All About

Servicing

Bottom Freezer Refrigerator

FRIGIDAIRE™

White-Westinghouse

Gibson

Kelvinator

TAPPAN

Electrolux Major Appliances, North America
10200 David Taylor Drive
Charlotte, NC 28262

Publication #5995556437

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Safe Servicing Practices For All Appliances

Avoid personal injury and/or property damage by observing important Safe Servicing Practices.
Following are some limited examples of safe practices:

1. DO NOT attempt a product repair if you have any doubts as to your ability to complete the repair in a safe and satisfactory manner.
2. Do not exceed maximum recommended wattage on light bulb replacements. Doing so could blow fuses and/or damage transformers.
3. Before servicing or moving an appliance:
   - Remove power cord from the electrical outlet, trip circuit breaker to the OFF position, or remove fuse.
   - Turn off water supply if applicable.
   - Turn off gas supply if applicable.
4. Never interfere with the proper operation of any safety device.
5. Use ONLY REPLACEMENT PARTS CATALOGED FOR THIS APPLIANCE. Substitutions may defeat compliance with safety standards set for home appliances.
6. GROUNDING: The standard color coding for safety ground wires is GREEN, or GREEN with YELLOW STRIPES. Ground leads are not to be used as current carrying conductors. It is EXTREMELY important that the service technician reestablish all safety grounds prior to completion of service. Failure to do so will create a hazard.
7. Prior to returning the product to service, ensure that:
   - All electrical connections are correct and secure.
   - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts.
   - All non-insulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels.
   - All safety grounds (both internal and external) are correctly and securely connected.
   - All panels are properly and securely reassembled.

ATTENTION

This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Electrolux Home Products, Inc. cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

Table of Contents

Important Safety Instructions

Safety Precautions

Do not attempt to install, operate or service the unit until you have read the safety precautions in this manual. Safety items throughout this manual are labeled with a Danger, Warning, or Caution based on the risk type.

Definitions

⚠ This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

⚠ WARNING

WARNING INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

➔ IMPORTANT

Indicates installation, operation, or maintenance information which is important but not hazard related.

General Safety

- Do not store or use gasoline or other flammable liquids near this or any other appliance. Read product labels for warnings regarding flammability and other hazards.
- Do not operate the refrigerator in the presence of explosive fumes.
- Avoid contact with any moving parts of the automatic ice maker.
- Remove all staples from the carton to avoid injury. Staples can also damage finishes if they come in contact with other appliances or furniture.

Child Safety

Packing Materials:

- Packing cartons covered with rugs, bedspreads, plastic sheets, or stretch wrap may become airtight chambers and can quickly cause suffocation.
- Destroy or recycle the product's carton, plastic bags, and any other exterior wrapping material immediately after the refrigerator is unpacked. Children should never play with these items.

Child Entrapment and Suffocation:

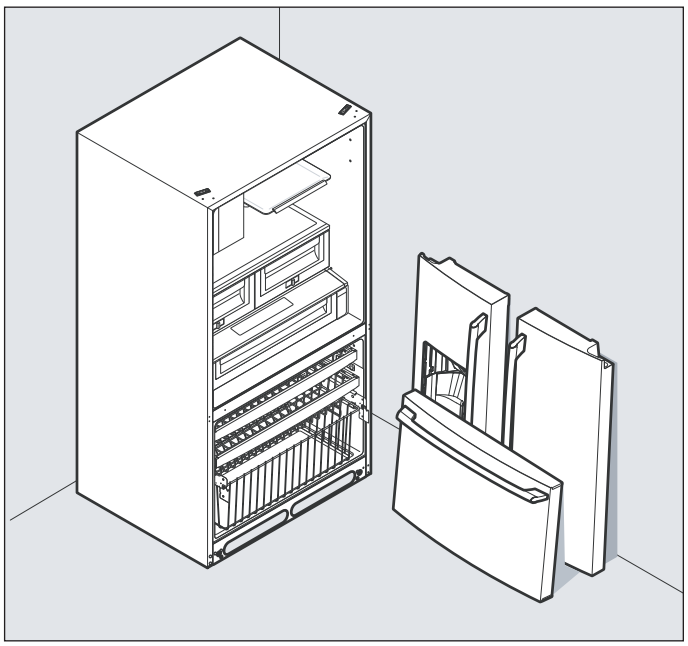
- These problems are not limited to the past. Whether junked, abandoned, or temporarily stored (even for a few hours), unattended refrigerators and freezers are dangerous. Please take the precautions listed below.

Proper Disposal of Refrigerators/Freezers

Electrolux Home Products Inc. strongly encourages responsible appliance recycling/disposal methods. Check with your utility company or visit www.recyclemyoldfridge.com for more information on recycling your old refrigerator.

Before you recycle or dispose of your old refrigerator/freezer:

- Remove the doors.
- Leave the shelves and baskets in place so children may not easily climb inside.
- Have refrigerant and compressor oil removed by a qualified service technician.

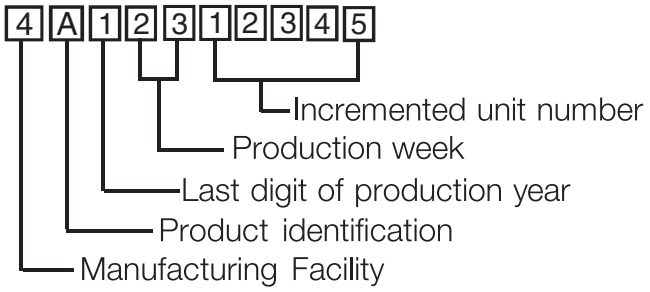


Model Number Matrix

FG	HB	23	44	L	F
BRAND	PRODUCT CATEGORY	CAPACITY	FEATURE LEVEL	YEAR OF INTRODUCTION	COLOR

Brand	**FG** – Frigidaire Gallery **FP** – Frigidaire Professional **LG** – Lowe's Gallery
Product Category	**HB** – High Efficiency Bottom Freezer **HN** – High Efficiency Non-Dispensing Bottom Freezer **HF** – High Efficiency Bottom Freezer Counter Depth **HG** – High Efficiency Non-Dispensing Bottom Freezer Counter Depth
Capacity	**23** – 23 cu. ft. Refrigerators **26** – 26 cu. ft. Refrigerators **28** – 28 cu. ft. Refrigerators
Feature Level	**2** – digit scale with 99 being the highest
Year of Introduction	**L** – 2010 **M** – 2011
Color	**F** – Stainless Steel **P** – Pearl White (Smooth), Plastic **E** – Ebony Black (Smooth) **M** – Silver Mist

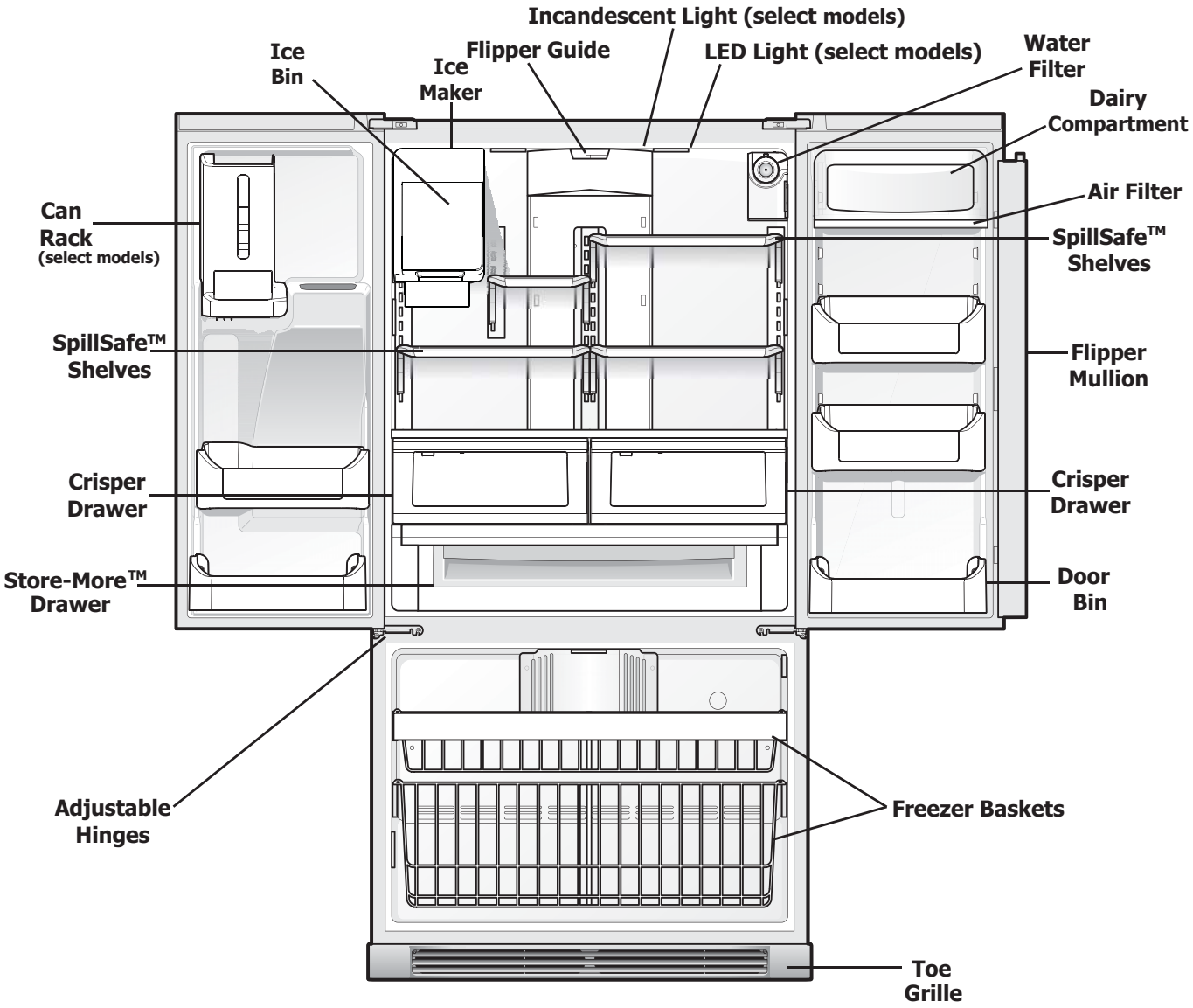
Serial Number Matrix



Product Identification
A = Refrigerator
B = Freezers
C = Washers
D = Dryers
E = Laundry Centers
F = Ranges
H = Dishwasher
G/P= Microwave
N = Dehumidifier

