

TO THE OWNER OR USER:

The service manual you are reading is intended to provide you, and the maintenance or service technician, with the information needed to install, start up, clean, maintain and service this ice system.

This Remote Low side unit is the freezer portion of a commercial ice machine. It is designed to be connected to the condensing section of a refrigeration system, specifically a supermarket R-404A system.

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This manual was printed on recycled paper. Keep it for future reference.

Note the Warning symbol where it appears. It marks a potential hazard.



AutoSentry Single System RL

FOR THE INSTALLER: Specifications

The unit is designed to fit a variety of Scotsman storage bins. See sales literature for more information.

- SB480 and extensions (with bin top KBT18)
- BH801 or B842S using bin top KBT28
- BH900 or B948S with KBT24 (one unit)
- BH900 or B948S with KBT25 (two units side by side)

Installation Limitations: The remote low side is designed for indoor installations only, and must also be in a controlled environment.

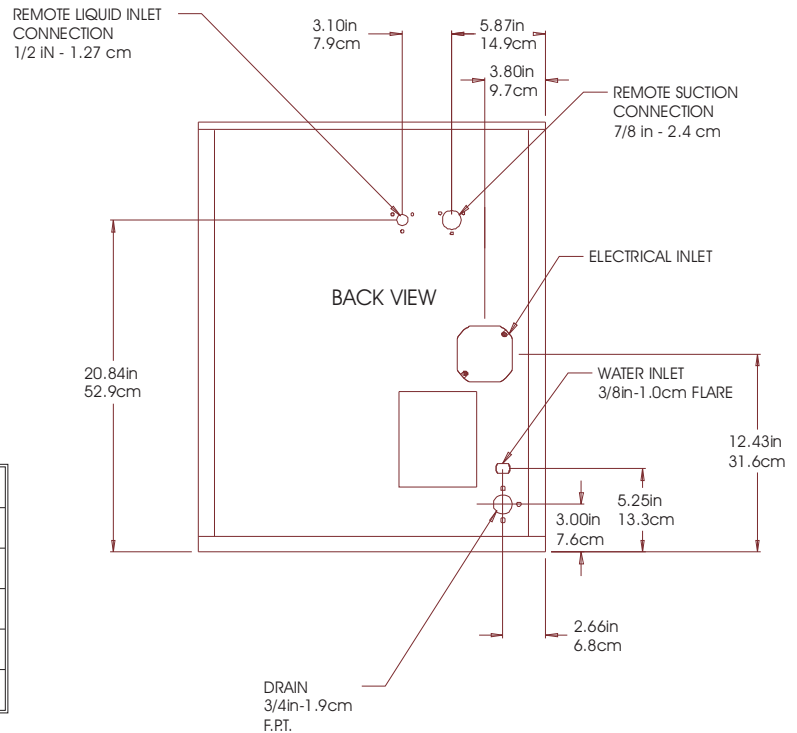
	Minimum	Maximum
Air Temp	50°F	100°F
Water Temp	40°F	100°F
Voltage (-1 models)	103 VAC	126 VAC
Voltage (-32 models)	198 VAC	253 VAC
Water Pressure	20 psi	80 psi

SPECIFICATIONS:

Scotsman Ice Systems are designed and manufactured with the highest regard for safety and performance. They meet or exceed the standards of U.L., N.S.F., and C.U.L.

Scotsman assumes no liability or responsibility of any kind for products manufactured by Scotsman that have been altered in any way, including the use of any parts and/or other components not specifically approved by Scotsman.

Scotsman reserves the right to make design changes and/or improvements at any time. Specifications and designs are subject to change without notice.



NME654 and NME954 Dispenser Applications

The NME654 or NME954 can be placed on and used with certain ice and ice-beverage dispensers. Kits are required for proper operation:

- ID150 use adapter KBT42 and KNUGDIV
- ID200 or ID250, use adapter KBT46 and KDIL-N-ID2
- Cornelius ED/DF200 beverage dispensers, use KBT46 and KDIL-N-200
- Cornelius ED/DF250 beverage dispensers, use KBT46 and KDIL-N-250
- Lancer nugget IBD, use KDIL-N-L & Lancer kit part number 83-3491.

Model	Cabinet Size	System Refrigerant	Min. Circuit Ampacity	Max Fuse Size	BTUH* required	Voltage	Ice Type
FME1204RL-32	21"w x 27"h x 24"d	R-404A	2.5	15	6,000	208-230/60/1	Flaker
NME954RL-32	21"w x 27"h x 24"d	R-404A	2.5	15	6,000	208-230/60/1	Nugget
NME954RL-1	21"w x 27"h x 24"d	R-404A	2.5	15	6,000	115/60/1	Nugget
NME654RL-1	21"w x 27"h x 24"d	R-404A	2.5	15	4,400	115/60/1	Nugget
FME804RL-1	21"w x 27"h x 24"d	R-404A	2.5	15	4,400	115/60/1	Flaker
FM1202RL-32C	21"w x 27"h x 24"d	R-22	2.5	15	6,120	208-230/60/1	Flaker
NM952RL-32C	21"w x 27"h x 24"d	R-22	2.5	15	6,120	208-230/60/1	Nugget
FME1504RL-32	21"w x 27"h x 24"d	R-404A	2.5	15	7,250	208-230/60/1	Flaker
NME1254RL-32	21"w x 27"h x 24"d	R-404A	2.5	15	7,250	208-230/60/1	Nugget

* For determining needed condensing unit capacity. Not an AC load.

FOR THE INSTALLER

Select the Location:

The unit can only be installed indoors within the limitations described on page 2.

The ice machine will have to be connected to the building's refrigeration system, check to be sure that the system has enough extra capacity to handle AT LEAST the additional BTUs (from the table on page 2) per hour @ 110°F. liquid line temperature (assume a 0°F. evaporator temperature).

Storage Bin:

Using a mechanical lift, install the ice machine onto the top of the storage bin.

Fasten the ice machine to the bin using (4) 5/16-18 2.5" cap screws.

Level the assembly by:

- Turning the leg levelers in or out on the standard legs.
- Use shims under the heavy duty legs (when used).

Locate the Nameplate: The nameplate is located on the back panel of the machine, and contains the electrical characteristics particular to the unit being installed.

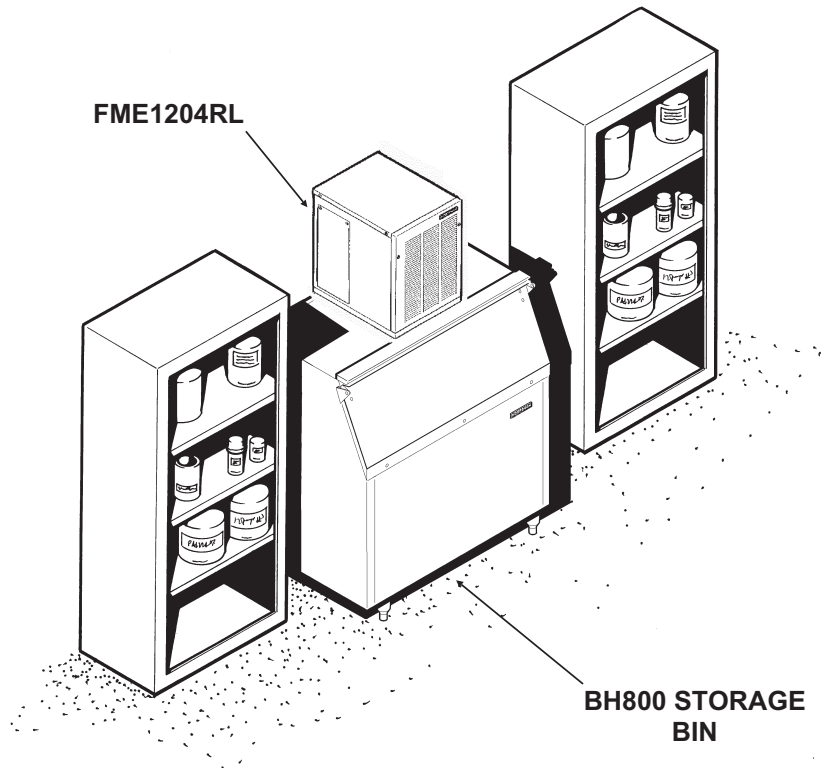
Refrigeration Installation:

The skills of a refrigeration technician are required to connect the ice machine to the buildings refrigeration system. Install appropriate tubing between the ice machine and condensing unit or rack. Flow dry nitrogen through the tubing when brazing. After final connections are made evacuate the system and field charge it.

Notes:

- Suction Line and Liquid Line Stubs are at the back of the cabinet.
- 1.5 ounces of the appropriate refrigerant is in the system as a holding charge.
- Be sure there is enough BTU capacity.
- Be sure that the liquid connection is NOT in series with another liquid line valve.
- Local Codes must be observed.

TYPICAL INSTALLATION: ALLOW ROOM FOR SERVICE ACCESS



- A P-trap should be installed where there will be more than 10' of vertical rise in the suction line.
- NME654RL may be connected to condensing unit NME654RH. The field charge with this condensing unit is 9 lb of R-404A.
- NME954RL may be connected to condensing unit NME954RH. The field charge with this condensing unit is 12 lb of R-404A.
- Like the other RLs, the NME954 and NME654 must be field charged.

Single System RL FOR THE ELECTRICIAN

CONFORM TO ALL APPLICABLE CODES

Electrical Connections:

