

315 Service Manual

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INTRODUCTION

This Sub-Zero Technical Service and Parts Manual (Job Aid Part #3757320) for the Model 315W is a compilation of information provided by the Scotsman Company and has been reprinted by Sub-Zero Freezer Company, Inc., with the permission of the Scotsman Company. This manual will provide the most recent service information about the model 315I. This information will enable the service technician to diagnose malfunctions, perform necessary repairs and return a model 315I appliance to proper operational status.

The service technician should read the complete instructions contained in this manual before initiating any repairs on a model 315I.

IMPORTANT SAFETY INFORMATION

Below are Product Safety Labels used in this manual. The "Signal Words" used are **WARNING** or **CAUTION**.

When reviewing this manual, please note these different Product Safety Labels placed at the beginning of certain sections of this manual. You must follow the instructions given in the boxes of the Product Safety Labels in order to avoid personal injury and/or product damage.

The sample Product Safety Labels below illustrate the precautions that should be taken when the signal word is observed.

WARNING

INDICATES THAT HAZARDOUS OR UNSAFE PRACTICES COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH.

CAUTION

Indicates that hazardous or unsafe practices could result in minor personal injury, and/or product damage, and/or property damage.

In addition, please pay attention to the signal word "**NOTE**", which highlights information that is especially important for the topic being covered.

TECHNICAL ASSISTANCE

If you should have any questions regarding the 315W Series and/or this manual, please contact:

*Sub-Zero Freezer Company, Inc.
ATTN: Service Department
P.O. Box 44988
Madison, WI 53744 - 4988*

*Customer Service & Parts / Warranty Claims
Phone #: (800) 222 - 7820*

*Technical Assistance
Phone #: (800) 919 - 8324*

*Customer Service & Technical Assistance
Facsimile #: (608) 441 - 5887*

*Parts / Warranty Claims
Facsimile #: (608) 441 - 5886*

*Service Department E-Mail Address:
customerservice@subzero.com*

*Office Hours:
7:00 AM to 7:00 PM Central Time
Monday through Friday*

This manual is designed to be used by Authorized Service Personnel only. Sub-Zero Freezer Co., Inc. assumes no responsibility for any repairs made on Sub-Zero refrigeration units by anyone other than Authorized Service Technicians.

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WARRANTY INFORMATION

This page contains a summary of the 2, 5 & 12 Year Warranty that is supplied with every Sub-Zero Appliance.

TWO, FIVE & TWELVE YEAR Warranty Summary

- Two year TOTAL PRODUCT warranty, *parts and labor.
- Five Year SEALED SYSTEM warranty, **parts and labor.
- Sixth through Twelfth year LIMITED SEALED SYSTEM warranty, sealed system **parts only.

ONE & FIVE YEAR Non-Residential Warranty Summary (Example: Office, Yacht, etc.)

- One Year TOTAL PRODUCT warranty, *parts and labor.
- Five year LIMITED SEALED SYSTEM warranty, sealed system **parts only.

ONE & FIVE YEAR Display / Model Home Warranty Summary (Display units sold three years after date of manufacture)

- One Year TOTAL PRODUCT warranty, *parts and labor.
- Five year LIMITED SEALED SYSTEM warranty, sealed system **parts only.

Warranty Details:

- * Total Product Parts includes, but is not limited to the following:

Control, Circulating Pump, Switches, Fan Motor & Blade, Drain Tube, Wiring, Water Valve, Hot Gas Valve, Door hinges, Compressor Electricals, etc. . .

- ** Sealed System Parts include the following:

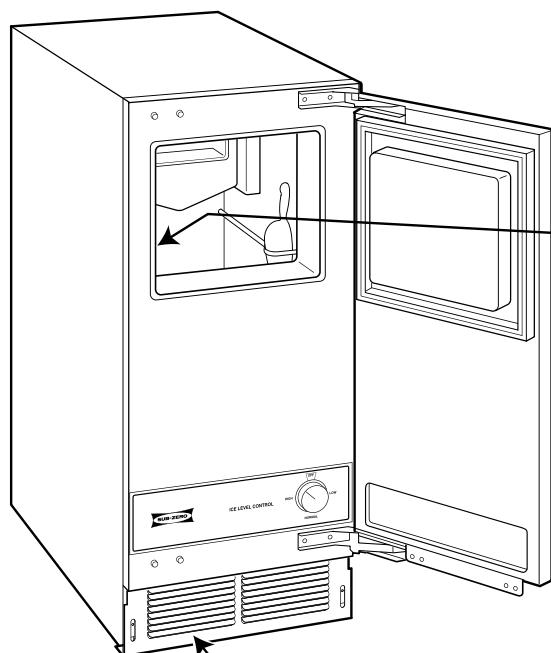
Compressor, Condenser, Evaporator, Filter-Drier, Heat-exchanger, All Tubing That Carries the Freon.

NOTE: Condenser Fan Motor, Freon, Solder and compressor electricals are NOT considered sealed system parts.

Warranty Notes:

- Sub-Zero Freezer Company, Inc. assumes no liability or responsibility for Sub-Zero products that have been altered in any way, including the use of parts and/or components not specifically approved by Sub-Zero.
- All warranties begin at the time of the unit's initial installation.
- All Warranty and Service information collected by Sub-Zero is arranged and stored under the unit serial number and/or customer name. Sub-Zero requests that you have the model and serial number available whenever contacting the factory or parts distributor.
- The serial number tag is located in two places, one on the left wall of the ice bin and one on the unit tray. (See Diagram below)

Serial Number Tag Information:



Upper serial tag on left side of ice bin

MODEL NUMBER	315I		
SERIAL NUMBER	0000000	JULY 2005	
A.C. SUPPLY VOLTAGE	115/60/1		
TOTAL LOAD AMPS	3.6		
REFRIGERANT 134a	5.0	OZ	
DESIGN PRESSURES	30	-L0	275 -HI



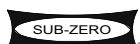


 FREEZER CO., INC.
 MADISON, WI

PRODUCT SERVICE (800) 222-7820

Lower serial tag on unit tray behind kickplate

MODEL NUMBER	315I	SERIAL NUMBER	0000000
A.C. SUPPLY VOLTAGE	115/60/1	REFRIGERANT 134a	5.0 OZ



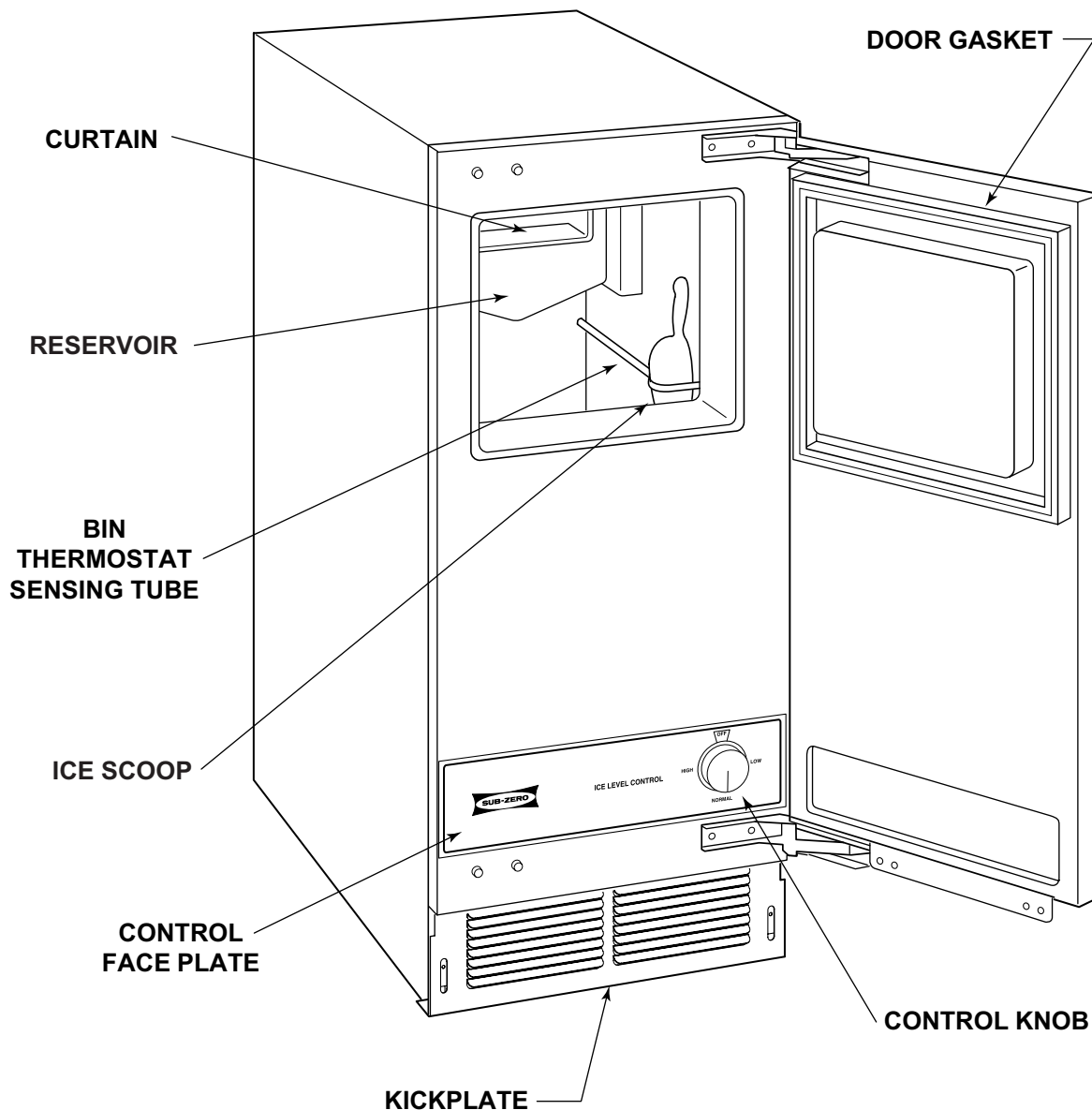
MODEL DESCRIPTION

There are two 315I models with different drainage configurations, the *Model 315I* and *Model 315IP*:

The *model 315I* is a gravity drain model that requires a drain tube that is pitched down from the outlet at the back of the cabinet directly to the sanitary sewer drain.

The *model 315IP* has a built-in drain pump that will pump water up to a drain point (maximum 10' rise).

COMPONENTS / FEATURES



PRE-INSTALLATION CONSIDERATIONS

To properly make and store ice, the model 315I requires access to air, potable water, 115 volts AC electricity and a drain. The ice machine must be installed indoors in a controlled environment.

Air

The model 315I uses a fan to take in room air through the front right side of the kickplate/grille and discharge warm air out the left side of the kickplate/grille. (See Figure 2-1) Airflow through the kickplate/grille must never be obstructed. Doing so will cause a decrease in performance and proficiency, and possible damage to the ice machine.

The minimum air temperature the ice machine will operate in is 50°F/10°C, and the maximum air temperature is 100°F/38°C.

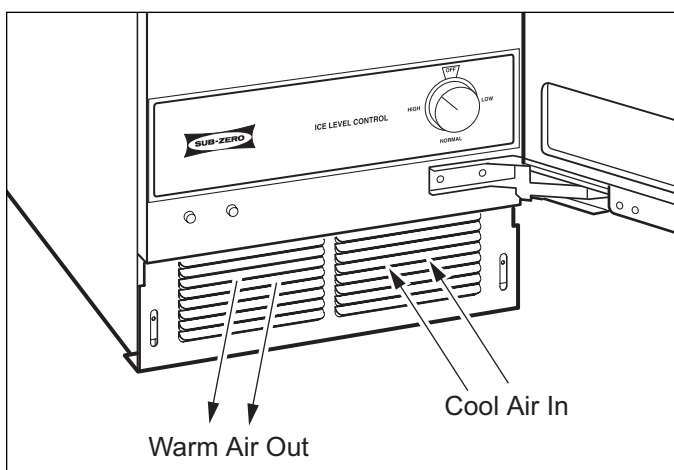


Figure 2-1. Condenser Air Flow

Water Supply

The model 315I requires a continuous supply of potable water at no less than 20 p.s.i.g. of flowing pressure. Static water pressure should not exceed 80 p.s.i.g.

The minimum water temperature that the ice machine will operate with is 40°F/4°C, and the maximum water temperature 100°F/38°C.

The roughed-in water supply line should be a 1/4" O.D. copper tube connected to the house supply. An easily accessible shut-off valve should be placed between the supply and the appliance. The shut-off valve should not be behind the unit.

NOTE: "Self-piercing" valves should never be used, as they are prone to clogging with minerals and sediment. Regular saddle valves are available from local Sub-Zero distributors/dealers (part #4200880).

A line filter is required when the water supply has a high mineral content.

NOTE: All plumbing must meet local codes.

Water Quality

There is no such thing as "pure" water. All water, including potable water supplied by municipalities, contains some "impurities". Water absorbs impurities from the air as it rains and/or as it flows through the the ground. Some of the impurities are solid particles, referred to as suspended solids, and can be removed from the water with a fine particle water filter. Other impurities are chemically bonded to the water molecules, referred to as dissolved solids, and cannot be filtered out.

Ice made by the model 315I will have a lower mineral content than the water it is made from. What makes this possible is the fact that anything dissolved in water lowers the water's freezing point. Because of this, "purer" water will freeze first in the ice making molds.

Most of the impurities or minerals will wash into the reservoir where they may form hard deposits known as scale. The model 315I dilutes this concentration of minerals by over-filling the reservoir during the harvest cycle (with the excess water flowing down the drain with most of the impurities). Approximately three quarts of water flow into the unit each cycle. Approximately one quart of that rinses the reservoir and goes down the drain carrying the impurities.

Some impurities will inevitably remain, sticking to parts of the ice machine, causing malformed ice cubes. This build up of mineral scale can shorten the life of the unit.

To keep the ice machine operating properly, these impurities or minerals will have to be dissolved regularly with an acid wash ice machine cleaner. (See Ice Making System Cleaning instructions in the Maintenance, Cleaning & Adjustments section of this manual.)

If the local water supply has high levels of impurities or minerals, a water filtering system may be needed. A proper water filter can remove taste and odors as well as particles from the water before it reaches the ice machine.

In-line water filters are the most common. Other methods of water treatment for dissolved solids include reverse osmosis (R.O.) and polyphosphate feeders. If a reverse osmosis system is used it should include post treatment to satisfy the R.O. water's "aggressiveness".

Deionized water is not recommended.

Because water softeners exchange one mineral for another, Sub-Zero does NOT recommend their use for the ice machine. Softened water may result in white, mushy cubes that stick together.

Sub-Zero suggests that if in doubt about the water quality of the local water supply, a local point of use specialist be contacted for recommendations on water filtering or treatment.



Electricity

The model 315I is supplied with a three prong power cord to be plugged into a grounded wall outlet. (See Figure 2-2) The outlet should be on a branch circuit of 115 VAC, 60 Hz, single phase 15 amp, delayed action fuse or circuit breaker. The ice machine should be the only device using that circuit.

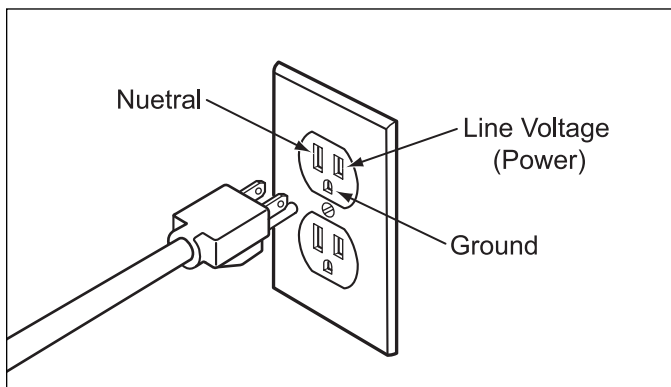


Figure 2-2. Power Cord & Wall Outlet

⚠ WARNING

ELECTRIC SHOCK HAZARD

- Plug into grounded 3 prong outlet.
- Do not remove ground prong from power cord.
- Do not use a two prong adapter.
- Do not use an extension cord.
- Failure to follow these instructions can result in fire, electrical shock or death.

Drain

There are two 315I models with different drainage configurations, the **model 315I** and **model 315IP**:

The **model 315I** is a gravity drain model that requires a drain tube that is pitched down from the outlet at the back of the cabinet directly to the sanitary sewer drain.

NOTE: All horizontal runs of drain line must have a 1/4" per foot fall. An air gap will likely be required between the ice maker drain tube and the drain/waste receptacle. A stand pipe with a trap below it would be acceptable for the drain/waste receptacle.

The **model 315IP** has a built-in drain pump that will pump water up to a drain point (maximum 10' rise).

NOTE: Poor drainage with either model will cause a high rate of ice melting in the ice bin.

NOTE: All plumbing must meet local codes.

Possible Need for Unit Removal

Although the model 315I has been designed to be serviced in place, in some cases it may be necessary to pull the unit out for service. For that reason, the area under the ice maker must be at the same level as the surrounding finished floor and any decorative molding at top or bottom must be removable. Also, there must be a minimum of 1/8" clearance on each side of the unit.

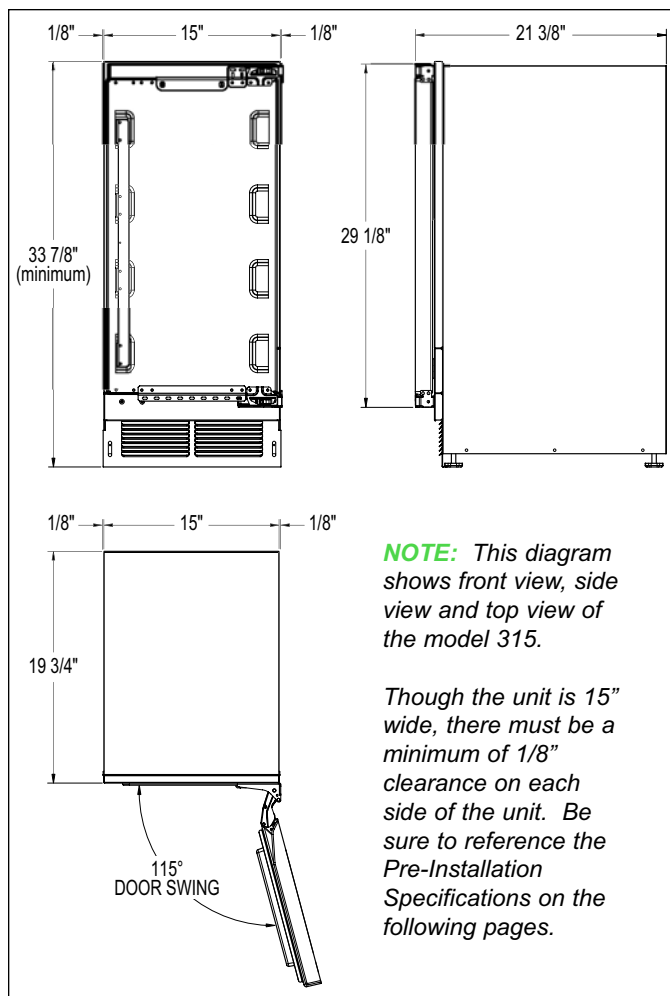
⚠ CAUTION

To avoid damage to the finished floor when the unit is installed, or if the unit needs to be removed for service purposes, the finished floor should be protected with appropriate material.

Moving the Unit

When the unit is moved into the house, or if it needs to be removed from the house for service purposes, it recommended to use a hand truck or dolly. Be sure to position the dolly on the side of the unit and securely tape the door shut so it does not open while transporting the unit.

Unit Dimensions

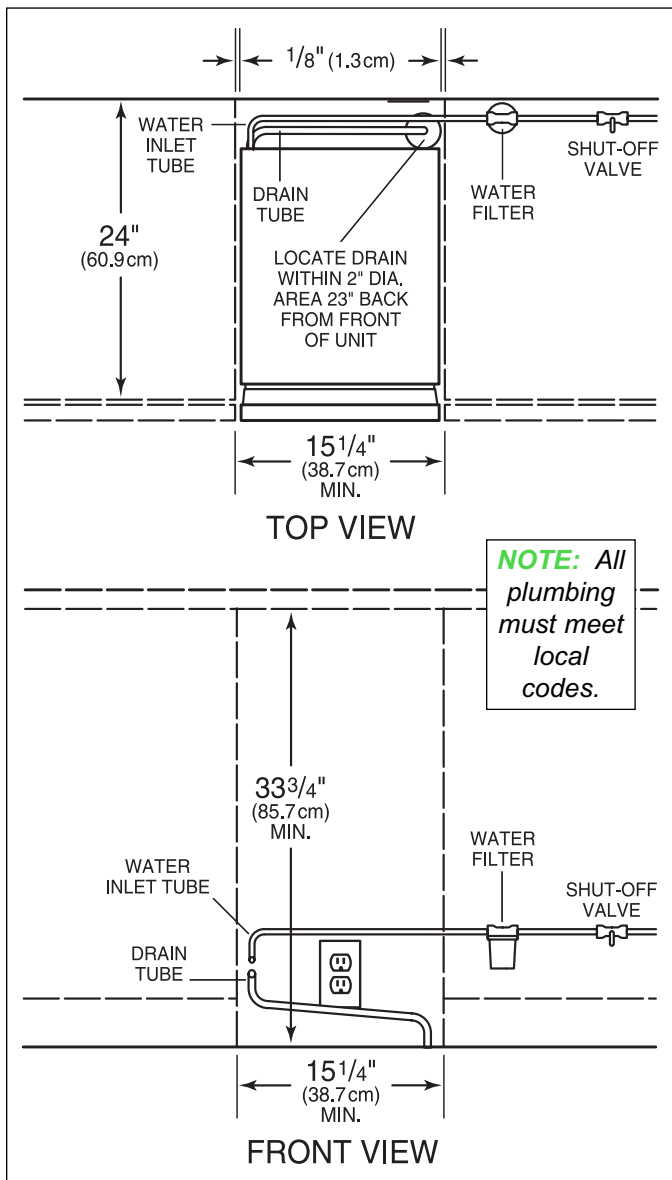


NOTE: This diagram shows front view, side view and top view of the model 315.

