Preferred Service

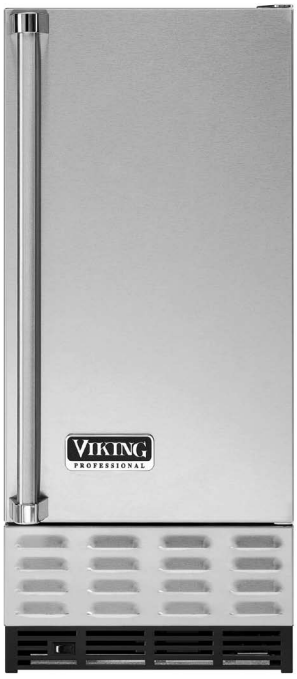
Service Manual

This manual is to be used by qualified appliance technicians only. Viking does not assume any responsibility for property damage or personal injury for improper service procedures done by an unqualified person.

Professional and Designer Undercounter/ Freestanding 15" W. Ice Machine

This manual covers general and specific information including, but not limited to the following models:

VUIM/DUIM150
(MFG AFTER 3/2007)
VUIM/DUIM153



SMR-0006
April 2009

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SAVE THESE INSTRUCTIONS

REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL AND TECHNICAL SHEETS BEFORE BEGINNING REPAIRS.

Pride and workmanship go into every product to provide our customers with quality appliances. It is possible, however, that during the lifetime of a product, service may be required. Products should be serviced only by a qualified authorized service technician who is familiar with the safety procedures required to perform the repair and is equipped with the proper tools, parts, testing instruments, and the appropriate service manual.

Safety Information

We have provided many important safety messages throughout this manual and on the appliance. Always read and obey all safety messages. This is a safety alert symbol.

This symbol alerts personnel to hazards that can kill or hurt you and others. All safety messages will be preceded by a safety alert symbol and the word "DANGER", "WARNING" or "CAUTION". These words mean:

DANGER

Immediate hazards which WILL result in severe personal injury or death.

WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death.

CAUTION

Hazards or unsafe practices which COULD result in minor personal injury, product or property damage.

All safety messages will identify the hazard, tell you how to reduce the chance of injury, and inform you what can happen if the instructions are not followed.

WARNING

To avoid risk of serious injury or death, repairs should not be attempted by unauthorized personnel.

CAUTION

VIKING will not be responsible for any injury or property damage from improper service procedures. If performing service on your own product, you must assume responsibility for any personal injury or property damage which may result.

Viking Technical Support
Phone No. 800-914-4799
Address your written correspondence to:
Viking Preferred Service
1803 HWY 82 West
Greenwood, MS 38930

UNDERCOUNTER/FREESTANDING ICE MACHINE WARRANTY

(Units certified for Outdoor Use)

One Year Full Warranty

Undercounter/freestanding ice machines and all of their components and accessories, except as detailed below*, are warranted to be free from defects in material or workmanship under normal household use for a period of one (1) year from the date of original retail purchase. Viking Range Corporation, warrantor, agrees to repair or replace, at its option, any part which fails or is found to be defective during the warranty period.

*Painted and decorative items are warranted to be free from defective materials or workmanship for a period of ninety (90) days from the date of original retail purchase. ANY DEFECTS MUST BE REPORTED TO THE SELLING DEALER WITHIN NINETY (90) DAYS FROM DATE OF ORIGINAL RETAIL PURCHASE.

Five Year Limited Warranty

Any sealed refrigeration system component, as listed below, is warranted to be free from defective materials or workmanship in normal household use during the second through the fifth year from the date of original retail purchase. Viking Range Corporation, warrantor, agrees to repair or replace, at its option, any part which fails or is found to be defective during the warranty period.

Sealed Refrigeration System Components: Compressor, Evaporator, Condenser, Connecting Tubing, Dryer/Strainer

It is recommended that in temperatures above 110oF (43.0oC) and below 45oF (7.2oC) the unit be shut off. The normal operating range for the unit is between 45oF (7.2oF)and 110oF (43.0oC).

Ninety (90) Day Residential Plus Warranty

This warranty applies to applications where use of the product extends beyond normal residential use. Examples are, but not limited to, bed and breakfasts, fire stations, private clubs, churches, etc. This warranty excludes all commercial locations such as restaurants, food service locations and institutional food service locations.

This warranty extends to the original purchaser of the product warranted hereunder and to each transferee owner of the product during the term of the warranty.

This warranty shall apply to products purchased and located in the United States and Canada. Products must be purchased in the country where service is requested. Warranty labor shall be performed by an authorized Viking Range Corporation service agency or representative. Warranty shall not apply to damage resulting from abuse, accident, natural disaster, loss of electrical power to the product for any reason, alteration, improper installation, improper operation or repair or service to the product by anyone other than an authorized Viking Range Corporation service agency or representative. Warranty shall not apply to damage resulting from indoor units being used in outdoor situations. This warranty does not apply to commercial usage. Warrantor is not responsible for consequential or incidental damage whether arising out of breach of warranty, breach of contract, or otherwise. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Owner shall be responsible for proper installation, providing normal care and maintenance, providing proof of purchase upon request, and making the appliance reasonably accessible for service. If the product or one of its component parts contains a defect or malfunction during the warranty period, after a reasonable number of attempts by the warrantor to remedy the defects or malfunctions, the owner is entitled to either a refund or replacement of the product or its component part or parts. Replacement of a component part includes its free installation. Warrantor's liability on any claim of any kind, with respect to the goods or services covered hereunder, shall in no case exceed the price of the goods or service or part there of which gives rise to the claim.

VIKING RANGE CORPORATION
111 Front Street, Greenwood, Mississippi (MS) 38930 USA 662-455-1200

Specifications are subject to change without notice.
For more product information, call 1-888-VIKING1 (845-4641), or visit our web site at http://www.vikingrange.com

WARRANTY SERVICE

Under the terms of this warranty, service must be performed by a factory authorized Viking Range Corporation service agent or representative. Service will be provided during normal business hours, and labor performed at overtime or premium rates shall not be covered by this warranty. To obtain warranty service, contact the dealer from whom the product was purchased, an authorized Viking Range Corporation service agent, or Viking Range Corporation. Provide model and serial number and date of original purchase. For the name of your nearest authorized Viking Range Corporation service agency, call the dealer from whom the product was purchased or Viking Range Corporation. **IMPORTANT:** Retain proof of original purchase to establish warranty period.

The return of the Owner Registration Card is not a condition of warranty coverage. You should, however, return the Owner Registration Card so that Viking Range Corporation can contact you should any question of safety arise which could affect you.

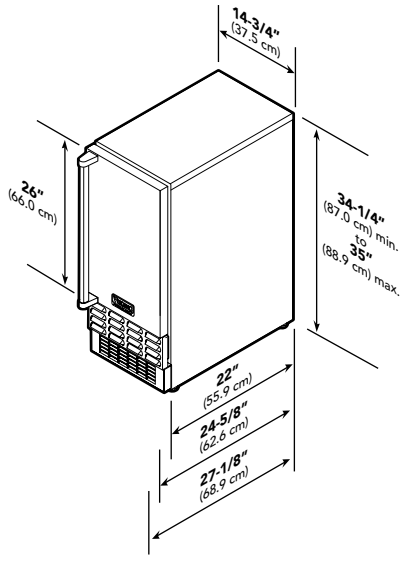
Any implied warranties of merchantability and fitness applicable to the described halogen elements are limited in duration to the period of coverage of the applicable express written limited warranties set forth above. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from jurisdiction to jurisdiction.

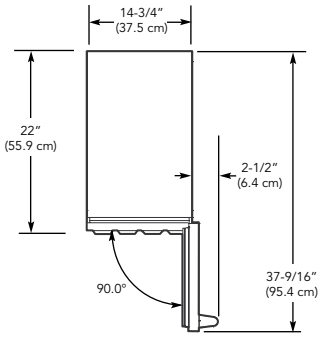
VIKING RANGE CORPORATION
111 Front Street • Greenwood, Mississippi 38930 USA
(662) 455-1200
www.vikingrange.com
Specification subject to change without notice

Specifications

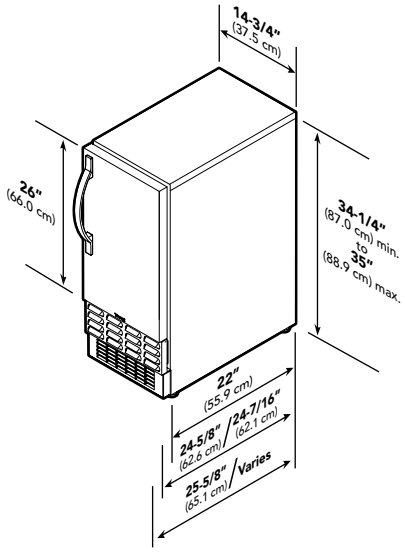
Undercounter/Freestanding 15"W. Ice Machine		
Description	**VUIM150/153**	**DUIM150**
Overall width	14-3/4" (37.5 cm)	
Overall height	34-1/4" (87.0 cm) min. to 35" (88.9 cm) max.	
Overall depth (from rear) To front of handle With door open	27-1/8" (68.9 cm) 37-9/16" (95.4 cm)	25-5/8" (65.1 cm) 37-9/16" (95.4 cm)
Approximate shipping weight	110 lbs. (49.5 kg)	

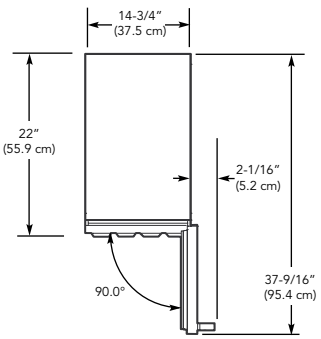
VUIM150/153





DUIM150





Warnings

Read and follow all instructions before using this appliance to prevent the potential risk of fire, electric shock, personal injury, or damage to the appliance as a result of improper usage of the appliance. Use appliance only for its intended purpose as described in this manual.

To ensure proper and safe operation: appliance must be properly installed and grounded by a qualified technician. DO NOT attempt to adjust, repair, service, or replace any part of your appliance unless it is specifically recommended in this manual. All other servicing should be referred to a qualified servicer. Have the installer show you the location of the gas shut-off valve and how to shut off in an emergency.

Electrical Requirements
Check your national and local codes regarding this unit. These units require 115 VAC, 60 Hz.

WARNING

ELECTRICAL SHOCK HAZARD
Failure to follow these instructions could result in fire or electrical shock or fire.

WARNING

Failure to use adequate drainage system will result in surrounding water damage and/or poor ice production

WARNING

Do not lay unit on top, side, back, or front. If unit is accidentally laid in any position other than right side up, then the unit must remain in the right side up position for at least 24 hours before plugging the unit in.

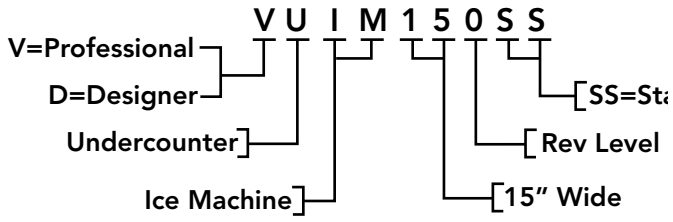
WARNING

Read and follow manufacturer's warnings on ice machine cleaner products.

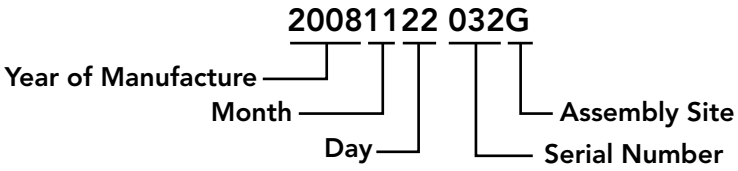
Model – Serial Number Matrix

The model number and serial number are located on the data plate. The data plate is located on the inside of the unit, on liner left side wall.