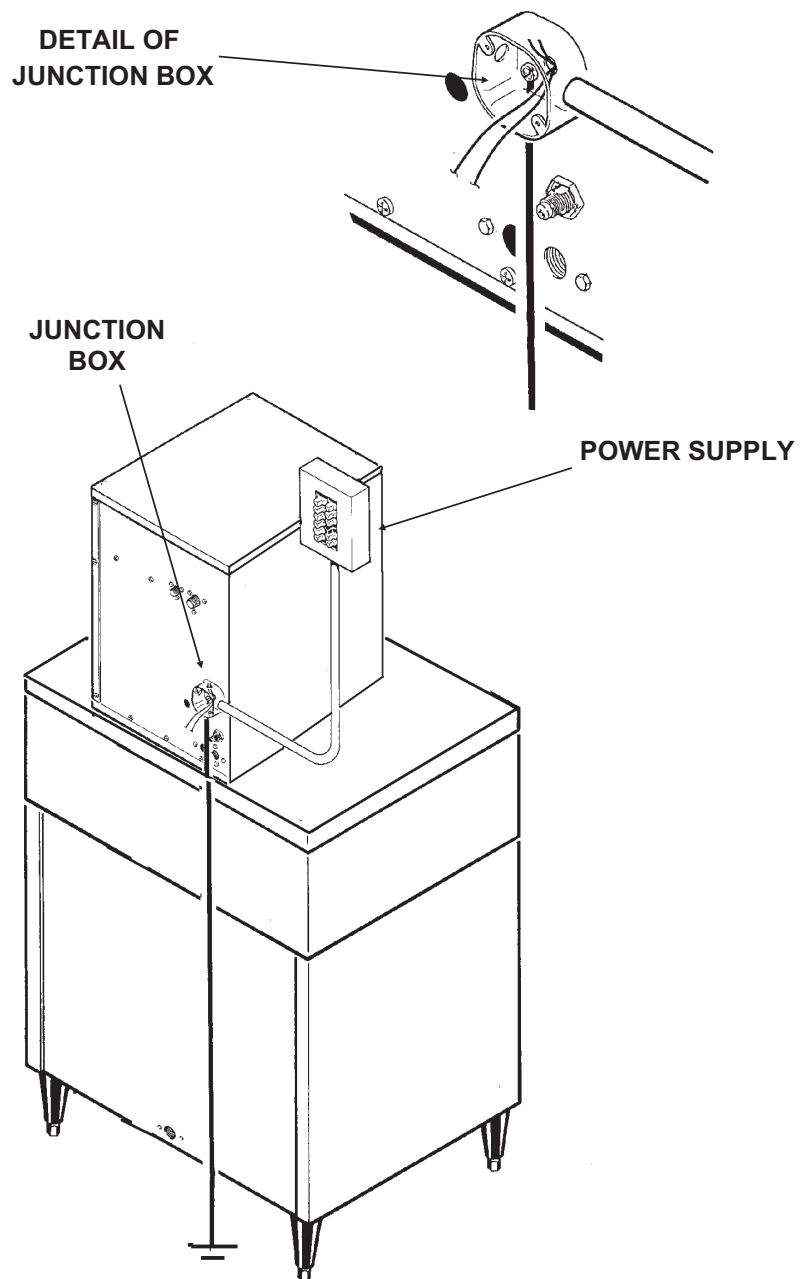
Locate the nameplate for the current requirements, and then determine the wire size and type per the National Electric Code. The machine requires a solid chassis to earth ground wire. Refer to the wiring diagram. The ice machine should be connected to it's own electrical circuit, and be individually fused.

Voltage, when the unit is under full load, must remain within the limitations listed on page 2.

**LOW VOLTAGE CAN CAUSE
EQUIPMENT MALFUNCTION AND/OR
DAMAGE**

All external wiring should conform to the National, State, and local electrical codes. Usually the services of a licensed electrician will be required.

Connect the electrical power to the leads in the junction box at the back of the cabinet.



FOR THE PLUMBER

CONFORM TO ALL APPLICABLE CODES

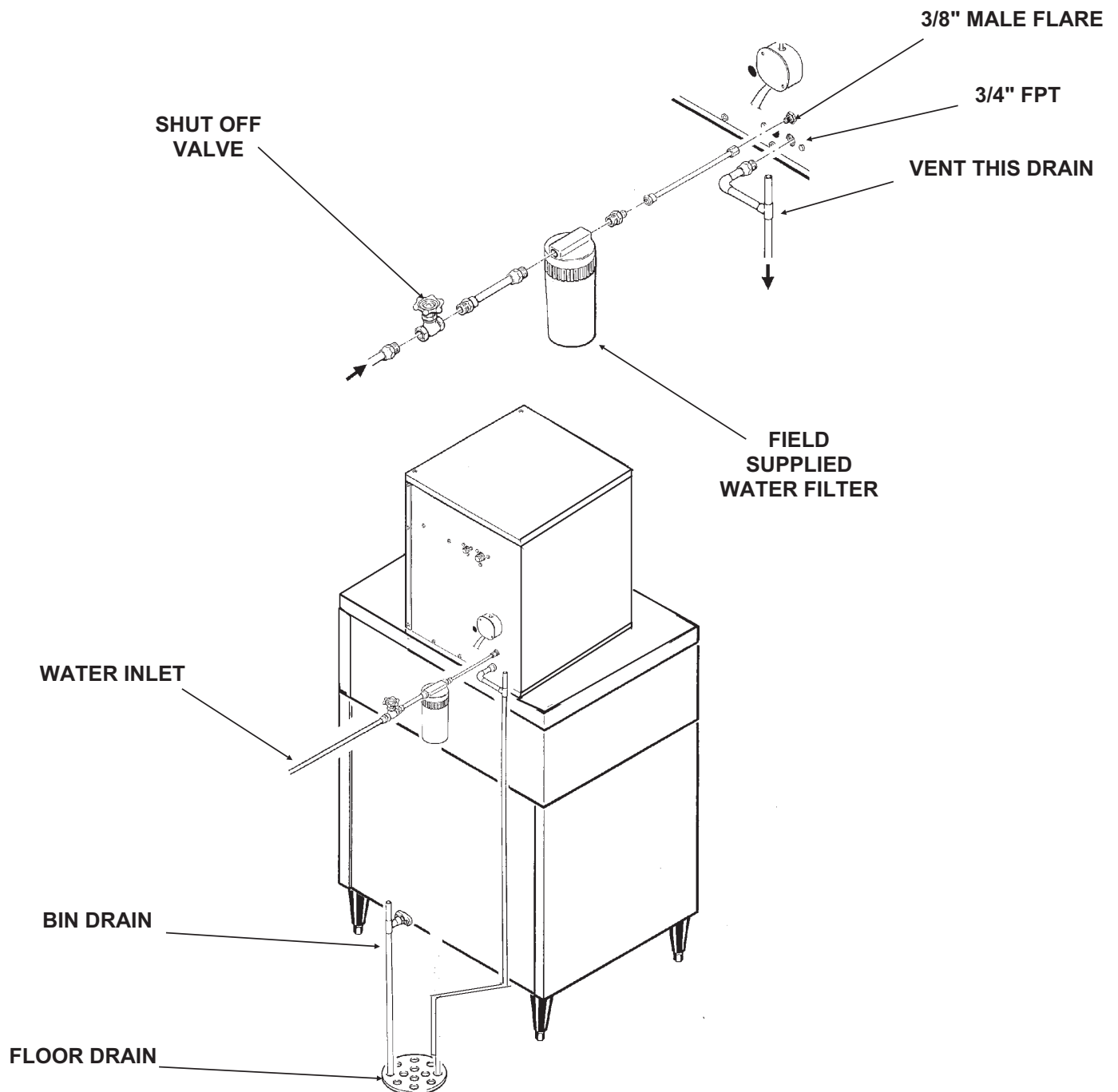
Water Supply:

Connect a 3/8" O.D. copper water supply tube to the male flare connection at the back of the machine. The water supply must be potable and from the cold water source. Be sure that the pressure and temperatures are within the product's limitations.

Install a shut off valve in an accessible space between the ice maker and the water supply.

Drain System:

Connect a drain tube to the 3/4" FPT drain fitting at the back of the cabinet. The drain is a gravity type, and must have a minimum of 1/4" fall per foot of horizontal run. The drains must be installed to conform to local plumbing codes. The use of a vent at the machine and at the bin will allow the system to drain properly. Use only rigid tubing for drains; insulation of the bin drain is recommended.



Single System RL

FOR THE INSTALLER:

Final Check List

1. Is the unit installed where the air and water temperatures are within and will remain within the limitations for the unit?
2. Is there 6" clearance at the rear of the machine for utility connections?
3. Has the water supply line be checked for pressures between 20 and 80?
4. Has the unit been leveled?
5. Has the shipping material been removed from inside the cabinet?
6. Have the electrical connections been made?
7. Have the drains been installed and checked for leaks?
8. Has the refrigeration supply been installed and checked for leaks?
9. Has the bin and cabinet been wiped clean or sanitized?
10. Has the warranty registration card been properly filled out and mailed to Scotsman?
11. Has the owner been given the service manual and been instructed on how to maintain the ice maker?
13. Has the owner been given the name and telephone number of the local Scotsman service agency?

Initial Start Up

1. Remove the top and front panels.
2. Open the water valve, and observe that the two float reservoirs fill up with water and shut off.
3. Switch on the electrical power.
4. Open the hand valve (in the liquid line).
5. Open the ball valve (in the suction line).
6. Switch on the master switch, and observe:
 - The liquid line valve opens
 - The gearmotor runs
 - Within a short time the machine begins to make ice.
 - Water flows from the water reservoir, and the float drops, letting in more water.
7. When operating, the sight glass should remain full, and the low side pressure will be about:
 - 1202 or 952 (R-22) - 25 PSIG + or - 2 PSIG
 - All others - 36 PSIG + or - 2 PSIGGearmotor amp draw should not exceed the nameplate rating.
8. Check the system very carefully for any refrigerant leaks, repair as needed.

COMPONENT IDENTIFICATION

Liquid line valve

This valve operates to turn the ice making process on and off.

When the ice level drops in the ice chute, the ice level sensor will cause the circuit board to close the liquid line relay, which energizes the liquid line valve. The liquid line valve opens, and liquid refrigerant flows to the thermostatic expansion valve.

Thermostatic Expansion Valve

The metering device of the system, the valve senses the temperature of the suction line and varies the amount of liquid refrigerant that passes through the valve into the evaporator, thus maintaining a constant level of refrigeration. TXV's are factory set. Do not adjust unnecessarily. **DO NOT ADJUST THE TXV UNTIL THE EPR HAS BEEN SET.**

The superheat setting is 4-8°F. Measure the temperature of the evaporator outlet at the TXV bulb, and check the low side pressure at the EPR valve. Convert the pressure to temperature (using a temperature pressure chart) and subtract the

amount from the outlet temperature. The result is the superheat. Use an electronic thermometer.

EPR: Evaporator Pressure Regulator Valve

This valve maintains a constant pressure on its inlet (evaporator) side regardless of the pressure on the outlet (suction) side. The EPR is factory set, adjust only if needed. After adjusting, re-check TXV superheat.