Though the unit is 15" wide, there must be a minimum of 1/8" clearance on each side of the unit. Be sure to reference the Pre-Installation Specifications on the following pages.

PRE-INSTALLATION SPECIFICATIONS

(Model 315I - Gravity Drain Model)



INSTALLATION

Leveling (Model 315I & 315IP)

Note: The unit must be leveled prior to installation.

There are four leveler legs on a model 315I, one at each corner. To level the unit, turn the leveler legs counterclockwise to raise the unit or clockwise to lower it. (See Figure 2-3)

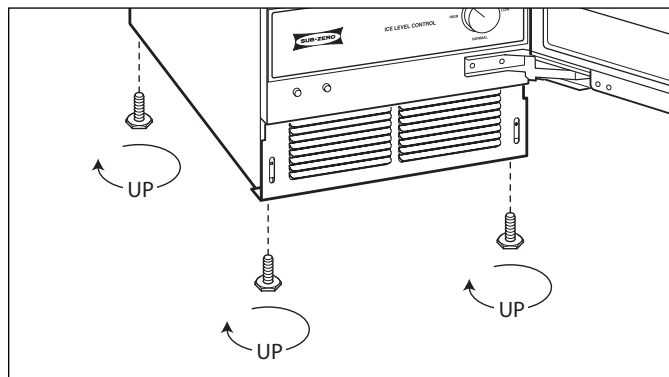


Figure 2-3. Unit Leveling

Installation Instructions

(Model 315I - Gravity Drain Model)

1. Place ice maker in front of installation location. Level unit as described above.
2. Remove door with hinges, kickplate, lower stainless steel face plate, control knob and control panel.
3. Route inlet water line through back of compressor area to front of unit, keeping tubing towards left side.
4. Route drain tube from drain/waste receptacle, through back of compressor area to front of unit, keeping tubing towards left side.

NOTE: If using a long horizontal run (more than 5 feet), the drain should be vented at back of unit.

5. Plug power cord into wall outlet.
6. Push ice maker into installation position.
7. Cut inlet water line to required length.

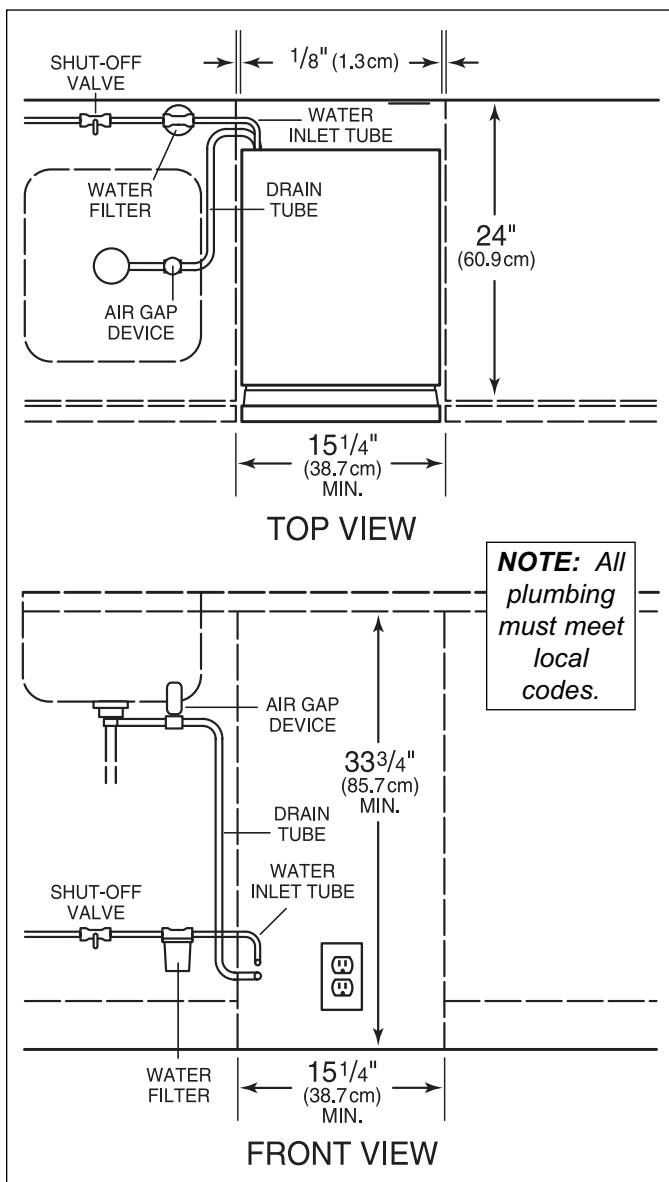
NOTE: It is recommended to flush the inlet water line at this time by turning water supply on and letting the water drain into a bucket.

8. Place flare nut onto inlet water line, then flare end of tube.
9. Attach flare nut to water valve inlet.
10. Cut drain tube to required length.
11. Connect drain tube to bin drain fitting and secure it with a hose clamp.
12. Turn water supply on and check for leaks.
13. Replace all parts removed in step 2.



PRE-INSTALLATION SPECIFICATIONS

(Model 315IP - Drain Pump Model)



INSTALLATION

Installation Instructions (Model 315IP - Drain Pump Model)

1. Place ice maker in front of installation location. Level unit as described on previous page.
2. Remove door with hinges, kickplate, lower stainless steel face plate, control knob and control panel.
3. Route inlet water line through back of compressor area to front of unit, keeping tubing towards left side.
4. Locate coil of 3/8" I.D. plastic drain tubing secured to back of unit.
5. Route plastic drain tube to drain connection point.

NOTE: Often an air gap is required by local codes between the ice maker drain tube and the drain receptacle.

6. Plug power cord into wall outlet.
7. Push ice maker into installation position.
8. Cut inlet water line to required length.

NOTE: It is recommended to flush the inlet water line at this time by turning water supply on and letting the water drain into a bucket.

9. Place flare nut onto inlet water line, then flare end of tube.
10. Attach flare nut to water valve inlet.
11. Turn water supply on and check for leaks.
12. Switch unit on and pour a couple of quarts of water into ice storage bin. The pump should start up and pump water out. Check for leaks.
13. Replace all parts removed in step 2.

Securing the Unit (Model 315I & 315IP)

Once the icemaker is installed, secure the unit to the cabinet by inserting two #8 x 1/2" flat head screws (supplied with the unit) through the holes in the flange of each hinge. (See Figure 2-4)

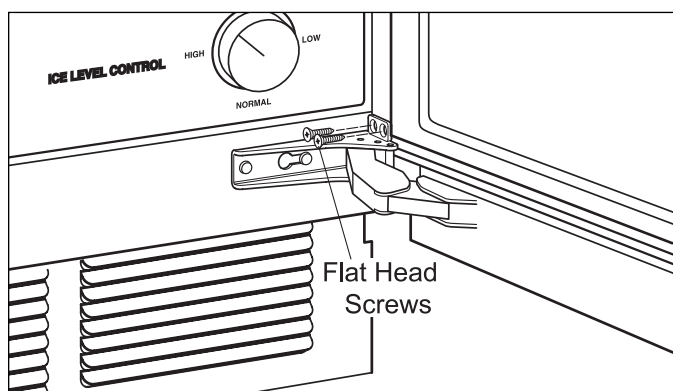


Figure 2-4. Securing Unit to Cabinet

Kickplate/Grille Adjustment

The Kickplate/Grille can be adjusted up or down to complete the built-in design. To adjust the grille, loosen the two mounting screws and move the kickplate/grille up or down to the desired location, then retighten the screws. (See Figure 2-6)

⚠ CAUTION

Airflow through the kickplate/grille must never be obstructed. Doing so could cause damage to the ice machine.

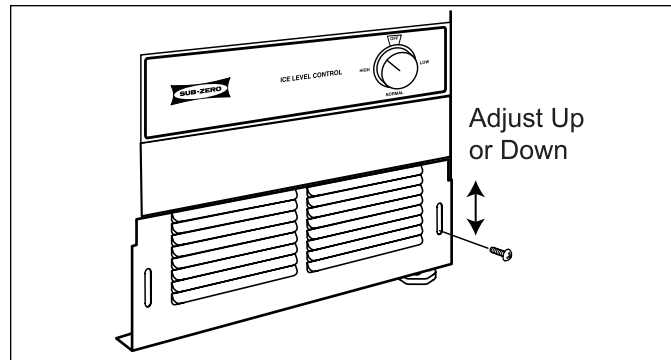


Figure 2-6. Kickplate/Grille Adjustment

Reversing Door Swing

All model 315I units are manufactured with the hinges on the right side of the door. The door and hinges are designed to be reversible, so that the hinges can be moved to the left side of the door. To reverse the door swing from right to left, follow the instructions below:

1. Remove door panel (if previously installed).
2. Remove door/hinge cover (top hinge-RH) from top of door by extracting the two mounting screws from face of door. (See Figure 2-7)
3. Remove door from hinges by extracting the four door mounting screws, two at bottom hinge, two at top hinge. (See Figure 2-7)
4. Remove hinges from cabinet by extracting the four hinge mounting screws, two each hinge.
5. Extract the four filler screws from opposite (left) hinge mounting holes in cabinet (See Figure 2-7) and insert them into right-hand hinge mounting holes of cabinet.
6. Move bottom right hinge to top left hinge mounting holes and insert two hinge mounting screws through hinge into mounting holes and tighten. Then, move top right hinge to bottom left hinge mounting holes and insert two hinge mounting screws through hinge into mounting holes and tighten.
7. Attach door to hinges with door mounting screws, utilizing left-hand door mounting holes.

NOTE: Do not flip door.

8. Extract two screws which secure upper door panel mount bracket to top right of door, then reattach bracket to top left of door utilizing left-hand mounting holes. (See Figure 2-7)
9. Attach new hinge cover (top hinge-LH) to top of door using the two mounting screws removed in step 2 above.
10. Open and close door to check for proper operation.

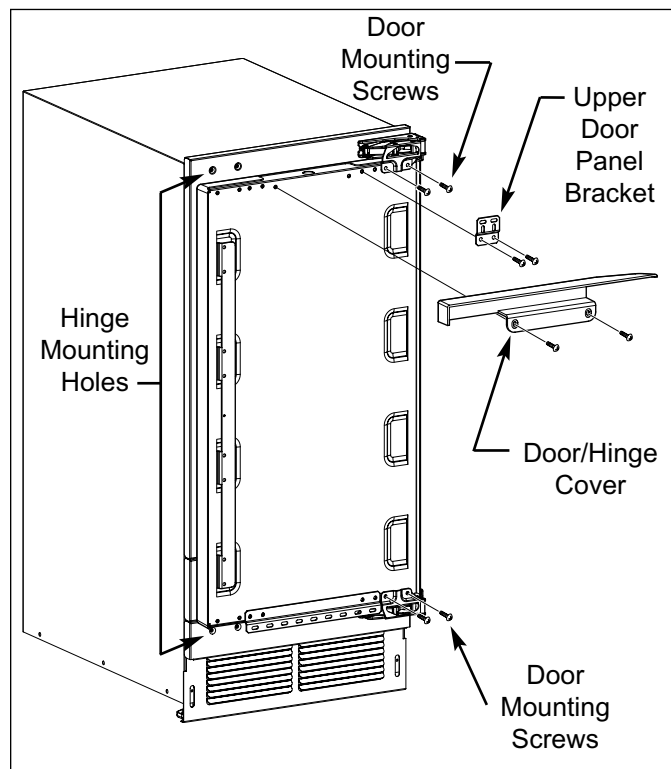


Figure 2-7.
Component Removal for Door Swing Reversal

Stainless Steel Door Panels

Stainless steel door panels are available from local Sub-Zero distributors/dealers. There are two sizes:

- 15" W x 30-3/8" H x 3/4" T - (part #FP315SS)
- 17-3/4" W x 30-3/8" H x 3/4" T - (part #FP315SS-18)

These panels can be installed as left-hand or right-hand swing and are equipped with stainless steel handles.

Custom Door Panel Specifications

The door panel specifications listed below are for units installed in a standard 15-1/4" Wide x 33-3/4" High rough opening. A minimum of 1/8" reveal should be allowed around the edge of the panel along with a 4" toe space.

- Door Panel Width 15"
- Door Panel Height 30-3/8"
- Door Panel Thickness 5/8" Minimum
- Door Panel Weight 15 lbs. Maximum

Door Panel Installation

NOTE: For stainless steel panel, skip to step #4

1. Place door panel face down on a protected surface, making sure to not damage front of panel.
2. Position plastic drilling template (provided with unit) on back of door panel, flush with upper edge and side of door panel. (See Figure 2-8)

NOTE: The size of the panel shown in Figure 2-8 is just large enough to cover the door. Actual door panel sizes may vary depending on design/installation variations.

3. Once proper position for mounting hardware has been located, mark hole locations, remove drilling template from door panel and drill pilot holes for mounting hardware.

NOTE: The location of the door handle should also be determined at this time. It is recommended that the position of the door handle be centered top to bottom and towards the side of the panel opposite the hinges. It may be necessary to countersink the handle mounting holes so the screw heads do not interfere with the panel fitting flush with the door.

4. Remove handle-side door panel mounting bracket from face of door and attach it to door panel with #8 x 1/2" screws, provided with unit. (See Figure 2-9)
5. Install door panel on door by engaging tabs of handle-side bracket with slots in face of door.
6. Insert the #8 x 1/2" screws, provided with unit, through top and bottom panel mounting brackets into panel, then snug but do not tighten screws.
7. Close door and align door panel with surrounding cabinetry, then open door and tighten panel mounting screws.

⚠ CAUTION

When the reveal on the hinge side of the door panel is less than 1/4", use caution when closing the door as severe finger pinching may occur.

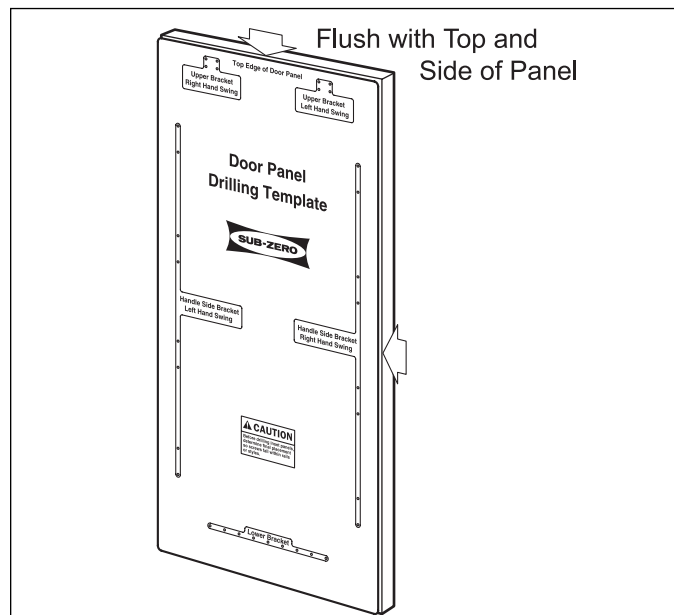


Figure 2-8. Door Panel Drilling Template & Panel

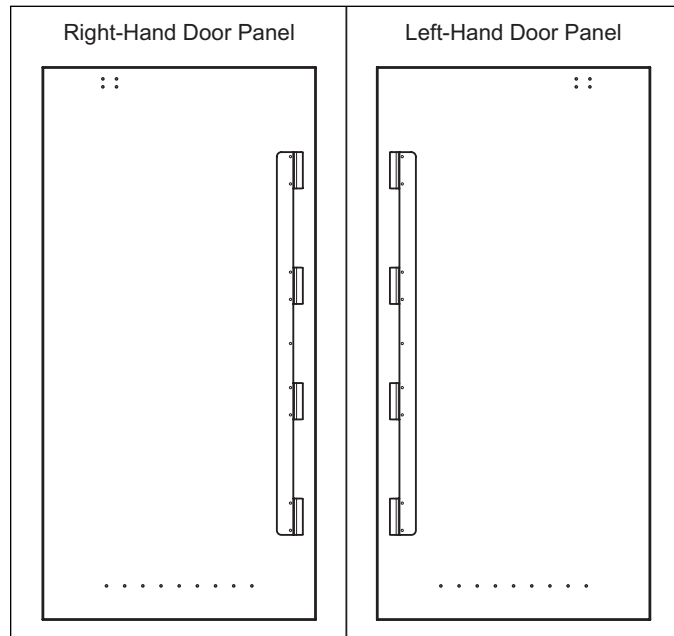


Figure 2-9. Holes Drilled with Handle Side Bracket

Side Panels

Side panels for a model 315I must be securely fastened to adjacent cabinets or to the floor and wall.

NOTE: Side panels should never be attached to the appliance.

If side panels are fastened to the floor or wall, the use of "L" brackets is recommended (hardware not included with the unit). For installation and possible service purposes, the area that an "L" bracket will sit on the floor should be routed out so the bracket sits flush with the floor.

90 Degree Door Stop Installation

Certain installations may require the door of the model 315I to stop at 90° instead of the full 115°. A 90° door stop pin is supplied with the unit. To install the 90° door stop pin, follow the instructions below:

1. Open door to approximately 80°.
2. Insert 90° stop pin down through holes in bottom hinge bracket. (See Figure 2-10)

NOTE: The stop pin must be driven down through the hole until the head of the pin makes contact with the bracket.

3. Insert 90° stop pin up through holes in top hinge bracket.

NOTE: The stop pin must be driven up through the hole until the head of the pin makes contact with the bracket.

4. Check for proper door operation.

Hinge Cover Installation

Adhesive and magnetic hinge covers are supplied with the unit. It is very important to read the notes below before proceeding to the hinge cover installation instructions.

NOTES:

- DO NOT attempt to install the hinge covers before the 90° door stop pins are installed (if used).
- If the 90° stop pins are installed, it will be necessary to remove the knock-outs from the hinge cover opposite the head of the pin. (See Figure 2-11)
- Hinges must be free of dirt and grease before attempting to install the hinge covers.

1. Remove backing paper from adhesive pads of upper and lower hinge covers, then adhere covers to top and bottom of each hinge bracket as shown in Figure 2-11.
2. The center hinge covers are magnetic. Install them to center of each hinge bracket as shown in Figure 2-11.

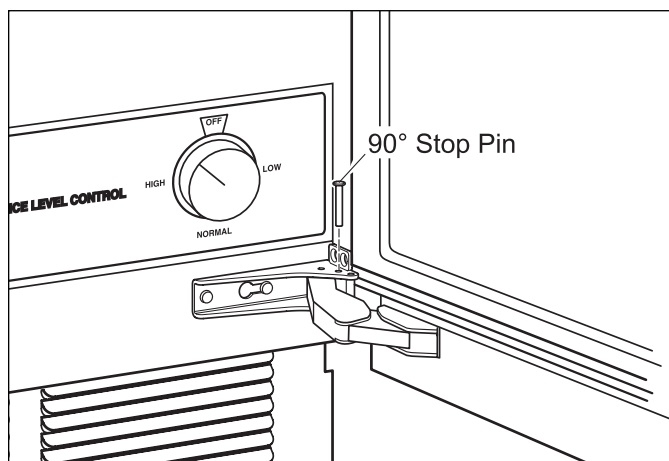


Figure 2-10. 90° Door Stop Pin at Bottom Hinge

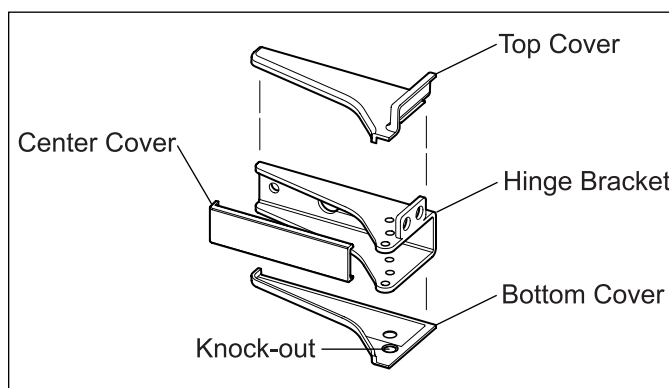


Figure 2-11. Hinge Cover Installation

Initial Start-Up

When the installation is complete and all electrical and water hook-ups have been checked, be sure to remove all tape and packing materials before initial start-up.