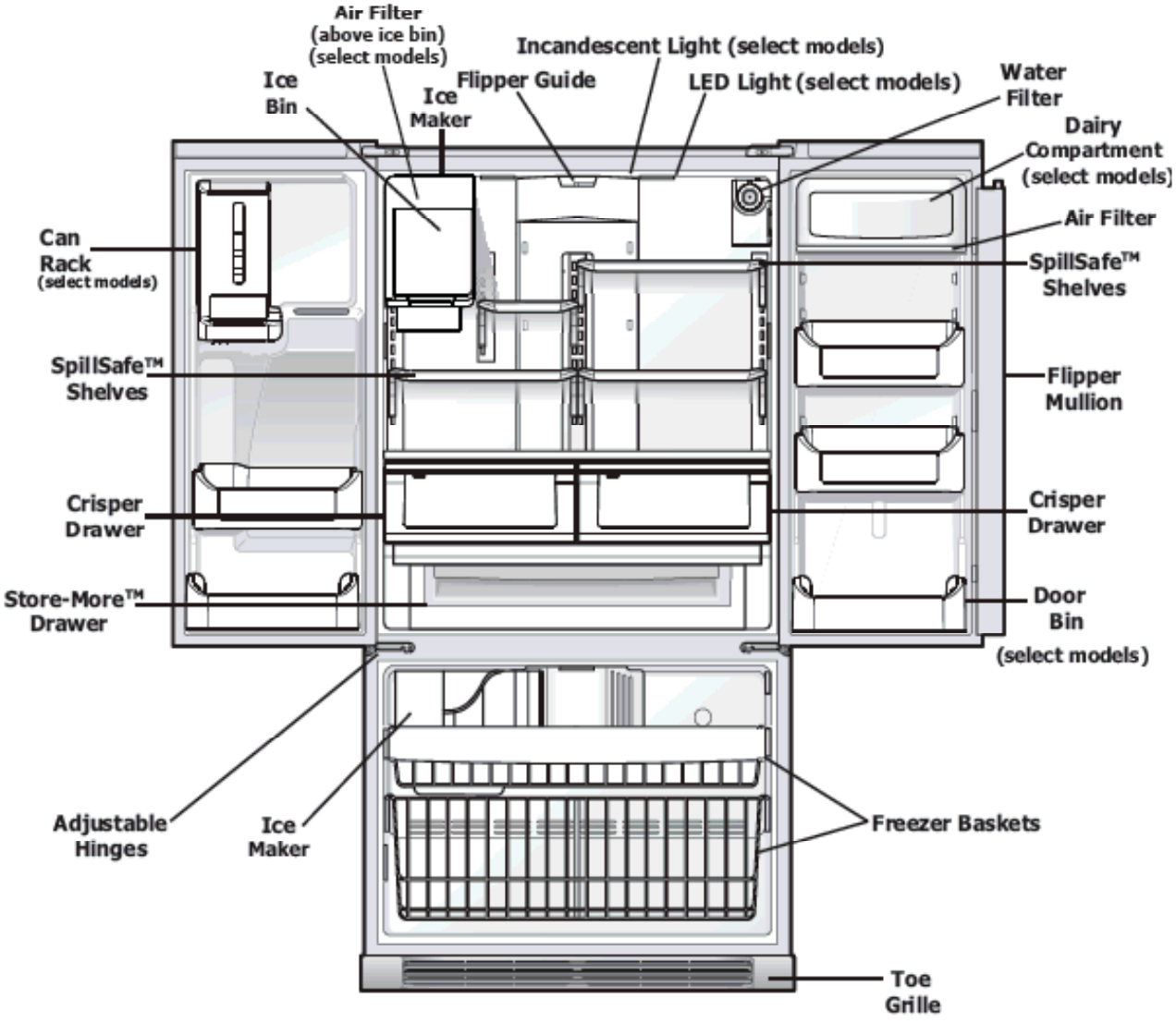
Models with Fresh Food Ice Maker

NOTE: Features may vary according to model



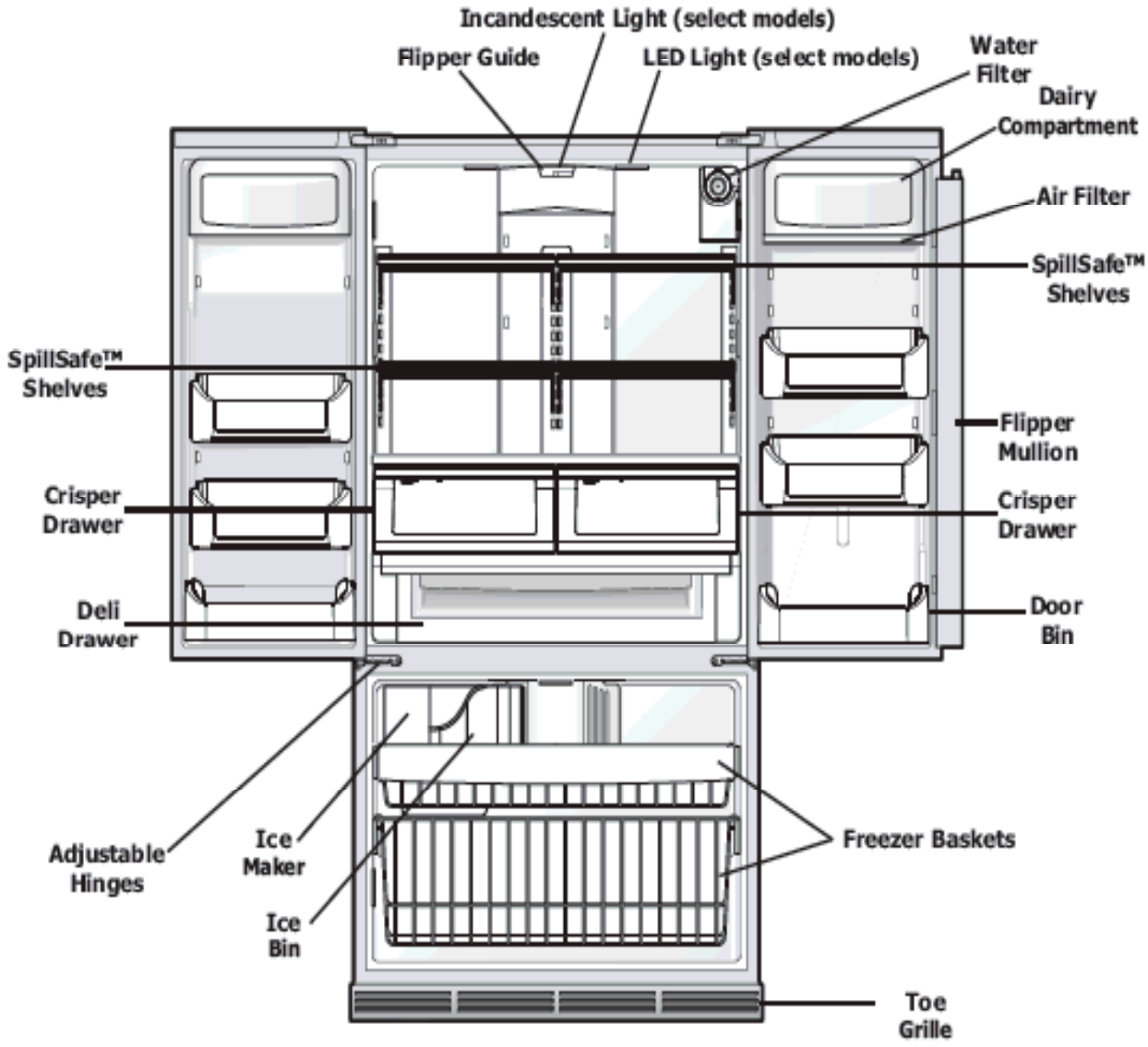
Models with Fresh Food and Freezer Ice Makers