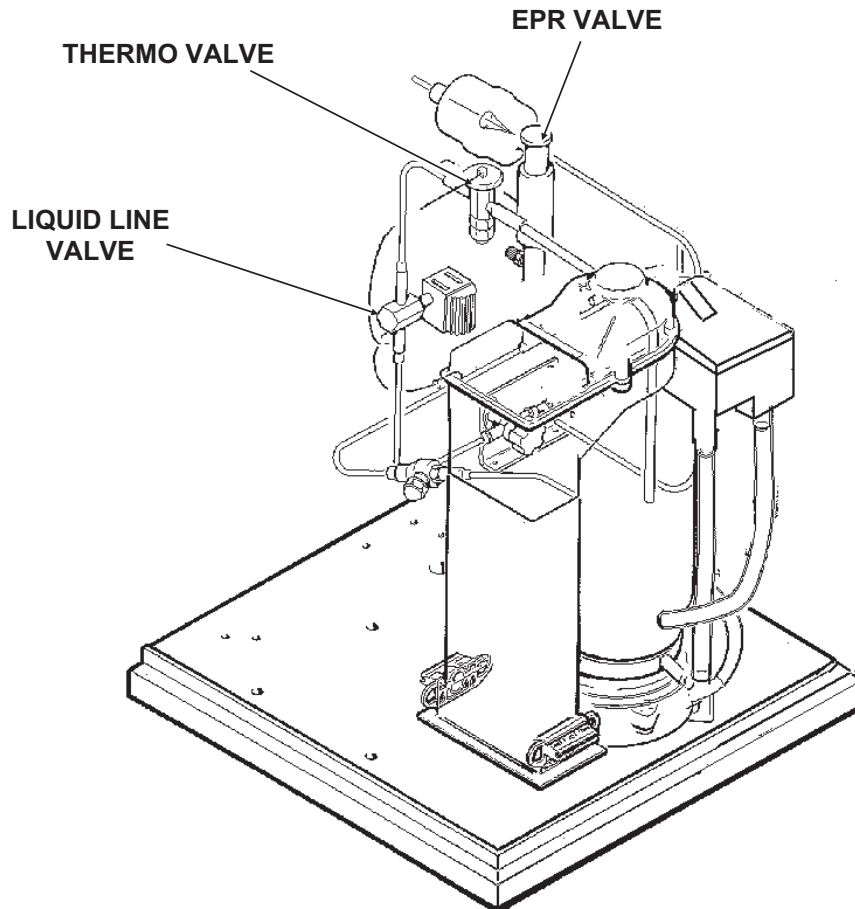
EPR Settings:

1202 or 952 (R-22): 25 PSIG + or - 2 PSIG

All others: 36 PSIG + or - 2 PSIG

Evaporator:

Where the water is frozen into ice crystals. As the water cools, it begins to turn into ice, and the slowly turning auger lifts the ice, as it is being made, and forces it up and out of the "breaker" or spout where the extra water is compressed out of the ice. The ice then drops through the chute, into the storage bin.



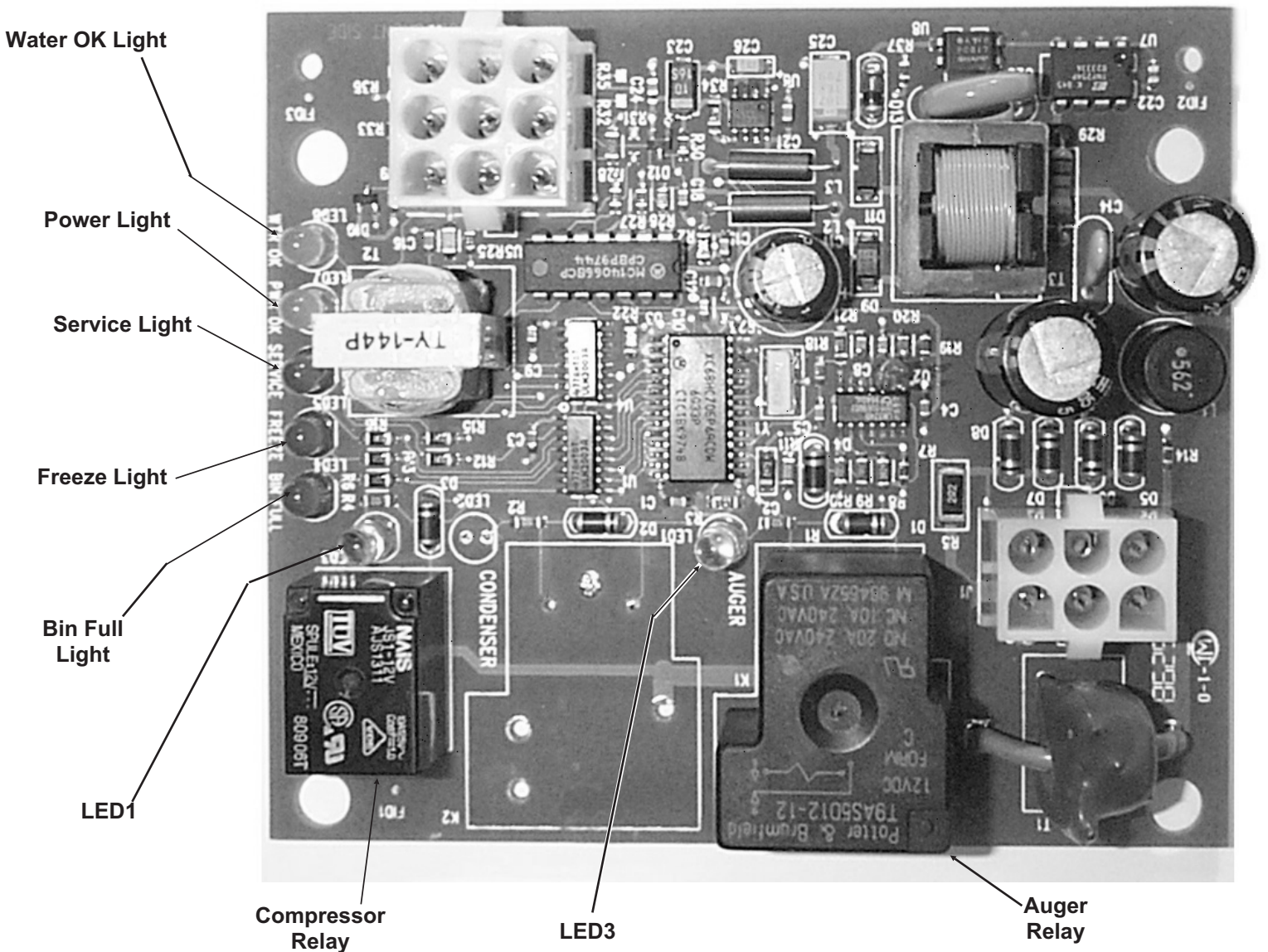
Single System RL

COMPONENT DESCRIPTION: Control Box

Circuit Board: Controlling the ice machine through sensors and relays. The sensors are: ice level, and water level. The relays are for the gear motor (with a built in time delay to clear the evaporator of ice when the unit turns off) and for the liquid line valve.

On/Off Switch: Manual control for that side of the machine.

Control Board



ELECTRICAL SEQUENCE

There are 7 indicator lights on the control board:

- **WTR-OK** (Water OK). *Green*. **Normal = Glowing. Glows when there is water in the reservoir.**
- **PWR-OK** (Power OK). *Green*. **Normal = Glowing. Glows when the control board has power and is functional.**
- **Service**. *Red*. Normally Off.
- **Freeze**. *Red*. Normally glowing when making ice.
- **Bin Full**. *Red*. Normally Off when making ice.
- **LED1**. *White*. Located next to the board's Compressor Relay (used to power the liquid line valve). Normally Glowing when making ice.
- **LED3**. *White*. Located next to the board's Auger Motor Relay. Normally Glowing when making ice.

If the machine is switched off at the mode switch, but is otherwise ready to go, switching the mode switch to ON does the following:

- The PWR-OK light glows.
- If there is water in the reservoir the WTR-OK light glows.
- After 10 seconds the Freeze, LED1 and LED3 lights glow and the machine starts up.

Start Up:

- The compressor relay and auger motor relay become energized, connecting power to the windings of the auger motor and liquid line valve coil.
- The liquid line valve opens, refrigerant flows to the expansion valve and ice making begins.
- As ice is made it passes between the ice level sensors but because it is not a continuous stream it only interrupts the sensor's infrared beam momentarily. The bin full light remains off and the machine stays on until ice builds up in the bin and blocks the path between the sensors for 6 seconds or longer. When that occurs the bin full light glows and the machine shuts down.

Shut Down:

- The compressor relay opens, LED1 goes out.
- The liquid line valve closes.
- The refrigerant flow stops.
- The auger motor stays on for 1 more minute, clearing out ice in the evaporator, and then
- The auger motor relay opens, LED3 goes out and the auger motor stops.

The liquid line valve will not re-open until 2 minutes or more have passed after the last shut down.

If the path between the ice level sensors remains clear for more than 10 seconds the ice machine will restart.

Control Board Protection Devices

- When the water level in the reservoir falls below the water level sensor's tip, the WTR-OK light goes out and the machine shuts down. When water refills the reservoir the WTR-OK light glows and the machine starts up again.
- If the auger drive motor current becomes excessive the compressor and auger drive motor will be switched Off and the Service light will blink. The control board will restart the auger drive motor in 4 minutes. If during the first 60 seconds after restart the auger motor current stays within limits, the liquid line valve is reopened and the machine returns to normal operation. If the auger motor's current is excessive within 60 seconds after the restart, the process will be repeated once more. If during that try the current is still excessive the machine shuts down and must be manually reset. The service light will then be glowing continuously.

To Reset: Disconnect and reconnect power to the ice machine.

The **mode (on - off)** switch is the manual control for the complete machine, but it is not a service disconnect.

Single System RL

COMPONENT DESCRIPTION: Evaporator

Evaporator: A refrigerated vertical tube filled with water and containing a water seal and auger.

Auger: A solid stainless steel double spiral auger, it pushes the ice crystals up to the top of the evaporator.

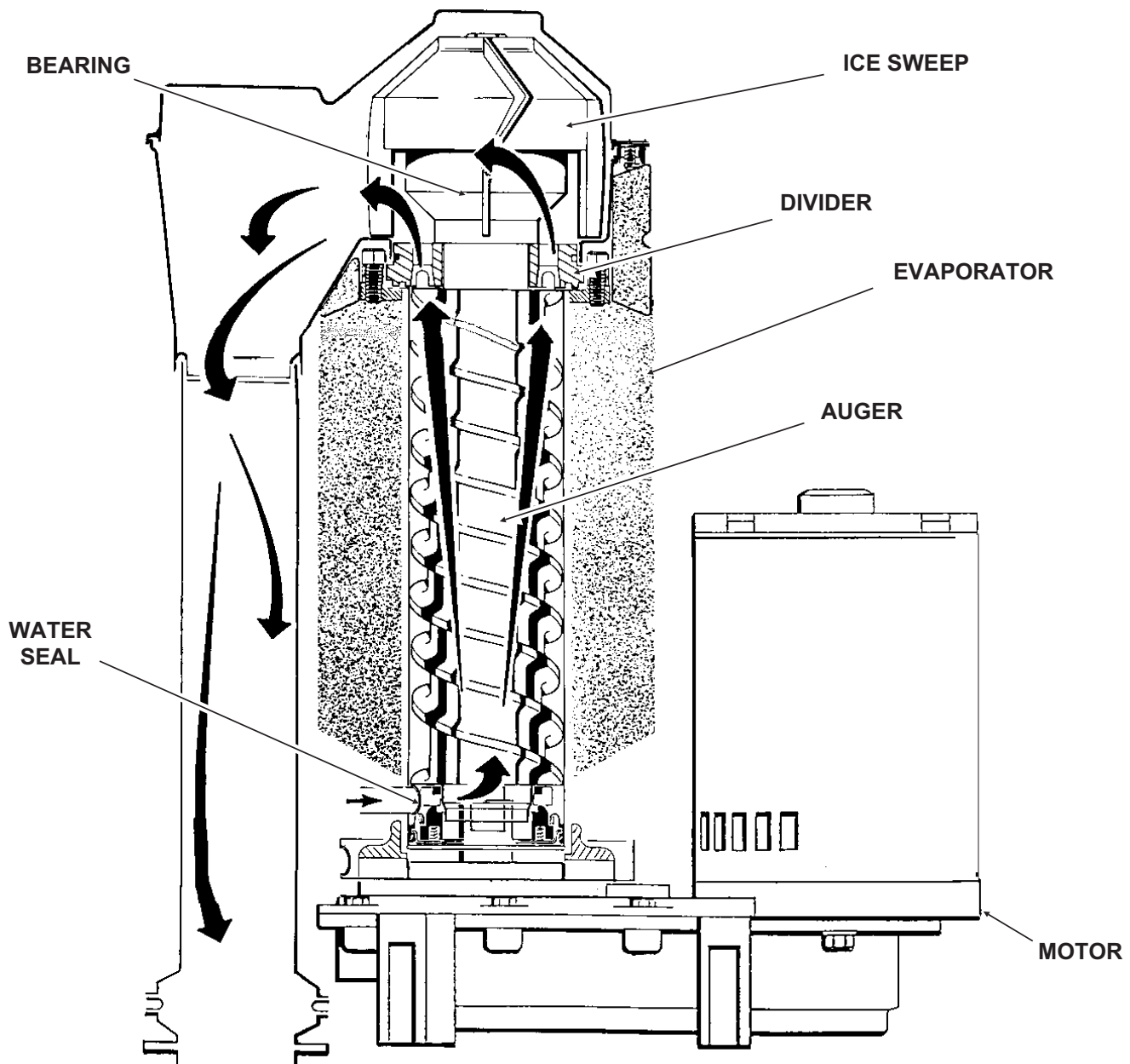
Water Seal: A two part "face" seal, the top half rotating with the auger, the bottom half stationary, the sealing action being where the two seal "faces" meet.