Follow the instructions below for initial start-up:

1. Pull the control knob from the ice machine control shaft. (See Figure 2-12)
2. Remove the control face plate by pulling the top forward to disengage the velcro strips, then lift up. (See Figure 2-12)
3. Remove the inner control access panel by extracting the three screws, then lower the panel slightly and pull forward. (See Figure 2-12)
4. Locate the cycle timer and rotate the shaft clockwise until the cam is in the harvest cycle position (switch button out). (See Figure 2-13)
5. Turn the water supply ON.
6. Make sure there is power to the unit, then place the ice machine control knob on the control shaft and turn the ice machine control knob to the "NORMAL" position (pointing straight down). (See Figure 2-14)
7. Allow the unit to run for approximately one hour, then check the size of the ice cubes.

NOTE: To confirm proper cube size, see "Cube Size Control Adjustment" in the Maintenance, Cleaning & Adjustment section of this manual. If cube size is incorrect, follow the Cube Size Control Adjustment procedures on that page.

8. After adjusting the cube size control and/or confirming cubes are the correct size, replace the inner control access panel, the control face plate and the control knob.

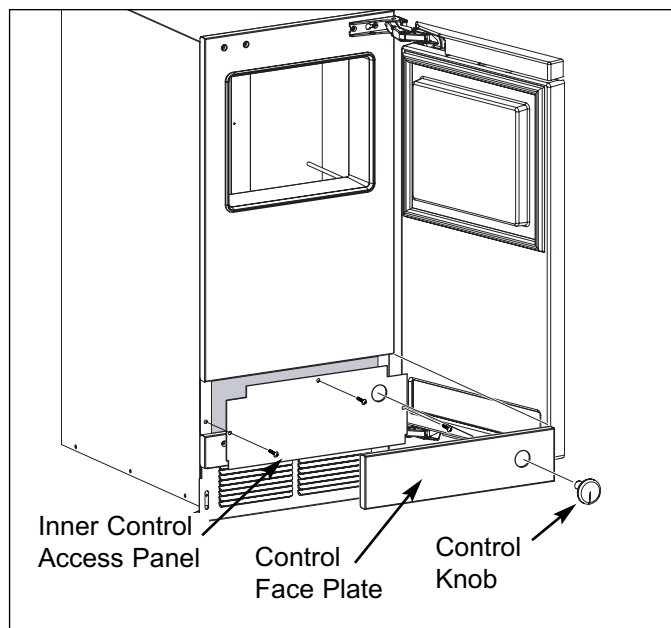


Figure 2-12.
Remove Control Knob, Face Plate & Access Panel

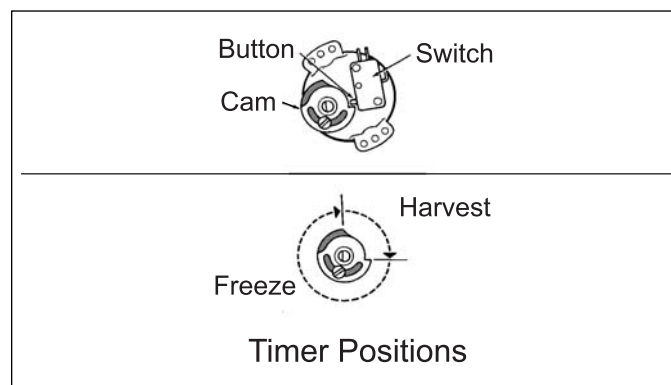


Figure 2-13. Rotate Timer Cam to Harvest Position

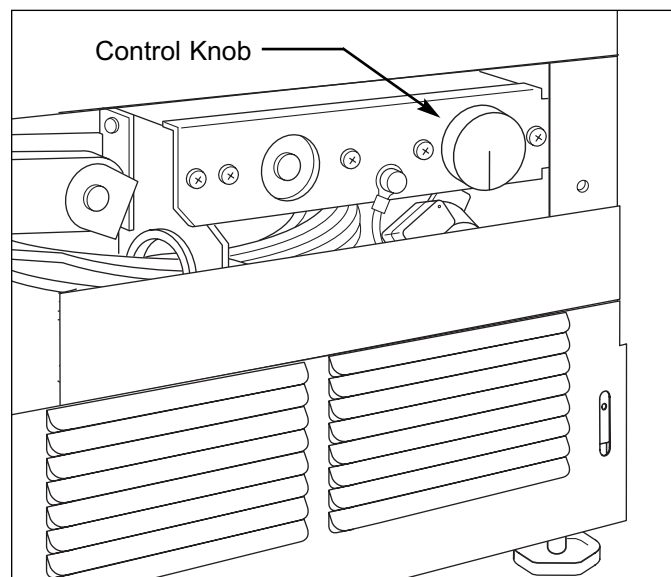


Figure 2-14. Control Knob in "NORMAL" Position

OPERATING SYSTEMS

There are three operating systems in the icemaker:

- *Refrigeration System*
- *Water System*
- *Electrical System*

Refrigeration System

The following components have been listed in the order of refrigerant flow, with an explanation of their function as part of the refrigeration system. Without delving too deeply into the operating cycles, which will be covered later, for our purposes the ice making cycle is used.

(See Figure 3-1)

- **Compressor:** The compressor creates a high side and low side pressure difference in the refrigeration system by compressing the refrigerant gas, thus raising the pressure and temperature. During the ice making cycle the compressor pushes this high-pressure/high-heat gas to the condenser.
- **Condenser:** The high-pressure/high-heat gas travels through the condenser, where the heat is dissipated by cooler air being drawn over the condenser tubing by the condenser fan. This changes the gas into a high-pressure/warm liquid that then enters the filter-drier.
- **Filter-Drier:** The high-pressure/warm liquid travels through the filter-drier, which removes moisture from the refrigerant before it enters the capillary tube.

- **Capillary Tube:** The warm liquid refrigerant travels through the skinny capillary tube which is wrapped around the suction line and accumulator. As the warm liquid refrigerant travels through the capillary tube it gives up heat to the cool vapor refrigerant in the accumulator and to the cool refrigerant gas traveling through the suction line. As the refrigerant in the capillary tube gives up heat, the pressure drops, so it is a low-pressure/cool liquid before it enters the evaporator.
- **Evaporator:** A dramatic pressure drop occurs as the low-pressure/cool liquid refrigerant leaves the small diameter capillary tube and enters the larger diameter evaporator tubing, and the refrigerant begins to vaporize. This vapor travels through the evaporator absorbing heat from the water being sprayed on the evaporator. This cool vapor then enters the accumulator.
- **Accumulator:** Another pressure drop occurs as the cool vaporized refrigerant leaves the evaporator tubing and enters the larger diameter accumulator tubing. Any liquid or vaporized refrigerant that may remain at this point is converted to gas. The capillary tube is wrapped around the accumulator to give up heat to the refrigerant in the accumulator before it enters the suction line.
- **Suction Line:** The cool gas travels through the suction line which is also partially wrapped with the capillary tube. As this cool refrigerant gas travels through the suction line it too absorbs heat from the warm liquid refrigerant traveling through the capillary tube. This assures that it is a luke warm gas before it enters the compressor, where the process begins again.

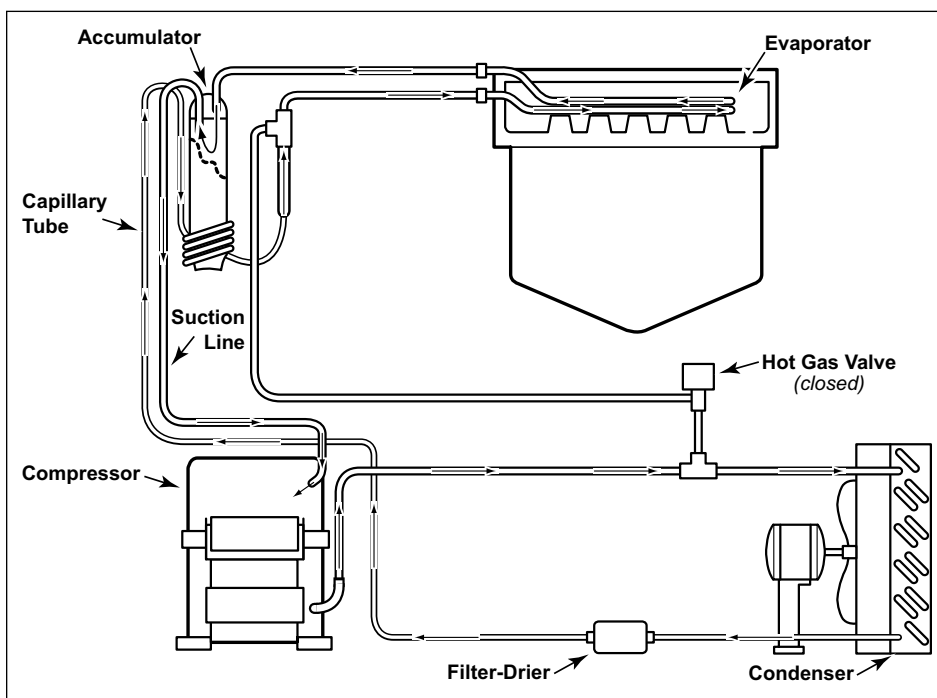


Figure 3-1. Refrigeration System (During Ice Making Cycle)

NOTE: There is an additional component in the ice maker refrigeration system which is used during the harvest cycle, this component is called the hot gas valve. Its function is described below:

- **Hot Gas Valve:** During a harvest cycle, the hot gas valve interrupts the flow of high-pressure/high-heat gas from the compressor, diverting it past the condenser, filter-drier and capillary tube, directly to the evaporator. This high-pressure/high-heat gas warms the evaporator so that the ice cubes release from the cube molds.

Water System

The water system provides and recirculates the water for ice production. It also provides a means of drainage. After the ice is produced, the water system flushes the impurities and minerals that were in the water, down the drain. During routine cleaning, the water system will circulate the ice machine cleaning solution. (See Figure 3-2)

Electrical System

Power for the refrigeration system and the water system is provided by the electrical system. The electrical system also controls the operational cycles of the ice maker. The electrical schematic in figure 3-3 below illustrates the electrical system of a model 315I during the ice making cycle.

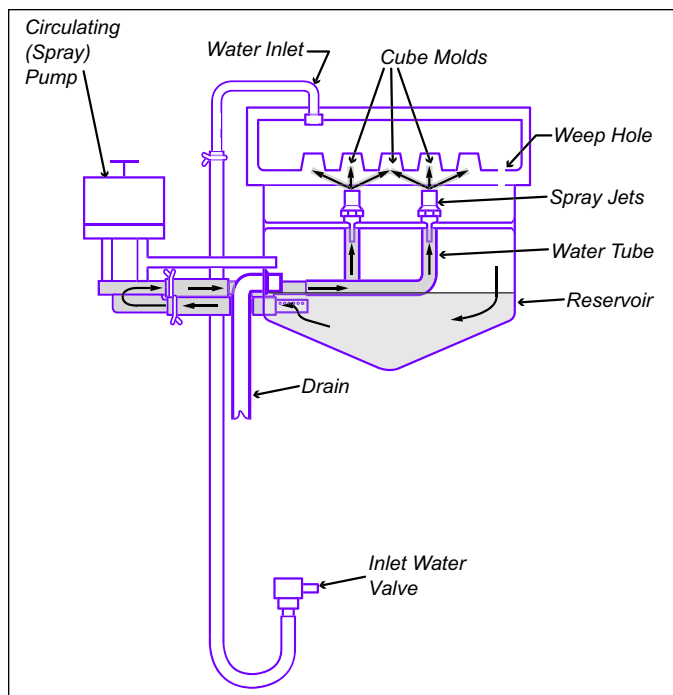


Figure 3-2. Water System (During Ice Making Cycle)

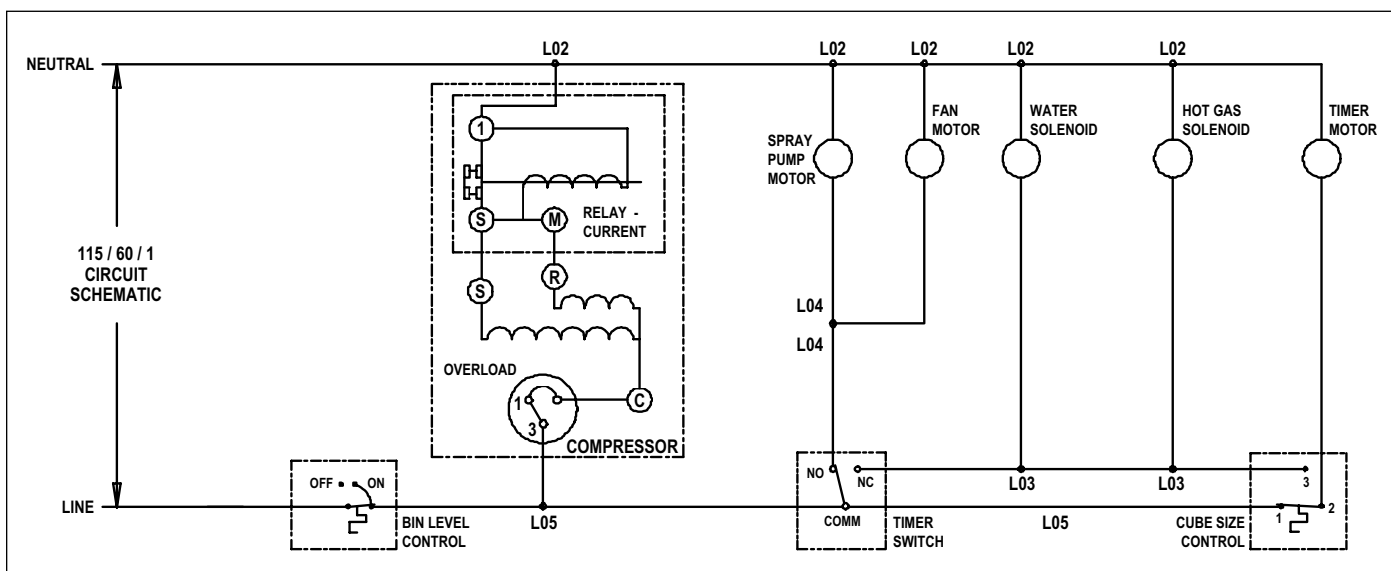


Figure 3-3. Electrical Schematic of Model 315I (During Ice Making Cycle)

OPERATIONAL CYCLES

There are two operational cycles of the icemaker:

- Ice Making (Freeze) Cycle
- Harvest Cycle

The ice making (freeze) cycle happens when water from the reservoir is sprayed into the ice cube molds at the bottom of the evaporator and the water freezes into cubes. The harvest cycle is when the ice cubes are released from the cube molds and fresh water enters the reservoir. The complete process takes approximately 30 minutes for each batch of ice. (1 Freeze Cycle + 1 Harvest Cycle = 1 Batch of 8 Cubes.)

Ice Making (Freeze) Cycle

During the ice making cycle the compressor pumps refrigerant through the system, the condenser fan draws air over the condenser, and the circulating spray pump sprays water into the cube molds. The refrigerant running through the evaporator absorbs heat from the water being sprayed into the cube molds and the water begins to freeze. The heat that the refrigerant absorbs from the water is carried in the refrigerant back to the compressor and then through the condenser where the heat is transferred from the refrigerant to the air being drawn over the condenser tubing by the condenser fan. This warm air is discharged out through the louvered kickplate. When the cube molds become cold enough, the ice machine's timer begins to turn. When the timer turns far enough, it stops the ice making (freeze) cycle and begins the harvest cycle.

NOTE: The Water System During Ice Making (Freeze) Cycle - The water system initially fills the reservoir with approximately two quarts of water. During the ice making cycle, water is taken from the reservoir and sprayed into the cube molds where it begins to freeze. But, due to the fact that water containing mineral impurities needs a lower temperature to freeze, the impure water falls back into the reservoir and the purer water freezes in the cube molds. This causes the water in the reservoir to become highly concentrated with mineral impurities towards the end of the ice making (freeze) cycle.

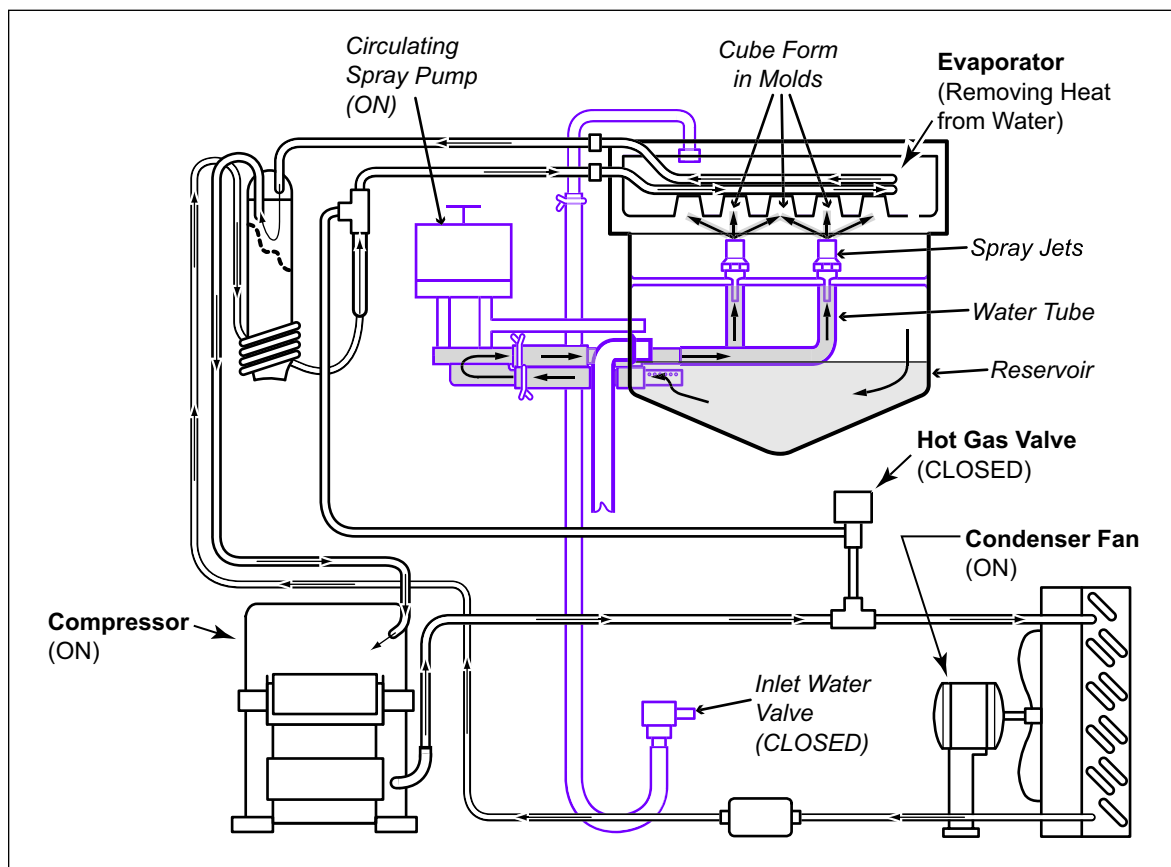


Figure 3-4. Ice Making (Freeze) Cycle

Harvest Cycle

During the harvest cycle the compressor is still operating, but the condenser fan and circulating spray pump are switched off. The hot gas valve opens, interrupting the flow of warm refrigerant from the compressor to the condenser, diverting it to the evaporator. The water valve also opens, pouring water over the top of the evaporator and into the reservoir. The warm gas in the evaporator, along with the water pouring over the top of the evaporator, causes the ice cubes to release from the cube molds and fall into the bin. The ice machine timer continues turning, and when it turns far enough, it stops the harvest cycle and the freeze cycle begins again.

NOTE: The Water System During Harvest Cycles - During the harvest cycle, approximately three quarts of water are added to the reservoir, over-filling the reservoir by approximately one quart. The extra quart of water rinses the reservoir and goes down the drain carrying the mineral impurities.