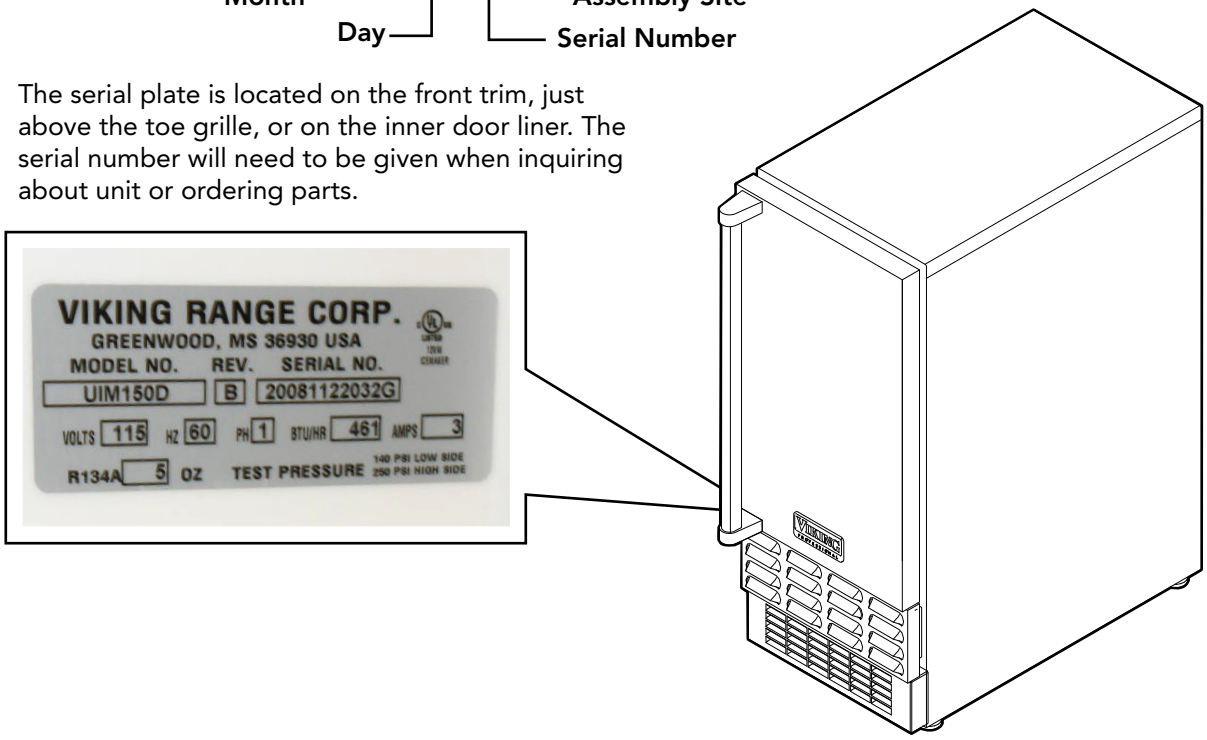
Model Numbers



Serial Numbers



The serial plate is located on the front trim, just above the toe grille, or on the inner door liner. The serial number will need to be given when inquiring about unit or ordering parts.



Before Servicing

- Always disconnect power to any Viking product before attempting to service it. Always verify that power has been disconnected.
- If the unit has been running, use caution around condenser and copper tubing. These areas may be very hot.
- Use caution around condenser fins and baseplate edges. These areas are sharp.
- Refrigerant is under high pressure. Always evacuate any system before attempting to work on it.
- Reasonable care and safe work methods should be practiced when working on any Viking product. Never work with energized electrical equipment in wet or damp areas.
- Use an appropriate work area and location when performing repairs. You will find that it is easier to repair undercounter units if they are set on a raised platform or workbench.
- Always wear protective safety glasses and gloves when working on any Viking product.
- Any refrigerant, whether CFC, HCFC, or HFC (R-12, R-22, or R-134a), must be recovered. Federal regulationsprohibit intentional venting or release of refrigerants during service repair or disposal of an appliance.

After Servicing

After servicing the unit, whether at a site or service center, check the following:

- MAKE CERTAIN THERE ARE NO LEAKS IN DRAIN OR WATER LINES. Check water line, water valve, drain valve, and drain tubing for leaks.
- Make certain ice machine functions properly by observing ice production and ice harvest cycles. Check for hollow ice slabs or ice slabs that will not release.
- Make certain bin thermostat will turn unit off. The best way to check this is to let ice maker bin fill with ice. However, if time is restricted then use several ice cubes and place them on bin thermostat's capillary tube sleeve located on side of ice bin. The unit should shut down within a few minutes. After removing ice, unit should start at least five minutes later.

Electrical Requirements

WARNING

ELECTRICAL SHOCK HAZARD
Failure to follow these instructions could result in fire or electrical shock or fire.

- 115 VAC, 60 Hz., single phase power is needed.
- Use an outlet with a 15 amp delayed action fuse or circuit breaker. DO NOT PUT A FUSE ON THE NEUTRAL OR GROUND OF THE CIRCUIT.
- Properly grounded outlet is required for unit.
- It is recommended or your building code may require that a single circuit GFCI receptacle or breaker be used for this unit only. DO NOT USE AN EXTENSION CORD.
- Outdoor models must use a GFCI receptacle.

Water Requirements

- Use supplied water line fitting for water connection to the rear of the unit.
- Use cold, potable water supply only with pressure between 20 to 120 psi.
- Use 1/4 inch OD soft copper tubing. Plastic tubing can be used, but may leak with age.
- Use 1/4 inch saddle shut-off valve. Check to make sure valve complies with local codes. DO NOT USE SELF PIERCING SADDLE VALVE OR LESS THAN 1/4 INCH SADDLE VALVE AS WATER FLOW WILL BE RESTRICTED.
- A quality system water filter or local water filter is recommended. A quality filter can remove particles as well as remove unpleasant taste and odors from water.
- Softened water is not recommended Depending on mineral concentrations, this can produce cloudy white cubes that may stick together.

Gravity Drain

NOTICE
A DRAIN PUMP MUST BE USED FOR ICE MACHINE DRAIN.

The drain fitting from ice maker is for 5/8 inch OD tubing. This tubing can be routed to a gravity drain in area shown in **Figure 1** or to a remote gravity drain that is located below ice machine. Be sure to check your local codes. Slope any long horizontal runs according to code to remote gravity drain for proper drainage. An air gap may be necessary for horizontal runs over four feet. Use thick wall tubing that will not kink easily when icemaker is installed. PROPER ROUTING, SLOPING, AND SIZE OF DRAIN LINE IS IMPORTANT ESPECIALLY IF USING FLEXIBLE TUBING OR POOR ICE PRODUCTION WILL RESULT.

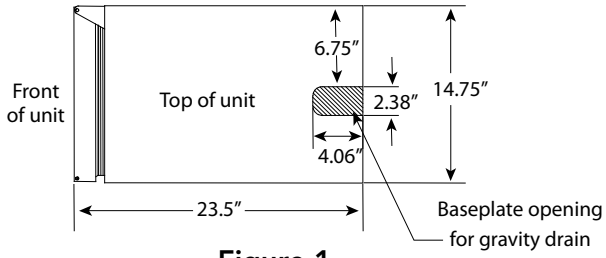


Figure 1

If installing a standoff gravity drain, use illustration below for location. Standpipe can be up to three inches high above the floor. Route tubing from ice maker into drain pipe. See the Owner's Guide for additional drain information.

It may be necessary in some installations to wrap drain tubing with wrap-type insulation to prevent condensation on drain tube. CONDENSATION CAN FORM ON DRAIN TUBING AND CAUSE SURROUNDING WATER DAMAGE.

Drain Pump

A drain pump can be used to drain water when a gravity drain is not practical. Refer to drain pump instructions supplied with drain pump for installation.

As with the gravity drain, it may be necessary to wrap drain tubing from ice machine to inlet of drain pump with wrap-type insulation. CONDENSATION CAN FORM ON DRAIN TUBING AND CAUSE SURROUNDING WATER DAMAGE.

Initial Start-Up

The water fill valve solenoid will energize as soon as the selector switch is turned to the on position. The valve will remain open until it de-energizes after a fill time of 1 minute 30 seconds (After the initial fill, the valve will be energized for 2 minute intervals).

The circulating pump will energize immediately after the fill valve de-energizes.

The compressor and condenser fan will cycle on when the bin thermistor senses a temperature at or above the "start ice" set point (43.0°F) and the evaporator thermistor senses a temperature at or above the "production" setpoint (45.0°F / 7 C). The compressor will have a delay of approximately five minute after initial start-up.

Harvest Cycle

When the evaporator thermistor senses a temperature at or below the "harvest" setpoint (11.0°F) the condenser fan will cycle off.

- The compressor will continue to operate to supply hot gas for the "harvest" cycle.
- The drain valve will energize.
- The grid-cutter will energize.

The hot gas valve will energize when the evaporator thermistor senses the "harvest" setpoint (11.0°F). The hot gas valve opens to divert hot gas, supplied by the compressor, to the evaporator plate to facilitate the "harvest" cycle.

The drain solenoid valve will energize for 45 seconds of operation.

The grid-cutter will remain energized for 35 minutes after the initialization of the "harvest" cycle.

Post Initial Fill Cycle

The water fill valves will energizes with a fill time of 2 minutes.

Once the evaporator thermistor senses a temperature at or above the "production" setpoint (45.0°F), a new production cycle will begin (steps 1-B and 1-C above). If at any time the bin thermistor senses a temperature at or below the "stop ice" setpoint (35.0°F), the current "production" or "harvest" cycle will continue until the completion of that cycles harvest.

Successive Cycles

A. Ice maker will continue to follow in operational sequence to maintain the setpoints of the "start-ice", "production", "harvest", and "stop-ice" modes maintained by the thermistors pre-set specifications.

Selector is in the "ON" Position

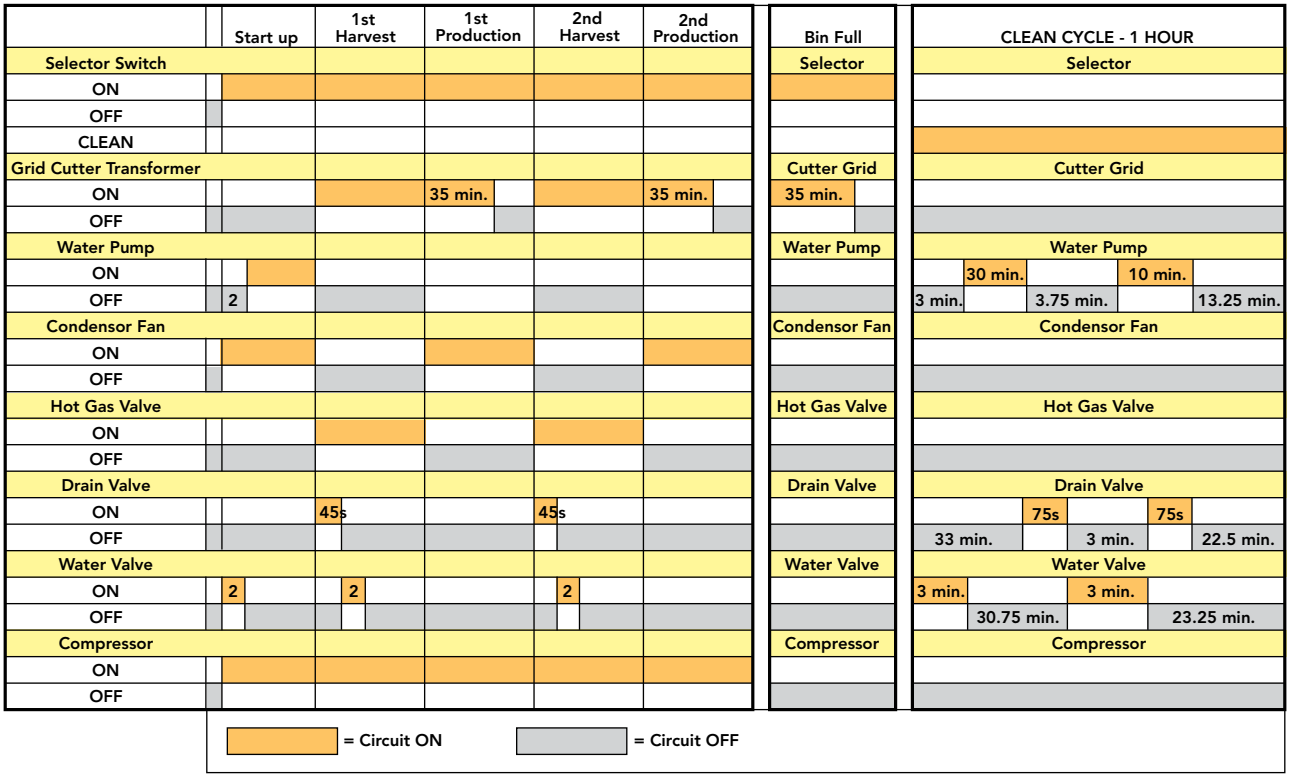


Figure 2 (Timing Diagram/Operation for electronic control)

IMPORTANT: The assumptions before proceeding are: water is supplied to ice machine (see Water Requirements page 10), proper electrical power supplied to ice machine (see Electrical Requirements page 10), drain is properly plumbed or drain pump is operating properly, and bin and evaporator thermistors are not defective.

Input power must be applied at all times for proper operation. Any interrupt will lockout compressor for no less than seven minutes and up to nine minutes and restart the mode of operation. **Figure 2** is the Timing Diagram/Operation for the electronic control chart.

Upon setting switch to "ON" position, water solenoid will energize for one and a half minutes and then de-energize. When bin thermistor senses temperature at or above "start ice" setpoint, and evaporator thermistor senses temperature at or above "production" setpoint, production cycle will begin. The circulation pump, condenser fan, and compressor relay will energize. When evaporator thermistor senses temperature at or below "harvest" setpoint, harvest cycle will begin. The circulation pump and condenser fan outputs will be de-energized and hot gas solenoid and drain solenoid will energize. The drain solenoid will remain energized for 45 seconds and then de-energize, after which water solenoid will energize for two minutes and then de-energize. Loads will remain in this state until evaporator thermistor temperature rises to "production" setpoint. Once evaporator thermistor temperature is at or above "production" setpoint, a new production cycle will begin. If at any time bin thermistor senses a temperature at or below "stop ice" setpoint, any production or harvest cycle in process will continue until harvest cycle is complete. Once complete, all loads will de-energize and remain so until bin thermistor senses a temperature at or above "start production" setpoint. A new production cycle will then begin. During the first production cycle only (switch was previously in "OFF" or "CLEAN" position), evaporator thermistor temperature will be ignored until circulation

Selector is in the "ON" Position (continued)

pump has run for two minutes. During all harvest cycles, evaporator thermistor temperature cannot terminate harvest cycle until water solenoid is de-energized. The grid cutter output will always be energized during harvest cycle, and for the first 35 minutes into production cycle.