Ice Sweep: A plastic cap with "fingers". It revolves with the auger to "sweep" the ice into the ice chute.

Divider: Where the ice is compressed and much of the extra water is squeezed out of it before it is discharged into the bin.

Motor: A split phase motor that drives the gear reducer.

Bearing: As the ice is pushed up the evaporator, the auger is thrust down, and pressure from the auger thrust is taken up by this bearing.



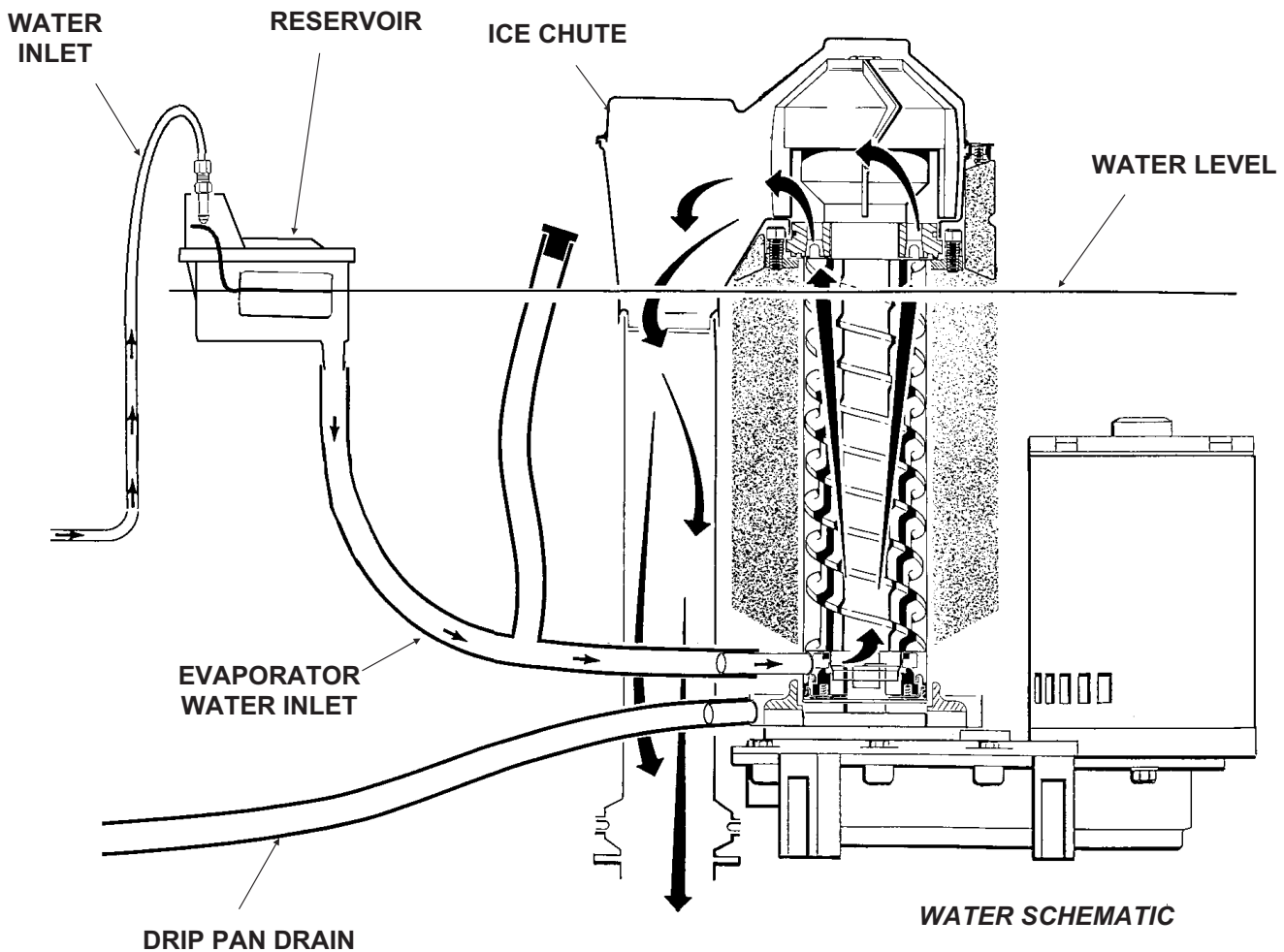
OPERATION

Water

Water enters the machine through the 3/8" male flare at the rear of the cabinet, goes to the water reservoir which it enters through the float valve.

The water then goes out the bottom of the reservoir tank to the bottom of the evaporator.

Reservoir overflow or evaporator condensation is routed to the drain.



Single System RL

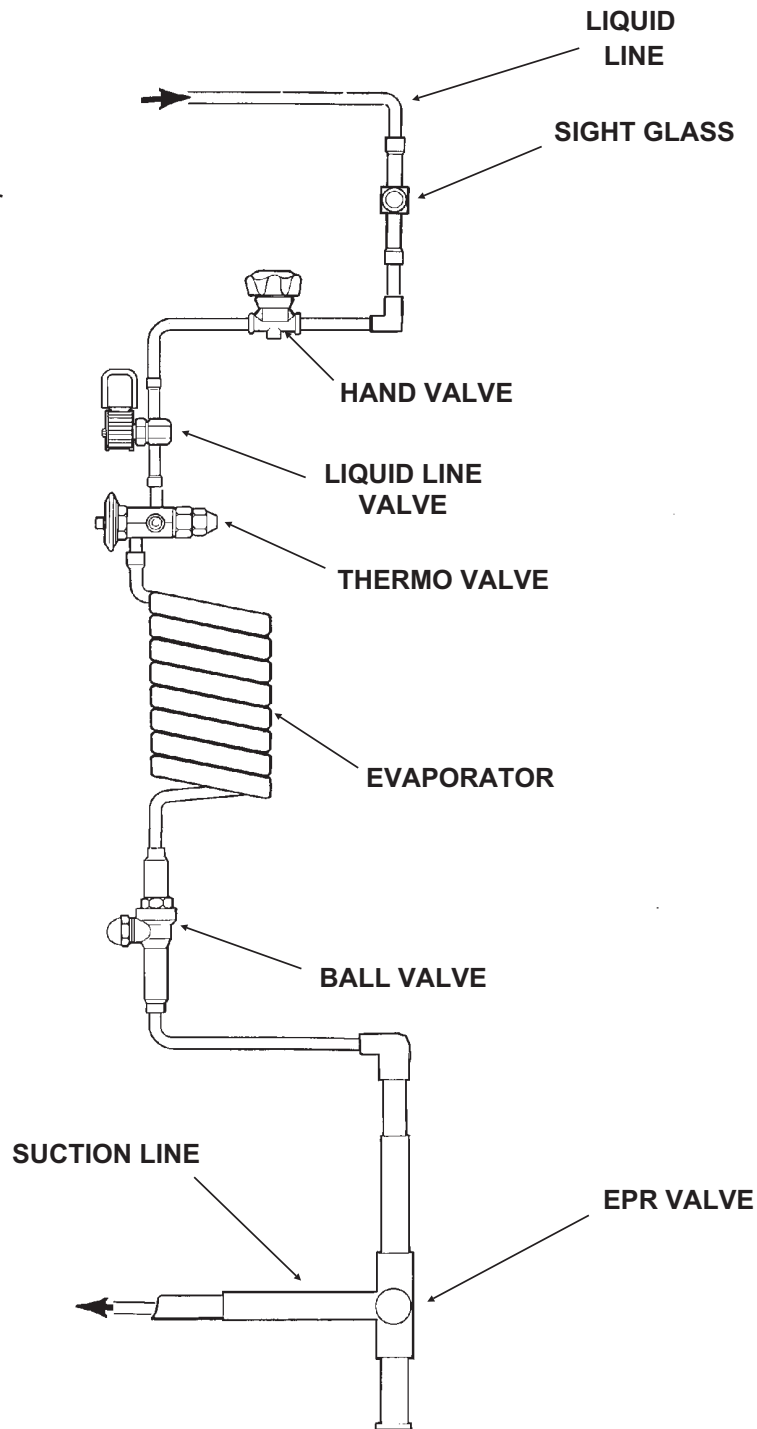
OPERATION: Refrigeration

The remote high side system supplies high pressure liquid refrigerant to the liquid line (inlet) connection on the ice machine.

The inlet line connects to the liquid line valve. When the ice level sensor signals the circuit board to energize the liquid line valve, the relay on the board connects power to the liquid line valve coil and the valve opens, allowing the liquid refrigerant to enter the expansion valve.

The thermostatic expansion valve meters the liquid refrigerant into the evaporator, where it boils off (evaporates) and absorbs heat. It then moves through the ball valve and into the evaporator pressure regulator valve, or EPR. The EPR keeps the evaporator pressure above a predetermined point, even though the suction line pressure of the remote high side system may vary. The refrigerant, now a low pressure gas, moves into the suction line of the remote high side system.