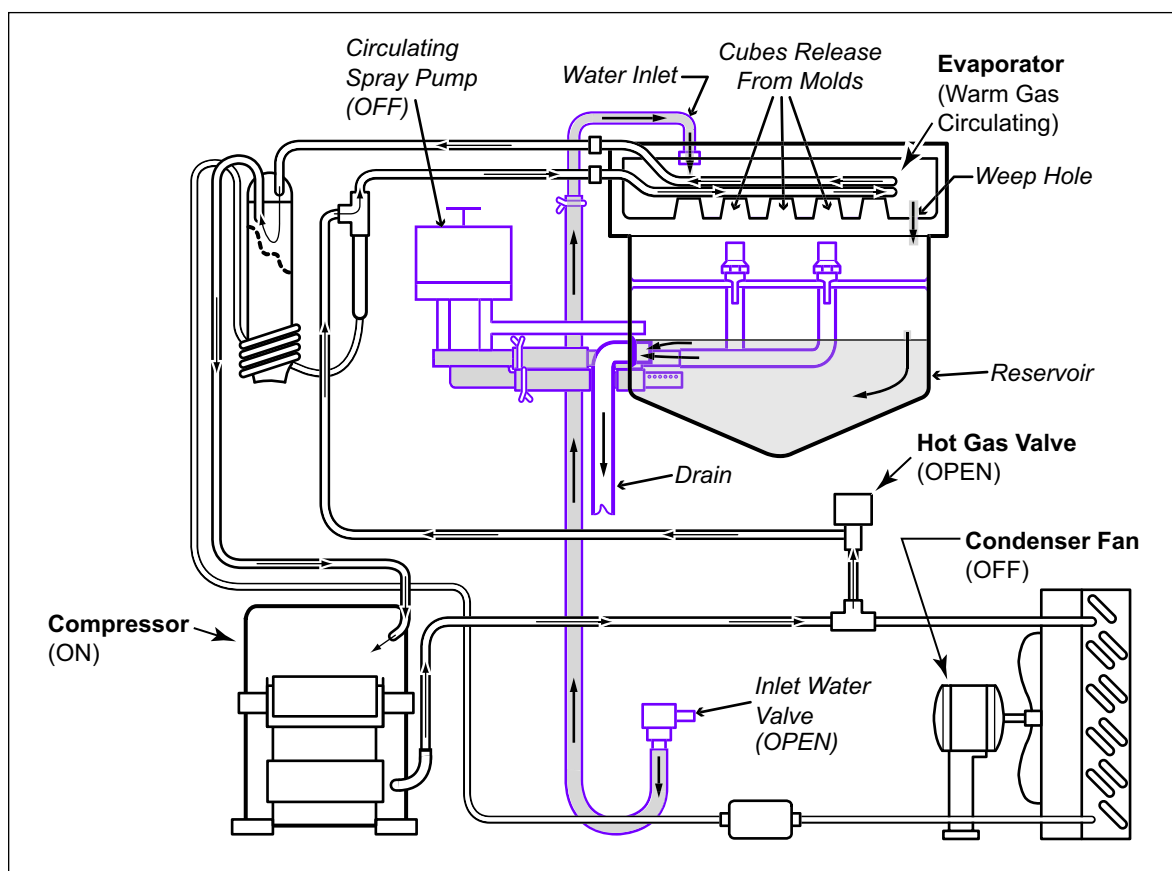


Figure 3-5. Harvest Cycle

WHAT TO EXPECT FROM THE MODEL 315I

The model 315I will release a batch of eight ice cubes approximately every thirty minutes. At the same time the cubes fall into the bin, water will be filling the reservoir and carrying the mineral impurities down the drain.

Ice

The ice cubes are tapered cylinders approximately 1-1/4" in diameter at the widest end; tapered down to 1" at the other end; and are 1-1/8" high. (See Figure 3-6) When the machine is adjusted properly, there should be a 1/4" indentation in the base of the cube. The cubes will appear wet when fresh, which is normal. The cubes may also develop frost on the outside and look cloudy, this is also normal. (The frost will disappear when liquid is poured over the cubes.)

Storage

The ice storage bin is not refrigerated. Instead, it is heavily insulated, much like an ice chest or picnic cooler. If the ice bin were refrigerated, the ice would freeze together into one large cluster of ice and would begin to evaporate. This would yield ice that is of very poor quality and would be very difficult to remove from the machine.

The model 315I will continue to operate until the ice builds up high enough to contact the bin thermostat sensor tube, then it will shut off. (See Figure 3-7)

NOTE: The model 315IP will continue to pump the water from the melted cubes even when the unit is off. The pump will only be on for a few seconds.

Run Time

The amount of time that the model 315I will run to replace melted ice (without the door being opened) is approximately two hours per day. The amount of time that the ice machine will run to replace ice removed during use will depend upon how much ice is removed, how often ice is removed, how clean the ice machine is and how hot the ambient air and water supplied to the ice machine are. An empty ice bin will usually take twenty-four to thirty-six hours to refill.

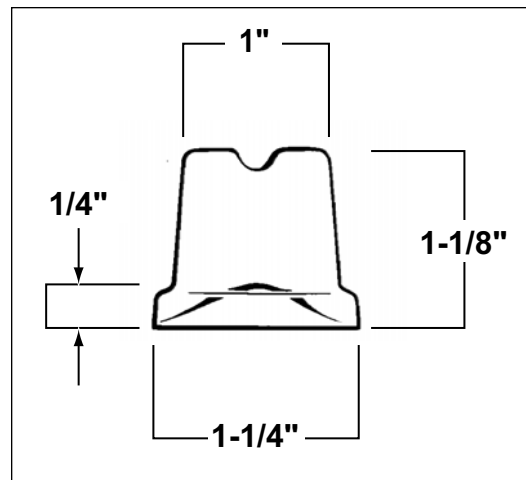


Figure 3-6. Proper Cube Dimensions

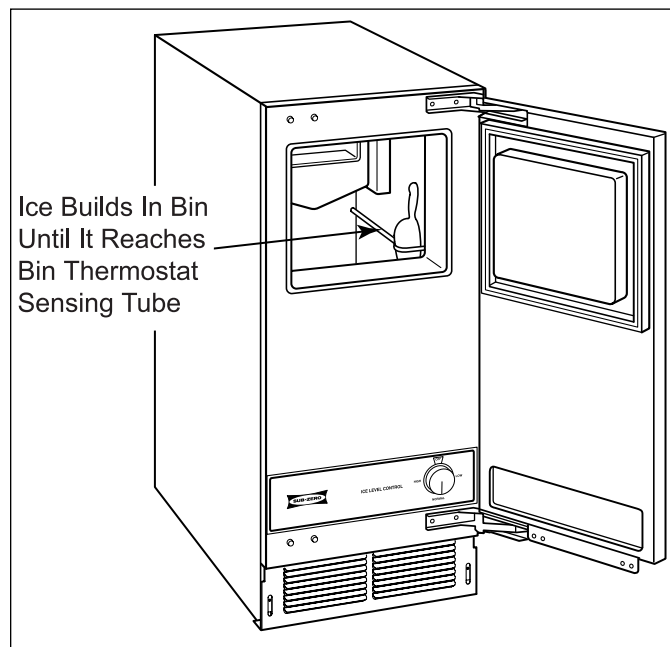


Figure 3-7. Ice Bin Storage Level

ICE MAKER MAINTENANCE & CLEANING

The ice maker should never be allowed to operate without regular maintenance and cleaning. Keeping the unit clean and maintained will keep it sanitary, extend the life of the machine and keep energy consumption down. Maintenance and cleaning should be performed approximately every six months. Some water conditions will dictate even more frequent cleaning of the ice making section, just as some carpets and pets will dictate more frequent cleaning of the condenser.

The Five Things to Keep Clean

- The outside of cabinet and door
- The ice storage bin
- The ice scoop
- The condenser
- The ice making system

Cleaning the Outside of Cabinet and Door

To clean the outside of the cabinet and door (including the door gasket), wipe off spills as they occur. If anything spilled dries onto the surface, wash it off with a mild dish soap and warm water.

Cleaning/Sanitizing the Ice Storage Bin

Sanitizing the ice storage bin periodically is recommended. To do this, the unit must be switched OFF and the storage bin emptied. Then, mix a sanitizing solution consisting of one ounce household bleach with two gallons of hot (95°/35°C - 115°F/46°C) water. Using a clean soft cloth, wipe down the interior of the storage bin with the sanitizing solution (See Figure 4-1) and pour some of the solution down the bin drain. Rinse the interior of the storage bin with clean hot water and allow it to air dry before restarting the unit.

NOTE: It is recommended that cleaning/sanitizing the ice storage bin be performed immediately after the ice making system has been cleaned. (See next page.)

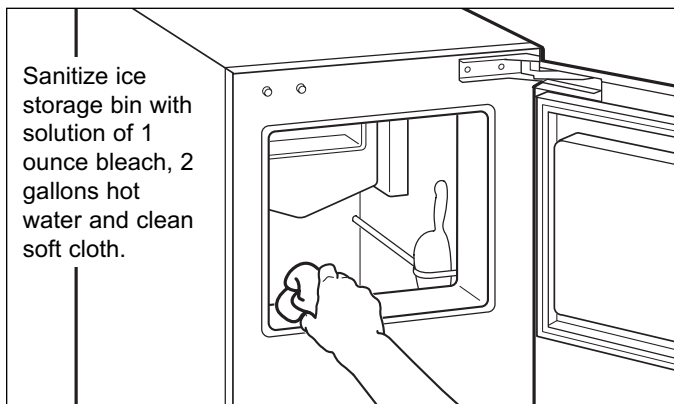


Figure 4-1. Cleaning/Sanitizing Ice Storage Bin

CAUTION

Never keep anything in the ice storage bin that is not ice. Objects such as beverage containers may be unsanitary and their labels might fall off which could plug the drain.

Cleaning the Ice Scoop

The ice scoop should be cleaned regularly to keep it sanitary. Clean the scoop with dish soap and warm water, as you would any other food container.

Cleaning the Condenser

The condenser is located at the right side of the compressor area, behind the kickplate and it looks similar to the radiator on a car. To clean the condenser, follow the directions below:

1. Remove the kickplate by extracting the two mounting screws, one at each side, and pull the kickplate down and forward.
2. With a brush attachment, vacuum the face of the condenser off while moving the brush up and down. (See Figure 4-2)

CAUTION

Do not bend the metal fins of the condenser, doing so will restrict airflow through the condenser, possibly causing mechanical failure of the ice maker.

3. After the condenser is clean, reattach the kickplate with the mounting screws.

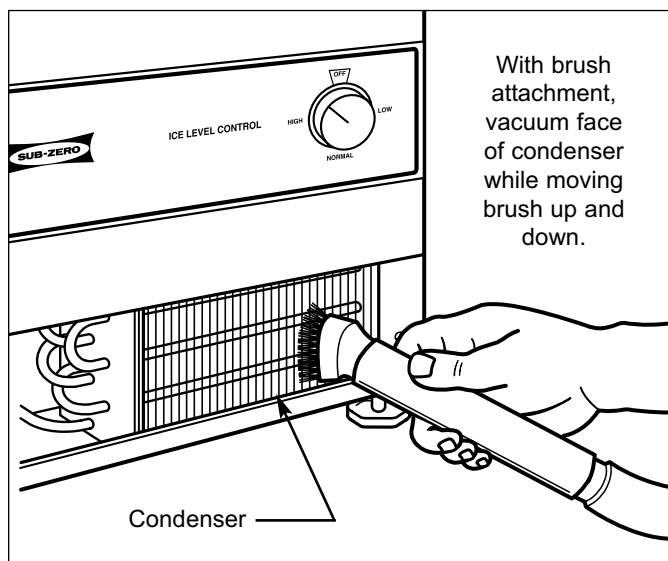


Figure 4-2. Condenser Cleaning

Cleaning the Ice Making System

Though the water system flushes away mineral impurities during the harvest cycle, some impurities will inevitably remain, sticking to parts of the ice machine, causing malformed ice cubes. This build up of mineral scale can shorten the life of the unit.

To keep the ice machine operating properly, these impurities or minerals will have to be dissolved regularly with ice machine cleaner. (Sub-Zero part #19034306)

⚠ WARNING

THE ICE MACHINE CLEANER SOLD BY SUB-ZERO CONTAINS ACIDS WHICH MAY CAUSE BURNS. ALWAYS WEAR HEAVY RUBBER GLOVES AND EYE PROTECTION WHEN WORKING WITH ICE MACHINE CLEANER.

IF ICE MACHINE CLEANER CONTACTS SKIN, FLUSH WITH WATER.

IF ICE MACHINE CLEANER CONTACTS EYES, FLUSH WITH LARGE AMOUNTS OF WATER AND CONTACT PHYSICIAN IMMEDIATELY.

IF SWALLOWED, DO NOT INDUCE VOMITING. DRINK LARGE AMOUNTS OF WATER OR MILK. CALL PHYSICIAN IMMEDIATELY.

KEEP ICE MACHINE CLEANER OUT OF REACH OF CHILDREN.

To clean the ice making system, follow the instructions below:

1. Turn ice machine control knob to OFF.
(See Figure 4-3)

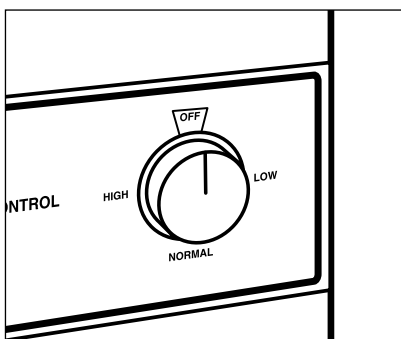


Figure 4-3. Control Turned OFF

2. Scoop all ice out of storage bin and either discard it or save it in an ice chest or cooler.
(See Figure 4-4)

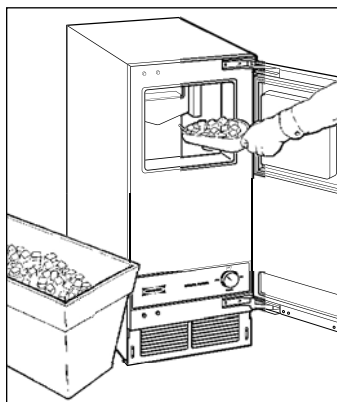


Figure 4-4. Empty Bin

3. Pour four ounces of Ice Machine Cleaner (part #19034306) into ice maker water reservoir.
(See Figure 4-5)

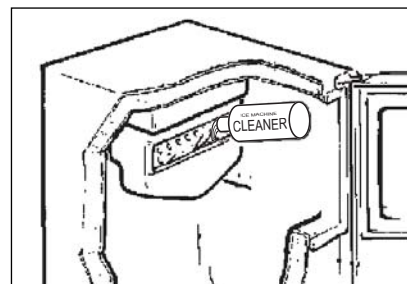


Figure 4-5.
Pour Cleaner into Reservoir

4. Turn ice machine control knob to ON and allow to run for approximately two hours (four ice making cycles).
(See Figure 4-6)

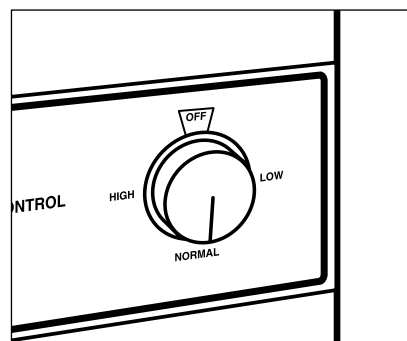


Figure 4-6. Control Turned ON
for Two Hours

5. Turn ice machine control knob to OFF, then pour hot (95°/35°C - 115°F/46°C) water into ice storage bin to melt ice that has been produced.
(See Figure 4-7)

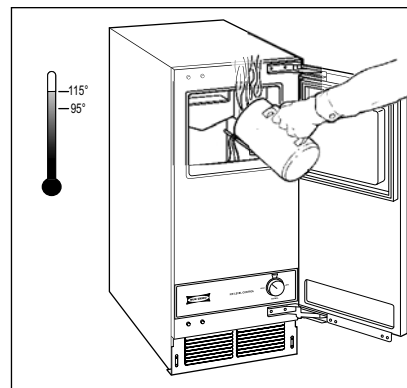


Figure 4-7.
Pour Hot Water into Bin

6. Clean bin liner of mineral scale by mixing a small amount of ice machine cleaner with hot water. Using a clean soft cloth, wipe down bin liner with this solution, then rinse with clean hot water.
7. Clean/sanitize ice storage bin as described earlier.
8. Turn ice machine control knob to ON and replace ice removed in step 2.

Winterizing the Ice Machine

The instructions below are for those units installed in homes left unoccupied for extended periods of time during winter months. If the ice maker is in a residence used year round, these directions need not be followed.

1. Clean the ice making system, condenser and ice storage bin as described on the preceding pages.
2. Turn off the water supply to the unit.
3. Locate the bottom hose that runs from the circulating/spray pump to the reservoir. Loosen the hose clamp on that hose and disconnect the hose from the reservoir. (See Figure 4-8) This will drain the reservoir.
4. Pull the control knob from the ice machine control shaft. (See Figure 4-9)
5. Remove the control face plate by pulling the top forward to disengage the velcro strips, then lift up. (See Figure 4-9)
6. Remove the inner control access panel by extracting the three screws, then lower the panel slightly and pull forward. (See Figure 4-9)
7. Locate the water valve and disconnect the inlet water line from the water valve. (See Figure 4-10)
8. Locate the cycle timer and rotate the shaft clockwise until the cam is in the harvest cycle position (switch button out). (See Figure 4-11)
9. With the appliance operating, blow air through the water valve with a tire pump or similar device. This will purge the valve and water system of water.
10. If winterizing a model 315IP (with drain pump), pour 1/2 gallon of "RV antifreeze" (propylene glycol) down the bin drain.

⚠ CAUTION

Do not use automotive antifreeze as this is unsanitary and may damage the appliance. The antifreeze must be propylene glycol.

11. Switch the unit to OFF, prop the door open and disconnect power to the ice maker.

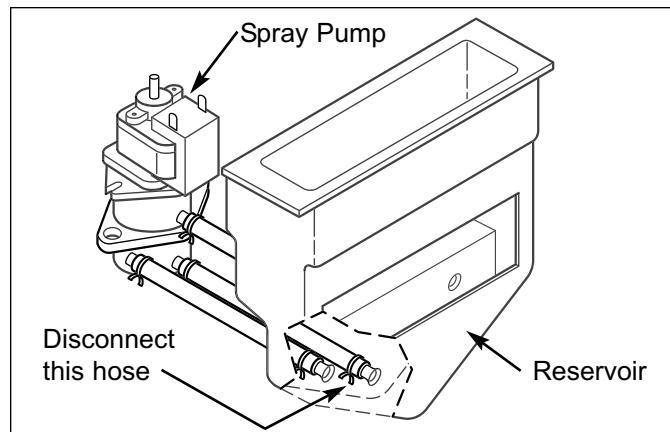


Figure 4-8. Emptying Water from Reservoir

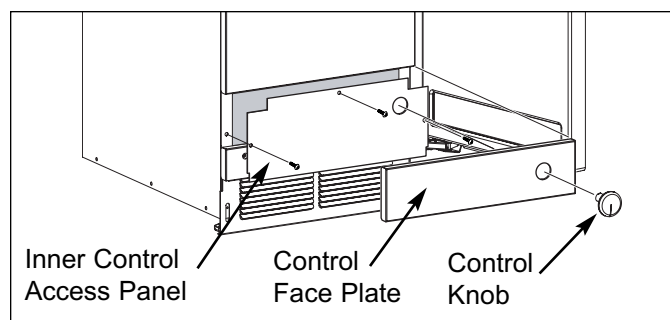


Figure 4-9. Remove Control Knob, Face Plate & Access Panel

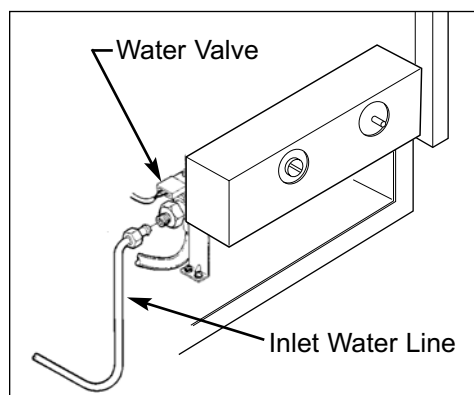


Figure 4-10. Disconnect Water Line

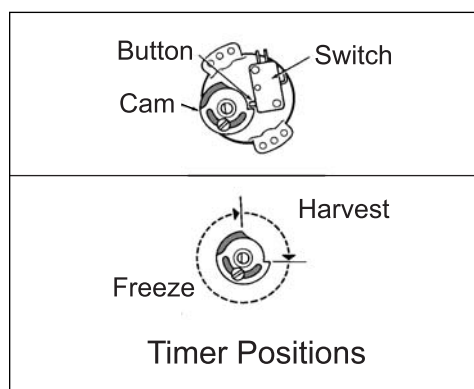


Figure 4-11. Rotate Timer Cam to Harvest Position

ADJUSTMENTS

There are three items that may be adjusted: Cube Size, Harvest Cycle Time and Bin Ice Level.

NOTE: *Cube Size and Harvest Cycle Time Adjustments should only be performed by a qualified technician.*

Cube Size Control Adjustment

The cube size control should only be adjusted to bring the cubes to the correct shape. The actual overall size cannot be adjusted. This adjustment should be performed when the ice machine is in the harvest cycle or within the first ten minutes of the freeze cycle.