If during any production or harvest cycle, selector switch is put into "CLEAN" position, any cycle in process will be immediately terminated and a clean cycle will occur. The unit will then repeat entire above cycle.

If during any production or harvest cycle, selector switch is put into "OFF" position, the cycle in process will be stopped and all loads will de-energize and remain so as long as the selector switch remains in "OFF" position.

If during any production or harvest cycle, selector switch is taken out of "ON" position, a lockout will be started during which compressor relay will not re-energize regardless of a switch position.

If during any production or harvest cycle, there is a power loss/interruption of greater than 25 milliseconds, a lockout delay will begin and compressor relay will not re-energize upon reapplication of power until lockout delay is complete. The lockout delay begins with loss of power and is unaffected by duration of power loss. All other loads will operate normally during lockout.

The setpoints are as follows:

- Stop ice: 35.0 degrees F +/- 2 degrees F
- Start ice: 43.0 degrees F +/- 2 degrees F
- Harvest: 11.0 degrees F +/- 2 degrees F
- Production: 45.0 degrees F +/- 2 degrees F
- Setpoint versus Temperature and Voltage (120VAC): +/- 3 degrees F

Selector is in the "CLEAN" Position

IMPORTANT: The assumptions before proceeding are: water is supplied to ice machine (see Section Water Requirements section), proper electrical power supplied to ice machine (see Electrical Requirements Section), drain is properly plumbed or drain pump is operating properly, and bin and evaporator thermistors are not defective. The refrigeration system components, compressor, condenser fan, and hot gas valve, are never on in the clean cycle.

Upon setting selector switch to "CLEAN" position during production or harvest cycle, clean cycle will immediatelystart, terminating harvest or production cycle. Refer to Timing/Operation Diagram in Figure The following sequence will now occur:

1. LED indicator on control will light for 10 seconds upon start of clean cycle. See, Electronic Controller section, for LED location.
2. The water solenoid will energize for three minutes and then de-energize. The circulation pump will energize.
3. After 30 minutes, the circulation pump will de-energize and the drain solenoid will energize.
4. After 75 seconds, the drain solenoid will de-energize and the water solenoid will energize.
5. After three minutes, the water solenoid will de-energize and the circulation pump will energize.
6. After 10 minutes, the circulation pump will de-energize and the drain valve will energize.
7. After 75 seconds, the drain solenoid will de-energize. The clean cycle is now complete.

All loads will remain off as long as selector switch remains in "CLEAN" position and power is not removed andreapplied.

If at any time during a clean cycle, selector switch is moved from "CLEAN" position, all loads except the drain solenoid will de-energize (this includes "OFF" position). The drain solenoid will energize for 75 seconds and then de-energize. The unit will now operate normally according to whether it is in "OFF" or "ON" position.

Sealed System

The following should always be practiced with any sealed system that has been opened. ONLY OPEN THE SEALED SYSTEM AS A LAST RESORT AND AS A FINAL DIAGNOSIS. Always check other areas of operation such as wiring, water supply, drain setup, proper air flow, etc. before opening up the sealed system. Many times these areas can resemble sealed system problems. The diagnosis of a sealed system can be determined by accurate pressure and temperature measurements.

1. Use a leak detection system that will detect R-134a refrigerant. Leaks need to be found on any leaking system BEFORE the repair takes place.

2. The drier must be replaced anytime the sealed system is opened. Failure to do so may cause repeated system failure in the future.

3. Limit time the system is opened. DO NOT EXPOSE THE OPEN SYSTEM FOR MORE THAN 15 MINUTES. This will prevent a sealed system failure. Leave replacement parts sealed and/or pressurized until ready to install.

4. The compressor must be replaced if there is a low side leak. Moisture has been drawn into the system if the unit has been running for an extended period of time. Be sure to flush the system with dry nitrogen gas and evacuate to 50 microns before re-charging (see Low Side Leaks section).

5. A new evaporator assembly must be ordered if the capillary tube is found to be plugged or severly restricted. Restrictions cannot be flushed out.

6. Be sure to purge the system after final brazing. This will flush out any air or moisture that may have entered the system before being absorbed into the refrigerant oil.

IMPORTANT

Testing of the electrical system, defrost system, controls, and air flow should be performed before entering any sealed system. What may first appear to be a system component failure may be only a simple control, air flow, electrical, or defrost system problem.

Low Side leaks

Low side leaks consist of a break in the system at the evaporator, low side (suction) return line, or accumulator. If a leak is found in any of these areas, moisture has probably entered the system. The compressor and drier will have to be replaced and the system will need to be flushed thoroughly with nitrogen gas and evacuated to 50 microns before re-charging.

High Side Leaks

High side leaks consist of a break in the system at the condenser, high side tubing, drier, or capillary tube. If a leak is found in any of these areas, the system can be flushed with nitrogen gas, evacuated to 50 microns, and recharged.

Restricted Capillary Tube

Moisture or other contaminants that enter the system can cause deposits in the system. These deposits will usually collect in the capillary tube and form a restriction that cannot be completely removed by flushing. If the capillary tube is found to be restricted, the evaporator, compressor, condenser, and drier should all be replaced.

Access Valves

A temporary access valve can be used to service or evaluate the system. The access valve can be installed on the compressor's process tube (this will also be a low pressure side). Be sure to cap off access valve while servicing. This will prevent contamination of the system and/or refrigerant from leaking. AFTER SERVICING, ACCESS VALVE MUST BE REMOVED. A pinch-off tool can be used to close the system to remove access valve and then braze the hole for access valve to seal the system. Be sure to leak check after brazing.

Pressure and Temperature

There are a couple of ways to measure temperature of the evaporator plate:

1. Use a thermocouple to measure temperature of evaporator plate. The thermocouple must be secured to evaporator when taking measurement. The best and most accurate location for the thermocouple end is where the thermistor is secured to evaporator. Allow anywhere from three to six degrees F of variation in measured temperatures if you measure on the plate because of thermal conductivity of thermistor body in comparision to thermocouple.

2. If it has been determined that there is proper contact between thermistor and evaporator plate, thermistor resistance value can be corresponded to temperature ("Resistance versus Temperature Chart" page 27).

3. If it has been determined that there is proper contact between the thermistor and the evaporator plate, the voltage at the thermistor terminals can be read. The voltage can be read while the unit is running by attaching test leads to thermistor terminals at the electronic control. The temperature to switch into harvest cycle is 11 degrees F and the corresponding voltage is 3.77V. The temperature to switch into the production cyle is 45 degrees F and the corresponding voltage is 2.88V. Slight variations in actual measurements can occur due toinput voltage variations.

***Note:** the temperature and pressure readings must be taken with unit on and water flowing over evaporator plate (in production cycle). Use gage pressure readings from compressor's process tube (low side) access valve.*

Refrigeration Temperature/Pressure Chart for R-134a			
Degrees F	Pressure (psi) R-134a	Degrees F	Pressure (psi) R-134a
-12	1.1	36	31.3
-9	2.8	38	33.2
-4	4.5	40	35.1
0	6.5	42	37.0
2	7.5	44	39.1
4	8.5	46	41.1
6	9.6	48	43.3
8	10.8	50	45.5
10	12.0	52	47.7
12	13.1	56	52.3
14	14.4	60	57.5
16	15.7	64	62.7
18	17.0	68	68.3
20	18.4	72	74.2
22	19.9	76	80.3
24	21.4	80	86.8
26	22.9	84	93.6
28	24.5	88	100.7
30	26.1	92	108.2
32	27.8	96	116.1
34	29.5	100	124.3

During production cycle, low side pressures will vary anywhere from 140 psi to 2 psi, depending at what point measurements are taken. High side pressures can range from 481 psi to 25 psi also depending at what point measurements are taken.

Pressure and Temperature (continued)

In evaluating this system, the best point to determine if pressures are correct is at the end of the production cycle. This is the point where there is a thick slab formed on the evaporator and the evaporator thermostat is near cut-out temperature. Using Refrigeration Temperature/Pressure chart , convert temperature to a corresponding pressure.

If low side pressure is below pressure in Refrigeration Temperature/Pressure chart , check for the following:

1. A system leak.
2. Capillary tube is restricted.
3. Insufficient compressor (does not pump properly)

If low side pressure is above pressure in Refrigeration Temperature/Pressure chart , check for the following:

1. Restricted air flow.
2. Dirty condenser coil.
3. Leaking or energized hot gas valve.
4. Overcharged system.
5. Low side leak.

Re-charging

RE-CHARGING OF THE UNIT SHOULD BE DONE ONLY AFTER DIAGNOSING AND REPAIRING THE SYSTEM Sealed System Introduction). Be sure to flush the system with dirty nitrogen gas and evacuate to 400 microns before re-charging.

THE METHOD FOR RE-CHARGING THE UNIT IS BY WEIGHT USING VAPOR REFRIGERANT. Using manifold gage set-up, hook up charge hoses to the access valve on the compressor's process tube. If any access valve is attached to the high side process tube, remove it and then seal the tube by brazing before charging. Charge the unit to 5 oz. (0.313 lbs.) or 3.5 oz. (0.218 lbs.) of R-134a, as specified on the serial plate.

After re-charging, check pressures. Refer to Refrigeration Temperature/Pressure chart for corresponding temperatures and pressures. If pressures or temperatures are incorrect, check the sealed system, recover the charge, repair, evacuate, and then re-charge.

NOTE: *It is not uncommon to have some condensation or a slight frost on the suction line. This may occur towards the end of the production cycle. Liquid refrigerant is not getting into the compressor if the unit was charged properly. It is important that the insulation remains on the suction line and the capillary tube together after any repair and that it is sealed at both ends. Repair any rips or tears as needed with vinyl tape.*

Hot Gas Valve

The hot gas valve is used to bypass the capillary tube and send warm vapor to the evaporator when opened during the harvest cycle. The valve is actuated by a solenoid that opens the valve when energized and closes when de-energized. The valve seats using gravity so the valve must remain vertical to fully close.

The valve can fail by either being stuck in the open or stuck in the closed position. When stuck fully or partially opened, the valve will not seat and seal causing leak-by. This will result in long ice production cycles and higher than normal low side pressures. A stuck closed valve will not allow the valve to open which will keep the ice machine in the harvest mode. A contaminated system or damage to the valve body will cause any of these failures.

Care in keeping the system clean, handling of the valve, keeping the valve cool during brazing, and evacuation of the system before charging must be done to prevent damage and eventual failure of the valve.

A quick way to check the valve to see that it opens and closes freely (with the system still sealed) is to repeatedly energize and de-energize the solenoid and listen for the valve opening and closing. You should be able to hear a distinct "click" of the valve piston moving in the bore if the valve is opening and closing. If you cannot hear this "click" then the valve is stuck and will need to be replaced. The solenoid coil itself can be checked by measuring resistance across the electrical terminals. A good solenoid coil will have a resistance reading of 380-390 ohms.

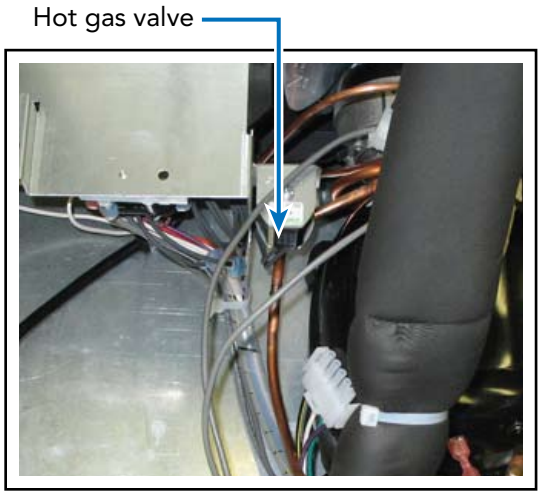


Figure 3

Removing the Hot Gas Valve

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.

2. Remove back panel and lower shroud (see **Figure 6**).

3. Remove grille by removing the two screws and disconnecting the three wires to rocker switch (see **Figure 7**).

4. Remove drain valve. (See page 25).

5. Remove water valve. (See page 26).

6. Take out the screw that secures the top of the electrical bracket located in the front of the mechanical area (see **Figure 8**).

7. Remove the six screws that secure the baseplate to the cabinet on the bottom of the unit (see **Figure 9**).

8. Gently slide the mechanical out the back of the unit just enough to gain access to the hot gas valve and drier assembly (see **Figure 10**).

9. Install system access valve(s) and recover refrigerant. After recovering be sure to cap off access valve to prevent contamination of the system.