NOTE: Features may vary according to model



Models with Freezer Ice Maker

NOTE: Features may vary according to model



Models With Dispenser and Fresh Food Compartment Ice Maker

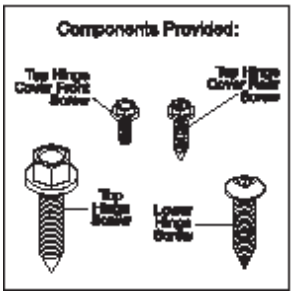
PERFORMANCE DATA NO LOAD & NO DOOR OPENINGS AT 37°/0° CONTROL SETTING				
Type A with Run/Start Capacitor	65°F (18°C) Ambient		90°F (32°C) Ambient	
Operating Time	74 to 84%		100%	
Freezer Temperature	-5° to 2° F (-20° to -17° C)		-1° to 3° F (-18° to -16° C)	
Refrigerator Temperature	34° to 39° F (1° to 4° C)		34° to 39° F (1° to 4° C)	
Low Side Pressure (cut-in)	5 to 12 psig (34 to 83 kPa)		N/A	
Low Side Pressure (cut-out)	-2 to 2 psig (-14 to 14 kPa)		-2 to 2 psig (-14 to 14 kPa)	
High Side Pressure (last 1/3 cycle)	85 to 95 psig (586 to 655 kPa)		120 to 135 psig (827 to 931 kPa)	
Wattage (last 1/3 cycle)	45 to 55		60 to 70	
Amps (running)	.6 to 1.1		.7 to .9	
Base Voltage	115 vac (127 vac max)			
DEFROST SPECIFICATIONS				
Cabinet Size	Thermostat		Heater	
	Cut-in	Cut-out	Watts	Ohms
26' & 28' SD, 23' CD	25° F (-4° C)	47° F (8° C)	500	31
Electronic Timer - (ADC) Defrost 24 minutes every 6-96 hours of compressor run time.				
CONDENSER FAN MOTOR				
Watts	RPM		Amps	
3.1	1100 CW Opposite Shaft		0.03 Running	
ICE MAKER SPECIFICATIONS				
Electrical	115 vac (127 vac max)			
Thermostat	Opens at 48° F (9° C), Closes at 15° F (-9° C)			
Heater Voltage	85 vac			
ICE MAKER CONNECTOR PLUG CONNECTIONS				
Wire Number	Wire Color		Connects to:	
1	Green/Yellow		Ground	
2	Yellow		Water Valve	
3	Black		Line	
4	Light Blue		Neutral	

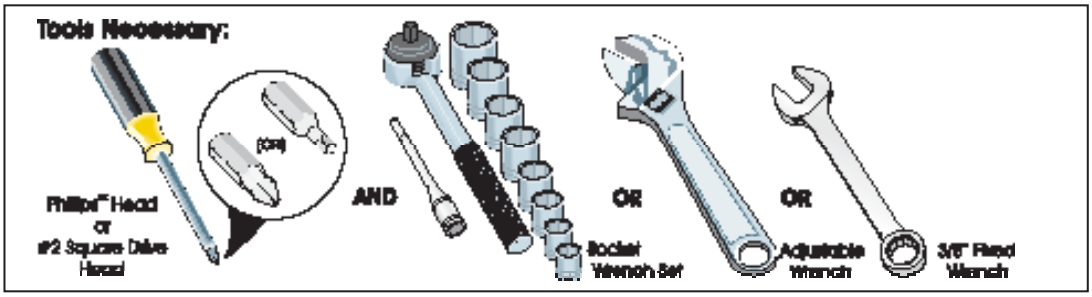
Models With Freezer Compartment Ice Maker And Without Dispenser

PERFORMANCE DATA NO LOAD & NO DOOR OPENINGS AT 37°/0° CONTROL SETTING				
Variable Speed Compressor	65°F (18°C) Ambient		90°F (32°C) Ambient	
Operating Time	32 to 40%		100%	
Freezer Temperature	-6° to 6° F -21° to -14° C		-6° to 6° F -21° to -14° C	
Refrigerator Temperature	33° to 46° F 0.5° to 8° C		33° to 46° F 0.5° to 8° C	
Low Side Pressure (cut-in)	5 to 12 psig 34 to 83 kPa		N/A	
Low Side Pressure (cut-out)	-2 to 2 psig -14 to 14 kPa		-2 to 2 psig -14 to 14 kPa	
High Side Pressure	85 to 95 psig 586 to 655 kPa		120 to 135 psig 827 to 931 kPa	
Wattage	40 to 55		60 to 70	
Amps (running)	.5 to 1.1		.7 to .9	
Base Voltage	115 vac (127 vac max)			
DEFROST SPECIFICATIONS				
Cabinet Size	**Thermostat**		**Heater**	
	Cut-in	Cut-out	Watts	Ohms
26’ & 28’ SD, 23’ CD	25° F (-4° C)	47° F (8° C)	500	26
Electronic Timer - (ADC) Defrost 24 minutes every 6-96 hours of compressor run time.				
CONDENSER FAN MOTOR				
Watts	**RPM**		**Amps**	
3.1 (Energy Star, some models)	1100 CW Opposite Shaft		0.03 Running	
ICE MAKER SPECIFICATIONS				
Electrical	115 vac (127 vac max)			
Thermostat	Opens at 48° F (9° C), Closes at 15° F (-9° C)			
Heater Voltage	85 vac			
ICE MAKER CONNECTOR PLUG CONNECTIONS				
Wire Number	**Wire Color**		**Connects to:**	
1	Green/Yellow		Ground	
2	Yellow		Water Valve	
3	Black		Line	
4	Light Blue		Neutral	

Required Tools

You will need the following tools:





This Use & Care Guide provides general installation and operating instructions for your model. We recommend using a service or kitchen contracting professional to install your refrigerator. Use the refrigerator only as instructed in this Use & Care Guide. **Before starting the refrigerator, follow these important first steps.**

Location

- Choose a place that is near a grounded, non-GFCI, electrical outlet. **Do Not** use an extension cord or an adapter plug.
- If possible, place the refrigerator out of direct sunlight and away from the range, dishwasher, or other heat sources.
- The refrigerator must be installed on a floor that is level and strong enough to support a fully loaded refrigerator.
- Consider water supply availability for models equipped with an automatic ice maker.

CAUTION

Do Not install the refrigerator where the temperature will drop below 55°F (13°C) or rise above 110°F (43°C). The compressor will not be able to maintain proper temperatures inside the refrigerator.

Do Not block the toe grille on the lower front of your refrigerator. Sufficient air circulation is essential for the proper operation of your refrigerator.

Installation

- Allow the following clearances for ease of installation, proper air circulation, and plumbing and electrical connections:

NOTE

If your refrigerator is placed with the door hinge side against a wall, you may have to allow additional space so the door can be opened wider.

Door opening

NOTE

The refrigerator doors are designed to shut by themselves within a 20 degree opening.

Your refrigerator should be positioned to allow easy access to a counter when removing food. For best use of refrigerator drawers and freezer baskets, the refrigerator should be in a position where both can be fully opened.

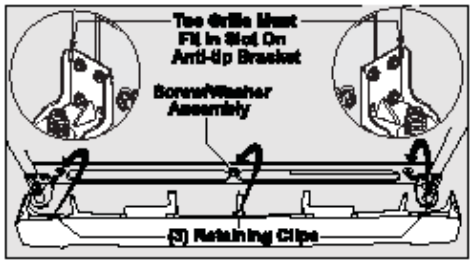
Leveling Freezer Drawer (if necessary)

NOTE

DO NOT remove center screw from freezer drawer. This is a factory adjustment.

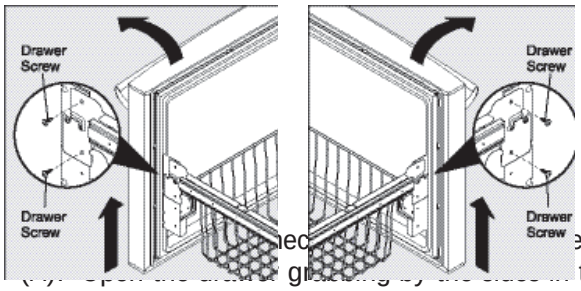
To level the cabinet using the front rollers (select models):

1 Slightly open freezer drawer. Lift the toe grille and gently pull forward (see illustration).

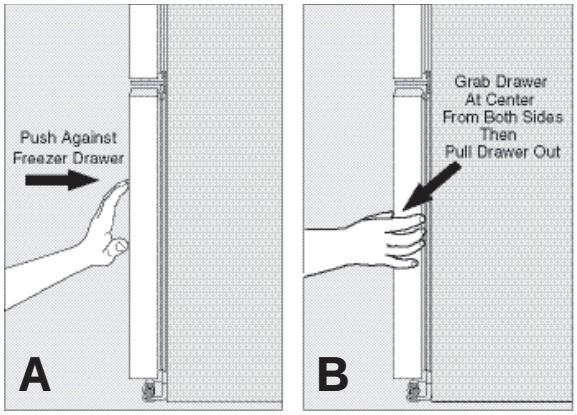


2 Check gasket seal around top, bottom, and sides of freezer drawer.

3 If gasket is not sealed, open drawer and slightly loosen four (4) drawer screws (two (2) on each side) to allow drawer to rotate.



4 ...ject ...et ... grabbing by the sides in the center (B). Be careful not to rotate the drawer.



5 Tighten four (4) drawer screws.

6 Recheck gasket seal.

7 Install the toe grille by fitting into place.

Level Refrigerator & Adjust Doors (if necessary)

Guidelines for final positioning of your refrigerator:

- All four corners of the cabinet must rest firmly on the floor.
- The sides should tilt 1/4 inch (6 mm) from front to back (to ensure that doors close and seal properly).
- Doors should align with each other and be level.

Most of these conditions can be met by raising or lowering the adjustable front rollers.