Follow the steps below to adjust the cube size:

- 1) Open the door and remove the control knob, the control face plate and the inner control access panel. (See Figure 4-12)

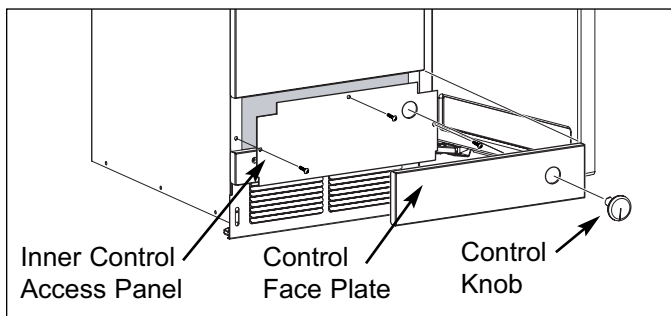


Figure 4-12.

Remove Control Knob, Face Plate & Access Panel

2. Locate the cube size adjustment screw. (See Figure 4-13)
 - a. To make the cubes fuller, turn the screw clockwise approximately 1/4 turn. This will increase the freeze cycle time.
 - b. To shorten the freeze cycle time and decrease the fullness of the cubes, turn the screw counterclockwise approximately 1/4 turn.
3. After the following freeze cycle the cubes should have responded to the adjustment. (See Figure 4-14 for proper cube size) If further adjustments are required, perform the adjustments early in the freeze cycle.

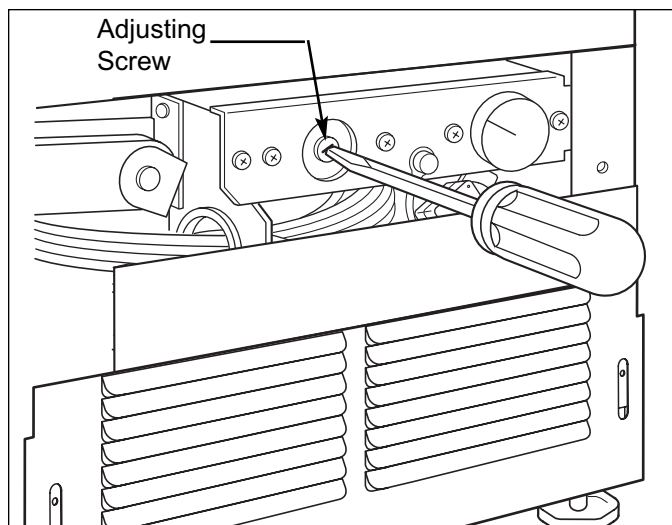


Figure 4-13. Turn Cube Size Adjustment Screw

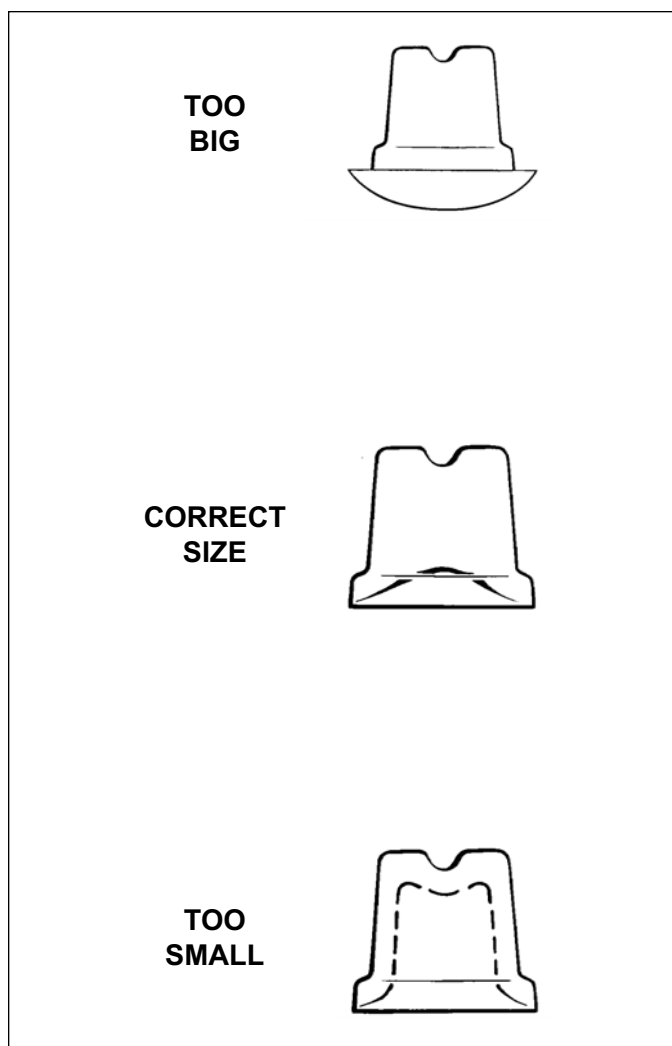


Figure 4-14. Ice Cubes

Bin Ice Level Adjustment

When the ice machine shuts off, the ice level in the bin should be even with the metal tube inside the bin. If the ice in the bin is too high or too low, turn the ice machine control knob to adjust the bin thermostat accordingly. See instructions below:

1. To lower the ice level, turn the control knob counter-clockwise. Usually 1/8 turn will be enough. (See Figure 4-15)
2. To increase the ice level, turn the control knob clockwise. Usually 1/8 turn will be enough. (See Figure 4-16)

Harvest Cycle Time Adjustment

The harvest cycle time is set at the factory for approximately three minutes, which should be adequate to release all the cubes and fill the reservoir. If the timer needs to be adjusted, follow the directions below:

1. Disconnect electrical power to the unit.

⚠ WARNING

**ELECTRICAL SHOCK HAZARD.
POWER TO THE UNIT MUST BE DISCONNECTED
BEFORE ATTEMPTING THIS ADJUSTMENT.**

2. Remove the control knob, the control face plate and the inner control access panel. (See Figure 4-17)
3. Locate the timer and loosen the set screw that holds the two halves of the timer cam together.
4. Rotate one half of the cam to either open or close the lower portion of the cam. More open increases harvest time, less open decreases harvest time. (See Figure 4-18)
5. Tighten the set screw and replace the control knob, the control face plate and the inner control access panel.
6. Reconnect power to the unit.

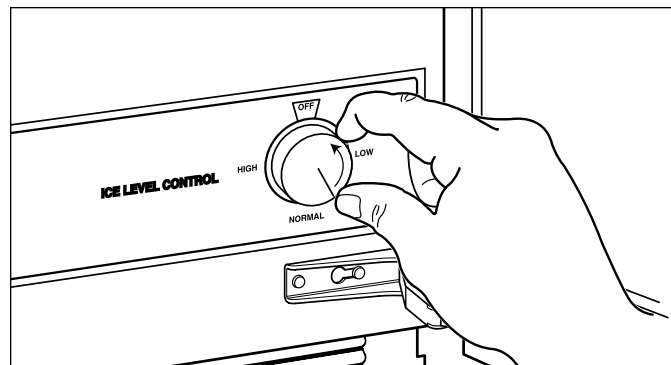


Figure 4-15. Decrease Ice Level

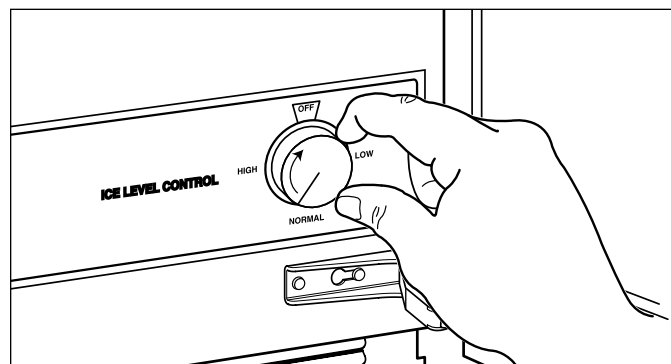


Figure 4-16. Increase Ice Level

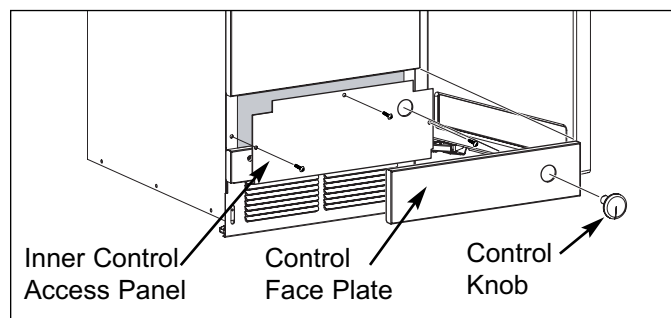


Figure 4-17.
Remove Control Knob, Face Plate & Access Panel

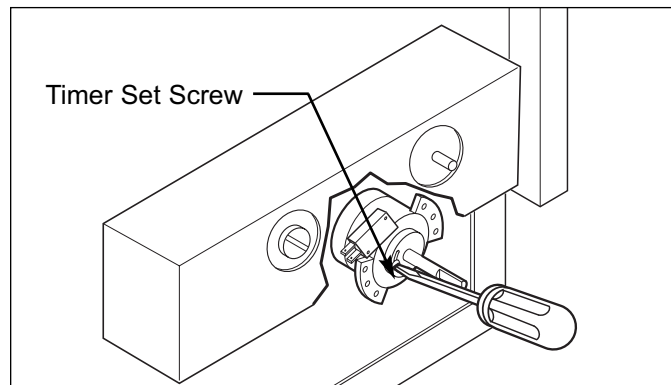


Figure 4-18. Loosen Set Screw



COMPONENT ACCESS AND REMOVAL

This section explains how to access and remove components in a model 315I ice maker.

This section is arranged as follows: Exterior components; followed by the internal components; followed by compressor area components. An attempt has been made to arrange these procedures in such a way as to simulate which components would need to be removed first in order to gain access to other components. When following a component removal procedure, it may be necessary to reference another component removal procedure listed earlier in this section.

NOTE: Before continuing, please take note of the **WARNINGS** and **CAUTIONS** below.

WARNING

TO AVOID ELECTRIC SHOCK, POWER TO THE UNIT MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS.

CAUTION

- If removing or disconnecting door hinge assemblies, remember they are spring loaded and may recoil quickly when released.
- If working in the compressor area, remember that compressor and tubing may be hot.
- If working on or around the condenser, remember that condenser fins are sharp.

EXTERIOR COMPONENTS

Kickplate Removal

The kickplate is held in place with two screws, one at each side. To remove the kickplate, extract the screws and pull the kickplate forward. (See Figure 5-1)

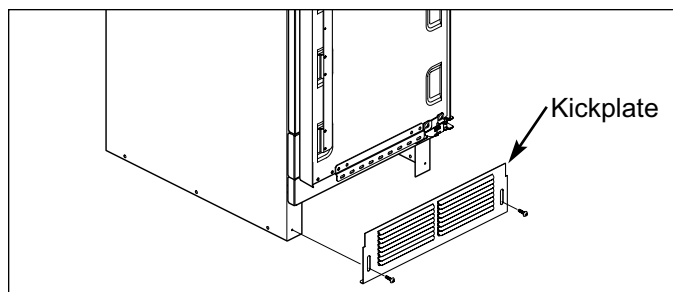


Figure 5-1. Kickplate Removal

Door Panel Mounting Hardware and Upper Door/Hinge Cover Removal

The handle-side panel mounting bracket is attached to the back side of the door panel with screws. The tabs of the handle-side bracket then fit into slots in the face of the door. The top and bottom panel mounting brackets are held to the front of the door with screws. The panel is secured to the top and bottom brackets by screws that pass through the brackets into the back of the panel. The upper door/hinge cover is also mounted to the face of the door with screws.

To access these components, the door panel will need to be removed. Begin by opening the door and extracting the door panel mounting screws from the bottom and top brackets. Then, slide the panel towards the hinge side to disengage the handle-side bracket from the slots in the door.

With the door panel off, remove the top and bottom panel mounting brackets and the upper door/hinge cover by extracting their mounting screws from the face of the door. Remove the handle-side bracket from the back of the door panel by extracting the panel mounting screws. (See Figure 5-2)

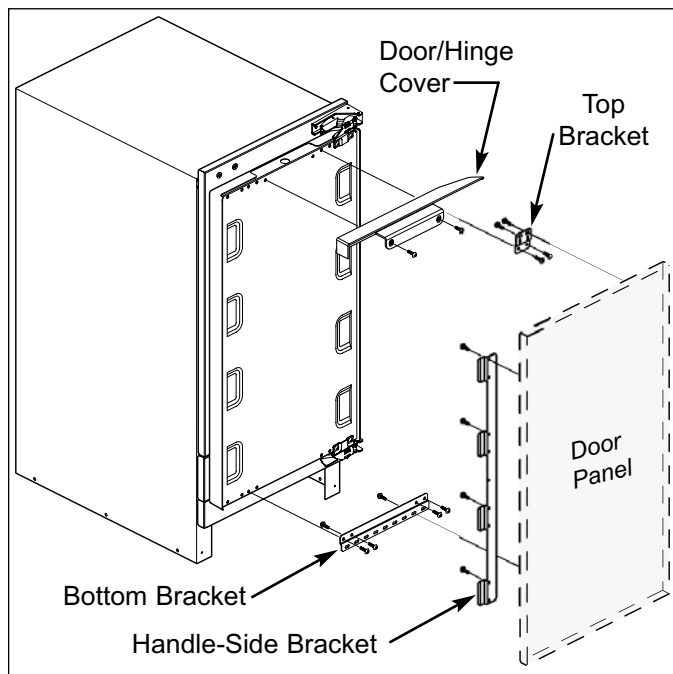


Figure 5-2. Panel Mount Hardware & Upper Door/Hinge Cover Removal

Door Gasket Removal

The door gasket has a rib on its back side that fits into a channel in the door liner. To remove the door gasket, open the door and pull the gasket from the door liner. (See Figure 5-3)

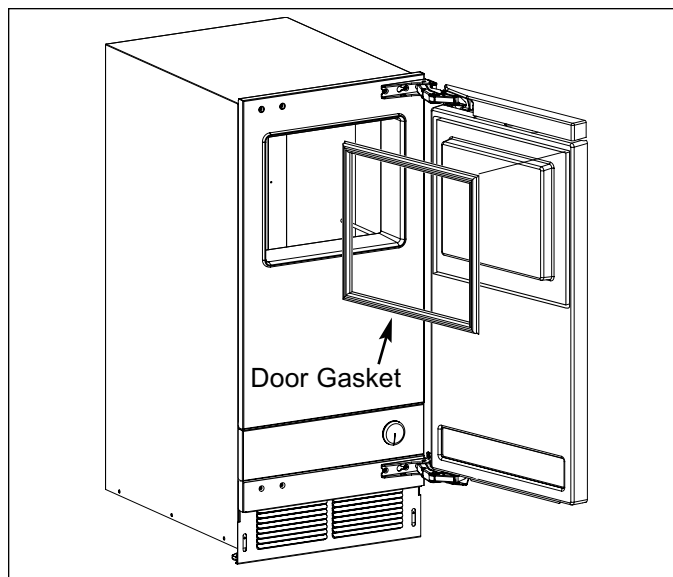


Figure 5-3. Door Gasket Removal

Door Removal

The door is held in place by screws that pass through the top and bottom hinges into the face of the door. To remove the door, the door panel will need to be removed first. With the door closed, extract the door mounting screws from the top and bottom hinges (two each hinge) and pull the door from the unit. (See Figure 5-4)

NOTE: To remove the door with the hinges, see Hinge Removal below.

Hinge Removal

Two screws at each hinge secure the hinges to the unit. To remove the hinges, open them fully and extract the hinge mounting screws. (See Figure 5-5)

Bin Thermostat Control Knob Removal

The bin thermostat control knob fits over the shaft of the bin thermostat. To remove the knob, pull it straight forward off of the control shaft. (See Figure 5-6)

Control Panel Assembly Removal

The control panel assembly has a flange at the bottom that sits behind the lower cabinet face plate. Adhered to the top rear of the control panel are two halves of dual lock fastener pads (similar to velcro) which mate up with the other halves of the dual lock fastener pads adhered to the bottom flanges of the upper cabinet face plate.

To remove the control panel assembly, the bin thermostat control knob needs to be removed first. Then pull the top of the control panel forward to disengage the dual lock fastener pads and lift the panel up. (See Figure 5-6)

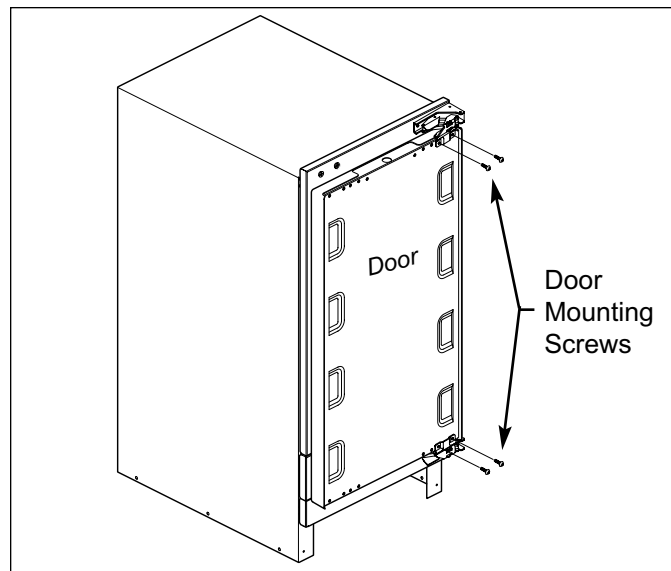


Figure 5-4. Door Removal

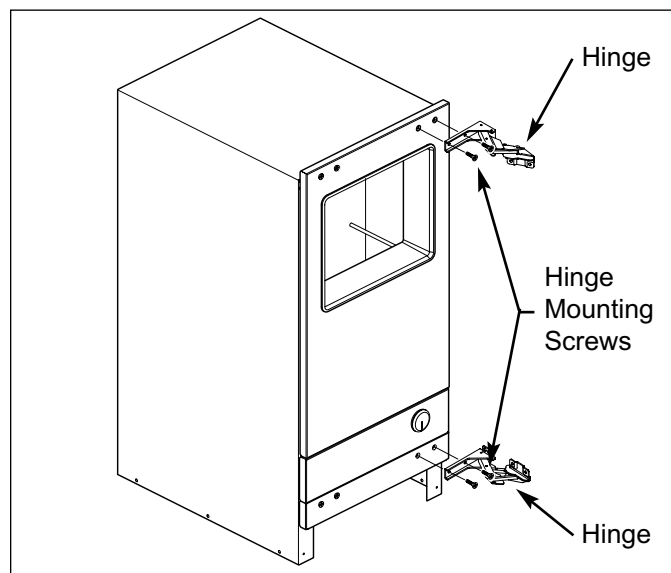


Figure 5-5. Hinge Removal

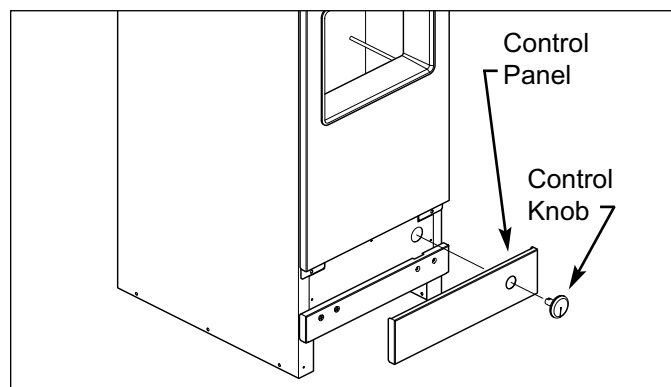


Figure 5-6. Control Knob and Panel Removal

Inner Control Access Panel Removal

The inner control access panel is behind the control panel assembly. The access panel is held in place with three screws that pass through the panel into the unit cabinet/shell, one at top center of the panel and one at each side.

To remove the inner control access panel, the control knob and control panel assembly must first be removed. Then, extract the three panel mounting screws and pull the top of the panel forward while lifting up. (See [Figure 5-7](#))

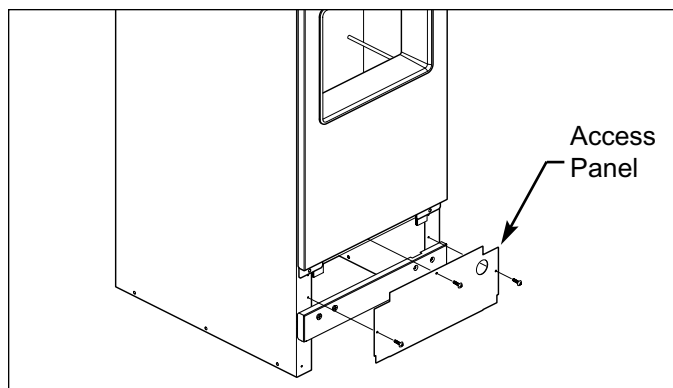


Figure 5-7. Inner Control Access Panel Removal

Bin Trim Ring Removal

The bin trim ring fits into the opening of the upper cabinet face plate and extends into the bin area. Tabs behind the outer flange on the trim ring hold the ring to the upper cabinet face plate, and a bead of permagum is placed behind the outer flange of the trim ring to prevent it from rattling.

