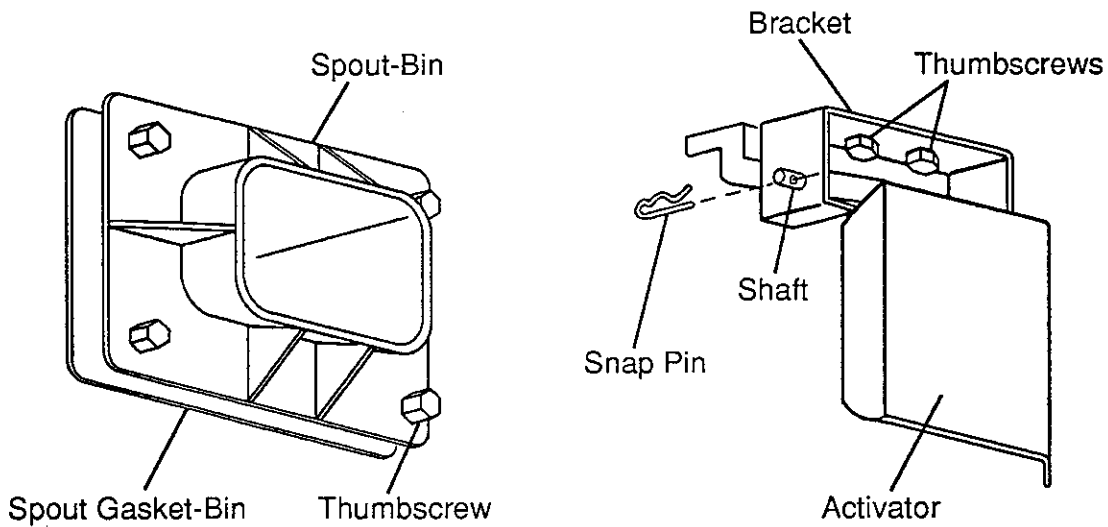
- 14) Dilute approximately 0.82 fl. oz. of a 5.25% Sodium Hypochlorite Solution with 1.6 gal. of water.
- 15) Close the Water Supply Line Shut-off Valve.
- 16) Turn off the Power Switch, and drain the water system. See the above step 6).
- 17) Remove the Reservoir Cover.
- 18) Pour the sanitizing solution into the Reservoir. Be careful not to overflow.
- 19) Replace the Reservoir Cover in its correct position.
- 20) Wait for 10 minutes before starting icemaking process. Then turn on the Power Switch. Run the icemaker until it stops automatically.
- 21) Turn off the Power Switch, and drain the water system. See the above step 6).
- 22) Open the Water Supply Line Shut-off Valve.
- 23) Turn on the Power Switch to rinse the sanitizing solution.
- 24) Turn off the Power Switch after 30 minutes.

CAUTION

Do not use ice produced from the cleaning and sanitizing solution. Be sure none remains in the Storage Bin.

[b] STORAGE BIN - Following Cleaning Procedures for Water System

- 1) Remove the Thumbscrews fixing the Bin Control Switch on the inside of the Bin Top Panel.
- 2) Remove the Snap Pin, the Shaft and the Activator. See the figure below.
- 3) Remove the Thumbscrews, the Spout-Bin and the Spout Gasket-Bin. See the figure below.
- 4) Remove the Thumbscrews, the Spout, the Spout Gasket and the Cylinder Gasket.
- 5) Remove the Sliding Door.
- 6) Soak or wipe the removed parts by using the sanitizing solution.
- 7) Rinse these parts thoroughly.



IMPORTANT

If the solution is left on these parts, they will rust.

- 8) Replace the removed parts and the panels.
- 9) Turn on the Power Switch and run the icemaker.
- 10) Turn off the Power Switch after 30 minutes.
- 11) Pour warm water into the Storage Bin to melt all ice, and then clean the Bin Liner with the solution.
- 12) Flush out any solution from the Storage Bin.
- 13) Turn on the Power Switch and start the automatic icemaking process.

IMPORTANT

1. After cleaning, do not use ice made from the sanitizing solution. Be careful not to leave any solution in the Storage Bin.
2. Follow carefully any instructions provided with the bottles of cleaning or sanitizing solution.
3. Never run the icemaker when the Reservoir is empty.

3. MAINTENANCE

IMPORTANT

1. This icemaker must be maintained individually, referring to the instruction manual and labels provided with the icemaker.
2. To have the optimum performance of this icemaker, the following consumable parts need periodical inspection, maintenance and replacement:

Extruding Head
Housing
Gear Motor
Auger
Mechanical Seal

These parts should be inspected at least once a year or every 10,000 hours of operation. Their service life, however, depends on water quality and environment. More frequent inspection and maintenance are recommended.

Consult with your local distributor about inspection and maintenance service. To obtain the name and phone number of your local distributor, call Hoshizaki Care at 1-800-233-1940.

1) Stainless Steel Exterior

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

2) Storage Bin and Scoop

- * Wash your hands before removing ice. Use the plastic scoop provided (Accessory).
- * The Storage Bin is for ice use only. Do not store anything else in the bin.
- * Keep the scoop clean. Clean using a neutral cleaner and rinse thoroughly.
- * Clean the bin liner using a neutral cleaner. Rinse thoroughly after cleaning.

3) 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.

4) 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.



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