10. Disconnect wires at solenoid, remove solenoid retaining screw, andremove solenoid, (see **Figure 4**).

11 Unbraze the brazed union upstream of hot gas valve, (see **Figure 5**) Be sure to cap off after tubing has cooled.

12. Unbraze and remove the capillary tube from the drier assembly.

13. Unbraze the drier assembly at the end of the condenser (see **Figure 4**). Be sure to cap off after cooling.

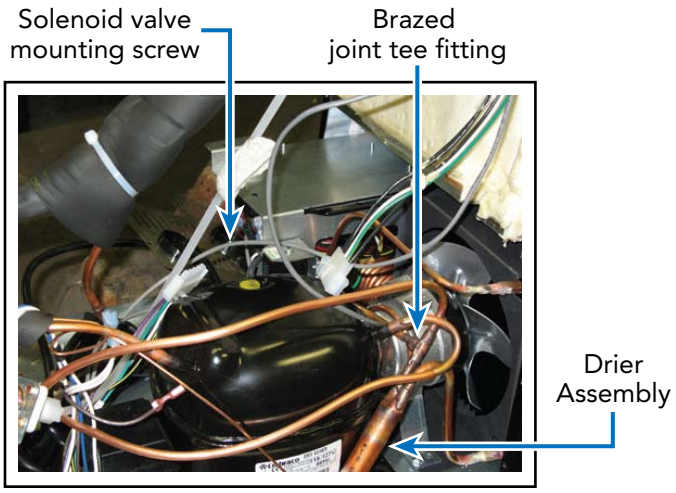


Figure 4

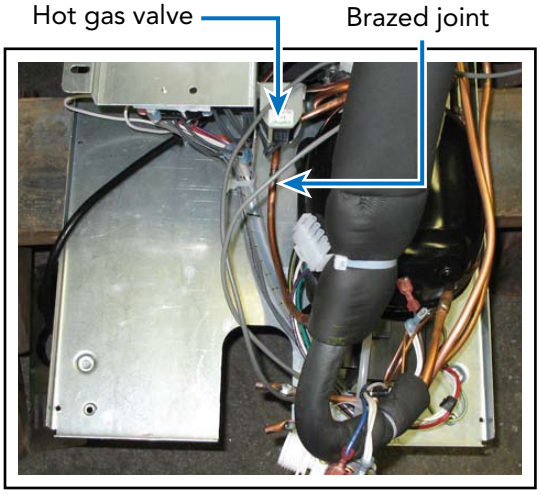


Figure 5

Figure 6

Installing Hot Gas Valve

1. Bend hot gas valve tubing similar to the one being replaced. DO NOT KINK TUBING OR OVERSTRESS TUBING AT VALVE JOINTS.

2. Braze in the new drier assembly and then the capillary tube.

3. APPLY A HEAT SINK OR A DAMP CLOTH ON THE VALVE BODY TO KEEP HEAT AWAY. Be sure to keep heat sink or water from entering the tubing. Failure to keep the valve body cool will result in a leaky valve.

4. Braze the hot gas valve tube (from the side of the valve) into the tee on the drier assembly.

5. Braze the hot gas valve tube (from the bottom of the valve) into the evaporator bypass tube.

6. Cool the brazed joints with a damp cloth.

7. Remove the heat sink or damp cloth from the valve body.

8. Check for leaks using dry nitrogen gas and a leak detection system.

9. Flush the system and re-charge.

Reassemble reversing steps 1 through 9 "Removing th Hot Gas Valve" section.

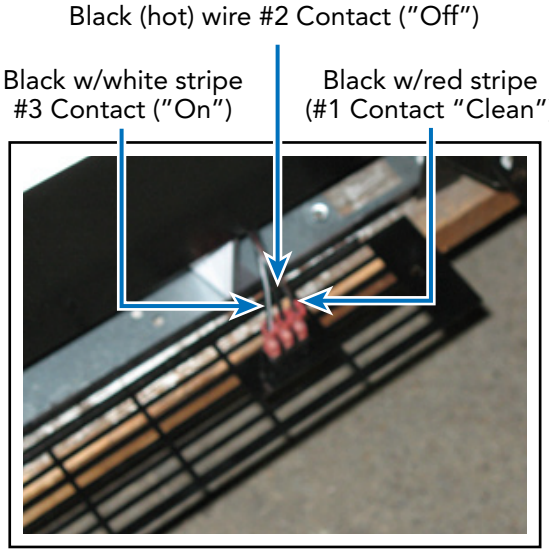


Figure 7

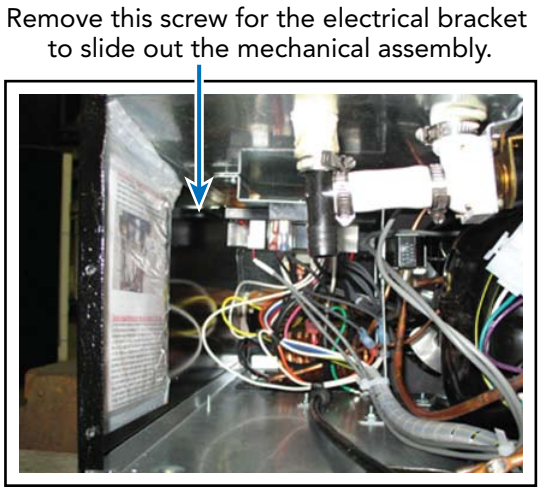


Figure 8

Figure 9

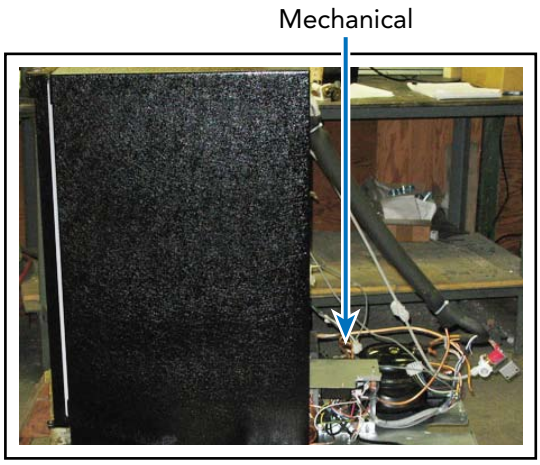


Figure 10

Evaporator

The evaporator uses evaporating refrigerant to remove heat from the water that flows over the evaporator plate to form an ice slab. The ice slab will simply slide down the evaporator plate onto the cutter-grid during harvest.

The evaporator plate will over time have a build-up of mineral deposits. The evaporator will NOT need to be replaced due to the mineral deposits. However, these deposits must be removed periodically for proper ice machine performance.

The evaporator must also be free of nicks and scratches. A nice polished and smooth evaporator will allow the ice machine to perform correctly, giving the best performance by allowing the ice slab to slide freely and allowing the water to have proper evaporator to water contact. If nicks and scratches are found, replacement is not needed. Simply remove the nicks and scratches with fine sanding material and then use a polish for stainless steel.

If the evaporator has a leak, it should be replaced. A leak detection device will confirm a leaking evaporator assembly. REMEMBER, IF A LEAK IN THE EVAPORATOR, ACCUMULATOR, OR LOW SIDE TUBING IS FOUND, THE COMPRESSOR, DRIER, AND HOT GAS VALVE WILL NEED TO BE REPLACED.

The temperature control thermistor sets on the bottom of the evaporator plate on a copper bracket. This bracket should be checked at the solder joint. Any cracks will break the proper thermal conductivity between the evaporator plate and the thermistor and result in a long production cycle with a thick slab on the plate. The thermistor should be tightly secured and have full contact to the copper bracket or thermal conductivity again will be sacrificed.

Removing the Evaporator

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.
2. Remove door from front of unit.
3. Remove escutcheon panel.
4. Remove cutter-grid (see page 32).
5. Remove ice deflector.
6. Remove reservoir (see Reservoir section).
7. Remove circulation pump (see page 35), hose, and distributor.
8. Remove evaporator thermistor fastened on bottom of evaporator with a stainless hex head or Phillips screw.
9. Remove the four screws securing the evaporator plate.
10. Remove back panel and lower shroud (see **Figure 6**).
11. Remove bin sensing tube with bin thermistor remaining inside it. It is not necessary to remove the bin thermistor from the sleeve. Remove through opening in back of liner.
12. Remove putty and water line from opening in back of liner.
13. Remove grille by removing the two screws and disconnecting the three wires to rocker switch.
14. Remove drain valve (see page 25)
15. Remove water valve (see page 26).
16. Remove the screw that secures top of electrical bracket located in front of mechanical area (see **Figure 7**).
17. Remove the six screws that secure the baseplate to the cabinet on the bottom of the unit (see **Figure 9**).

Removing the Evaporator (continued)

18. Gently slide mechanical out back of unit just enough to gain access to the assembly (see **Figure 10**).

19. Install access valve and recover refrigerant After recovering, be sure to cap off access valve to prevent contamination of the system.

20. Remove cap from back of compressor.

21. Disconnect starter relay and overload behind compressor electrical cap by pulling off starter and then overload. You will not need to disconnect the wires.

22. Unbraze and remove capillary tube from drier assembly.

23. Unbraze hot gas valve tube at evaporator bypass tube (see **Figure 5**).

24. Unbraze and remove drier assembly at condenser (see **Figure 4**).

25. Unbraze and remove suction line at compressor (see **Figure 11**).

26. Unbraze hot gas discharge line at compressor (see **Figure 11**).

27. Remove compressor by removing the two lock-nuts on the mounting plate of the compressor. Lift compressor off of carriage bolts (see **Figure 11**).

28. Install the four rubber grommets in the bottom of the new compressor and install the two sleeves where the carriage bolts will be located. Mount the new compressor and install the two washers and lock-nuts and tighten to 4 in-lbs. DO NOT REMOVE RUBBER PLUGS AT TUBE STUBS ON COMPRESSOR AT THIS TIME.

29. Remove the insulation tube on the evaporator tubing harness.

30. Remove the evaporator from the front of the unit. The evaporator will need to be tilted 90 degrees down and then the tubing harness with the accumulator will fit through the opening in the liner.

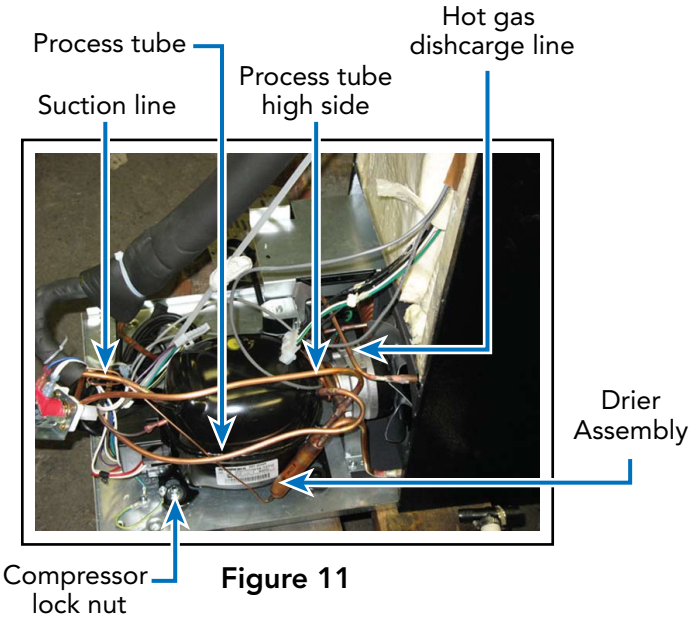


Figure 11

Installing the Evaporator

Reverse the removal procedure for installation. Remove the plugs from the compressor right before brazing. Make certain that the suction line and tubing harness insulation tube are installed and sealed. Also, check the thermistor to make sure it has full contact and is secure. Be sure to check for leaks, flush the system thoroughly, and evacuate to 50 microns. Weight charge the system (see Re-charging page 16).

Compressor

The compressor is the heart of the refrigeration system. However, it also relies on other parts of the system to function. Make certain that the other parts of the system are functioning correctly before determining that the compressor is faulty.

IMPORTANT

The compressor is protected from power interruption with a start delay built into the control to prevent high pressure startup (see page 11, Operation - Selector Switch in the "ON" Position). DO NOT MISTAKE THIS FOR A FAULTY COMPRESSOR.

The following must also be observed before concluding the compressor is faulty:

1. Low high side pressures, warm evaporator plate, cool condenser coil, or little or very low current draw from the unit will indicate a faulty compressor.

2. Check for continuity between the compressor terminals and the shell or chassis ground of the compressor. If continuity is found, the compressor is faulty and will need to be replaced.

3. Check for resistance between all compressor terminals. The resistance will vary from terminal to terminal and from compressor to compressor due to age and use. If no resistance is found, the compressor is faulty and will need to be replaced.

Compressor Removal

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.

2. Remove back panel and lower shroud (see **Figure 6**).

3. Remove grille by removing the two or four screws (depending on grille style) and disconnecting the three wires to rocker switch.

4. Remove drain valve (see page 25)

5. Remove water valve (see page 26).

6. Take out the screw that secures the top of the electrical bracket located in the front of the mechanical area (see **Figure 7**).

7. Remove the six screws that secures the baseplate to the cabinet on the bottom of the unit (see **Figure 8**).

8. Gently slide the mechanical out the back of the unit just enough to gain access to the drier assembly (see **Figure 8**).

9. Install sealed system access valve(s) and recover refrigerant. After recovering, be sure to cap off the access valve to prevent contamination of the system.

10. Remove the cap from the back of the compressor.

11. Disconnect the compressor overload and starter relay at the compressor by pulling off. You will need to disconnect the two wires from the old overload and starter relay and then connect the new one. The red (hot) wire goes on the overload and the white (neutral) wire will go on the starter.

12. Unbraze and remove the capillary tube from the drier assembly.

13. Unbraze tube from hot gas valve at the tee fitting on drier assembly (see **Figure 4**)

14. Unbraze and remove drier assembly.

15. Unbraze and remove suction line at compressor (see **Figure 11**).

16. Unbraze hot gas discharge line at compressor (see **Figure 11**).

17. Remove compressor by removing the two lock-nuts on the mounting plate of the compressor (see **Figure 11**). Lift compressor off of the carriage bolts.