When the bin is full, the ice level sensors signal the board to shut down. During a normal shut down the board first disconnects power to the liquid line valve, causing it to close, stopping the flow of refrigerant. A short time (1 min) later the auger motor is shut off and the machine stops making ice.



CLEANING and SANITATION

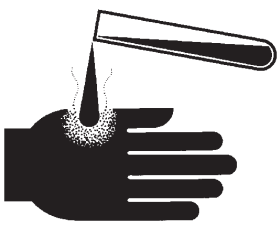
A Scotsman Ice System represents a sizable investment of time and money in any company's business. In order to receive the best return for that investment, it MUST receive periodic maintenance.

It is the USER'S RESPONSIBILITY to see that the unit is properly maintained. It is always preferable, and less costly in the long run, to avoid possible down time by keeping it clean; adjusting it as needed; and by replacing worn parts before they can cause failure. The following is a list of recommended maintenance that will help keep the machine running with a minimum of problems.

Maintenance and Cleaning should be scheduled at a minimum of twice per year.

ICE MAKING SYSTEM: In place cleaning

1. Check and clean any water treatment devices, if any are installed.
2. Pull out and remove the front panel.
3. Move the ON-OFF switch to OFF.
4. Remove all the ice from the storage bin.
5. Remove the cover to the water reservoir and block the float up.
6. Drain the water reservoir and freezer assembly using the drain tube attached to the freezer water inlet. Return the drain tube to its normal upright position and replace the end cap.
7. Prepare the cleaning solution: Mix eight ounces of Scotsman Ice Machine Cleaner with three quarts of hot water. The water should be between 90-115 degrees F.

⚠ WARNING	Scotsman Ice Machine Cleaner contains acids. These compounds may cause burns.
	If swallowed, DO NOT induce vomiting. Give large amounts of water or milk. Call Physician immediately. In case of external contact, flush with water. Keep out of the reach of children.

8. Slowly pour the cleaning solution into the water reservoir until it is full. Wait 15 minutes, then switch the master switch to ON.
9. As the ice maker begins to use water from the reservoir, continue to add more cleaning solution to maintain a full reservoir.
10. After all of the cleaning solution has been added to the reservoir, and the reservoir is nearly empty, switch the master switch to OFF.

11. After draining the reservoir, as in step 6, wash and rinse the water reservoir.
12. Go thru steps 13-19 to sanitize the ice machine water system.
13. Mix two gallons of sanitizer solution. Use an approved sanitizer.

A possible sanitizer solution may be obtained by mixing two gallons of warm (90-115°F.) potable water with 1 ounce of household bleach.

14. Slowly pour the sanitizer solution into the water reservoir until the float rises, then switch the master switch ON.
15. As the ice machine uses water from the reservoir, continue to pour the sanitizer solution into the reservoir.
16. After ½ of the sanitizer solution has been added to the reservoir, and the reservoir is nearly empty, switch the master switch OFF.
17. Drain the reservoir and thoroughly wash the interior of the reservoir and cover with sanitizer solution. Be sure the drain hose is upright and capped.
18. Remove the block from the float in the water reservoir.
19. Switch the master switch to ON
20. Continue ice making for at least 15 minutes, to flush out any cleaning solution.

DO NOT USE any ice produced from the cleaning solution. Be sure no ice remains in the bin.

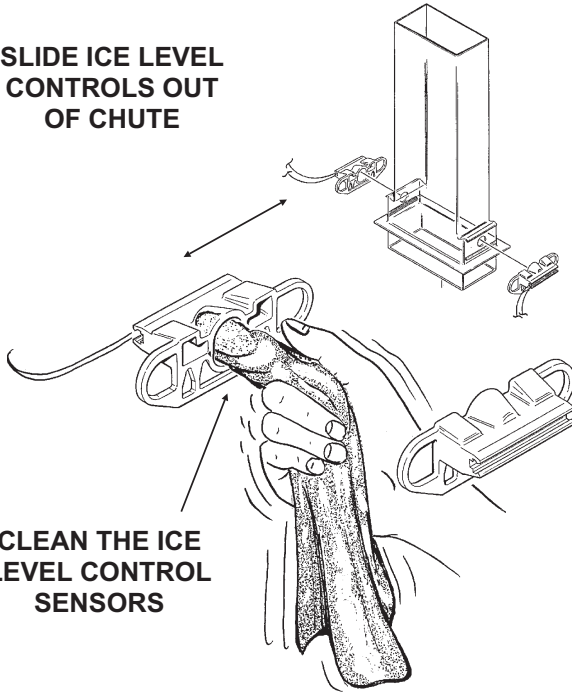
21. Remove all ice from the storage bin.
22. Add warm water to the ice storage bin and thoroughly wash and rinse all surfaces within the bin.
23. Sanitize the bin interior by washing the interior of the bin with the balance of the sanitizer solution.
24. Switch the master switch ON.

Single System RL

SENSOR MAINTENANCE

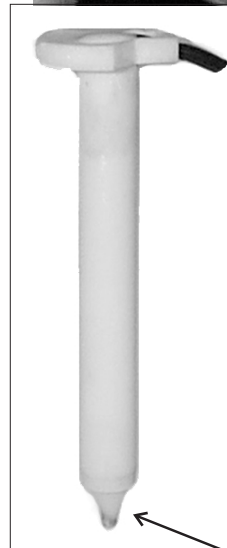
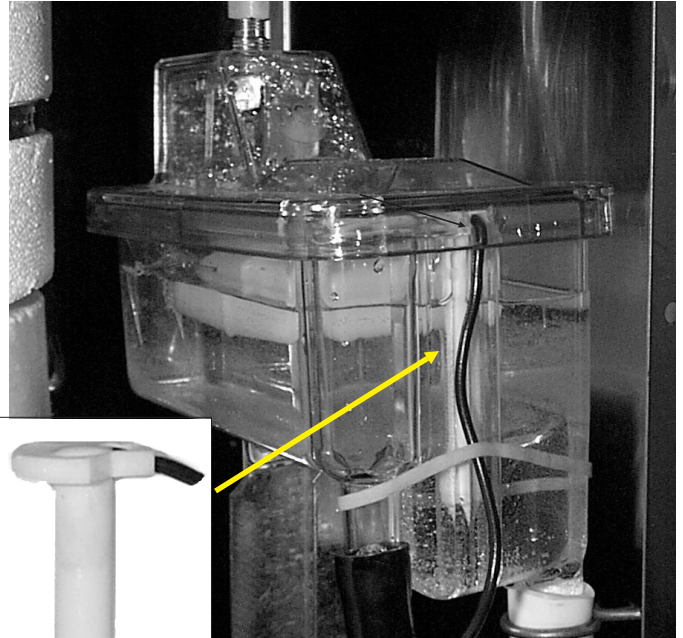
1. The bin control uses devices that sense light, therefore they must be kept clean enough so that they can “see”. At least twice a year, remove the bin control sensors from the base of the ice chute, and wipe the inside clean, as illustrated.
2. The ice machine senses water level by a probe

**SLIDE ICE LEVEL
CONTROLS OUT
OF CHUTE**



**CLEAN THE ICE
LEVEL CONTROL
SENSORS**

located in the water reservoir. At least twice a year, the probe should be removed from the reservoir, and the tip wiped clean of mineral build-up.



**Clean the Probe's Tip
with ice machine
cleaner and a clean,
soft cloth.**

BEARING MAINTENANCE

The bearing in the breaker should also be checked at least **two times per year**.

A. Check the bearing by:

- removing the ice chute cover

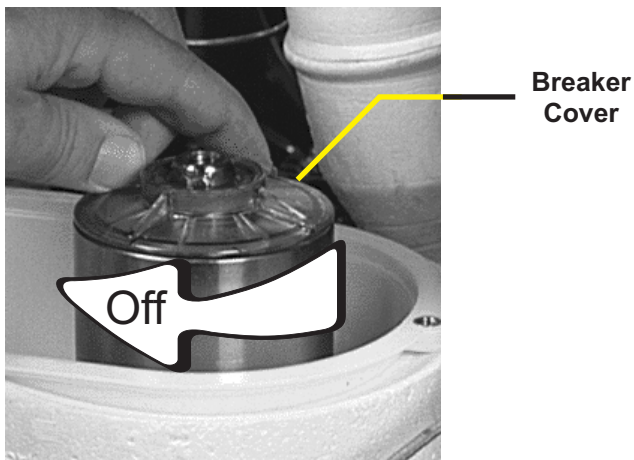
Chute Cover



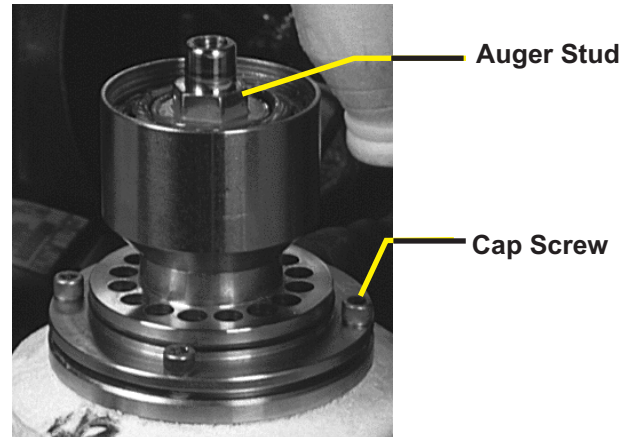
- unscrewing the ice sweep



- removing the water shed & unscrewing the breaker cover (left hand threads).



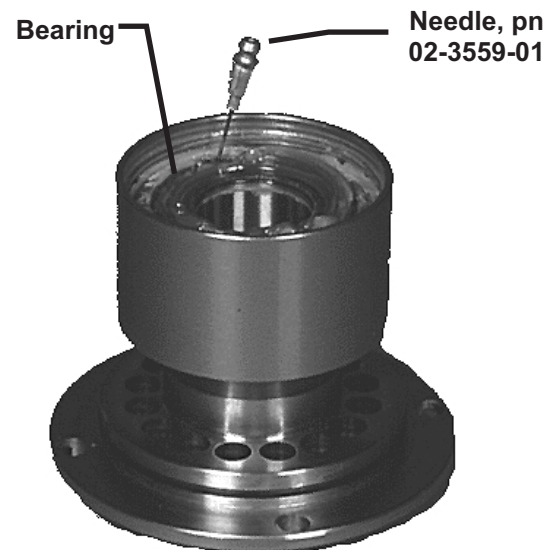
- unscrewing the auger stud



Inspect the bearing. There should be plenty of grease in sight. If grease is needed the bearing and breaker should be removed to check the action of the bearing. It should rotate smoothly.

To remove the breaker remove the lower ice chute then take out all four allen head cap screws and pull the breaker off the auger and evaporator.

If the bearing only needs grease, inject grease into the bearing using Scotsman grease needle pn 02-3559-01 and Scotsman bearing grease cartridge, pn A36808-001. Be sure to inject grease evenly and thoroughly.