To level the cabinet using the front rollers:

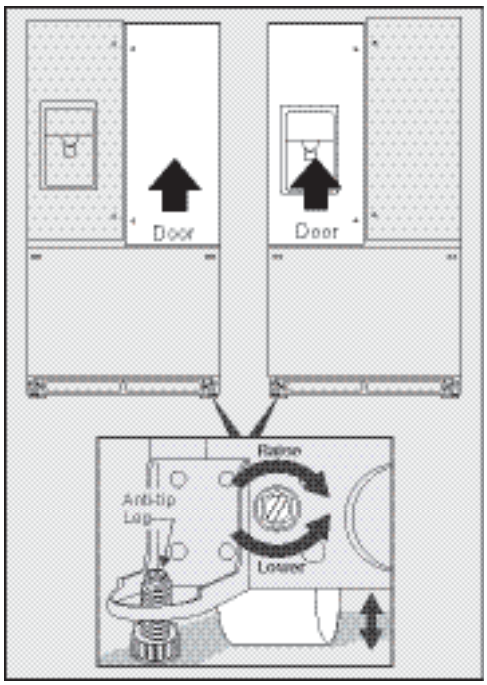
1 You can raise or lower each door. use a 3/8 inch socket wrench to turn the adjustment screws (1 per side).

To raise: turn adjustment screw clockwise.

To lower: turn adjustment screw counterclockwise.

2 Ensure both doors are bind-free with their seals touching the cabinet on all four sides and that cabinet is stable.

3 After unit is leveled, lower anti-tip leg until it contacts the floor.

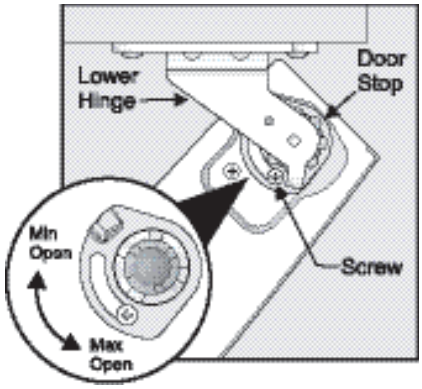


To adjust the door stop:

Door stop is adjustable between 85 to 145 degrees.

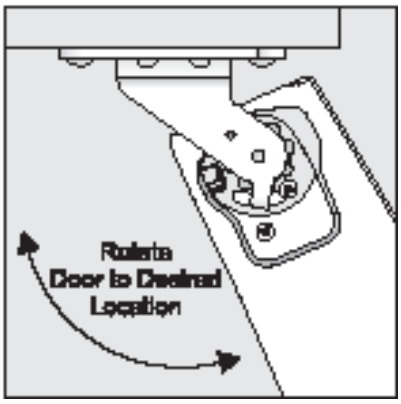
NOTE

View shown is looking up at the bottom of the refrigerator door.



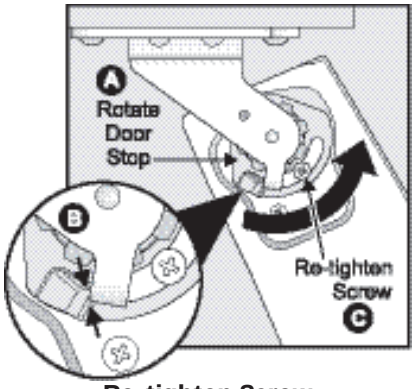
Adjustable Door Stop

1. Open door to provide access to screw.
2. Loosen screw.
3. Adjust door to desired location.



Adjusting Door

4. Rotate door stop until it makes contact with the lower hinge.
5. Re-tighten screw.

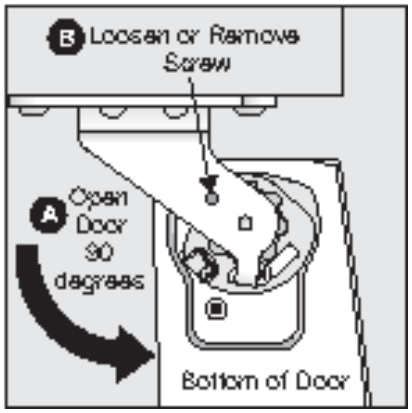


Re-tighten Screw

6. Ensure door stops in desired location before resuming normal use.

To level the doors using the adjustable lower hinge (select models):

1. Remove all food items from door bins on door being adjusted.
2. Open doors to 90 degrees.
3. Loosen or remove screw.

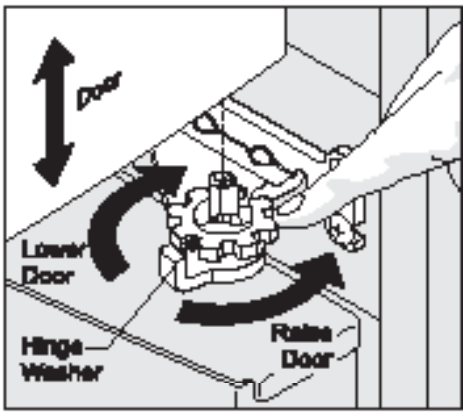


Loosen/Remove Screw

NOTE

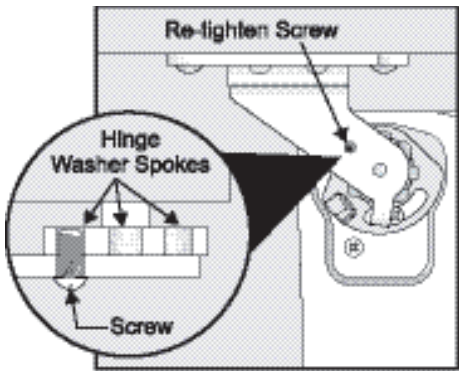
Adjustable hinge should only be used after doors have been leveled with rollers.

4 Lift the door while adjusting the washer. To raise the door, rotate washer clockwise (when viewed from the bottom). To lower door, rotate washer counter-clockwise (when viewed from the bottom).



Raising/Lowering Door

5 Re-tighten the screw, ensuring it is between the spokes of the washer. Screw will not be tight, just insert until it is flush with the hinge.



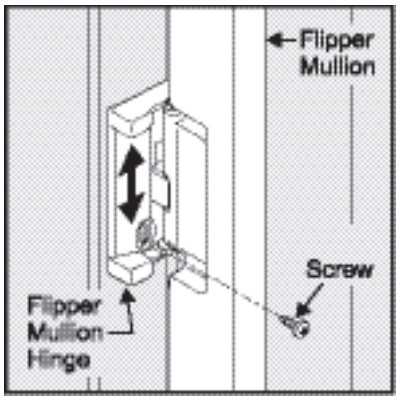
Screw

NOTE

If after adjusting doors higher the door makes a popping/clicking sound, remove screw and replace with the longer one supplied in the handle package.

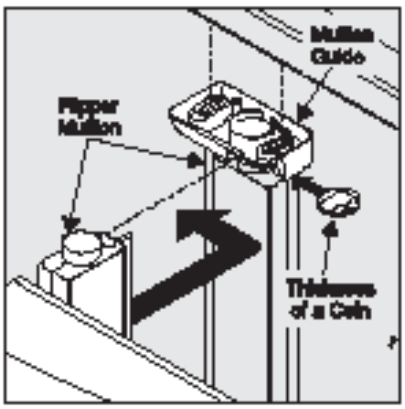
To adjust the flipper mullion:

1 Loosen the screw located on the flipper mullion hinge.



Adjusting Flipper Mullion Screw

2 Adjust flipper mullion height. For proper connection with the flipper mullion guide, there should be a separation about the thickness of a coin (0.060 inches, or 1.5 mm) between the guide and flipper mullion.



Adjusting Flipper Mullion Height

3 Re-tighten screw.

Getting through narrow spaces

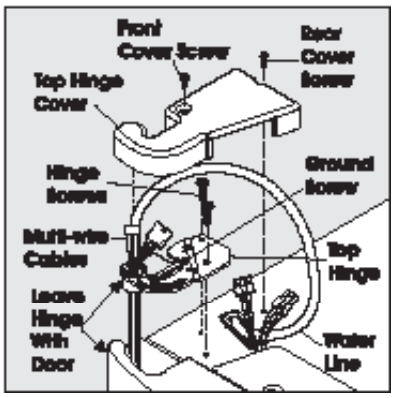
If your refrigerator will not fit through an entrance area, you can remove the doors. Check first by measuring the entrance.

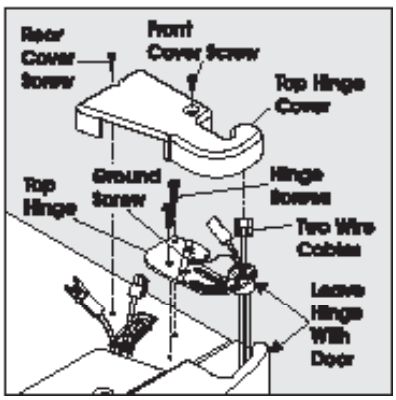
To prepare for removing the doors:

1. Make sure the electrical power cord is unplugged from the wall outlet.
2. Open the freezer drawer and remove the toe grille (see “Installation” section).
3. Remove any food from the door shelves and close the doors.