Compressor Installation

1. Install the four rubber grommets in the bottom of the new compressor and install the two sleeves where the carriage bolts will be located. Mount the new compressor and install the three washers and lock nuts and tighten to 45 in-lbs. DO NOT REMOVE RUBBER PLUGS AT THE TUBE STUBS ON THE COMPRESSOR AT THIS TIME.

2. Install and braze new drier assembly to condenser. Install and braze capillary tube and hot gas valve tube.

3. Remove the plug for the hot gas line at the compressor. Install and braze the hot gas line to the compressor.

4. Remove the plug for the process tube on the compressor. Install and braze in the process tube. Be sure to cap off the end to prevent any contamination.

5. Remove the plug for the sution line on the compressor. Install and braze in the suction line from the evaporator. BE SURE TO REINSTALL THE SUCTION LINE AND TUBING HARNESS INSULATION TUBES.

6. Reinstall compressor overload and then the starter.

7. Reinstall compressor cap.

8. Reverse steps 1 through 7 of removal process for remaining installation.

9. See page 16, Re-charging, for re-charging information.

Condenser

The condenser is a steel tube serpentine with copper alloy fins, which removes heat from hot, high pressure vapor from the compressor. The most common trouble is lack of airflow from either a restricted intake or exhaust opening in the front of the unit. Lint, dust, hair, and dirt build-up needs to be removed from the condenser periodically to allow the unit to perform properly.
It is possible that the condenser might need replaced because of an unrepairable leak or a restriction that cannot be flushed out. System high side pressures and temperatures will verify if this is the case.

Removing the Condenser

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.

2. Remove back panel and lower shroud (see **Figure 4**).

3. Remove the grille by removing the two screws and disconnecting the three wires to the rocker switch.

4. Remove the drain valve (see page 25, Drain Valve).

5. Remove the water valve (see page 26, Water Valve).

6. Take out the screw that secures the top of the electrical bracket located in the front of the mechanical area (see **Figure 8**).

7. Remove the six screws that secure the baseplate to the cabinet on the bottom of the unit (see **Figure 8**).

8. Gently slide mechanical out back of unit enough to gain access to condenser coil and fan shroud (see **Figure 9**).

9. Install sealed system access valve(s) and recover refrigerant. After recovering, be sure to cap off access valve to prevent contamination of system.

Removing the Condenser (continued)

10. Remove fan by removing the two nuts on fan mounting bracket at the baseplate. The fan wire leads can be left. connected. Set fan assembly to side of mechanical.

11. Remove the three nuts retaining the side of the fan shroud. Remove the fan shroud.

12. Unbraze the capillary tube from the drier assembly.

13. Unbraze the hot gas valve tube at the tee on the drier assembly (see **Figure 4**).

14. Unbraze and remove the drier assembly.

15. Unbraze the hot gas line from the compressor at the top of the condenser coil (see **Figure 11**).

Installing the Condenser

Reverse the removal procedure. Be sure to thoroughly flush the system and evacuate to 50 microns before weight charging. If contamination was found or determined, the evaporator should also be replaced at this time.

Drain Valve

The drain valve drains water that is left in the reservoir after ice production. The valve will only be open for a fixed time of 45 seconds during the beginning of the harvest cycle.

The drain valve fails by allowing water to flow into the drain during the ice production cycle (leak-by). This can be caused by a foreign particle(s) or build-up of mineral deposits that will not allow the valve to fully seat or has caused damage to the seat of the valve. Periodic cleaning of the ice machine will keep build-up off the valve allowing it to work properly and should be done before further evaluation of the valve.

Symptoms of this include thin or no ice slab (depending on severity of leak) and, more noticeably, water drainage through to the drain during ice production cycle (do not mistake this for reservoir run-off water or melted ice drain water from the ice bin). The drain valve should be replaced if it is found to be leaking.

The drain valve solenoid actuator can also possibly fail. Test the solenoid by checking the resistance. A resistance of 50-65 ohms should be found. If no resistance is found, the drain valve will need to be replaced.

Removing Drain Valve

1. Drain water in the reservoir by removing the drain plug or switching to the "CLEAN" switch position and then to the "OFF" position. Replace the drain plug, if this method is used, after the water has been drained.

2. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.

3. Remove the back panel and lower shroud (see **Figure 6**).

4. Remove the brown wire and white wire at the drain valve terminals.

5. Loosen the hose clamps on each side of the drain valve (see **Figure 12**).

6. Remove the two screws securing the drain valve (see **Figure 12**).

7. Remove the drain valve.

Installing Drain Valve

Reverse the removal procedure for installation (see above). It is important to keep the valve clean during installation to assure proper performance. After installation, make certain the hose clamps are secure and that the valve or tubing does not leak. This can be done by adding water to the reservoir and observing for any leaks from the tubing connections or the valve itself. Also, at this time, make certain that the drain tee-fitting flow restrictor is in place (see **Figure 13**). Reposition as needed or order replacement.

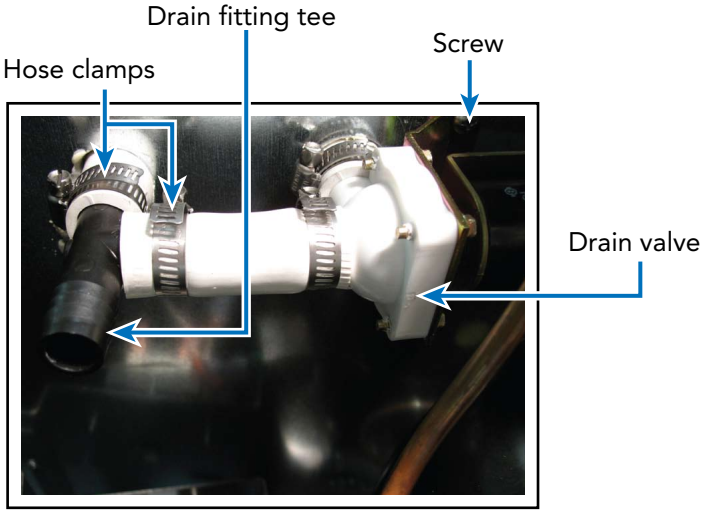


Figure 12

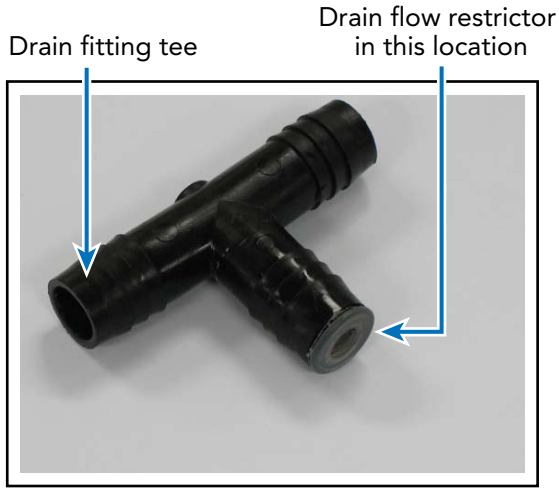


Figure 13

Water Valve

The water valve supplies water to the reservoir for producing ice. The valve opens for one and a half minutes during initial start up or power up of the unit and opens for two minutes at each harvest cycle after the drain valve has closed.

The valve has a built-in screen in the water supply fitting. This screen will filter out any large particles and, over time, these particles will accumulate and restrict water supply. If this is found, simply clean the screen with a toothbrush to remove the particles. DO NOT REMOVE THE SCREEN FROM THE VALVE.

To check water valve

1. Check the solenoid actuator for resistance. If no resistance is found, the valve will need to be replaced.

2. Check to see if the valve will seat properly. Foreign particles that may have passed the filter could damage the seat of the valve. To make sure the valve is seating, make sure power is disconnected to the unit, hook up the water supply, turn on the water supply, and see if there is any water flowing in the water lines. If water is present and flowing, the valve will need to be replaced.

3. Check the flow rate of the reservoir water line. Using a stopwatch or a watch with a second hand, see what amount of time it takes to fill up a one quart container. The time should be 60 seconds to get the 0.25 gpm specification of valve.

    - If it takes substantially less than 60 seconds, check the water supply pressure to make certain it is not above 120 psi static pressure. If it is not, the metering orifice of the valve has been damaged or changed and the valve will need to be replaced.

    - If it takes substantially more than 60 seconds, check the water supply pressure to make certain it is not below 20 psi static pressure. If it is not, make certain the valve screen filter is filter is clean and pressure is above 20 psi, the valve is defective and will need to be replaced.

Removing Water Valve

1. Disconnect power, water line, and drain line.

2. Remove the back panel and lower shroud (see **Figure 6**).

3. Remove the blue wire and white wire at the water valve terminals.

4. Loosen the reservoir water supply line compression nut from the bottom of the water valve.

5. Remove the two screws securing the water valve to the flange of the cabinet (see **Figure 14**).

6. Remove the water valve.

Installing Water Valve

Reverse the removal procedure for installation (see above). Make certain that the reservoir water line is in the reservoir inside the unit and there are no water leaks anywhere after installation.

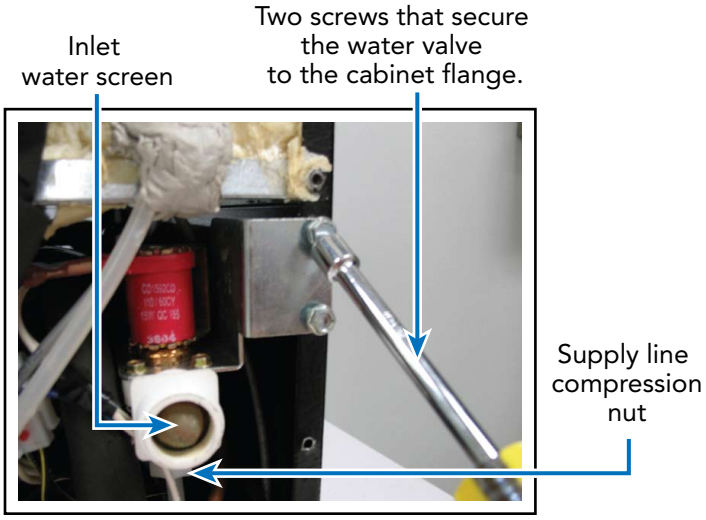


Figure 14

Condenser Fan

The condenser fan is used to force air over the condenser coil. The fan will only run during ice production cycle and turn off in ice harvest cycle.

To check condenser fan:

- Make sure motor shaft turns freely. This can be done by rotating the fan blade by hand and observing any excessive resistance. Axial motor shaft movement (thrust) is typical.
- Check for resistance between terminals. If no resistance found, replace the condenser fan.
- Check for continuity between terminals and fan casing. If continuity is found, replace the condenser fan.
- Check current draw. Typical current draw will be 0.15 amp without fan resistance. If current draw is 0.19 amp or more, check for resistance in air movement or objects touching the fan blade. If this is not found, replace the condenser fan.

Removing Condenser Fan

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.
2. Remove the back panel and lower shroud (see **Figure 6**).
3. Remove the grille by removing the two screws and disconnecting the three wires to the rocker switch. Be sure to mark where these wires go for reassembly (see **Figure 7**).
4. Remove the drain valve (see page 25)
5. Remove the water valve (see page 26)
6. Take out the screw that secures the top of the electrical bracket located in the front of the mechanical area (see **Figure 6**).
7. Remove the six screws that secure the baseplate to the cabinet on the bottom of the unit (see **Figure 9**).
8. Gently slide the mechanical out the back of the unit enough to gain access to the condenser fan (see **Figure 10**).
9. Remove the two nuts that secure the condenser fan.
10. Disconnect the neutral white wire lead (black ribbed wire) and hot wire lead (black smooth wire) from the wire harness.
11. Remove the condenser fan.

Installing Condenser Fan

Reverse the removal procedure for installation.

Thermistors

This unit utilizes two thermistors for reading temperatures for input to the electronic control. Each thermistor has a different function for input to the electronic control.

The evaporator thermistor is secured to the underside of the evaporator. The location of the thermistor allows it to give voltage input to the electronic control. This input is processed through the electronic control to switch the icemaker into the production or harvest cycles. The thermistor must be tightly secured to the evaporator plated copper bracket for proper heat transfer.

The following will happen in the event of a thermistor failure:

1. If the evaporator thermistor fails, all loads will be shut off and the unit will not run.

2. If the evaporator thermistor senses temperature outside of 0-140 degrees F, all loads will be shut off and the unit will not run.

3. The control LED will blink three times every five seconds.

The thermistor can be checked by use of a multimeter with the ability to read resistance. To check the thermistor:

1. Disconnect and remove thermistor from unit.

2. Use a reference temperature point that is know (such as an ice bath) and measure the resistance across the wire leads.

3. Compare the recorded resistance with "Resistance versus Temperature Chart".

If measured resistance falls outside the resistance given in Table C within 4% of the value, the thermistor is bad and will need to be replaced.