See Removal and Replacement section to replace bearing or seals.

Reverse to reassemble.

Single System RL

AUGER MAINTENANCE

In some installations the water supply to the ice maker will be so concentrated with dissolved minerals, (such as calcium carbonate) that as ice is made, the evaporator and auger become coated with the minerals, requiring a more frequent cleaning than twice per year. If in doubt about the condition of the evaporator and auger, the auger can be removed so the parts can be inspected.

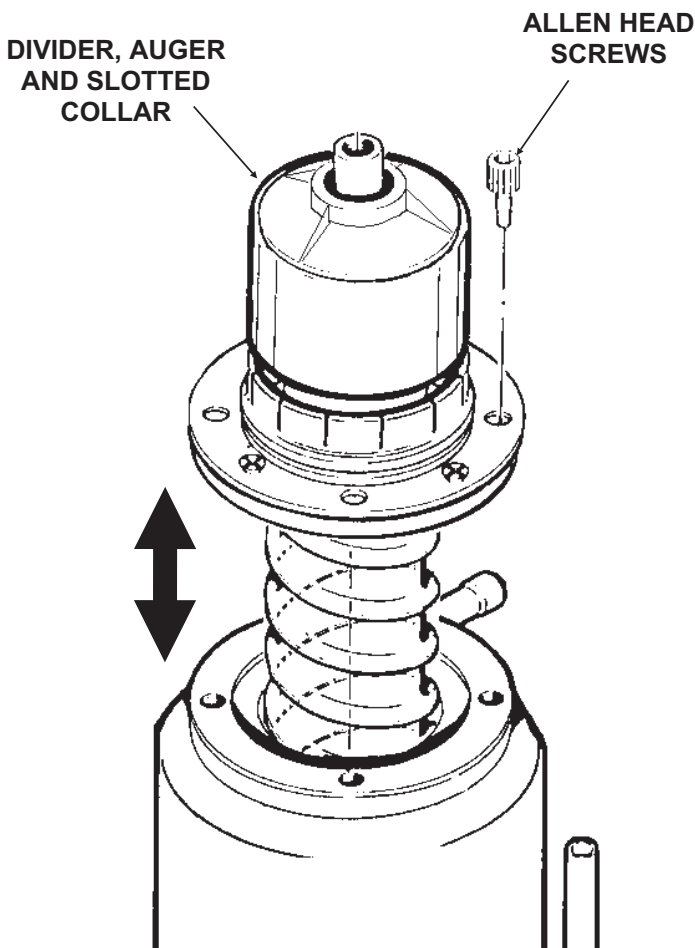
Note: Water filters can filter out suspended solids, but not dissolved solids. "Soft" water may not be the complete answer. Check with a water treatment specialist regarding water treatment.

	<p>⚠ WARNING</p> <p>Moving parts hazard. Moving parts can cause personal injury. Disconnect power before beginning to service components.</p>
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Switch off electrical power, and shut off the water supply.

For more information on removal of these parts, see REMOVAL AND REPLACEMENT.

1. To remove the auger, remove front and top panel. See Removal And Replacement.
 2. Push bail clamp back and remove ice chute cover.
 3. Unscrew and remove ice sweep.
 4. Loosen band clamp under ice chute, and remove ice chute from evaporator.
 5. Remove 4 allen head screws holding breaker to evaporator.
 6. Pull up on breaker to remove auger.
- Allow the auger to dry, the stainless steel of the auger and evaporator must be clean and bright. Clean the auger and evaporator as required. **DO NOT HONE THE EVAPORATOR.**
7. Replace the water seal.
 8. Reverse to reassemble.



SERVICE DIAGNOSIS:

Symptom	Possible Cause	Probable Correction	
No ice is made, nothing operates	Unit off due to no power	Restore Power	
	Unit off due to master switch in OFF position.	Switch master switch to ON.	
	Unit off due to low water level.	Check water supply, filter, strainer, float valve. Correct water supply.	
	Unit off due to ice level sensors (photo-electric eyes) blocked.	Check/clean ice level sensors.	
	Unit off due to scale on water level sensor.	Clean water level sensor.	
	Auger motor hums but does not turn.	Auger can't turn. Circuit board has not yet shut unit down. See Unit is Shut Down.	
	Auger motor turning, but no refrigeration effect	Liquid line valve not opening, check coil, check board relay	
		No refrigerant to ice machine, check main system	
	Unit is shut down	Circuit board has shut ice machine down due to high auger motor amp draw. Check for cause of high amp draw, including bearings, gearmotor condition and scale on auger and in evaporator. May also be due to Liquid Line Valve leak thru causing auger to freeze to evaporator during off cycle. Check liquid line valve.	
	Auger not turning	May be due to: motor failure; auger relay failure on circuit board; or gears stripped. Check drive train.	
	Low suction pressure	EPR setting too low, check and adjust	
		TXV restricted or not metering. Check bulb temperature.	
		Check for a restricted system	
No power to circuit board.	Check harness		
Circuit Board gear motor relay will not close	Check, replace board		
Water level or ice level sensor failed.	Check, replace sensor		
No ice, auger motor is turning	Liquid line valve coil is open	Check/replace coil	
	Circuit board compressor relay will not close.	Check, replace board	

Single System RL

SERVICE DIAGNOSIS

Symptom	Possible Cause	Probable Correction
Water Leak	Drain plugged up	Clean out drain
	Tubing cracked	Replace tubing
	Condensation on drain tubing	Insulate tubing
	Hose off	Reattach hose
	Reservoir cover off	Return cover to reservoir
	Reservoir cracked	Replace reservoir
	Evaporator water seal leaks	Check base of evaporator & drip pan. If the seal leaks, shut off the water, remove the auger, replace the water seal. Check gear motor for water infiltration.
Uses too much water	Reservoir float valve leaks thru	Replace float valve or seat
Excessive ice meltage	Bin drain clogged	Clean out bin drain.
	Improper installation of drains, they are connected.	Drains must be separate.
	Poor fit between bin door and door frame	Adjust or replace
Machine makes too much noise	Evaporator coated internally with minerals	Clean with Scotsman Ice Machine Cleaner
	Motor bearings /seal dry	Oil or replace motor

CONTROL SYSTEM DIAGNOSTICS

The control system consists of:

- Control Board
- Water Sensor
- Ice Sensors

If the unit is OFF, check the **control board**:

1. Is the Power OK light on? If not check power to the unit. If it has power, and the Power OK light is NOT on, check the high pressure and low pressure cut outs. If they are both closed, replace the board. If the Power OK light is ON, go to the next step.

2. Is the Water OK light on? If it is, go to the next step. If not, check the water level in the reservoir. If there is water in the reservoir, check that the water sensor is plugged in. To check the **water sensor**:

A. Unplug water sensor.

B. Pull water sensor from reservoir.

C. Place one ohmmeter lead on the sensor's plug and the other on the sensor's tip. The meter should show nearly zero resistance. If it reads infinite resistance, check the tip for corrosion. If it is clean and still reads open, replace the sensor.

OR connect a copper wire to the wire where the water sensor plugs into and place the other end in the water. The water OK light should go ON. If it does not, replace the control board.

3. **Ice sensor check.** Is the Bin Full light Off? If it is OFF and the Service light is Off, and the unit is not running, replace the control board.

If it is OFF and the auger motor is running but the compressor is not, check the compressor contactor coil.

If it is on, the ice sensors may be blocked. Remove them and check for mineral scale. Scotsman's test box can also be used to determine if the ice sensors or board are defective.

Using the tester:

A. Disconnect the ice sensors at the connection by the ice chute. Connect the LED and PHOTO TRANS wires to the control board's wires.

B. With the On - Off (mode) switch in either position, move the Bin Full switch on the tester to Bin Full - the tester's light will blink and after a few seconds the bin full light on the control board will come on. If not, replace the board.

Move the Bin switch on the tester to Bin Empty.

The light on the tester will go out, and after a few seconds the Bin Full light on the board will go out.

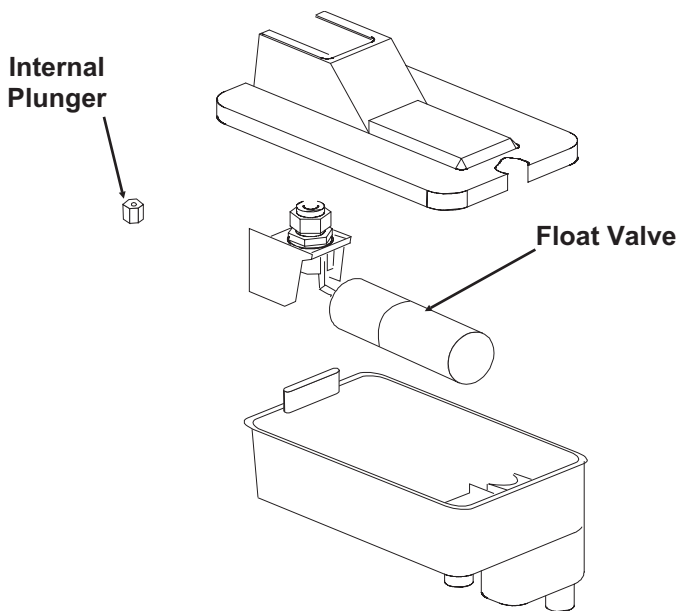
If master switch is ON, the unit should start.

Single System RL

REMOVAL AND REPLACEMENT

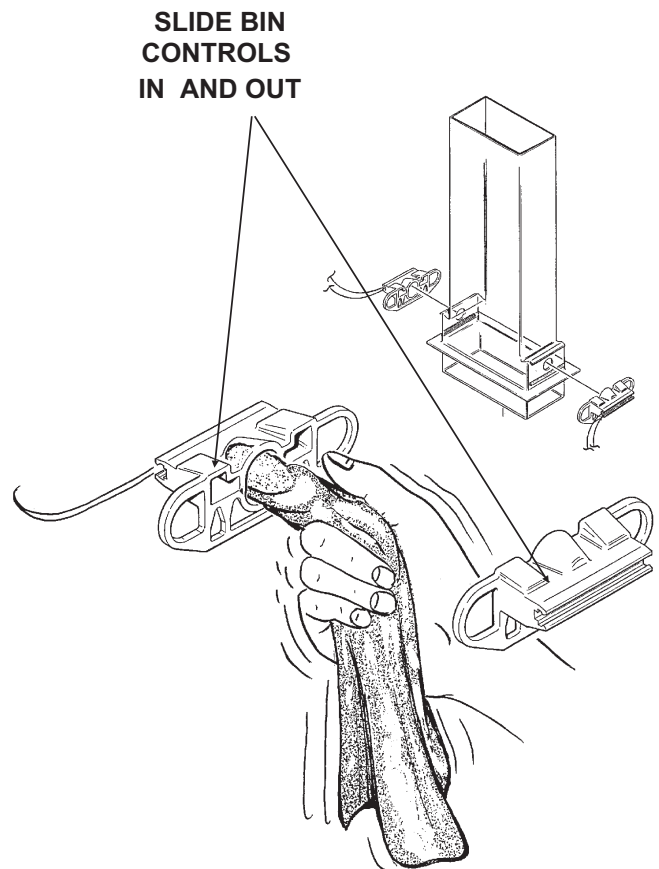
WATER RESERVOIR

1. Shut off the water supply to the ice maker.
2. Remove front panel and reservoir cover.
3. To remove float only, disconnect water inlet tube, push in the tab behind the reservoir and pull valve assembly out of the reservoir tank.
4. To remove reservoir, disconnect water inlet compression fitting at reservoir inlet.
5. Remove drain hose from reservoir.
6. Remove evaporator inlet hose from reservoir.
7. Remove mounting screws from reservoir bracket, and remove reservoir from ice maker.
8. Reverse to reassemble.