To remove the top hinge covers:

1. Remove the two (2) screws from each cover over the top door hinges.
2. Lift inside edge of hinge cover and tilt back.



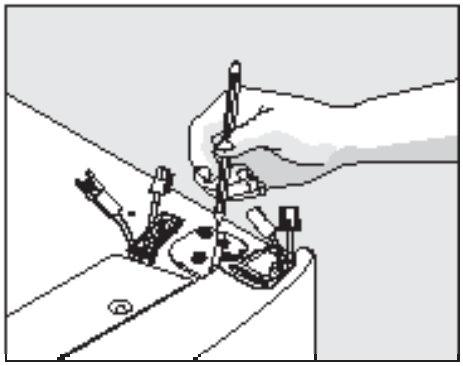


NOTE

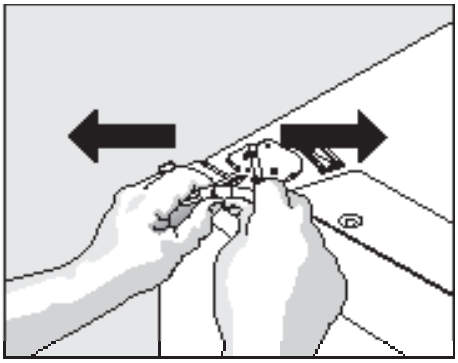
DO NOT remove the ground screw from hinge.

To remove the refrigerator doors:

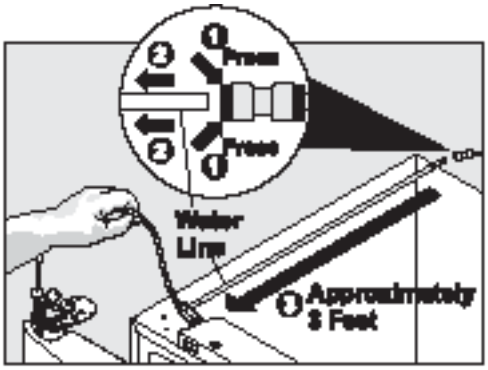
1. Trace lightly around the door’s top hinges with a pencil. This makes reinstallation easier.



2. Disconnect the harness by grasping both sides of the connector firmly, depress the latch, and pull apart. Remove the two (2) screws from the top hinge. Lift the door off of the bottom hinge and set it aside.



3. Detach the water tube from the connector located behind the refrigerator and pull the tube back out to the front of the unit. The connector releases when you press inward on the outer sleeve while pushing the tube toward the connector then while continuing to hold in the sleeve, pull the tube away.



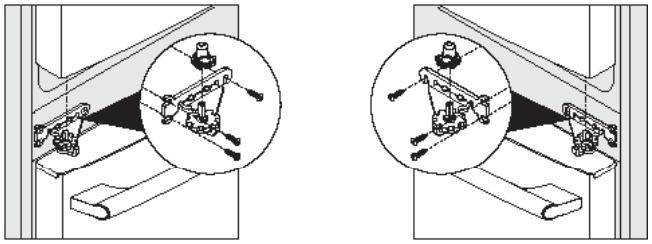
NOTE

You will be pulling approximately three (3) feet of water tube from the back of the refrigerator.

4 Unscrew the three (3) lower hinge screws and hinge if necessary.

To reinstall the right door, reverse the above steps.

Lower Hinge Removal



Once both doors are in place, ensure they are aligned with each other and level (Please see the “Installation” section for more details), and replace the top hinge cover.

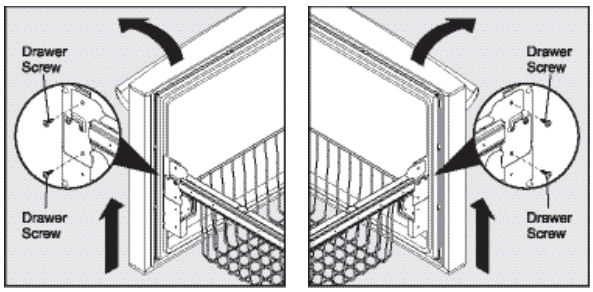
CAUTION

Be sure doors are set aside in a secure position where they cannot fall and cause personal injury, or damage to the doors or handles.

Removing Freezer Drawer

1 Open freezer drawer.

2 Remove drawer screws on right and left sides (two (2) screws on each side).



NOTE

DO NOT remove center screw from freezer drawer. This is a factory adjustment.

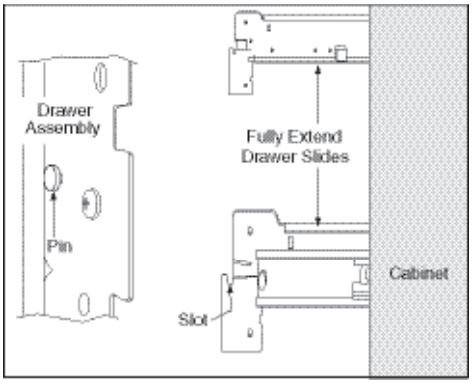
CAUTION

Drawer is heavy. Use caution when lifting.

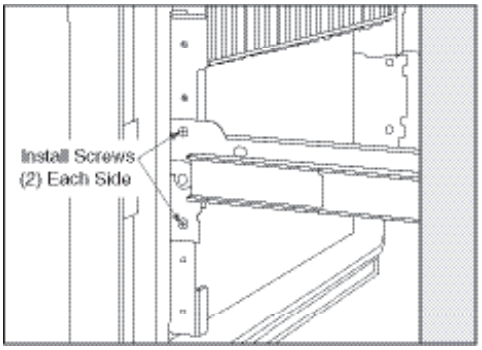
3 Lift drawer up and out to remove.

Installing Freezer Drawer

1 With lower slides pulled out, hang drawer onto slide brackets ensuring pins on each side are fully inserted into slots on each side.



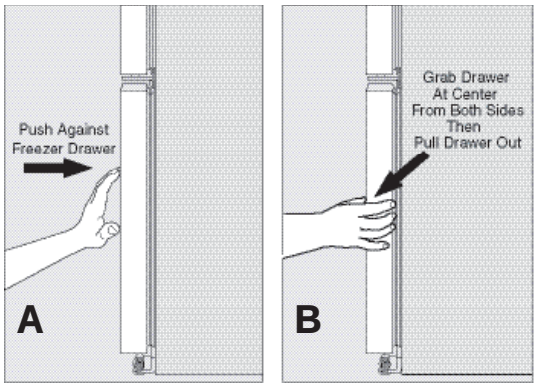
2 Reinstall four (4) drawer screws (two (2) per side), tighten down, and close drawer (C).



3 Check gasket seal around top, bottom, and sides of freezer drawer.

4 If gasket is not sealed, open drawer and slightly loosen four (4) drawer screws (two (2) on each side) to allow drawer to rotate.

5 Close drawer and recheck the seal on the gasket (A). Open the drawer grabbing by the sides in the center (B). Be careful not to rotate the drawer.



6 Tighten four (4) drawer screws.

7 Recheck gasket seal.

8 Install the toe grille by fitting into place.

Door Handle Mounting Instructions for Frigidaire Gallery®

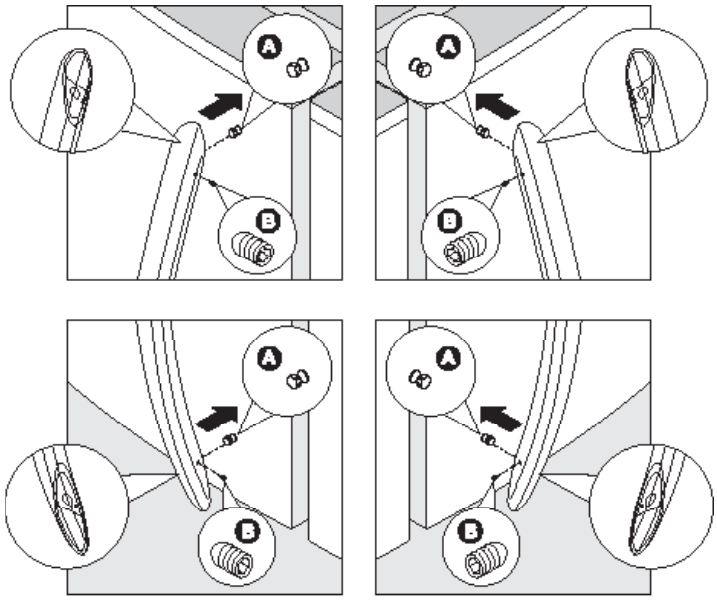
1. Remove handles from carton and any other protective packaging.
2. Position fresh food handle end over upper and lower pre-installed shoulder bolts (A) that are fastened into door, ensuring the holes for the set screws are facing towards the opposite door.
3. While holding handle firmly against door, fasten upper and lower Allen set screws (B) with supplied Allen wrench.
4. Repeat steps 2 and 3 to install opposite handle. Ensure the holes for the set screws are facing towards the first door.
5. Position freezer handle end over left and right pre-installed handle mounts that are fastened to the door, ensuring the holes for the set screws are facing down.
6. While holding handle firmly against door, loosely tighten far right Allen set screw (B) with supplied Allen wrench until there is no gap between handle and door.
7. Still holding the handle firmly to the door, firmly tighten far left Allen set screw (B) with supplied Allen wrench.
8. Return to the far right Allen set screw (B) and firmly tighten with supplied Allen wrench.