To remove the bin trim ring, flex it inward at the top and sides while pulling forward, this will disengage the tabs from the upper cabinet face plate. (See [Figure 5-8](#))

Upper Cabinet Face Plate & Bin Seal Removal

The bin seal is a 3/4" thick styrofoam sheet cut to approximately the same size and shape as the upper cabinet face plate. The bin seal is sandwiched between the face plate and the cabinet.

The upper cabinet face plate is attached to the cabinet with screws: two screws pass through the top hinge and the face plate into the top hinge mount support bracket; two screws pass through the face plate at the upper corner on the handle side and one screw at each bottom corner pass through flanges into the cabinet/shell.

To remove the upper cabinet face plate and bin seal, the control panel assembly, door, hinges and bin trim ring must be removed first. Then, extract the two screws at the upper corner on the handle side and the two screws at each bottom corner. Now, pull the face plate and bin seal forward. (See [Figure 5-8](#))

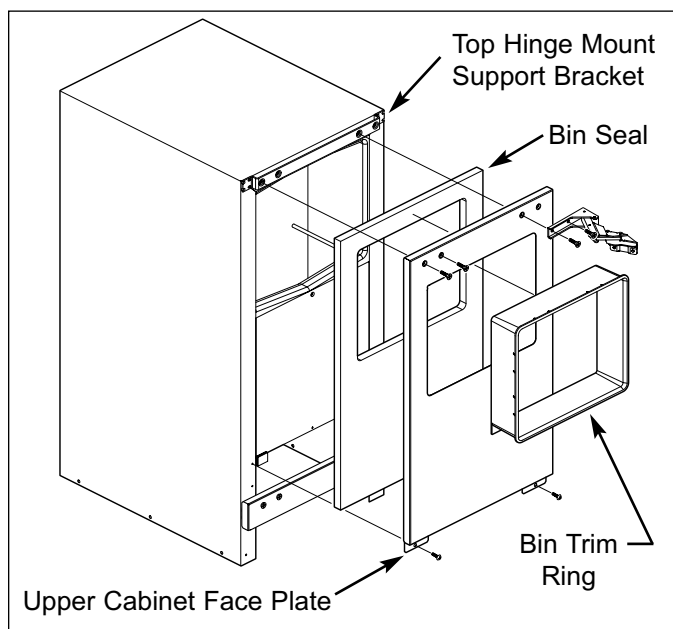


Figure 5-8. Bin Trim Ring, Upper Cabinet Face Plate and Bin Seal Removal

Decor Trim Gasket Removal

The decor trim gasket fits over the edge of the cabinet/shell at the opening of the bin. A screw at the top of the opening and one at the bottom of the opening help to hold the gasket in place.

To remove the decor trim gasket, the control panel assembly, door, top hinge, bin trim ring, upper cabinet face plate and bin seal must be removed first. Then, loosen the screws at top and bottom center of the bin opening and pull the gasket from the edge of the cabinet/shell. (See [Figure 5-9](#))

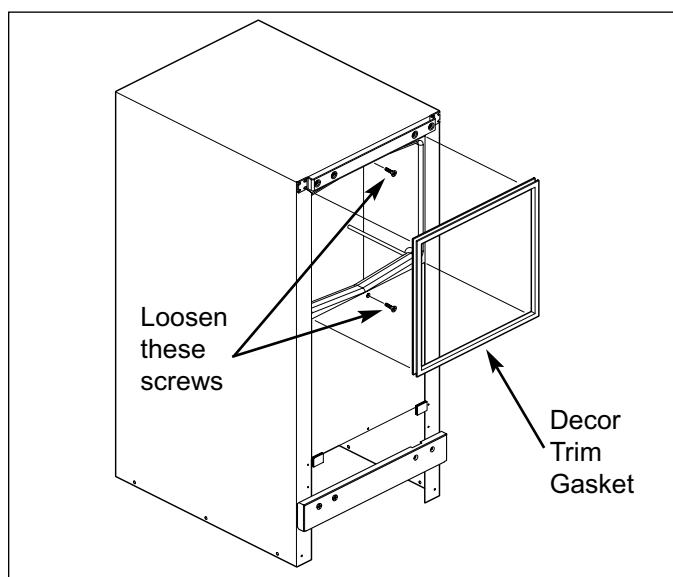


Figure 5-9. Decor Trim Gasket Removal

Lower Cabinet Face Plate Removal

The lower cabinet face plate is attached to the cabinet with screws: two screws pass through the bottom hinge and the face plate, and two screws pass through the face plate on the handle side. All four screws then attach to the bottom hinge mount support bracket

To remove the lower cabinet face plate, the door must be removed first. Then, extract the two screws on the handle side and pull the face plate forward. (See [Figure 5-10](#))

Hinge Mount Support Bracket Removal

The upper and lower hinge mount support brackets are secured to the cabinet/shell with screws.

To remove the hinge mount support brackets, the door, bin trim ring, upper cabinet face plate, bin seal and lower cabinet face plate must be removed first. Then, extract the bracket mounting screws. (See [Figure 5-11](#))

Rear Panel Removal

The rear panel is held to the back of the unit with screws. To remove the rear panel, extract the panel mounting screws and pull the panel from the unit. (See [Figure 5-11](#))

Cabinet/Shell Removal

The cabinet/shell is secured to the rest of the unit with screws along the bottom of both sides of the unit, screws at the top and bottom of the bin opening and mounting screws for some of the exterior components.

To remove the cabinet/shell, the rear panel, kickplate, control knob, control panel assembly, inner control access panel, door, hinges, bin trim ring, upper cabinet face plate, bin seal and lower cabinet face plate must be removed first. Then, extract the screws at the bottom and top of the bin opening. Extract the screws along the bottom of both sides of the unit and lift the cabinet/shell up off of the base frame. (See [Figure 5-11](#))

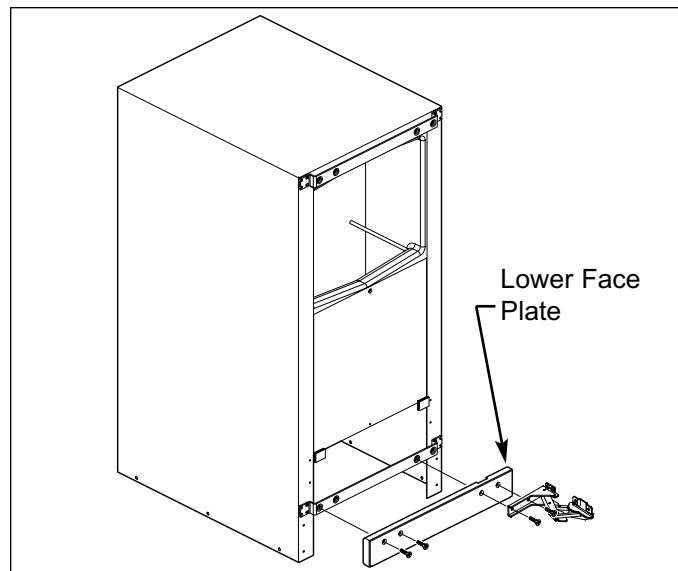


Figure 5-10. Lower Cabinet Face Plate Removal

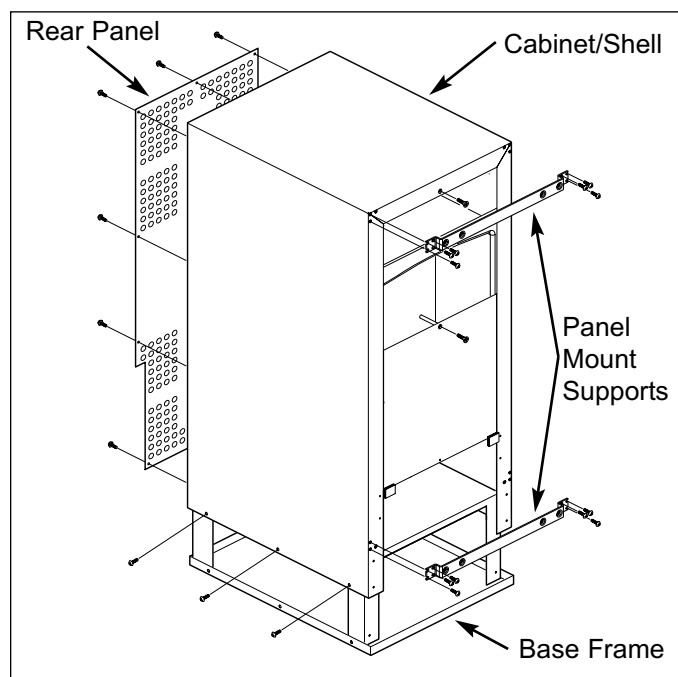


Figure 5-11. Hinge Mount Support Bracket, Rear Panel & Cabinet/Shell Removal

COMPONENTS IN BIN AREA

Bin Thermostat Bracket Removal

The bin thermostat bracket is a hollow cylindrical tube which holds the bin thermostat control bulb. The bracket fits into holes, one each in the front wall and rear wall of the bin.

To remove the bin thermostat bracket, push the bracket back into the hole in the rear bin wall until the front of the bracket clears the hole in the front wall. Then, lift the front of the bracket up and pull it from the hole in the rear wall. (See Figure 5-12)

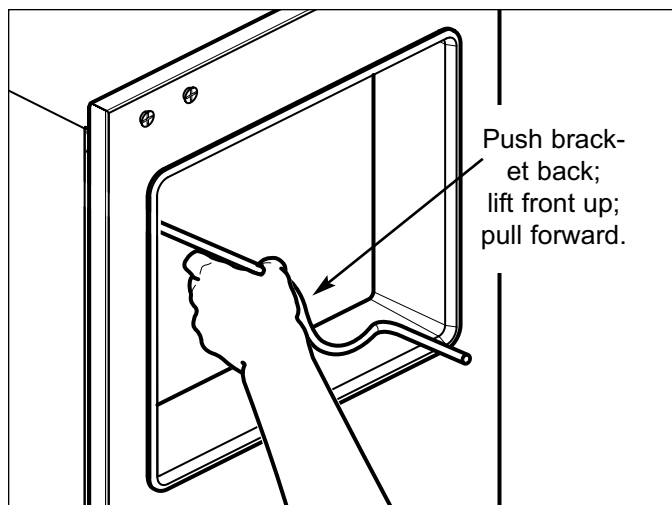


Figure 5-12. Bin Thermostat Bracket Removal

Curtain and Curtain Stiffener Removal

The curtain and curtain stiffener are held to the reservoir with screws that pass through the front of the reservoir and stiffener, then into the bracket of the curtain.

To remove the curtain and stiffener, extract the curtain mounting screws and pull the curtain and stiffener from the reservoir. (See Figure 5-13)

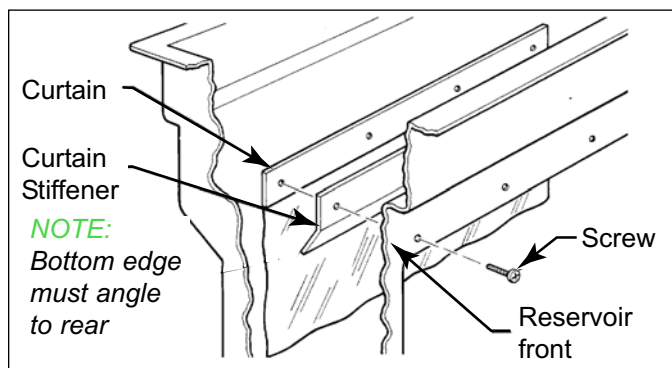


Figure 5-13. Curtain & Curtain Stiffener Removal

Cube Chute Removal

The cube chute has two notches at its rear flange that fit over the stems of the spray jet bases. The spray jet bases are then tightened down to sandwich the rear flange of the chute between the bottom flat surface of the jet base and the reservoir wall.

To remove the cube chute, loosen both spray jet bases and pull the cube chute forward. (See Figure 5-14)

Spray Jet Assembly Removal

A spray jet assembly consists of a cap/nozzle, spinner and jet base. The nozzle screws onto the base, capturing the spinner. The stem of the jet base passes down through the a notch in the cube chute, a hole in the reservoir and an O-ring, then is threaded into the spray bar assembly tubing.

To remove the nozzle and access the spinner, unscrew the nozzle counterclockwise off of the jet base.

To remove the jet base, or the spray jet assembly, use a 5/8" wrench to unscrew the stem of the jet base from the spray bar assembly tubing. (See Figure 5-14)

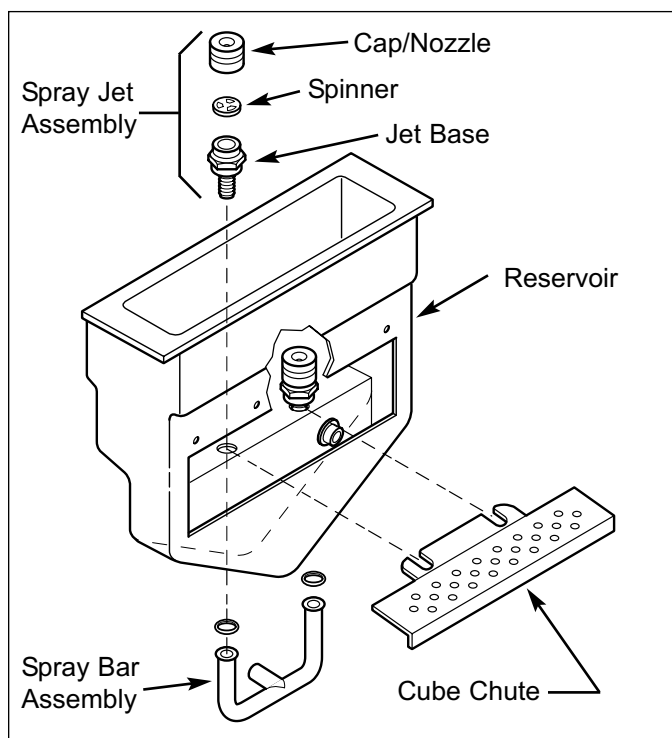


Figure 5-14. Cube Chute & Spray Jet Assy Removal

O-Ring and Spray Bar Assembly Removal

The spray bar is a copper tubing assembly with one inlet port and two outlet ports. The inlet fits inside the circulating/spray pump discharge tube. An O-ring is positioned at the top of each spray bar outlet port. The jet base stems pass down through the reservoir wall and the O-rings and then screw into the outlet ports, sandwiching the O-rings which seal the connection.

NOTE: The use of a mirror will help in the following removal procedures.

To remove an O-ring, extract the appropriate jet base and pull the O-ring from the top of the spray bar tubing.

To remove the spray bar assembly, extract both spray jet assemblies or jet bases and remove the O-rings. With a pliers, depress the ends of the hose clamp at the spray bar inlet and pull the spray bar from the circulating/spray pump discharge tube. (See Figure 5-15)

Circulating/Spray Pump Hose Removal

There are three hoses connected to the circulating spray pump nipples. The bottom hose is the pump inlet hose, leading from the reservoir bottom nipple. The second hose up is the spray discharge hose leading to the spray bar assembly. The top hose on the pump leads to the top center reservoir nipple. The purpose of the top discharge hose is to bypass the spray discharge hose if it were to become clogged or air-locked.

NOTE: The use of a mirror will help in the following removal procedures.

To remove a pump hose, depress the ends of the hose clamp on the hose and pull the hose off of the nipples and/or spray bar assembly. (See Figure 5-15)

Reservoir Drain Hose Removal

The reservoir drain hose fits between the top right reservoir nipple and the ice bin drain fitting.

NOTE: The use of a mirror will help in the following removal procedures.

To remove the drain hose, pull it off of the top right reservoir nipple and the drain fitting. (See Figure 5-16)

O-Ring and Stainless Steel Drain Nipple Removal

The stainless steel drain nipple is inserted through the back of the top right reservoir nipple, up to the nub on the nipple. An O-ring is then placed over the stainless nipple inside the reservoir.

NOTE: The use of a mirror will help in the following removal procedures.

To remove the stainless steel nipple, the drain hose must be removed from the top right reservoir nipple first. Then, remove the O-ring inside the reservoir and pull the stainless steel nipple out through the back of the reservoir top right nipple. (See Figure 5-16)

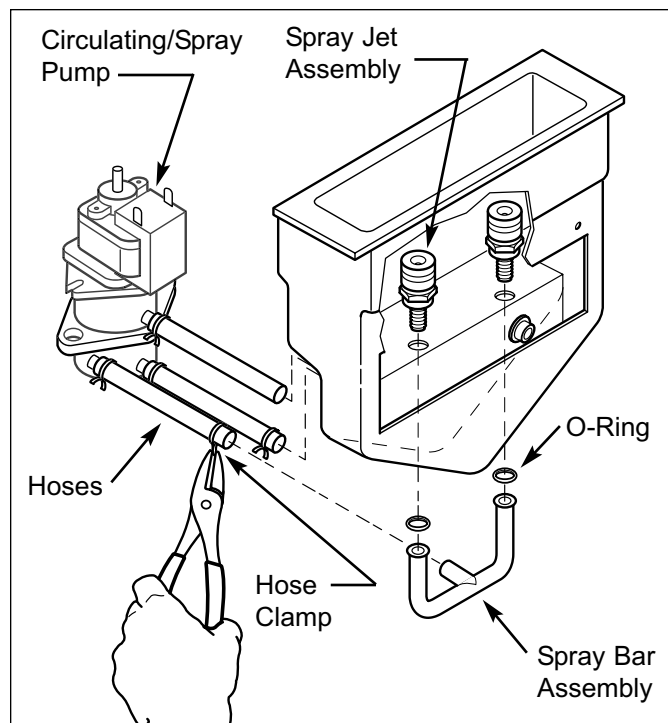


Figure 5-15. O-Ring, Spray Bar and Hose Removal

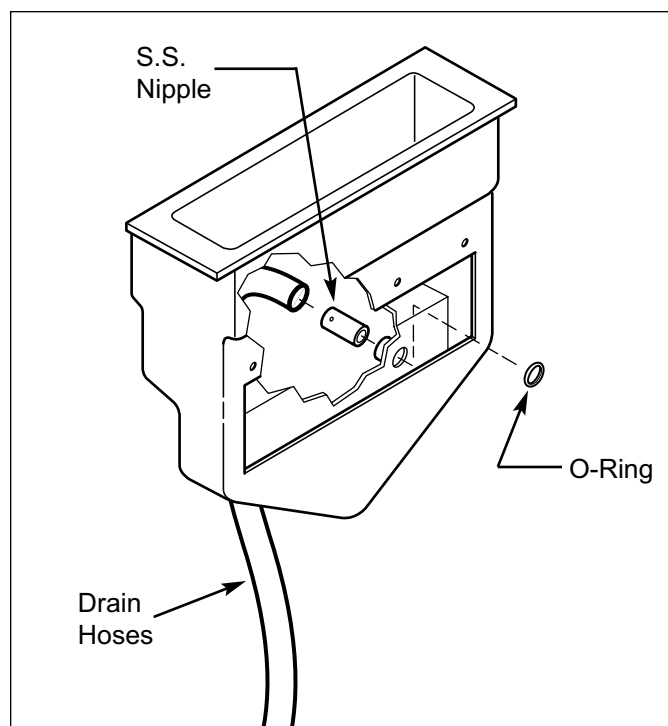


Figure 5-16. Drain Hose, O-Ring & SS Nipple Removal

COMPONENTS BEHIND PANELS AND SHELL

Inlet Water Valve Removal

The inlet water valve is attached to the left side of the control box with screws. The inlet and outlet water lines are connected to the valve with compression fittings.

To access the inlet water valve, remove the control panel and inner access panel.

Before removing the water valve, shut off the water supply and disconnect power to the unit. Then, unplug the valve electrical leads. With a wrench, disconnect the inlet water line from the valve. Extract the valve mounting screws, pull the valve forward and disconnect the outlet water line. (See Figure 5-17)

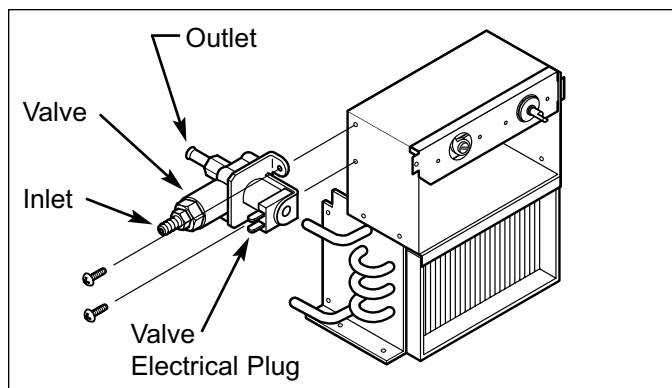


Figure 5-17. Water Valve Removal

Harvest Cycle Timer & Switch Removal

The harvest cycle timer switch is attached to the timer. The timer is attached inside the control box with screws and spacers. Three wires are connected to the switch. One electrical lead from the timer runs to the terminal board, the other runs to the cube size control.

To access the cycle timer, remove the control panel and inner access panel.