Set Points

Sensor; Mode; Temperature

- Bin Sensor; "Stop Ice"; 35.0°F / 2 C, (+/-) 2°F
- Bin Sensor; "Start Ice"; 43.0°F / 6 C, (+/-) 2°F
- Evaporator Sensor; "Harvest"; 11.0°F / -11.5 C, (+/-) 2°F
- Evaporator Sensor; "Production"; 45.0°F / 7 C, (+/-) 2°F

Resistance Values

The following measurements show a sample of the approximate resistance of each component:

- Grid Cutter: 3.80 ohms: across the front posts on the grid cutter.
- Water Valve Solenoid Coil: 472 ohms: across coil terminals.
- Hot Gas Valve Solenoid Coil:
  Ranco: 375 ohms: across the coil terminals.
  Saginomiya (Danfoss): 375 ohms: across the spade terminals on wire ends.
- Circulating Pump:
  40.5 ohms: across the load pins on molded plug.
  Ohm-meter will read OL across either load pin to either ground pin.

Bin & Evaporator Sensors:
The following chart can be used to determine sensor resistance at a given temperature.

Resistance versus Temperature Chart		
Temperature (C)	Temperature (F)	Resistance (K-OHMS)
-15	5	11.350
-10	14	8.918
-5	23	6.700
0	32	5.630
5	41	4.520
10	50	3.652
15	59	2.970
20	68	2.430
25	77	2.000

Resistance Values (continued)

If the thermistor has been tested and is found to be good, check the temperature of the evaporator plate and the resistance of the thermistor. If the temperature of the evaporator plate does not correspond to a proper resistance from the thermistor, check for a proper and secure connection of the thermistor to the evaporator plate bracket.

Removing evaporator thermistor

1. Remove any ice and drain the reservoir by pulling the drain plug.
2. Disconnect power, water line, and drain line.
3. Remove back panel and lower shroud (see **Figure 6**).
4. Disconnect evaporator thermistor connector at electronic controller. (Refer to **Figure 15** for connector location).
5. Remove escutcheon panel from inside unit.
6. Remove cutter-grid (see page 32).
7. Remove ice deflector.
8. Remove reservoir (see page 33).
9. Remove evaporator thermistor by removing screw securing it.

Feed the thermistor wire out through the opening in the back of the unit.

The bin thermistor is made up of a soft copper tube body and placed inside a plated copper sensing tube. This plated tube is then secured to the side of the ice machine's bin to detect the ice bin level. The bin thermistor gives voltage input to the electronic control. This input is processed through the electronic control to switch the icemaker into stop making ice or start making ice. THE THERMISTOR MUST BE FULLY INSERTED INTO THE PLATED SENSING TUBE FOR PROPER DETECTION. You will typically receive an assembly with the thermistor and plated tube already assembled.

IMPORTANT

Once the bin thermistor detects to stop making ice, the electronic control will continue in ice production or harvest until a harvest cycle is complete (see page 11, Operation–Selector Switch in the "ON" Position).

The following will happen in the event of a thermistor failure:

1. If the bin thermistor fails, all loads will be shut off and the unit will not run.
2. If the bin thermistor senses temperature outside of 25-140 degrees F, all loads will be shut off and the unit will not run.
3. The control LED will blink two times every five seconds.

The thermistor can be checked by use of a multimeter with the ability to read resistance. To check the thermistor:

1. Disconnect and remove thermistor from unit.
2. Use a reference temperature point that is known (such as an ice bath) and measure the resistance across the wire leads.
3. Compare the recorded resistance with "Resistance versus Temperature Chart".

If measured resistance falls outside the resistance given in Table C within 4% of the value, the thermistor is bad and will need to be replaced.

Removing Bin Thermistor and Sleeve

1. Remove any ice and drain reservoir by pulling drain plug.
2. Disconnect power, water line, and drain line.
3. Remove back panel and lower shroud (see **Figure 6**).
4. Disconnect bin thermistor connector at electronic controller.

Removing Bin Thermistor and Sleeve (continued)

5. Remove escutcheon panel from inside unit.
6. Remove cutter-grid (see page 25).
7. Remove ice deflector.
8. Remove reservoir (see page 33).
9. Remove bin thermistor and sleeve assembly by removing screws securing it to bin of ice machine.
10. Feed thermistor wire out through opening in back of unit.
11. Remove sensing tube from unit through opening in back.
12. The bin thermistor will slide out of the sleeve.

Installing bin thermistor

Reverse removal procedure for installation (see above). Be sure to securely tighten the screw holding the thermistor for proper bracket to thermistor contact.

Electronic Control

The electronic control can be replaced from the back of the unit. For electronic control functions, see page 11, Operation–Selector Switch in the "ON" Position.

Diagnostic LED

- LED is off: Selector switch is in either the "off" or "on" position.
- LED is on for 10 seconds then turns off: Selector switch has just been moved into the clean position. This mode will reset after 10 seconds or after exiting clean mode.
- LED flashes twice with one interval between flashes every 5 seconds: Bin sensor open or shorted.
- LED flashes three times with one interval between flashes every 5 seconds: Bin sensor open or shorted.
- LED flashes four times with one interval between flashes every 5 seconds: Bin and Evaporator sensor open or shorted.

Removing Electronic Control

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.
2. Remove back panel and lower shroud (see **Figure 6**).
3. Remove grille by removing the two screws and disconnecting the three wires to rocker switch (see **Figure 7**).
4. Remove drain valve. (See page 25).
5. Remove water valve. (See page 26).
6. Take out the screw that secures the top of the electrical bracket located in the front of the mechanical area (see **Figure 8**).
7. Remove the six screws that secure the baseplate to the cabinet on the bottom of the unit (see **Figure 9**).
8. Gently slide the mechanical out the back of the unit to gain access to to the control bracket on the right side of the unit. (See **Figure 10**).
9. Remove the control mounting screw (see figure 5.2) and slide the control out of the bracket.
10. Disconnect the power wire harness connector, bin thermistor connector, and evaporator thermistor connector from the electronic control.

Installing the Electronic Control

Reverse removal procedure for installation (See above). Make sure all wire connections are secure and in the correct location. Refer to units wiring diagram to verify (see page 42).

Cutter-Grid Transformer

The cutter-grid transformer is used to step down the voltage to the cutter-grid to 12VAC. The cutting grid receives power from the transformer from the start of a harvest cycle to 35 minutes into the next production cycle. The transformer remains off at all other times. The transformer itself can be checked by applying 120VAC to the marked 120V (for the hot lead) and COM (neutral lead) side of the transformer and reading the 12V side using a multimeter.

If no readout is found or readout is below 10VAC, replace the transformer.

Removing Transformer

1. Disconnect power, water line, and drain line. If a drain pump is used, it will need to be disconnected and removed.
2. Remove back panel and lower shroud (see **Figure 6**).
3. If a drain pump has been installed, it will need to be removed. (It may be necessary to remove electronic control before removing transformer.)
4. Remove the two Phillips head screws that secure transformer to electrical bracket (see **Figure 7**).
5. Mark and remove the four wires to transformer.
6. Remove transformer.

Installing Transformer

Reverse removal procedure for installation (see above). Make certain all wire connections are secure and in the correct location. Refer to unit's wiring diagram to verify (see page 42).

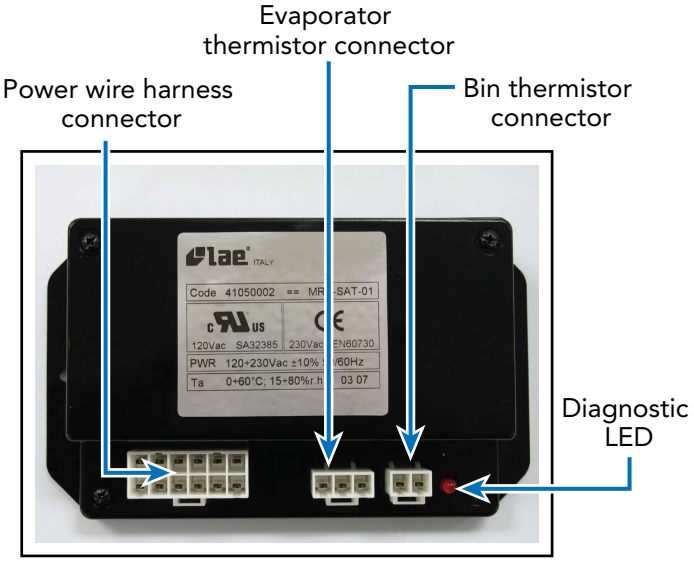


Figure 15

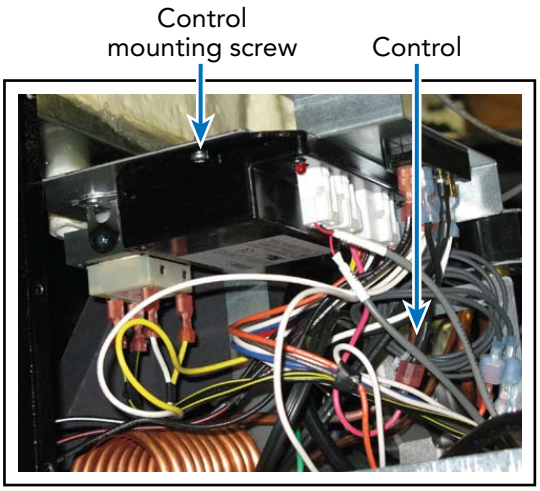


Figure 16

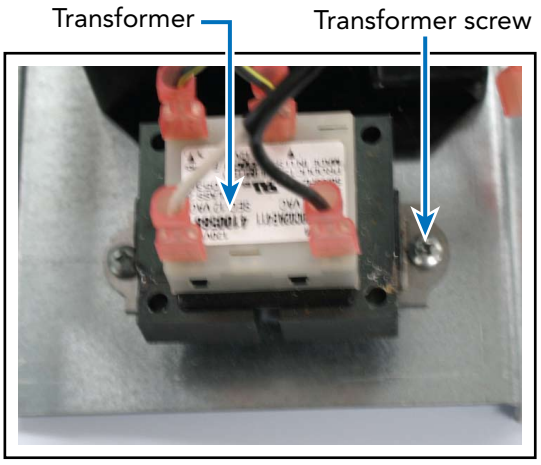


Figure 17

Cutter-Grid

The cutter-grid is used to cut cubes from the ice slab formed on the evaporator. It uses low voltage, 12VAC from the transformer, to heat the wires. Wires are warm to the touch of a hand when not under the load of a slab of ice. The cutter-grid is on only from the start of a harvest cycle to 35 minutes from the start of the production cycle (see page 11, Operation–Selector Switch in "ON" Position).

There is no electrical repair for the cutter-grid. It will have to be replaced as an assembly. If mineral deposits have built-up on the cutter-grid wires or frame, use ice machine cleaner to remove these deposits and to improve cutter-grid performance.

To electronically test the cutter-grid

- Check the resistance at the cutter-grid's plug on the outside terminals (NOTE: The middle terminal is not used). If the resistance between the terminals of the plug is 5.0-5.9 ohms, the cutter-grid is good. At any other resistance readings, it will need to be replaced.

- Check for continuity between terminals and the cutter-grid's stainless steel frame. If continuity is found, check for wires that are not on the insulators.

Removing Cutter-Grid

1. Remove the escutcheon panel from inside the unit.

2. Unplug the cutter-grid from the receptacle on the side of the liner (see **Figure 19**).

3. Remove the four screws that secure the cutter-grid to the liner (see **Figure 19**).

4. Remove the cutter-grid.

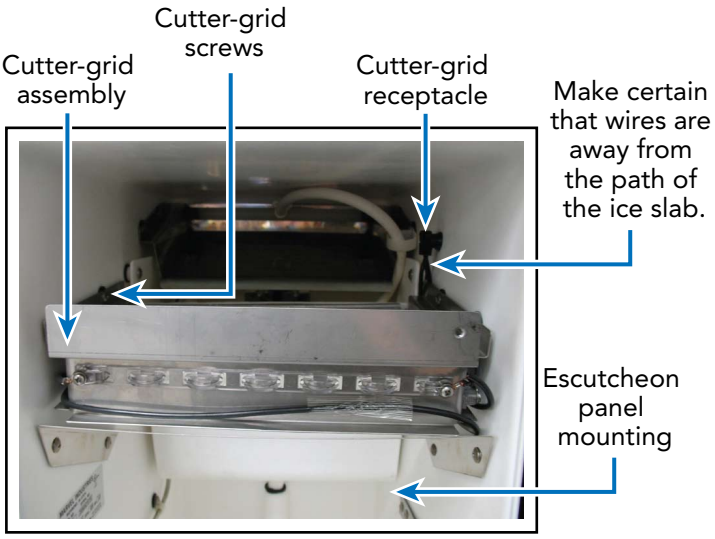


Figure 19

Installing Cutter-Grid

1. Reinstall the cutter-grid with the four screws.

2. Plug the cutter-grid into the receptacle on the side of the liner. Route the plug wire between the reservoir and liner (see **Figure 19**). This will keep it away from the path of an ice slab.

3. Reinstall the escutcheon panel. Adjustment to the cutter-grid from the front screws may be necessary to align the escutcheon panel.

Reservoir

The reservoir retains the water needed to produce an ice slab. It will hold a maximum of three quarts of water. Anything over three quarts will be drained in the reservoir's overflow standpipe.

Anytime the reservoir is removed, it should be cleaned with ice machine cleaner, soap, and warm water. Be sure to rinse the reservoir before reinstalling and clear out the drain screen when sanitizing the reservoir.