NOTE

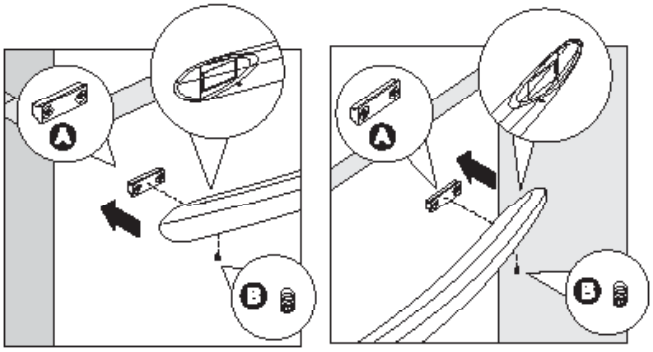
All set screws should be tightened so the screw is below the surface of the handle. The handles should be drawn tight to freezer and refrigerator doors with no gaps. Opening the opposite door while tightening the Allen screw makes installation easier.

The door handle may loosen over time or if it was installed improperly. If this happens, tighten the set screws on the handles.

Mounting Refrigerator Handles



Mounting Freezer Handle



Door Handle Mounting Instructions for Frigidaire Professional®

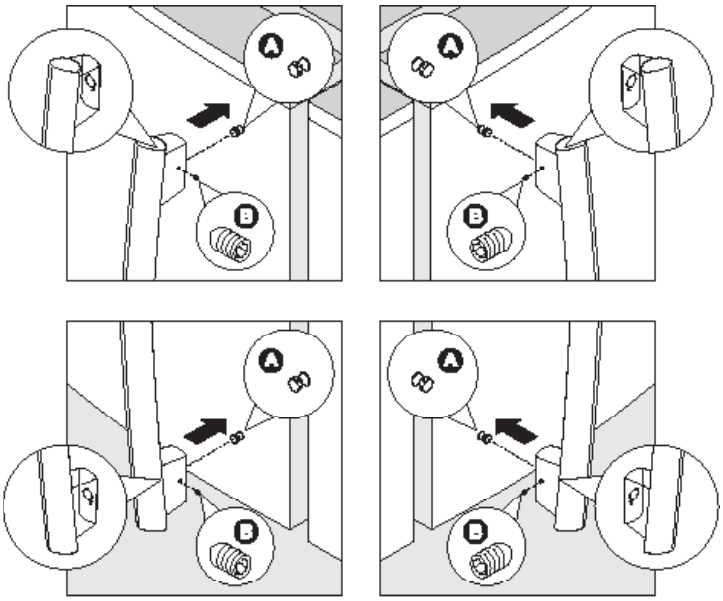
1. Remove handles from carton and any other protective packaging.
2. Position fresh food handle end over upper and lower pre-installed shoulder bolts (A) that are fastened into door, ensuring the holes for the set screws are facing towards the opposite door.
3. While holding handle firmly against door, fasten upper and lower Allen set screws (B) with supplied Allen wrench.
4. Repeat steps 2 and 3 to install opposite handle. Ensure the holes for the set screws are facing towards the first door.
5. Position freezer handle end over left and right pre-installed handle mounts that are fastened to the door, ensuring the holes for the set screws are facing down.
6. While holding handle firmly against door, loosely tighten far right Allen set screw (B) with supplied Allen wrench until there is no gap between handle and door.
7. Still holding the handle firmly to the door, firmly tighten far left Allen set screw (B) with supplied Allen wrench.
8. Return to the far right Allen set screw (B) and firmly tighten with supplied Allen wrench.
9. Firmly tighten the inside Allen set screws.

NOTE

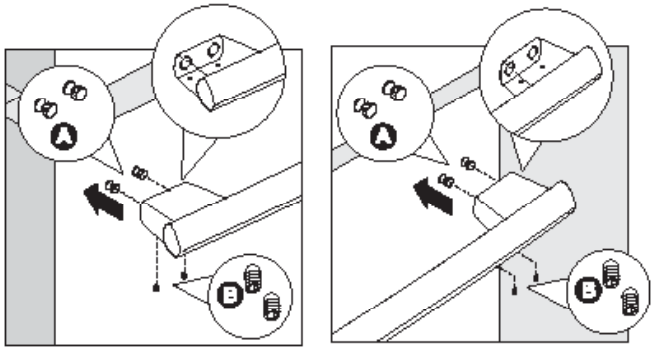
All set screws should be tightened so the screw is below the surface of the handle. The handles should be drawn tight to freezer and refrigerator doors with no gaps. Opening the opposite door while tightening the Allen screw makes installation easier.

The door handle may loosen over time or if it was installed improperly. If this happens, tighten the set screws on the handles.

Mounting Refrigerator Handles



Mounting Freezer Handle



WARNING

To avoid electric shock, which can cause death or severe personal injury, disconnect the refrigerator from electrical power before connecting a water supply line to the refrigerator.

CAUTION

To Avoid Property Damage:

- **Copper or Stainless Steel braided tubing is recommended for the water supply line. Water supply tubing made of ¼ inch plastic is not recommended to be used. Plastic tubing greatly increases the potential for water leaks, and the manufacturer will not be responsible for any damage if plastic tubing is used for the supply line.**
- **DO NOT install water supply tubing in areas where temperatures fall below freezing.**
- **Chemicals from a malfunctioning softener can damage the ice maker. If the ice maker is connected to soft water, ensure that the softener is maintained and working properly.**

IMPORTANT

Ensure that your water supply line connections comply with all local plumbing codes.

Before Installing The Water Supply Line, You Will Need:

- Basic Tools: adjustable wrench, flat-blade screwdriver, and Phillips™ screwdriver
- Access to a household cold water line with water pressure between 30 and 100 psi.
- A water supply line made of ¼ inch (6.4mm) OD, copper or stainless steel tubing. To determine the length of tubing needed, measure the distance from the ice maker inlet valve at the back of the refrigerator to your cold water pipe. Then add approximately 7 feet (2.1 meters), so the refrigerator can be moved out for cleaning (as shown).
- A shutoff valve to connect the water supply line to your household water system. DO NOT use a self-piercing type shutoff valve.
- A compression nut and ferrule (sleeve) for connecting a copper water supply line to the ice maker inlet valve.

NOTE

Check with your local building authority for recommendations on water lines and associated materials prior to installing your new refrigerator. Depending on your local/state building codes, Frigidaire recommends for homes with existing valves its Smart Choice® water line kit 5305513409 (with a 6 ft. Stainless Steel Water Line) and for homes without an existing valve, Frigidaire recommends its Smart Choice water® line kit 5305510264 (with a 20 ft. Copper Water Line with self-tapping saddle valve). Please refer to www.frigidaire.com/store for more information.

To Connect Water Supply Line To Ice Maker Inlet Valve

1. Disconnect refrigerator from electric power source.
2. Place end of water supply line into sink or bucket. Turn ON water supply and flush supply line until water is clear. Turn OFF water supply at shutoff valve.
3. Remove plastic cap from water valve inlet and discard cap.
4. **If you use copper tubing** - Slide brass compression nut, then ferrule (sleeve) onto water supply line. Push water supply line into water valve inlet as far as it will go (¼ inch/6.4 mm). Slide ferrule (sleeve) into valve inlet and finger tighten compression nut onto valve. Tighten another half turn with a wrench; DO NOT over tighten. See Figure 1.

   If you use stainless steel tubing - The nut and ferrule are already assembled on the tubing. Slide compression nut onto valve inlet and finger tighten compression nut onto valve. Tighten another half turn with a wrench; DO NOT over tighten. See Figure 2.
5. With steel clamp and screw, secure water supply line (copper tubing only) to rear panel of refrigerator as shown.
6. Coil excess water supply line (copper tubing only), about 2½ turns, behind refrigerator as shown and arrange coils so they do not vibrate or wear against any other surface.
7. Turn ON water supply at shutoff valve and tighten any connections that leak.
8. Reconnect refrigerator to electrical power source.

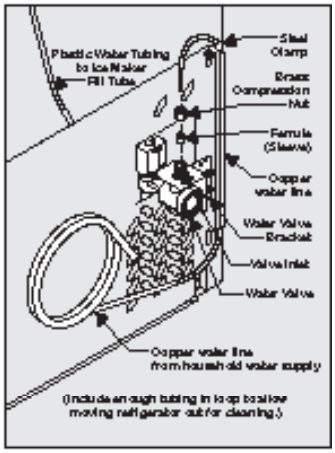


Figure 1

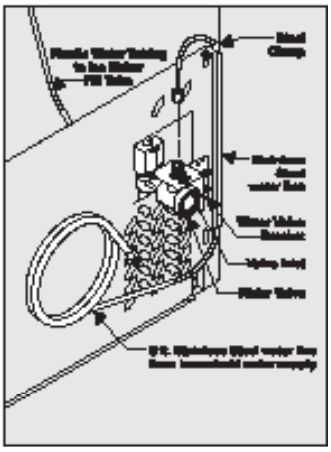


Figure 2

IMPORTANT

After connecting the water supply, refer to “How to Prime the Water Supply System” for important information about priming an empty water supply system.

Your refrigerator’s water supply system includes several tubing lines, a water filter, a water valve, and a water tank. To ensure that your water dispenser works properly, this system must be completely filled with water when your refrigerator is first connected to the household water supply line.

The purpose of this section is to familiarize the service technician with operation of the user interface and proper function of the electronic control system. This section explains all electronic controls and diagnostics for the unit with the exception of ice maker controls. Ice maker controls operation is detailed in the "Ice Maker" section.

There are two standard user interface controls available with dispenser equipped models: Express-Select™ and Pro-Select™ (See Figure 3-1 and 3-2).

The user interface for non-dispensing models is an Express-Select™ control (See Figure 3-3). The control layout is different from the dispenser model Express-Select™ control user interface in Figure 3-1, but functions of the corresponding selections are the same unless otherwise noted. See page 3-4 for details.