Before removing the harvest cycle timer and switch, disconnect the power to the unit. Then, unplug the electrical leads from the switch. Extract the timer mounting screws and pull the timer forward. Disconnect the timer electrical lead from the terminal board. Extract the control box face plate mounting screw, pull the face plate forward and disconnect the timer electrical lead from the cube size control. (See Figure 5-18)

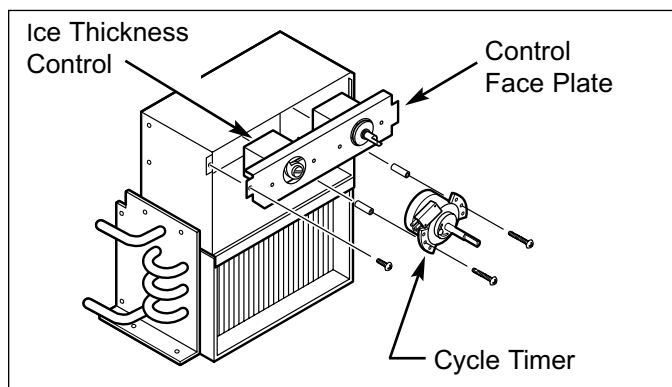


Figure 5-18. Cycle Timer Removal

Terminal Board Removal

The terminal board is attached inside the control box with screws.

To access the terminal board, remove the control panel, inner access panel and lower face plate.

Before removing the terminal board, disconnect power to the unit. Then, extract the board mounting screws, disconnect all electrical leads from the terminal board and pull the board forward. (See Figure 5-19)

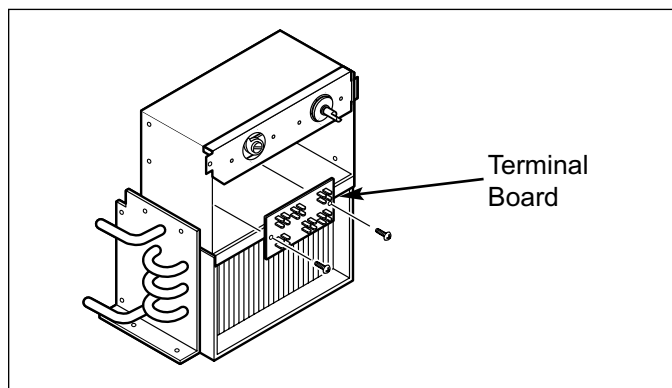


Figure 5-19. Terminal Board Removal

Hot Gas Solenoid Coil Removal

The hot gas solenoid coil is attached to the top of the hot gas valve body with a clip. The electrical leads of the coil pass through a grommet in the side of the control box and plug into the terminal board.

To access the hot gas solenoid coil, remove the control panel and inner access panel.

Before removing the hot gas solenoid coil, disconnect the power to the unit. Then, unplug the coil electrical leads from the terminal board. With a small flat blade screwdriver, pull the clip off of the top of the hot gas valve body, lift the coil off of the valve body and pull the electrical leads from the control box. (See Figure 5-20)

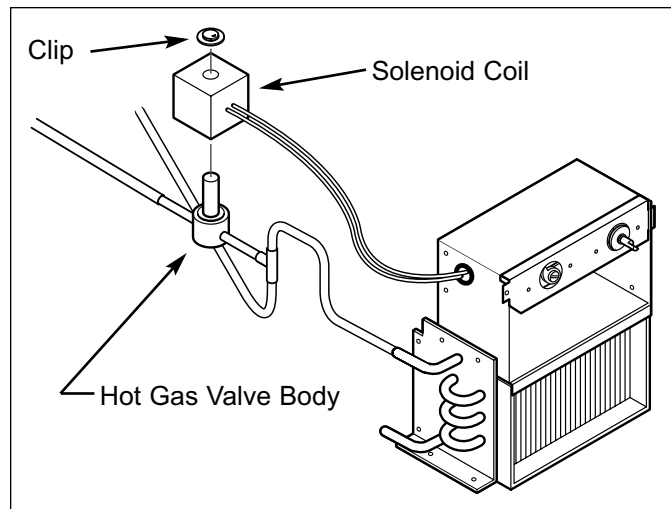


Figure 5-20. Hot Gas Solenoid Coil Removal

Drain Pump Pressure Switch Removal (315IP Only)

The drain pump pressure switch is attached to the pump bracket with screws. Electrical leads are connected to both sides of the switch, and a pressure sensing hose leading from the drain pump inlet hose is fit over the pressure sensing port of the switch.

To access the drain pump pressure switch, remove the control panel, inner access panel and lower face plate.

Before removing the drain pump pressure switch, disconnect the power to the unit and scoop all the ice cubes out of the storage bin. Then, unplug the electrical leads from both sides of the switch. Pull the hose from the pressure sensing port. Extract the switch mounting screws and pull the switch forward. (See Figure 5-21)

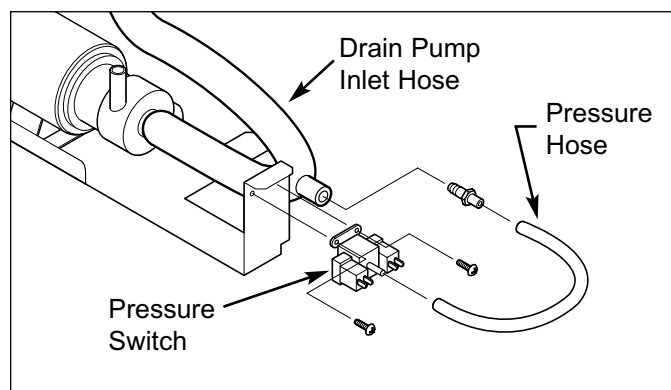


Figure 5-21. Drain Pump Pressure Switch Removal

Circulating/Spray Pump Removal

A rubber gasket/bushing assembly is positioned at the base of the circulating/spray pump motor. The circulating/spray pump is inserted down through a hole in the back of the bin assembly. Two screws are inserted down through the flanges at the base of the pump motor, then into screw anchors. The anchors are inserted into mounting holes on either side of the pump. As the screws are tightened down into the anchors, the anchors expand at the bottom to hold the pump in position. The circulating/spray hoses are attached to the pump inside the bin.

To access the circulating/spray pump, remove the rear panel.

Before removing the circulating/spray pump, disconnect the power to the unit. Then, disconnect all hoses from the pump inside the ice storage bin. Disconnect the electrical leads from the pump motor. Remove the pump mounting screws and lift the pump and the gasket/bushing assembly up out of the hole in the back of the storage bin. (See Figure 5-22)

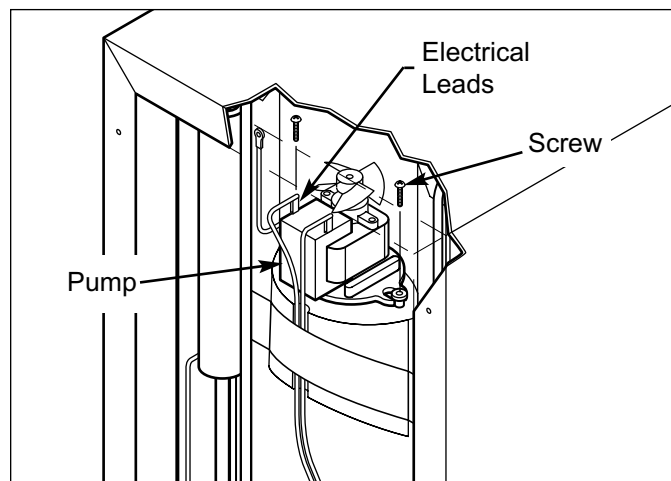


Figure 5-22. Circulating/Spray Pump Removal

Bin Level Control (Thermostat) Removal

The bin level control is mounted to the right side of the control box face plate with screws. Two wires are connected to the back of the control. The control capillary tube is inserted into a plastic sleeve and routed out the back of the control box, up through a grommet in the base assembly, up the back of the bin assembly and into the back of the cylindrical bin thermostat bracket.

To access the bin level control, remove the control panel, inner access panel and back panel.

Before removing the bin level control, disconnect the power to the unit. Then, extract the control box face plate mounting screw and pull the face plate forward. Extract the control mounting screws. Disconnect the electrical leads from the control. At the back of the unit, pull the control capillary tube from the thermostat bracket, then pull the capillary tube with the sleeve from the grommet in the base assembly. At the front of the unit, pull the control body, capillary tube and sleeve forward, out of the control box. (See Figure 5-23)

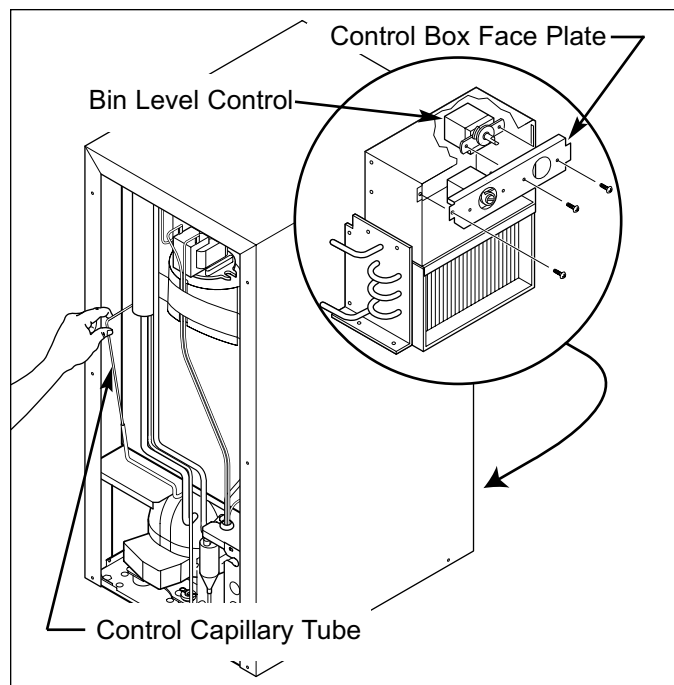


Figure 5-23. Bin Level Control Removal

Cube Size Control (Evap. Thermostat) Removal

The cube size control is mounted to the left side of the control box face plate with screws. Three wires are connected to the back of the control. The control capillary tube is routed out the back of the control box, up through a grommet in the base assembly, up the back of the bin assembly, then inserted into a tube attached to the evaporator.

To access the cube size control, remove the control panel, inner access panel, upper and lower face plates, back panel, unit shell, insulation bag, tube retaining clip and evaporator/platen cover.

Before removing the cube size control, disconnect the power to the unit. Then, extract the control box face plate mounting screw and pull the face plate forward. Extract the control mounting screws. Disconnect the electrical leads from the control. At the back of the unit, pull the control capillary tube from the tube on the evaporator, then pull the capillary tube from the grommet in the base assembly. At the front of the unit, pull the control body and capillary tube forward, out of the control box. (See Figure 5-24)

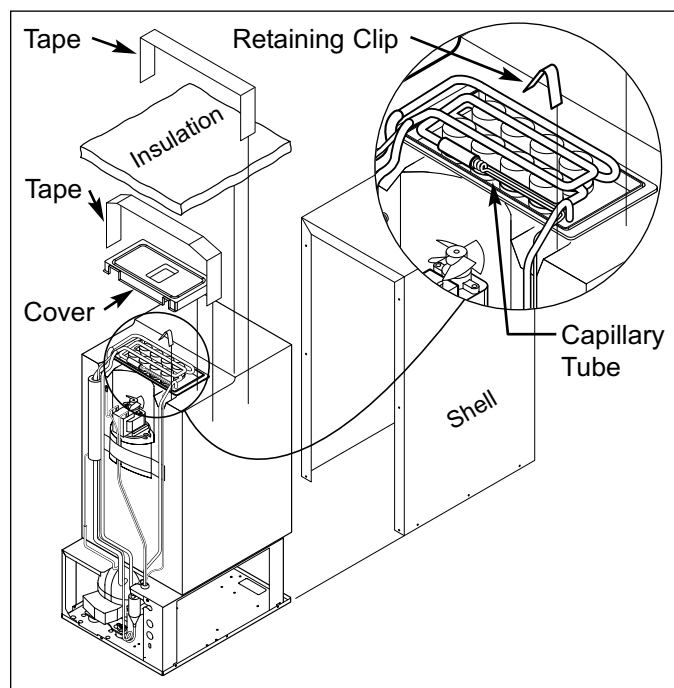


Figure 5-24. Cube Size Control Removal

Reservoir Fill Tube Assembly Removal

The reservoir fill tube assembly is attached to the water valve outlet port. The tube is routed to the rear of the base assembly, up through a grommet in the base assembly, up the back of the bin assembly, then hooked over the back edge of the evaporator.

To access the reservoir fill tube assembly, remove the control panel, inner access panel, upper and lower face plates, back panel, unit shell, insulation bag, tube retaining clip and evaporator/platen cover.

Begin removing the reservoir fill tube assembly by disconnecting it from the water valve outlet. Then, pull the tube from the grommet in the base assembly and unhook it from the back edge of the evaporator. (See [Figure 5-25](#))

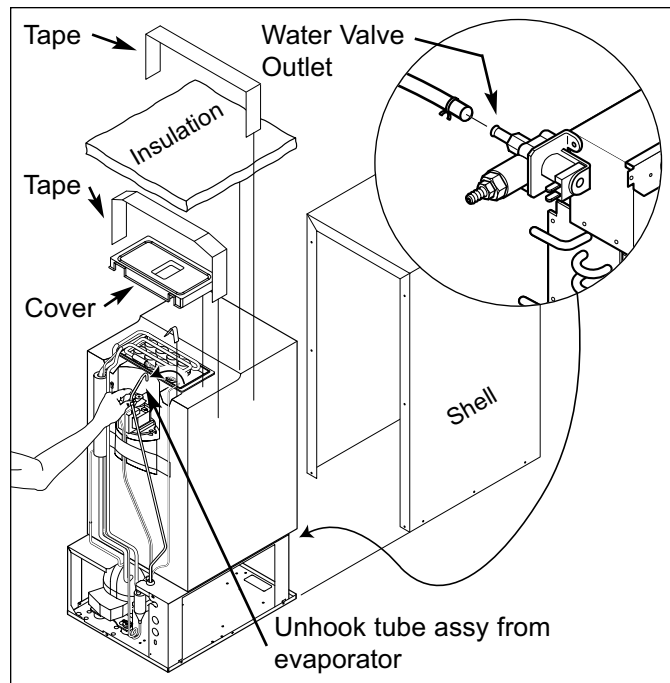


Figure 5-25. Reservoir Fill Tube Removal

Drain Pump Assembly Removal (315IP Only)

The drain pump assembly on the model 315IP sits on the pump bracket. The pump is held in place with a cable tie that loops through two holes in the bracket and around the body of the pump. The bracket is held to the base assembly with screws. The pump inlet hose fits over the front port of the pump. The outlet hose is attached to the top port of the pump.

To access the drain pump assembly, remove the control panel, inner access panel, upper and lower face plates, back panel and unit shell.

Before removing the drain pump assembly, disconnect the power to the unit and scoop all the ice cubes out of the storage bin. Then, disconnect the inlet and outlet hoses from the pump, cut the cable tie holding the pump to the pump bracket and pull the pump off of the bracket. (See [Figure 5-26](#))

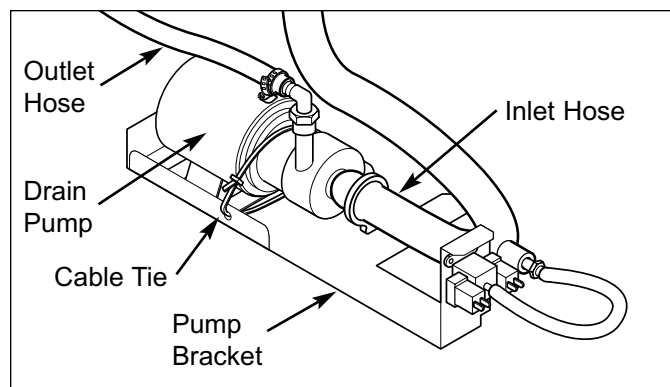


Figure 5-26. Drain Pump Removal

Condenser Fan Assembly Removal

The condenser fan motor is attached to the fan bracket with screws that pass up through the bracket into the motor body. The fan bracket is attached to the base assembly with screws that pass up through the base into the fan bracket. The condenser fan blade fits over the shaft of the motor. A flat nut screws onto the motor shaft to hold the blade in place. The fan motor electrical leads pass through a grommet in the side of the control box and plug into the terminal board.

To access the condenser fan assembly, remove the control panel, inner access panel, upper and lower face plates, back panel and unit shell.

Before removing the condenser fan assembly, disconnect the power to the unit. Then, disconnect the fan motor electrical leads from the terminal board. Extract the fan bracket mounting screws from the bottom of the base assembly and lift the fan assembly off of the base plate. The fan motor can then be removed from the bracket by extracting the motor mounting screws, and the fan blade can be removed from the motor shaft by first removing the flat nut. (See Figure 5-27)

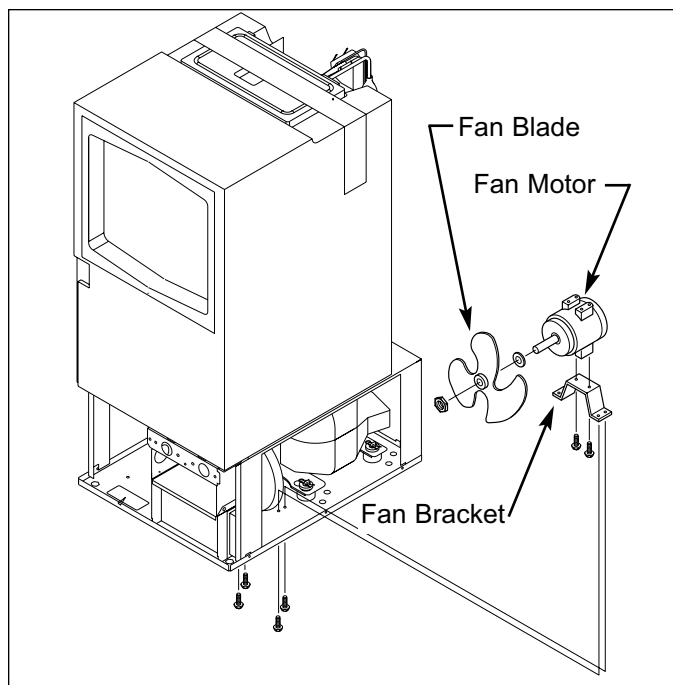


Figure 5-27. Condenser Fan Removal

High-Side Filter-Drier Removal

The high-side filter-drier is attached between the condenser outlet and the capillary tube and is located at the rear of the base assembly.

To access the high-side filter-drier, remove the back panel.

Before removing the high-side filter-drier, capture the refrigerant from the sealed system. Then, use a file to score a line around the capillary tube approximately one inch from the filter-drier. Fatigue the capillary tube at this point until it separates. Now, use a tube cutter to cut the drier inlet tube approximately one inch from the drier. (See Figure 5-28)

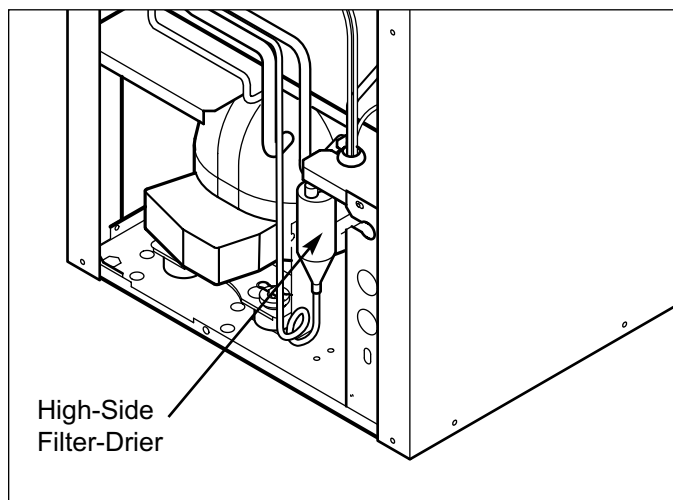


Figure 5-28. High-Side Filter-Drier Removal

Evaporator Assembly Removal

The evaporator assembly consists of the evaporator, heat exchanger assembly and hot gas line from the gas valve. The evaporator/cube mold sits inside the top of the reservoir insert. The evaporator/platen cover is placed over the evaporator and a piece of tape is placed over the cover to keep it in place.

To access the evaporator assembly, remove the control panel, inner access panel, upper and lower face plates, back panel, unit shell, insulation bag, tube retaining clip and evaporator/platen cover.