BIN CONTROLS (Ice Level Sensors)

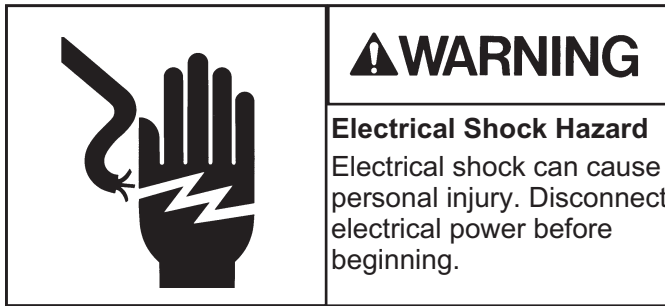
1. Disconnect electrical power.
2. Remove front panel.
3. Remove control box cover.
4. Locate ice chute, at the base of the chute, in front of and behind it are two plastic bin control mounts.
5. Slide each bin control to the left, and in the control box, disconnect the electrical leads connecting the bin control to the circuit board.
6. Reverse to reassemble, be certain that the bin controls are aligned so that the ice level sensors are visible (centered) through the holes in the cube chute.



REMOVAL AND REPLACEMENT: Bearing And Breaker

Note: Removal of the auger, water seal, evaporator and gearmotor must begin at the top of the assembly.

To Remove the Breaker Bearing Assembly:



1. Remove panels and disconnect electrical power.
2. Push back bail clamp, remove insulation retaining strap and insulation, remove ice chute cover.
3. Unscrew and remove ice sweep.
4. The breaker may be removed from the auger and evaporator without disturbing the auger.
 - a. Unscrew breaker cover from breaker (left hand threads)
 - b. Unscrew auger stud from top of auger.
 - c. Unscrew 4 allen head cap screws holding breaker to evaporator.
 - d. Lift up, and remove breaker/bearing assembly from auger & evaporator.

5. Service the bearing. Check for rust, rough spots and damage.

a. The bearing is pressed into the breaker, to remove the bearing and replace it an arbor press is needed.

b. Replace lower seals before installing new bearing in breaker.

Note: Seals must be pressed in with a tool pushing against the outer edge only, they will not install by hand.

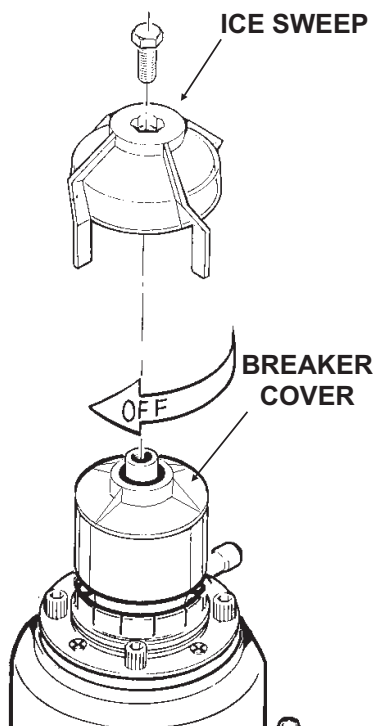
Replace parts as required. Re-grease bearing with Scotsman part no. A36808-001 bearing grease. Replace top seal, and check the o-rings, replace if cut or torn.

6. Reverse to reassemble: specific tools and materials are required to install properly.

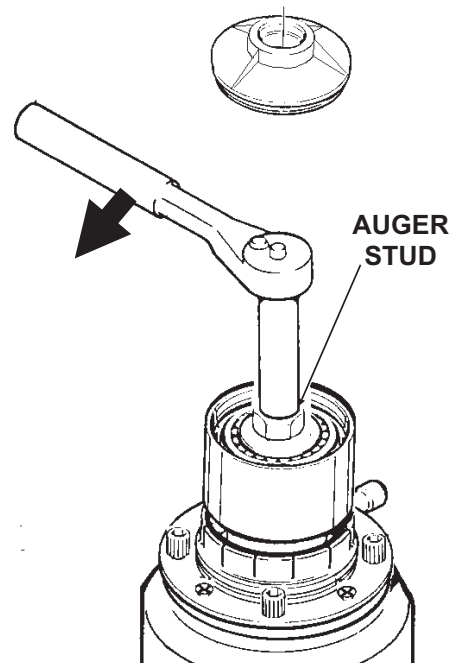
a. Add food grade grease such as Scotsman part number 19-0569-01 to the seal area before installing on the auger.

b. Check the seal to shaft areas for cuts, or rough spots: none are permitted.

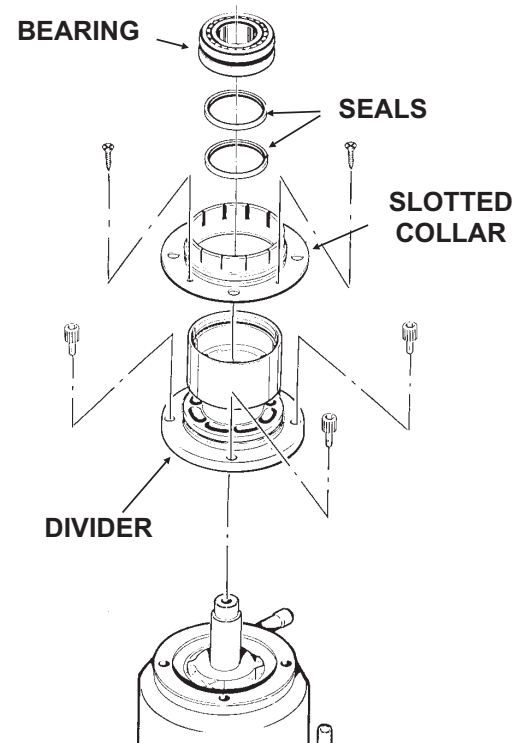
Step 5- a



Step 5-b



Step 5-c and Step 6

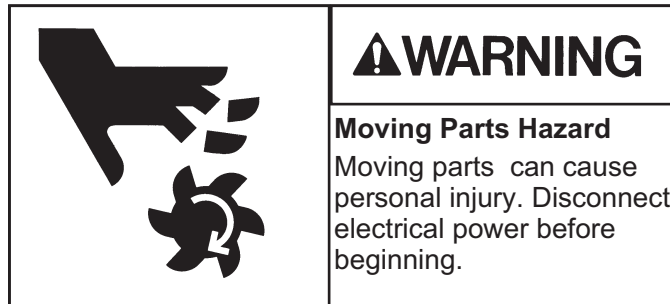


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REMOVAL AND REPLACEMENT

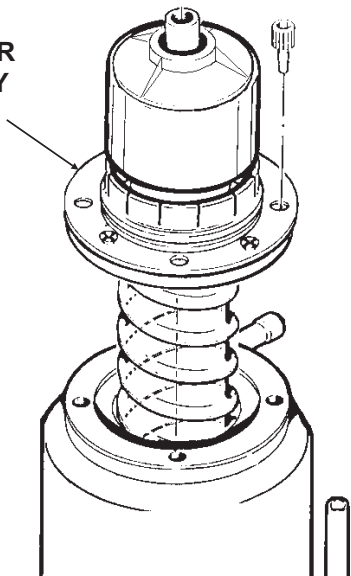
To Remove the Auger:

Turn off the water to the machine, and unclip the evaporator drain hose, pull it down and drain the evaporator into the bin or a container.



1. The top panel must be removed.
2. Remove ice chute cover.
3. Unscrew ice sweep.
4. Loosen band clamp and remove ice chute body.
5. The auger and breaker/bearing may now be removed as an assembly.
 - a. Unscrew 4 allen head cap screws holding breaker to evaporator.
 - b. Lift up on breaker and remove auger from evaporator.

DIVIDER AND AUGER ASSEMBLY



Note: If the auger is stuck, the breaker must be removed from the auger.

The breaker may be removed from the auger and evaporator without disturbing the auger.

- a. Use spanner wrench and unscrew breaker cover from breaker (left hand threads)
- b. Unscrew auger stud from top of auger.
- c. Unscrew 4 allen head cap screws holding breaker to evaporator.
- d. Lift up and remove breaker from evaporator.

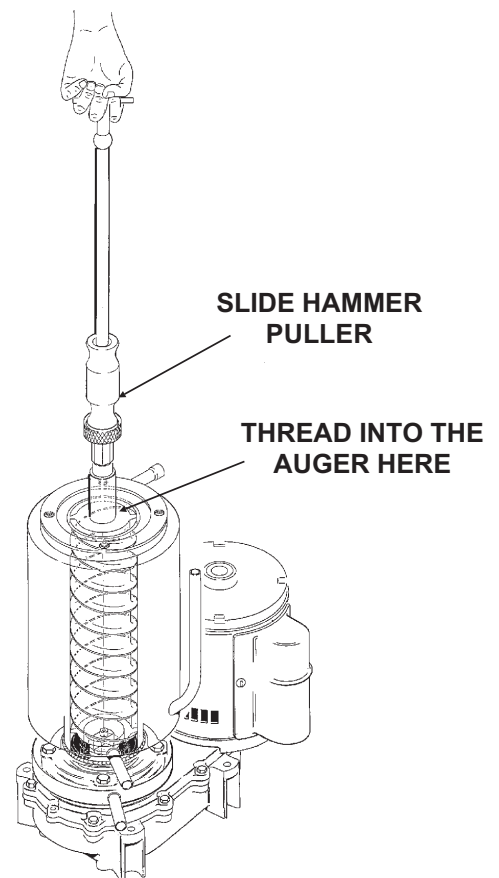
e. If the auger is stuck use a slide hammer type puller to pull on the auger at the threaded hole. The size of that hole is 5/8"-18.

Inspect the auger, the critical areas of the auger are:

1. The auger body. It should be clean and shining. Sometimes an auger will appear clean when wet, but after it is dry it will be seen to be stained. Scrub the auger with ice machine cleaner and hot water.

Ice machine cleaner is an acid. Handle it with extreme care, keep out of the reach of children.

2. The water seal area. Because the auger has been removed, the water seal will have to be replaced. Remove the water seal top half from the auger, and inspect the auger for minerals clean as required.