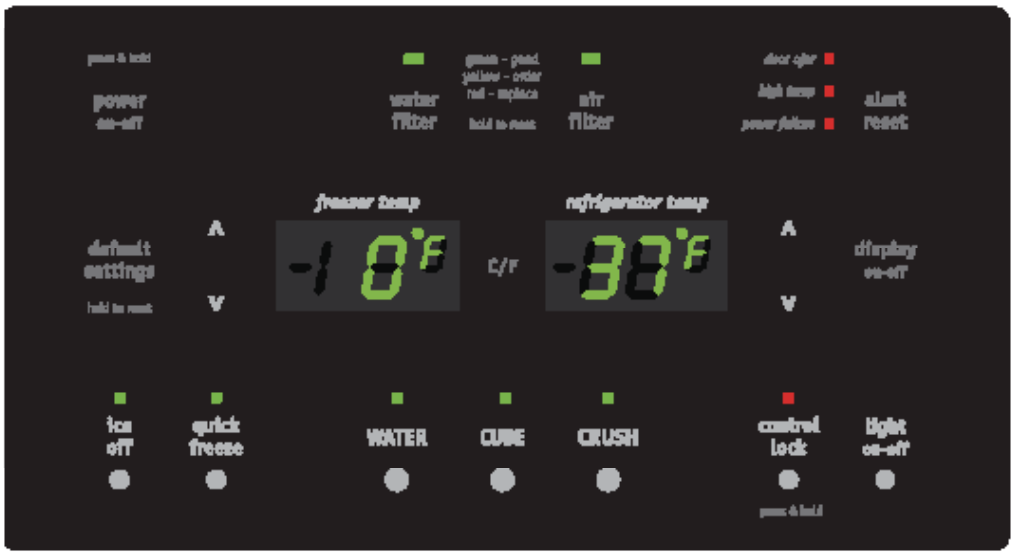


Figure 3-1. Express-Select™ User Interface for Dispenser Models

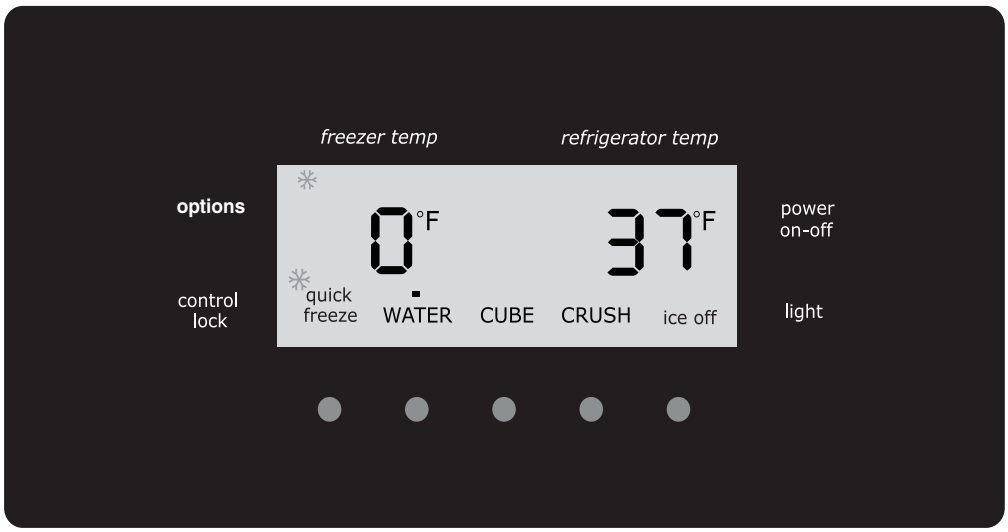


Figure 3-2. Pro-Select™ User Interface

Figure 3-3. Express-Select™ User Interface for Non-Dispenser Models

NOTE: User Interface options vary by model. Illustrations are for reference only.

Pro-Select™ User Interface Display Operation (Dispenser Models)

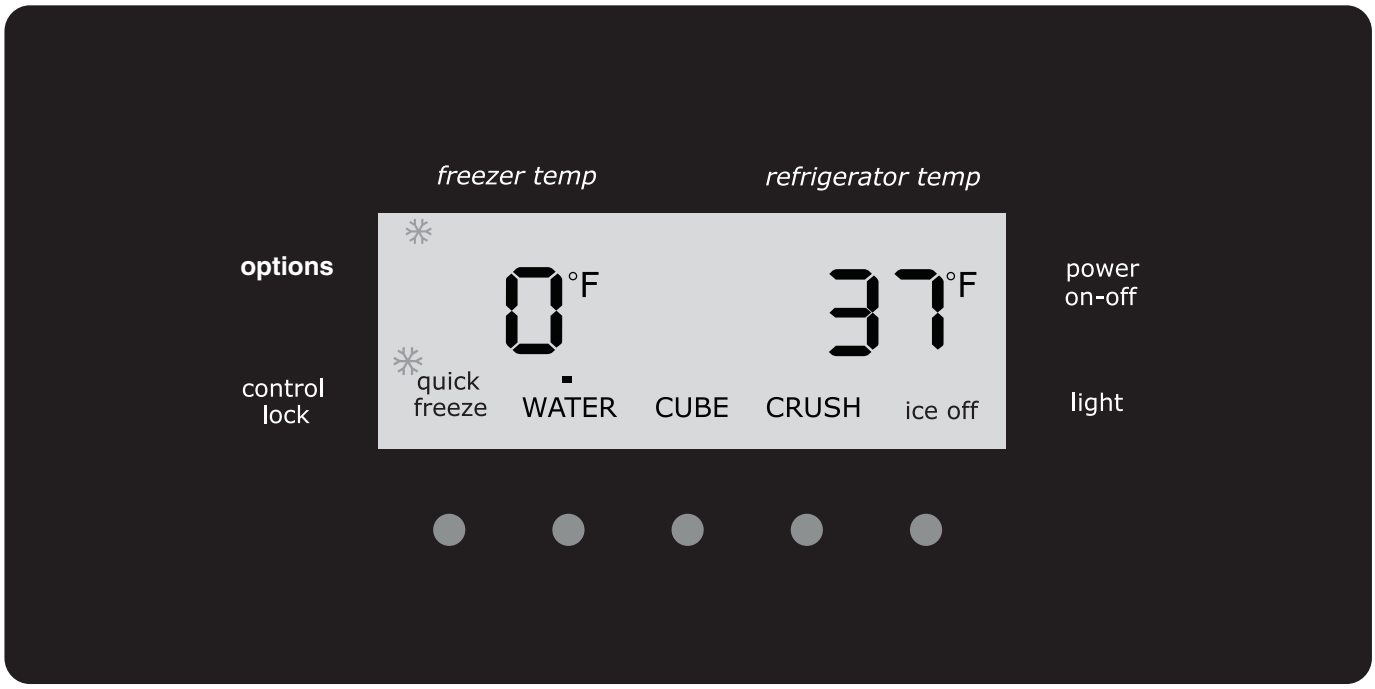


Figure 3-4. Pro-Select™ User Interface for Dispenser Models

Touch an icon (Water/Cube/Crush) to activate the desired dispenser mode.

light on-off — On / Off

control lock — Press and hold for three (3) seconds to activate and deactivate. The Lock icon will be displayed in the LCD window. This restricts undesired changes to the refrigerator's settings and prevents use of the ice and water dispenser.

options — Touch to display options menu.
Use the menu buttons to scroll down to either freezer or refrigerator temp to adjust temperatures.
Use the Temp Adjust buttons to adjust the temperature to the desired setting.
Press the SET button to accept the new temperature setting.
Press options button to exit the main menu.

power on-off — Press and hold for three (3) seconds to turn off the cooling system to clean the refrigerator. It also turns off all dispenser functions. The temperature display will read "OF".

IMPORTANT

Pressing the power off icon does not turn off power to your refrigerator. You must unplug the power cord from the wall outlet.

Express-Select™ User Interface Display Operation (Dispenser Models)

Figure 3-5. Express-Select™ User Interface for Dispenser Models

ice off (Fresh Food Ice Maker) — Press and hold for three (3) seconds to turn the ice maker “ON” or “OFF”. Turning the ice maker “OFF” disables the ice dispensing feature. Neither “CUBE” nor “CRUSH” will operate with the ice maker “OFF”.

quick freeze — Activates a faster rate for freezing food and increases ice production in the freezer.

light — On / Off

IMPORTANT

When the fresh food ice maker is turned off, the ice in the bucket should be transferred to the freezer or discarded to prevent it from melting.

NOTE

For freezer ice maker, see Automatic Ice Maker-Freezer section.

control lock — Press and hold for three (3) seconds to activate and deactivate. This restricts undesired changes to the refrigerator’s settings and prevents use of the ice and water dispenser.

water filter — Touch to display filter condition status. Press and hold for three (3) seconds to reset after filter change.

air filter — Touch to display filter status. Press and hold for three (3) seconds to reset after filter change.

display on-off — Toggles the temperature displays On and Off.

C / F — Touch to toggle display from Fahrenheit to Celsius.

default settings — Hold to Reset all refrigerator settings such as temp, and temp display to their factory default settings.

power — Press and hold for three (3) seconds to turn off the cooling system to clean the refrigerator. It also turns off the ice maker, all dispenser functions. The temperature display will read OFF.