Before removing the evaporator assembly, capture the refrigerant from the sealed system. Then, use a file to score and separate the capillary tube approximately one inch from the filter-drier. Use a tube cutter to cut the suction line approximately one inch from the compressor. Cut the hot gas line approximately one inch from the hot gas valve and lift the assembly out of the reservoir insert and off of the back of the bin assembly. (See Figure 5-29)

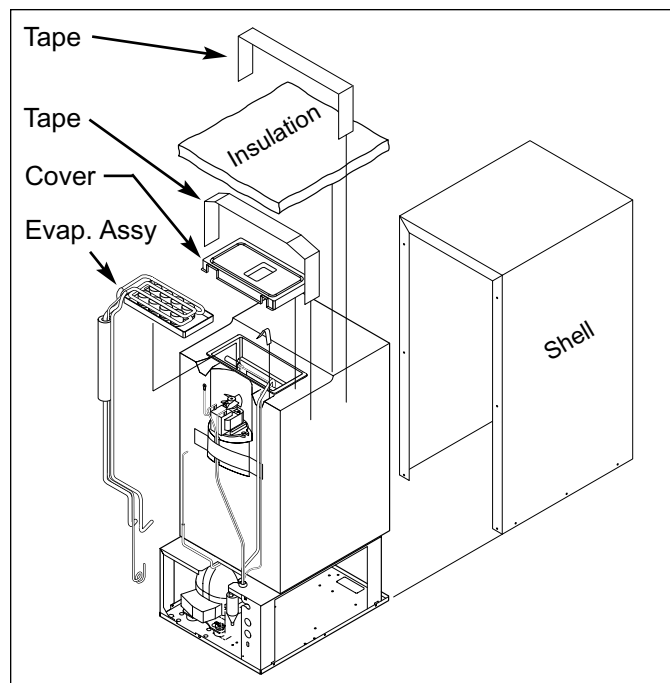


Figure 5-29. Evaporator Assembly Removal

Hot Gas Valve Removal

The inlet of the hot gas valve is attached to a "T" connection off of the compressor discharge line. The outlet of the valve is attached to the hot gas line that runs up to the evaporator. The hot gas solenoid coil is attached to the top of the hot gas valve body with a clip.

To access the hot gas valve, remove the control panel, inner access panel, upper and lower face plates, back panel and unit shell.

NOTE: Separating the top of the base assembly from the bottom by extracting the screws from the base assembly legs will allow easier access to the hot gas valve.

Before removing the hot gas valve, capture the refrigerant from the sealed system. Then, disconnect the solenoid coil from the valve body. With a tube cutter, cut the valve inlet and outlet tubing approximately one inch from the valve body and lift the valve off of the base assembly. (See Figure 5-30)

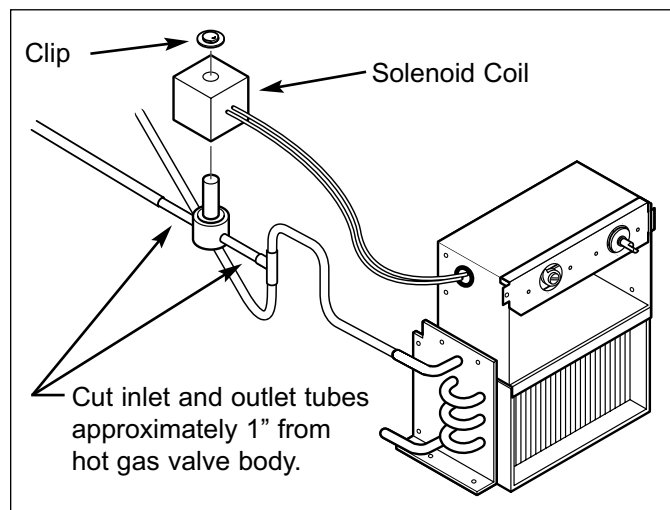


Figure 5-30. Hot Gas Valve Removal

Compressor Removal

The compressor sits on the bottom plate of the base assembly. Two “U” shaped compressor brackets are passed up through the base plate, compressor grommets and washers. Cotter-pin clips are attached to the compressor brackets over the washers and grommets to hold the compressor in place.

To access the compressor, remove the control panel, inner access panel, upper and lower face plates, back panel and unit shell.

NOTE: Separating the top of the base assembly from the bottom by extracting the screws from the base assembly legs will allow easier access to the compressor.

Before removing the compressor, capture the refrigerant from the sealed system. Then, disconnect the electrical leads from the compressor. With a tube cutter, cut the suction and discharge lines approximately one inch from compressor ports, remove the clips and lift the compressor off of the base assembly. (See Figure 5-31)

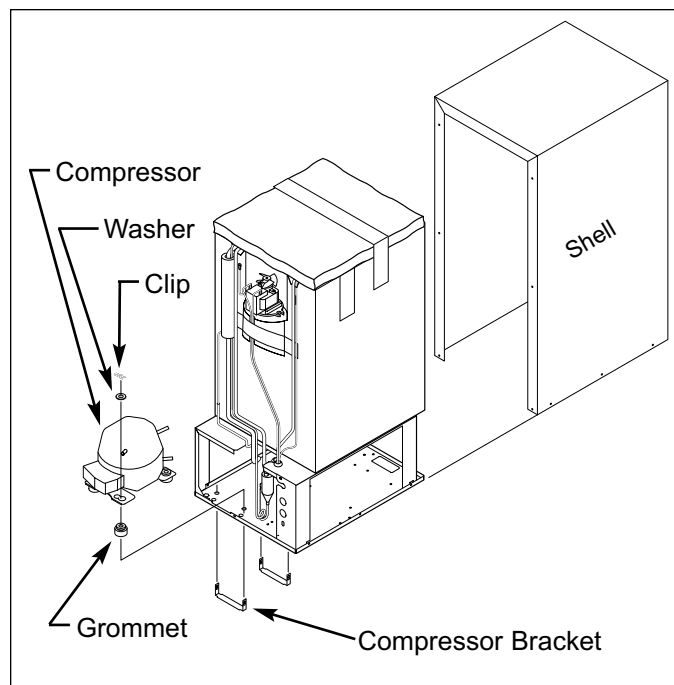


Figure 5-31. Compressor Removal

Condenser Removal

The condenser is attached to the base assembly with screws that pass up through the base into the bottom side flanges on the condenser. The control box is attached to the top of the condenser with screws that pass through the top side flanges of the condenser into the sides of the control box. The condenser fan shroud is attached to the back of the condenser with screws passing through the shroud into the rear side flanges of the condenser. A styrofoam gasket is sandwiched between the fan shroud and the condenser to prevent air leaks around the shroud. The inlet port of the condenser is attached to the compressor discharge line. The condenser outlet leads to the high-side filter-drier.

To access the condenser, remove the control panel, inner access panel, upper and lower face plates, back panel and unit shell.

NOTE: Separating the top of the base assembly from the bottom by extracting the screws from the base assembly legs will allow easier access to the condenser.

Before removing the condenser, capture the refrigerant from the sealed system. Then, cut the compressor discharge line and drier inlet line approximately one inch from the condenser inlet and outlet ports. Disconnect the control box from the top of the condenser. Disconnect the fan shroud from the back of the condenser and lift the condenser off of the base assembly. (See Figure 5-32)

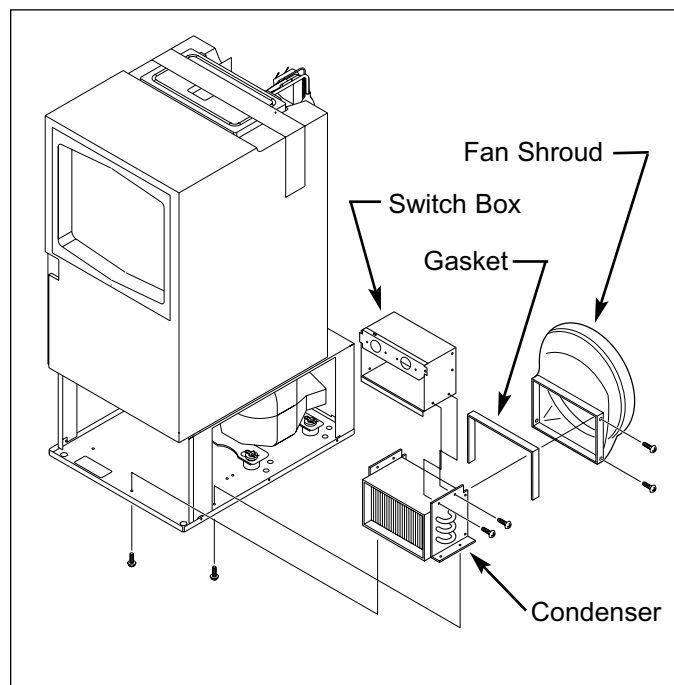


Figure 5-32. Condenser Removal



TROUBLESHOOTING GUIDE

This section of the manual contains the Troubleshooting Guide which will help the Service Technician troubleshoot a model 315I.

How to Use the Troubleshooting Guide

The list below indicates how the Troubleshooting Guide is arranged. Identify the description of the problem that the unit is experiencing from the list and go to the page indicated. To the left of the problem description is a letter. Locate that letter in the left column of the Troubleshooting Guide. The center column will identify the possible causes for the problem. And, the information in the right column will explain what tests to perform in order to determine if what you are checking is the cause and/or what action to take to correct the problem.

Troubleshooting Guide Layout

	Page #
A. Ice machine does not operate	7-3
B. Ice machine operates, but will not make ice	7-3
C. Ice machine operates, makes ice, but cubes do not release from mold	7-4
D. Ice machine operates, makes ice, but does not fill bin	7-5
E. Cubes are too big	7-5
F. Cubes are too small	7-5
G. Cubes are partially formed - ragged edges	7-5



PROBLEM	POSSIBLE CAUSE	TEST / ACTION
A. Ice machine does not operate	The ice machine control is turned to the OFF position	Turn ice machine control to ON or NORMAL position
	Circuit breaker switch tripped off or fuse is blown	Reset circuit breaker / replace fuse. If it happens again, check for electrical short in appliance.
	Ice machine is unplugged	Check outlet. Plug unit in.
	Loose or disconnected wiring of ice machine	See Wiring Diagrams and Schematics section of manual and check for voltage at appropriate points. Repair wiring.
	Bin thermostat open	a. Bin full, ice touching thermostat sensing tube - This is normal. b. Room ambient temperature too low (below 50°F/10°C). Advise customer. c. Bin thermostat defective, stuck open. Replace thermostat.
	Cycle timer contacts open	Check/replace timer
B. Ice machine operates, but will not make ice	No water in reservoir	a. House water supply turned off. Turn water supply on. b. Check water supply line for kinks or restrictions. c. If supply line has a filter, it may be clogged and/or need changing. d. Check screens in water valve for clogs. - Clean screens or replace valve. e. Check for loose or disconnected wiring to water valve. Repair bad wiring. f. Check operation of water valve. If defective, replace. g. Check for leaks in reservoir. Repair leak.
	No water spray from spray jets	a. Check for clogged spray jets. See Cleaning the Ice Making System instructions in Maintenance, Cleaning and Adjustment section of manual. b. Check for leaks in reservoir. Repair leak. c. Check for loose or disconnected wiring to spray pump. Repair bad wiring. d. Check operation of spray pump. Replace if defective.
(Continued on next page)		



PROBLEM	POSSIBLE CAUSE	TEST / ACTION
B. Ice machine operates, but will not make ice <i>(Continued)</i>	No airflow through condenser	a. Check for obstructions in vents of kick-plate. Move/clear obstruction. b. Check for dirty condenser. Clean condenser. c. Check for loose or broken condenser fan blade. Repair or replace blade. d. Check for loose or disconnected wiring to condenser fan motor. Repair bad wiring. e. Check operation of condenser fan motor. Replace if defective.
	Hot gas valve stuck open	Check operation of hot gas valve. Replace valve and drier if valve is defective.
	Electrical problem at compressor	a. Check for loose or disconnected wiring to compressor electricals. Repair bad wiring. b. Check operation of overload and relay. If defective, replace.
	Sealed system problem.	a. If power is at compressor and compressor electricals are good, but compressor will not run, replace compressor and drier. b. Inspect sealed system for leaks, restrictions or inefficient compressor by observing frost patterns and feel tubing for irregular temperatures. Repair or replace components as needed.
C. Ice machine operates, makes ice, but cubes do not release from mold	Mineral scale build up in ice making system.	See Cleaning the Ice Making System instructions in Maintenance, Cleaning and Adjustment section of manual.
	Harvest time too short <i>(should be approximately 3 - 3-1/2 minutes).</i>	Lengthen harvest time setting at cycle timer if too short.
	Hot gas valve does not open during harvest cycle	a. Check for loose or disconnected wiring to hot gas valve. Repair bad wiring. d. Check operation of hot gas valve, it may be stuck closed. Replace valve and drier if valve is defective.
	Cube size control will not close	Check operation of cube size control. Replace control if defective. NOTE: <i>Cube size control will not close if sealed system is low on freon. Check sealed system too.</i>



PROBLEM	POSSIBLE CAUSE	TEST / ACTION
D. Ice machine operates, makes ice, but does not fill bin	Bin takes 24 - 36 hours for initial fill	This is normal. Heavy/frequent ice consumption by customer will slow the refill process. Advise customer.
	High room ambient temperature	Ambient temperatures should not exceed 100°F/38°C. Ice machine works best in ambient between 60°F/16°C - 90°F/32°C. Advise customer.
	High water temperature	Water temperatures should not exceed 100°F/38°C. Ice machine works best with 50°F/10°C - 80°F/27°C water. Advise customer.
	Vents in kickplate obstructed	Move/clear obstruction.
	Dirty condenser	Clean condenser.
	Bin drain restricted causing rapid melting in bin	Clean out bin drain and/or check installation for kinks in drain line.
E. Cubes are too big	Cube size control set too cold	See Cube Size Control Adjustment instructions in Maintenance, Cleaning and Adjustment section of manual.
F. Cubes are too small, possibly white at bottom	Cube size control set too warm	See Cube Size Control Adjustment instructions in Maintenance, Cleaning and Adjustment section of manual.
	Not enough water	a. Check water supply line for kinks or restrictions. b. If supply line has a filter, it may be restricted and/or need changing. c. Check screens in water valve for restrictions. - Clean screens or replace valve. d. House supply water pressure too low. Pressure must be 20 - 80 p.s.i.g., constant. Advise customer. e. Check for water leak at reservoir. Repair or replace parts. f. Check for torn or mis-positioned curtain causing water leak into bin. Reposition or replace curtain.
	Cube size control stuck closed causing rapid ice making cycles	Check/replace control
G. Cubes are partially formed - ragged edges	Spray jets partially clogged with mineral scale	See Cleaning the Ice Making System instructions in Maintenance, Cleaning and Adjustment section of manual.

BIN CAPACITY AND ICE PRODUCTION

Bin Storage Capacity	26 lbs
Ice Production (24 Hours)	18 - 30 lbs

WATER VALVE FLOW RATE

.2 gpm

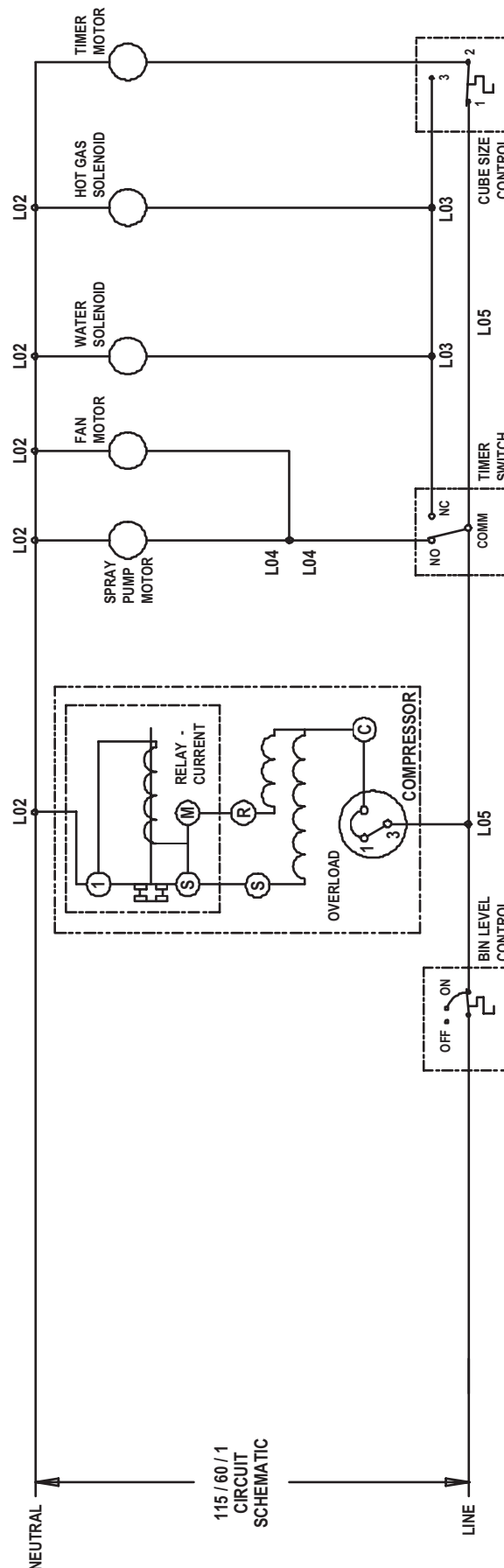
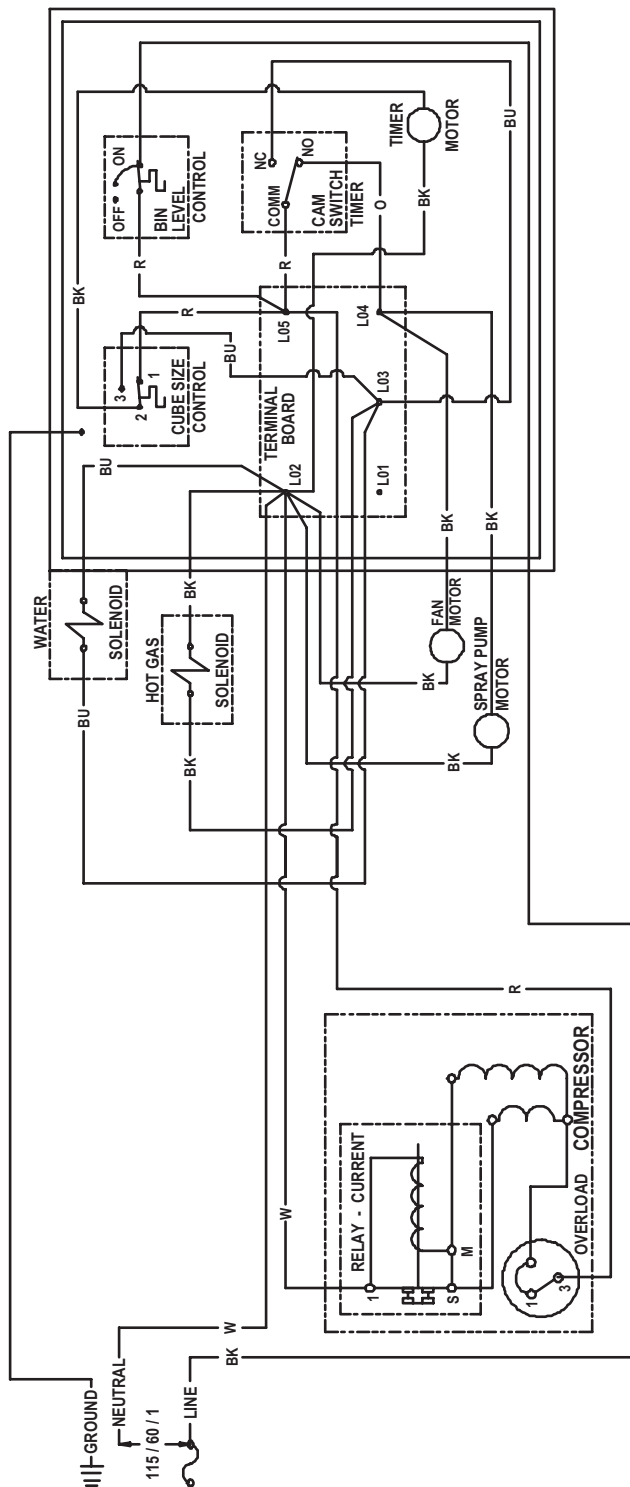
SEALED SYSTEM INFORMATION

Refrigerant Charge (134a)	5 oz.
Approximate Low Side Pressure (at End of Freeze Cycle)	1 - 5 psi
Approximate High Side Pressure (at End of Freeze Cycle)	125 - 150 psi

ELECTRICAL INFORMATION

Unit Average Running Amperage	4 amps
Compressor Horse Power	1/8 hp
Compressor LRA (Locked Rotor Amps)	18.5 amps
Compressor Start Winding Resistance	11 - 13 ohms
Compressor Run Winding Resistance	2 - 4 ohms
Hot Gas Valve Coil Watts / Resistance	6.9 watts / 2069 ohms
Cycle Timer Motor Watts / Resistance	3 watts / 4800 ohms
Condenser Fan Motor Watts / Resistance	3 watts / 480 ohms
Water Valve Coil Watts / Resistance	15 watts / 960 ohms
Circulating Spray Pump Watts / Resistance	180 watts / 80 ohms
Drain Pump Watts / Resistance	150 watts / 96 ohms
Cube Size Control Cut-in / Cut-out Temps ("NORMAL" setting)	6°F(-14°C) / 12°F(-11°C)

Model 315I Wiring Diagram and Schematic



Model 315IP Wiring Diagram and Schematic