Removing Reservoir

1. Remove escutcheon panel from inside of unit.
2. Remove cutter-grid (see **Figure 19**).
3. Remove the four screws that secure ice deflector.
4. Remove ice deflector.
5. Drain reservoir by removing drain plug located on bottom of reservoir.
6. Remove the two screws and spacers that secure reservoir (see **Figure 20**).
7. Remove reservoir by lifting drain tube off reservoir and away from circulation pump (see **Figures 21 and 22**).

Installing Reservoir

1. Slide circulation pump into reservoir.
2. Insert reservoir drain tube fitting to drain tube in back of liner.
3. Tilt reservoir forward and line up screw holes in reservoir with those of liner.
4. Insert spacer to outside of reservoir and then the screw and plastic washer to inside of reservoir. Repeat for other side.

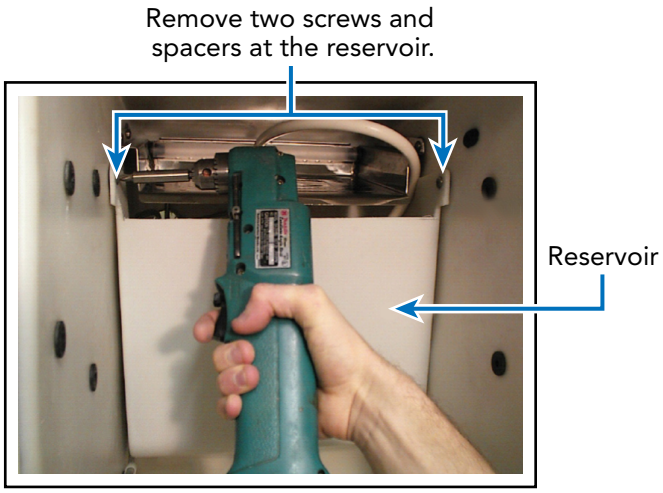


Figure 20

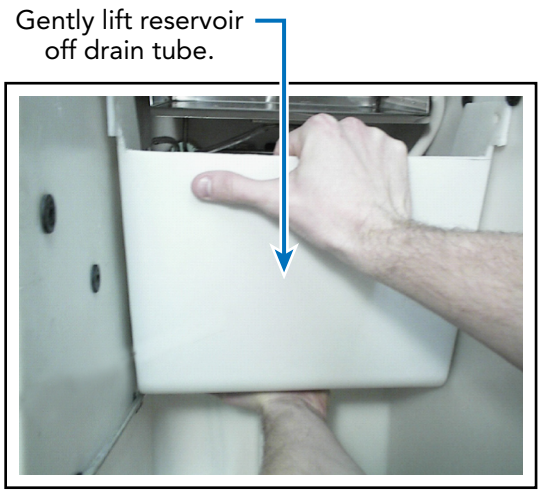


Figure 21

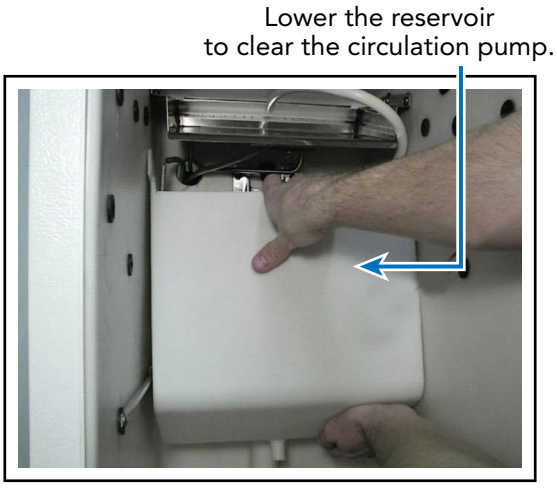


Figure 22

Installing Reservoir (continued)

5. Route water line from circulation pump between liner and reservoir and through clamp attached to evaporator. This will keep it away from path of ice slab (see **Figure 23**).

6. Reinstall ice deflector.

7. Reinstall cutter-grid.

8. Plug cutter-grid into receptacle on side of liner. Route plug wire between reservoir and liner. This will keep it away from path of ice slab.

9. Reinstall escutcheon panel. Adjustment to brackets may be necessary to align escutcheon panel.

Make certain that the water line is in the clamp and away from the path of the ice slab. Otherwise, the ice slab may hang-up.

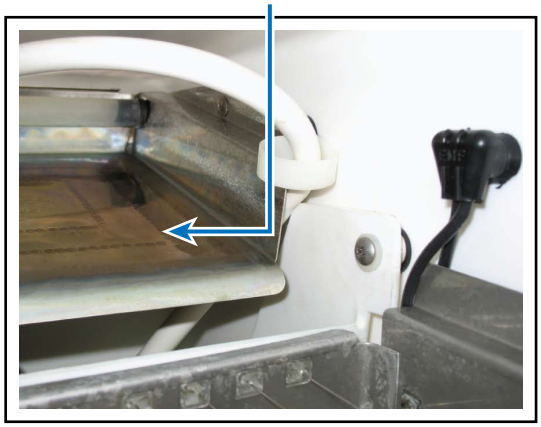


Figure 23

Circulation Pump

The circulation pump is used to circulate the water in the reservoir over the evaporator. The circulation pump will run only during ice production cycle and turn off in ice harvest cycle and also when called on for the clean cycle.

The pump is a centrifugal impeller type pump. The pump and motor are an assembly that cannot be repaired separately.

To check circulation pump
(with the pump removed)

- Make sure motor shaft turns freely. This can be done by rotating the pump's drive shaft and observing any excessive resistance. Axial motor shaft movement (thrust) is typical.

- Check for resistance between the terminals. If no resistance is found, replace the circulation pump.

- Check for continuity between the hot and neutral terminals and the pump's motor casing. If continuity is found, replace the circulation pump.

- Check current draw. Typical current draw will be 0.36 amp without pump resistance. If excessive current draw is found, check the pump's impeller for foreign particles or severe build-up of mineral deposits.

- The circulation pump can run dry without pump damage.

Removing Circulation Pump

1. Disconnect power to ice machine.
2. Remove escutcheon panel from inside of unit.
3. Remove cutter-grid (see page 32).
4. Remove ice deflector.
5. Remove reservoir (see page 33).
6. Unplug circulation pump at receptacle at top of circulation pump (see **Figure 24**).
7. Disconnect water line attached to circulation pump (see **Figure 24**).
8. Remove the two screws that secure circulation pump (see **Figure 24**).
9. Remove circulation pump.

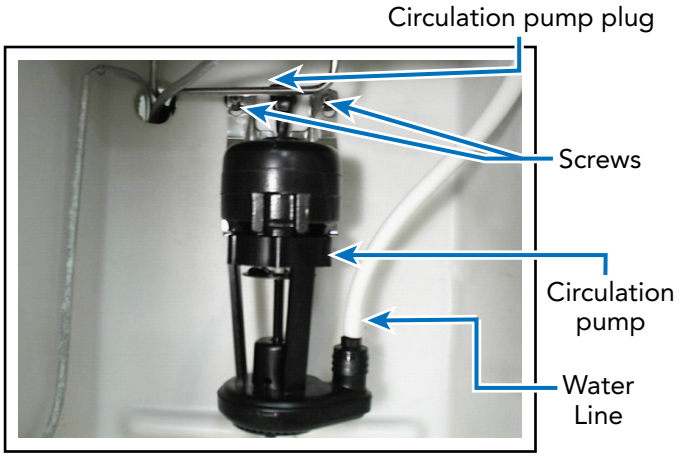


Figure 24

Installing Circulation Pump

Reverse removal procedure for installation (see above).

Cleaning Ice Machine

1. Remove all ice from ice storage bin.
2. Pull reservoir drain plug to drain reservoir.
3. Reinstall drain plug after all of water has drained.
4. Add ice machine cleaning solution to ice machine's reservoir.
5. Switch rocker switch in grille to "CLEAN" position.
6. The clean cycle will complete in 50 minutes.

Troubleshooting Guide

Below and on the following page are some general guides should a problem be detected. Please refer to the test procedures in this manual to determine the defective component.

Problem	Probable Cause	Correction
Unit does not operate.	The unit is unplugged.	Plug in the unit.
	Breaker is tripped or fuse is blown.	Reset breaker or replace fuse. Check to make sure there is not a short in the electrical circuit.
	Ice machine selector switch is in the "OFF" position.	Set the rocker switch on the grille of the ice machine to the "ON" position.
	The evaporator and/or bin thermistors are out of specification.	Test the thermistor in question (see Thermistors section). Replace any thermistor that is out of specification
Unit operates but does not produce any ice.	The unit has just been started and it has been less than six hours.	Ice produced when the unit is initially started will melt off in the bin. Ice will accumulate in the bin. In six hours, there can be a few cubes in the bin. This is normal operation.
	Typical ice production cycle can take up to one and a half hours. Initial startup cycles can be longer.	Check the unit in 24 hours for ice accumulation in the bin.
	The selector switch is in the "OFF" or "CLEAN" position.	Set the rocker switch on the grille of the ice machine to the "ON" position.
	Build up of deposits on evaporator plate.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation.
	Distributor tube is restricted or not installed correctly.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation.
	Grid-cutter is unplugged.	Plug in the grid cutter so that ice slabs can be cut into cubes.
	No water in the reservoir.	Make sure that the reservoir drain plug is installed. Check the water line to the unit to make sure it is on and that there are no restrictions or kinks in the line. Check all filters to make sure they are not restricted or plugged.
	Inadequate drain system.	Restriction in drain lines will cause ice in the bin to melt. If using a gravity drain, make certain there are no kinks or restrictions in the drain lines. If using a drain pump, check the inlet screen, discharge line, and vent line for any build-up or restrictions.
	Condenser fan air flow is re-stricted.	Make certain the grille in the front of the unit is free and open for proper air circulation. Check and clean the condenser coil by removing the grille in the front of the unit. Clean the condenser with a vacuum and brush attachment.
	Room and/or water temperature is too warm.	Move the unit to an area where ambient temperature is below 90 degrees F. The unit should not be placed next to a heat source such as an oven. Check for cold water connection.
	Leaking drain valve.	See "Cleaning Your Ice Machine" section for cleaning the unit. This will also dissolve and flush out foreign material in the drain valve causing it to leak. If this does not stop the drain valve from leaking, the drain valve will need to be replaced.

Problem	Probable Cause	Correction
Unit operates but does not produce any ice.	Evaporator thermistor does not have sufficient contact with evaporator or out-of-range.	Check to see that the evaporator thermistor is secured properly to the evaporator. If secured, check resistance value with Table C in Section 5.2, Thermistors.
	Leak in sealed system.	Check for any leaks. If leak found, repair, evacuate, and re-charge unit.
Ice cubes are too small (less than 1/2 inch thick).	Low ice consumption.	Ice is slowly melting in the ice bin and will affect the size of the ice cubes. aThis is normal operation. When the ice bin needs to be replenished, cubes will return to regular size.
	Not enough water in reservoir.	Make sure that the reservoir drain plug is installed properly. Check the water line to the unit to make sure there are no restrictions or kinks in the line. Check all filters to make sure they are not restricted or plugged.
	Unit is freestanding.	Ice cubes can be anywhere from 3/8 to 1/2 inch thick when freestanding. Make sure back panel is installed if you continueto use in freestanding position.
	Distributor tube is restricted.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation.
	Build-up of deposits on evaporator plate.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation and cube size.
	Inadequate drain system.	Restriction in drain lines will cause ice in the bin to melt to a thinner cube. If using a gravity drain, make certain there are no kinks or restrictions in the drain lines. If using a drain pump, check the inlet screen, discharge line, and vent line for any build-up or restrictions.
	Leaking drain valve	See "Cleaning Your Ice Machine" section for cleaning the unit. This will also dissolve and flush out foreign material in the drain valve causing it to leak.
	Room temperature is too cold.	Move to an area where temperature is above 55 degrees F.
Ice cubes are too big (greater than 3/4 inch thick).	Ice slab not releasing.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation and cube size.
	Condenser fan air flow is restricted.	Make certain the grille in the front of the unit is free and open for proper air circulation. Check and clean the condenser coil by removing the grille in the front of the unit. Clean the condenser with a vacuum and brush attachment.
	Room temperature is too warm.	Move to an area where temperature is below 90 degrees F.
	Evaporator thermistor does not have sufficient contact with evaporator or out-of-range.	Check to see that the evaporator thermistor is secured properly to the evaporator. If secured, check resistance with "Resistance versus Temperature Chart" page 27, Thermistors.
Hollow ice slab	Distributor tube is restricted.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation.
	Build-up of deposits on evaporator plate.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation and cube size.
	Low water level in reservoir.	Make sure that the reservoir drain plug is installed properly. Check the water line to the unit to make sure there are no restrictions or kinks in the line. Check all filters to make sure they are not restricted or plugged.
	Leak in the sealed system.	Check for any leaks. If leak found, repair, evacuate, and re-charge unit.