REMOVAL AND REPLACEMENT: Water Seal

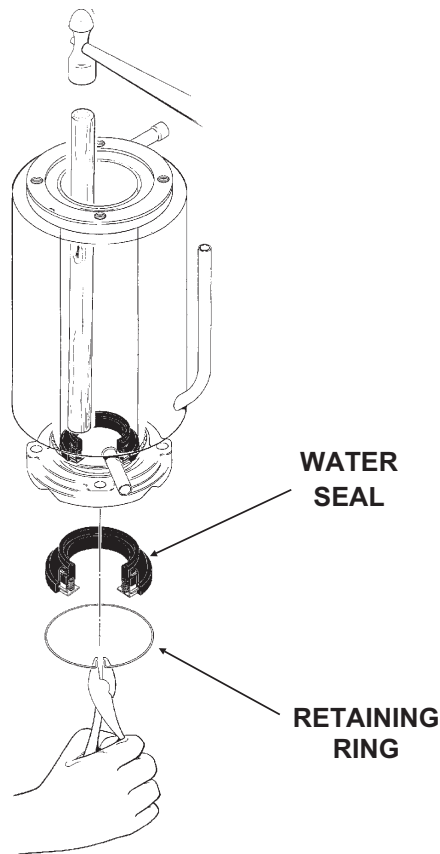
To Remove the Water Seal:

(Assuming all steps to remove the auger have been performed.)

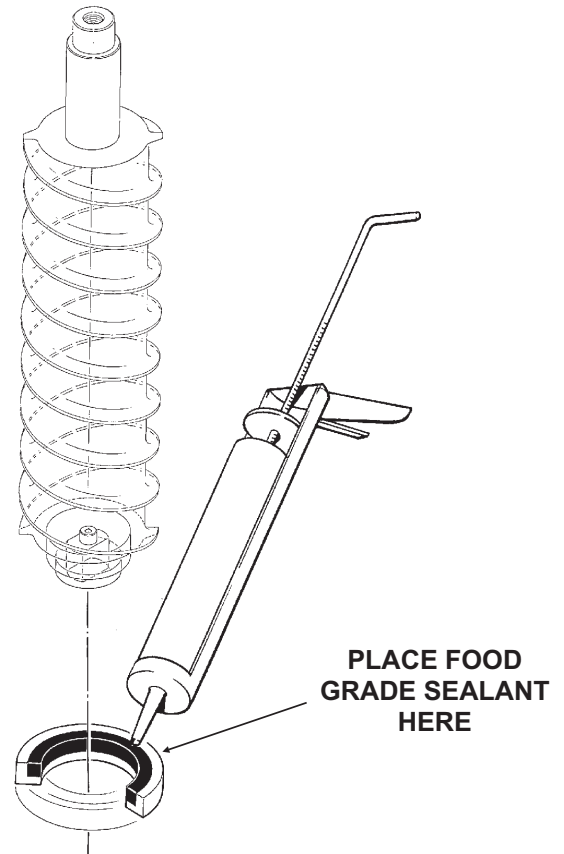
1. The gearmotor/evaporator assembly will have to be exposed.
2. Remove the 4 hex head cap screws holding the evaporator to the gearmotor assembly. Lift the evaporator up and off of the gearmotor.
3. Remove the snap ring or wire retainer from the groove under the water seal.
4. Pull or drive out the lower half of the water seal.

To Replace the Water Seal:

1. Lubricate the water seal with water, and push the water seal into the bottom of the evaporator slightly past the groove for the snap ring.
2. Replace the snap ring and pull the water seal down against it.
3. The part of the water seal that rotates with the auger must also be replaced. Remove the old part from the auger and clean the mounting area.



4. Place a small bead of food grade silastic sealant (such as 732 RTV or Scotsman part number 19-0529-01) on the area of the auger where the water seal is to be mounted.



5. Carefully push the water seal (rubber side against the auger shoulder and the silastic.)

CAUTION

Do not get any silastic onto the face of the seal.

6. Allow the auger and seal to air dry until the silastic is dry on the surface.
7. If the original water seal was leaking, it would be a good idea to inspect the interior of the gearmotor.

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REMOVAL AND REPLACEMENT: Evaporator

To Replace the Evaporator:

(Assuming all the steps for removal of the thrust bearing, breaker, auger, and water seal have been performed.)

1. Shut the hand valves in the liquid and suction lines to the evaporator being serviced; then discharge the refrigerant.
2. Unswheat the refrigerant connections:
 - a) At the thermostatic expansion valve outlet.

CAUTION

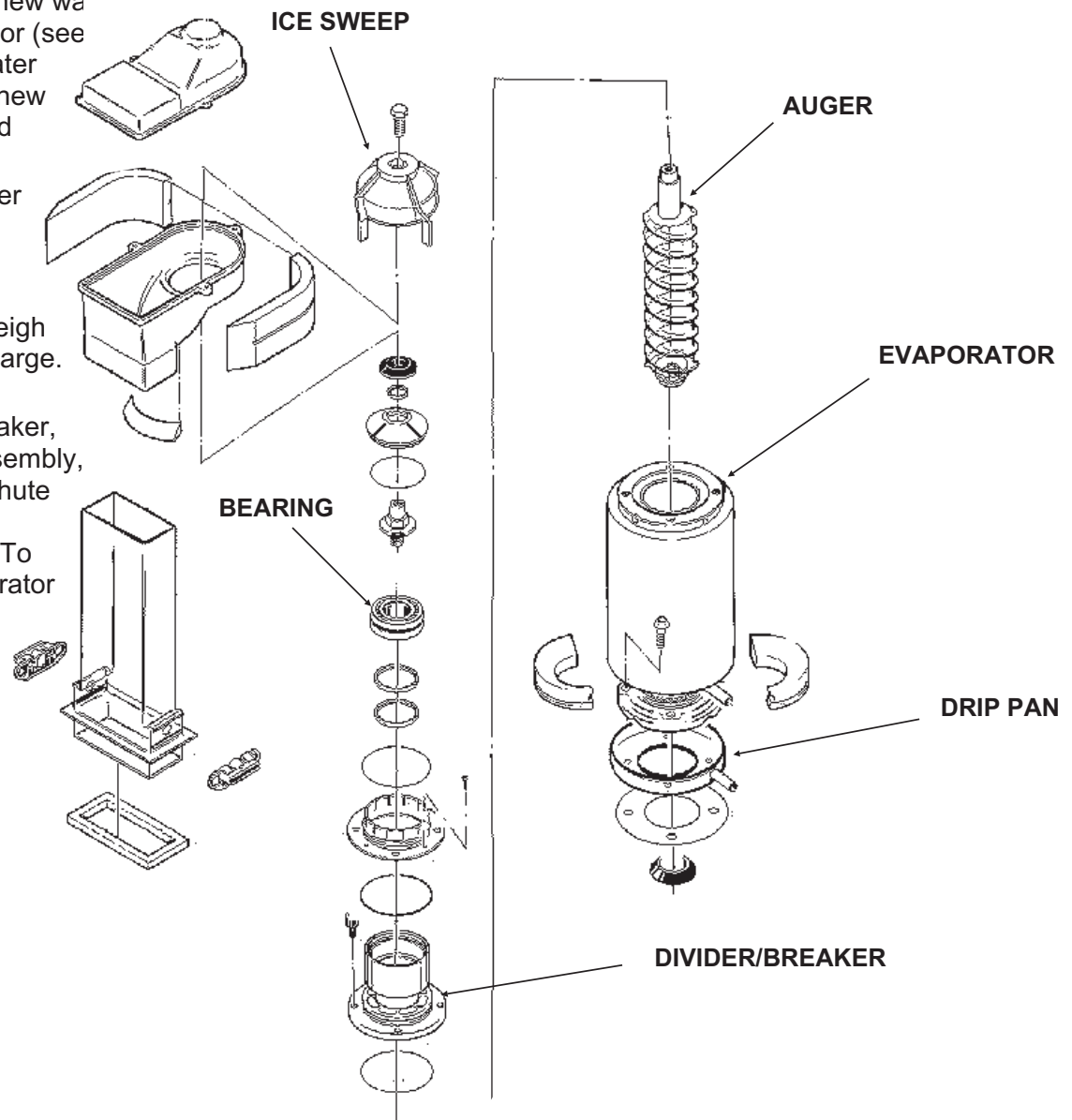
Heat sink the TXV body when unswearing or resweating the adjacent tubing.

b) At the suction line at the joint about 3" from the evaporator.

3. Remove the evaporator.
4. Unswheat the drier from the liquid line.
5. After installing a new water seal in the new evaporator (see "To Replace the Water Seal") sweat in the new evaporator at the old connections.
6. Install an new drier in the liquid line.
7. Evacuate the system until dehydrated, then weigh in the nameplate charge. Check for leaks.
8. Install auger, breaker, breaker bearing assembly, and ice discharge chute in reverse order of disassembly. See "To Reassemble Evaporator and Auger"

To Reassemble the Evaporator and Auger

1. After the gearmotor has been inspected, fasten the evaporator to the gear motor, torque the bolts to 110 inch pounds.
2. Lower the auger into the evaporator barrel, slightly turning it to match up with the drive end. Do Not Drop Into the Evaporator.
3. Complete the reassembly by reversing the disassembly for the breaker & thrust bearing assembly.



REMOVAL AND REPLACEMENT: Gearmotor

To Remove and Repair the Gearmotor Assembly:

(Assuming that the procedures through removal of the water seal have been performed.)

1. Remove the electrical wires from the gear drive motor.
2. Unscrew the 4 cap screws holding the gearmotor to the gearmotor plate.
3. Remove the gearmotor from the ice maker.

To Inspect the gearmotor.

A) Remove the cap screws holding the gearmotor case halves together and pry the two cases apart.

B) To lift off the cover, lift up until you can feel internal contact, then pull the cover towards the output gear end, and then lift the cover (with drive motor attached) up and away from the gear motor case.

Note: The case cover output gear, bearings, and shaft are one pressed together assembly. Replace as a unit.

C) Inspect the oil, gears, and bearings. If the oil level and condition is acceptable, quickly check the gears and bearings. They are likely to be fine if the oil is.

If there is evidence of water in the oil (rusty bearings and gears; the oil having a creamy white appearance; oil level too high) carefully inspect the bearings and gears. If in doubt about the condition of a part, replace it. The oil quantity is 14 fluid ounces, do not overfill.

Note: The gears and bearings are available only as pressed together sets.

D) After replacing parts as required, (if any) reassemble the gearcase. The two smaller gears and the oil should be in the lower case, the output gear will be with the cover. As you lower the cover onto the lower case, cover will have to be moved closer to the second gear after the output gear has cleared the second gear top bearing.

E) After the case is together, and the locating pins are secure in both ends, replace all cap screws.

4. Bench test the gearmotor, check for oil leaks, noise, and amp draw.