Problem	Probable Cause	Correction
Ice is not clear.	Low water level in reservoir.	Make sure that the reservoir drain plug is installed properly. Check the water line to the unit to make sure there are no restrictions or kinks in the line. Check all filters to make sure they are not restricted or plugged.
	Softened water supply.	Make certain the water line is not connected to the water softener.
	Room temperature is too cold.	Move the unit to an area where room temperature is above 55 degrees F.
Low ice production. Unit is running and has run over a 48 hour period but there is little ice accumulation in bin.	Low water level in reservoir.	Make sure that the reservoir drain plug is installed properly. Check the water line to the unit to make sure there are no restrictions or kinks in the line. Check all filters to make sure they are not restricted or plugged.
	Distributor tube is restricted.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation.
	Build-up of deposits on evaporator plate.	See "Cleaning Your Ice Machine" section for cleaning the unit for proper operation.
	Inadequate drain system.	Restriction in drain lines will cause ice in bin to melt. If using a gravity drain, make certain there are no kinks or restrictions in the drain lines. If using a drain pump, check the inlet screen, discharge line, and vent line for any build-up or restrictions.
	Condenser fan air flow is restricted.	Make certain the grille in the front of the unit is free and open for proper air circulation. Check and clean the condenser coil by removing the grille in the front of the unit. Clean the condenser with a vacuum and brush attachment.
	Faulty drain pump installation or faulty drain pump.	Check and clean the condenser coil by removing the grille in the front of the unit. Clean the condenser with a vacuum and brush attachment.
Unit continues to run and produce ice.	Ice bin is not full.	The unit will automatically shut down when ice reaches the sensing tube.
	Ice bin is full.	The unit will automatically shut down when ice reaches the sensing tube AND has completed the harvest of the ice slab.
	Ice machine is not level.	Use a level to check the unit for level from side-to-side and front-to-back.
	Room temperature is too warm.	Move the unit to an area where room temperature is below 90 degrees F.
	Bin thermistor is out-of-range.	Check bin thermistor resistance value with that of "Resistance versus Temperature Chart" page 27, Thermistors.
Cutter-grid is not cutting the ice slab.	The selector switch is not in the "ON" position.	Set the rocker switch on the grille of the ice machine to the "ON" position.
	The grid-cutter is not plugged into the receptacle.	Remove the escutcheon panel and plug cutter-grid into the receptacle on the side of the line.
	Time to cut through the slab.	It can take up to 35 minutes to cut through a harvested ice slab. This is normal operation.
Ice cubes are sticking together.	Ice consumption is low.	Use the ice in the bin frequently. Ice will stick together if left in an insulated bin over long periods of time.
	Room temperature is too warm.	Move the unit to an area where temperature is below 90 degrees F.

Problem	Probable Cause	Correction
Ice level is too high.	The ice machine is not level.	Use a level to check the unit for level from side-to-side and front-to-back.
	Room temperature is too warm.	Move the unit to an area where temperature is below 90 degrees F.
	Ice deflector is not in place or secured properly.	Check to see that the ice deflector is in place and secured below the cutter-grid.
	Bin level sensing tube needs adjusted.	You can adjust the bin level sensing tube by simply pressing directly down on the tube five inches from the front of the tube to get a desired bin level.
Ice level is too low.	The ice machine is not level.	Use a level to check the unit for level from side-to-side and front-to-back.
	Room temperature is too cold.	Move the unit to an area where temperature is above 55 degrees F.
	The selector switch is not in the "ON" position.	Set the rocker switch on the grille of the ice machine to the "ON" position.
Water keeps backing up into the ice bin (gravity drain).	Inadequate drain system.	Restriction or improperly installed drain lines will cause water to back up into the ice bin. Make certain there are no kinks or restrictions in the drain lines. If necessary, consult a qualified plumber.
	Foreign material in ice bin drain.	Foreign material is restricting or blocking the ice bin drain located at the right rear corner of the ice bin. The drain will need to be cleared.
Water keeps backing up into the ice bin (drain pump).	Drain pump tubing kinked or restricted.	Check inlet, discharge, and vent line tubing for any kinks or restrictions and repair as necessary.
	Inlet screen to the drain pump is restricted or blocked.	Clean the inlet screen to the drain pump.
	Drain pump and/or the ice machine are not level.	Check and level, if necessary, the drain pump as well as the ice machine.
The drain pump cycles on and off erratically.	Vent line to the drain pump is restricted or kinked.	Check the vent line for any restrictions or kinks and repair as necessary.
	Discharge line is restricted or kinked.	Check the discharge line and connection to the desired drain for any restrictions or kinks and repair as necessary.
	The drain pump is not level.	THE DRAIN PUMP MUST BE LEVEL. Check for level on the top of the drain pump case and adjust the tubing or use shims to level.

Short Cycle Test

This test is recommended to evaluate the ice makers performance. Supply water
To the ice maker must be turned off or disconnected prior to this test.

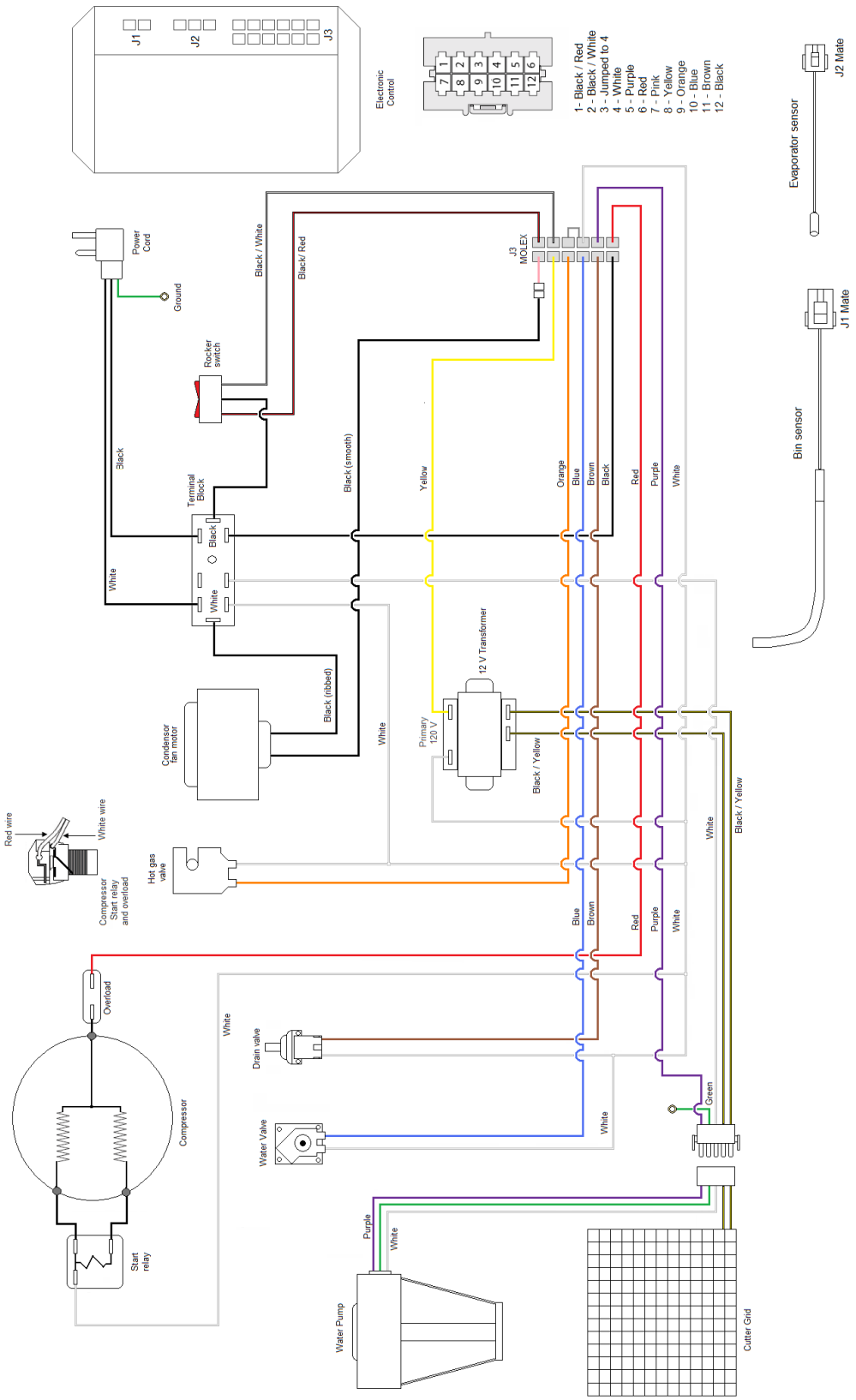
Checks	Corrections
Water Fill Valve 1-Check fill valve: fill time is approximately 2 minutes during a normal operation cycle. (Initial start-up fill rate will be approximately 1 1/2 minutes).	Ensure selector switch is in on position, wires to switch are properly connected, and fill valve is functioning properly. If fill valve is functioning, but control is not working correctly - replace control.
	Replace fill valve if it does not meet fill time.
Circulating Pump The circulating pump should run for approximately 6 min. 45 sec. on the initial start-up cycle (normal operation will be approximately 3 min. 45 sec.).	Check to make sure that pump power plug plugged into interior receptacle.
	Check voltage at interior receptacle.
	Check if white 5 pin Molex plug is connected inside machine compartment.
	Check resistance of pump for open or grounded windings.
Compressor and Condenser Fan Both of these components will cycle on simultaneously at approximately 3 min. 30 sec. and continue to operate until the initialization of the harvest cycles.	Diagnosis either component by checking voltage.
	If compressor does not operate check the overload, relay, & capacitor.
	Check compressor with a start cord.
Evaporator Check evaporator to see if its getting frosted.	Compressor not running.
	Low on charge (leak).
	Restriction.
	Low voltage.
Hot Gas and Drain Solenoids the initial cycle, both the hot gas and drain solenoids energize after the completion of the refrigeration cycle. At this time the compressor will continue to run and the condenser fan drops out of the circuit. The drain solenoid should stay energized for about 45 sec. at that time it will drop out of the circuit and the hot gas will continue for another 2 minutes.	Check voltage at drain solenoid.
Grid Cutter The grid cutter energizes after the conclusion of the refrigeration cycle. It will remain energized for the first 35 minutes after the Harvest cycle has ended.	The grid cutter can be diagnosed by checking the voltage across the front posts after the escutcheon panel has been removed, It should read 10-12 volts AC.
Hot Gas Valve / Solenoid 1. Check solenoid coil: Solenoid will energize for approximately 2 min. 45 sec. (start of HARVEST @ 11°F +/- 2°F, end of HARVEST @ 45°F +/- 2°F at evaporator sensor). Solenoid and compressor will operate in conjunction to clear ice from evaporator plate. Valve operation can be monitored by holding a screwdriver to the valve below coil and your ear.	If solenoid is not energized, check for loose connections. Replace solenoid if all electrical connections are tight.
2. Check for frost build-up on the copper tubing downstream of the hot gas valve (between valve & evaporator). If frost-occurs, liquid is bypassing the valve seat.	Replace valve.

Short Cycle Test

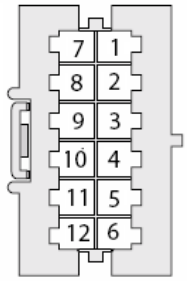
Checks	Corrections
Hot Gas Valve / Solenoid 3. Check for frost on the evaporator plateduring the refrigeration cycle. If evaporator is not getting frosted, the hot gas valve is not seating.	Replace valve.
4. Check evaporator plate for excessive ice build-up, if ice is not releasing from the evaporator (a typical harvest cycle) then the hot gas valve is not opening.	See step A below.
A. Check for voltage at solenoid (Approx. 120 when valve is energized).	Replace valve.
B. Check resistance of solenoid coil.	Replace solenoid coil if open or shorted.
C. if voltage & resistance is good.	Replace valve assembly

1. These steps conclude the short cycle test, if necessary, continue to monitor the system as it advances through another harvest cycle.

2. Please remember to turn on, or reconnect the supply water to the ice maker at the conclusion of the short cycle test.

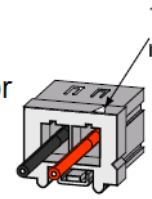

J1
J2
J3
Electronic Control
1 - Black / Red
2 - Black / White
3 - Jumped to 4
4 - White
5 - Purple
6 - Red
7 - Pink
8 - Yellow
9 - Orange
10 - Blue
11 - Brown
12 - Black
J2 Mate
Evaporator sensor
J1 Mate
Bin sensor
Power Cord
Ground
Rocker switch
Terminal Block
J3 MOLEX
Black / White
Black/ Red
Black
White
Black (smooth)
Yellow
Orange
Blue
Brown
Black
Red
Purple
White
Black (ribbed)
Condensor fan motor
12 V Transformer
Primary 120 V
Black / Yellow
Red wire
White wire
Compressor Start relay and overload
Hot gas valve
Overload
Compressor
Start relay
Drain valve
Water Valve
Water Pump
Green
Cutter Grid

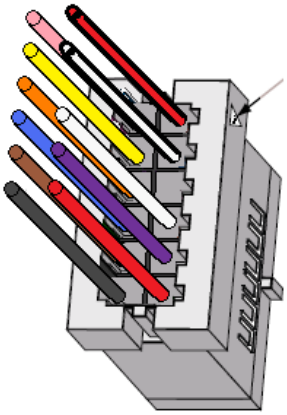
7 - Pink
8 - Yellow
9 - Orange
10 - Blue
11 - Brown
12 - Black



1- Black / Red
2 - Black / White
3 - Jumped to 4
4 - White
5 - Purple
6 - Red

Bin Sensor





Communication Cable

Evaporator Sensor