There are three (3) dispenser modes:

- Water
- Ice Cubes
- Crushed Ice

A green indicator light will be illuminated above the active feature.

IMPORTANT

Pressing the power on/off icon does not turn off power to your refrigerator. You must unplug the power cord from the wall outlet.

Express-Select™ User Interface Display Operation (Non-Dispenser Models)

A red indicator light will be illuminated above most active features.

Touch the icon to activate the options below.

quick ice	Increases the production of ice
water filter	Press and hold for three (3) seconds to reset after filter change.
C/F	Touch to toggle display from Fahrenheit to Celsius.
default settings	Resets all refrigerator settings such as temp, temp display and tones to their factory default settings.
power on-off	Press and hold for three (3) seconds to turn off the cooling system to clean the refrigerator. It also turns off the ice maker. The temperature displays will read OFF.

IMPORTANT

Pressing the system on-off icon does not turn off power to your refrigerator. You must unplug the power cord from the wall outlet.

Setting Cooling Temperatures

Express-Select™ User Interface

Down (∨) and up (∧) indicators are located beside the displayed temperatures. Press the down (∨) or up (∧) indicator to adjust the temperature to the desired setting. The temperature display will begin to blink with the first touch. After five (5) seconds of inactivity, the display will beep to accept the new temperature. After 10 seconds, the display times out and returns to the basic display.

Figure 3-6. Express-Select™ User Interface for Non-Dispenser Models

Sabbath Mode

The Sabbath Mode is a feature that disables portions of the refrigerator and its controls in accordance with observance of the weekly Sabbath and religious holidays within the Orthodox Jewish community.

Express-Select™

Sabbath Mode is turned ON and OFF by pressing and holding simultaneously the freezer down (∨) and fresh food up (∧) indicators for up to ten (10) seconds.

Pro-Select™

Sabbath Mode is turned ON and OFF by pressing and holding simultaneously 'control lock' and 'power on-off' for up to ten (10) seconds.

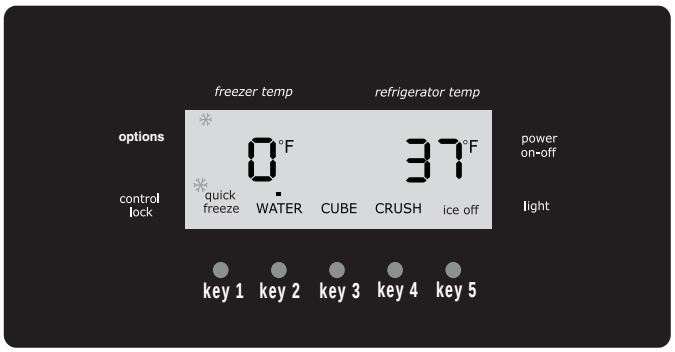


Figure 3-7

The display shows "Sb" while in Sabbath mode.
In the Sabbath Mode, the High Temp alarm is active for health reasons. If a high temperature alarm is activated during this time, for example due to a door left ajar, the alarm will sound intermittently for about 10 minutes. The alarm will then silence on its own and a red high temperature icon will display. The high temp icon will continue to display, even if the door is closed, until the Sabbath mode is exited and the icon reset. The refrigerator will function normally once the door is closed, without any violation of the Sabbath/Holidays. For further assistance, guidelines for proper usage and a complete list of models with the Sabbath feature, please visit the web at http:\\www.star-k.org.will function normally once the door is closed, without any violation of the Sabbath/Holidays.

NOTE

Although you have entered the Sabbath Mode, the ice maker will complete the cycle it had already initiated. The ice cube compartment will remain cold and new ice cubes can be made with standard trays.

Showroom Mode

Express-Select™

To enter, press and hold freezer temperature up (∧) while pressing the fresh food temperature down (∨) indicator 3 times within five (5) seconds.

Pro-Select™

To enter, press and hold simultaneously 'options' and 'light' for up to ten (10) seconds.
When freezer and fresh food displays show the same temperature, the unit is in Showroom mode.

Active Functions

1. Displays
2. Freezer/Fresh Food Temperature Keys
3. Lights
4. Alarm Key - Flashes alarm indicator
5. Air Filter Key - Key Tone and green LED toggles on & off.
6. All other functions are disabled including alarm(s).

NOTE: If the Manual Defrost is activated while the product is in the show room mode the displays will work as normal but the defrost heater will not turn on.

Deactivation

Showroom Mode automatically deactivates at a power on reset (POR).
NOTE: A power on reset (POR) means to unplug the product for one minute and then plug it back in again.

Manual Defrost Mode

Express-Select™

To enter, press and hold the fresh food up (∧) and fresh food down (v) indicators simultaneously for up to ten (10) seconds. This will advance the control into a normal defrost cycle with "d" and "F" will be displayed.

Pro-Select™

To enter, press and hold simultaneously 'light' and 'key 5' for up to 10 seconds.

The product will go through a normal defrost cycle and return the normal run at the end of the defrost.

If the manual defrost is activated during a normal automatic defrost cycle, the freezer display will show "AD" and the fresh food display will show "F".

Deactivation

Express-Select™

Press and hold the fresh food up (∧) and fresh food down (∨) indicators for up to ten (10) seconds.

Pro-Select™

Press and hold simultaneously 'light' and 'key 5' for up to 10 seconds.

Alarms

Door Ajar

If the door has been left open for an extended period of time an alarm will sound and the door ajar indicator will display on the right side of the display. The alarm is turned off by closing the door. The mute sounds key or alarm off key will blink to prompt the resetting of any pending alarms. Press mute sounds key to reset any system alarms.

High Temperature

Temperature Displays From Power On To Reaching Set-points

When a warm refrigerator is first powered-on, the audible 'power fail' alarm will sound, the 'power fail' indicator light will illuminate, and the current set-points (the factory default set-points are 0°F, 37°F) will be displayed for a few seconds. After the few second delay, both displays will switch to "HI". The 'power fail' alarm will be active until it is acknowledged by the user by pressing the 'alarm reset' key on Express-Select™ or 'reset' on Pro-Select™. The displays will continue to show "HI" for 20 minutes. After 20 minutes, the 'high temp' alarm will sound and both displays will switch to showing the actual temperature.

At this point, there are two possibilities:
1. The 'high temp' alarm can be cleared by pressing the 'alarm reset' or 'reset'. If this action is taken, then the audible alarm and 'hi temp' indicator will turn off. Likewise, the 'power fail' indicator will turn off.
2. The user can ignore the 'high temp' alarm and NOT press the 'alarm reset' or 'reset'. If no action is taken, the 'high temp' audible alarm will clear after 2 minutes, but the 'high temp' indicator will stay illuminated until acknowledged by the user. In this case, both of the temperature displays flash and continue to track the temperature downward in real-time.

The freezer is not considered to be in a high temperature state when it cools to 25°F or below, and the fresh food is not in a high temperature state when it cools to 54°F or below. The typical behavior of this system is that the freezer will cool from ambient to 25°F in approximately 1 hour. The fresh food compartment will cool from ambient to 54°F typically around 90 minutes from power on.

When the unit enters into high temeprature state, the affected compartment temperature display (fresh food or freezer) will dispaly 'HI'. 20 minutes later the audible 'high temp' alarm will be activated and the 'high temp' indicator will illumiate.
The alarm can be deactivated in two ways:
1. Press 'alarm reset' or 'reset'. If high temperature condition persists, the 'hi temp' alarm will allert the user again.
2. If the user ignores the alarm, the audible alarm will cease after 2 minutes. The 'hi temp' indicator will remain illuminated until it is deactivated by pressing 'allarm reset' or 'reset'. At this point, the unit will momentarily display the highest temperature reached in the alarm state. Once normal operating temepratures are restored, the unit will display actual temperatures.

Power Fail

In the event of a power failure, the 'power fail' alert will be displayed and the temperature display will blink until 'alarm reset' or 'reset' is pressed, acknowledging the alarm. When the power fail alert is turned off, the refrigerator will resume normal operation. The 'high temp' alarm may also be illuminated until a safe operating temperature is reached.

Error Codes

The following are error codes may appear in the display. These error codes relate directly to the 2500++ main control. The Ice Maker Errors are explained in detail in the Ice Maker Section of this manual.

Freezer Display	Fresh Food Display	Error Condition
OP	Normal	Freezer Sensor OPEN
SH	Normal	Freezer Sensor SHORTED
Normal	OP	Fresh Food Sensor OPEN
Normal	SH	Fresh Food Sensor Shorted
SY	EF	Evaporator Fan Failure
SY	CE	Communication Error
SY	CF	Communication Failure

Entering System Service Mode

Note: Fresh Food Ice Maker service mode is discussed in section 4 of this manual.

Express-Select™

To enter the service mode, press and hold the freezer up (∧) and down (∨) temperature pads simultaneously for up to ten (10) seconds.

Press Fresh Food up (∧) to advance thru the menu options; press 'power on-off' to initiate the selected test.

Pro-Select™

To enter the service mode, press and hold 'control lock' and 'options' simultaneously for up to ten (10) seconds.

Press '+' on the LCD display to advance thru the menu options; press 'power on-off' to initiate the selected test.

Deactivation

Express-Select™

Press and hold the fresh food up (∧) key for up to ten (10) seconds. The control will beep and service mode will deactivate.

Pro-Select™

Press and hold '+' on the LCD display for up to ten (10) seconds. The control will beep and service mode will deactivate.

NOTE: Service Mode automatically deactivates after 5 minutes of no key entry.

Tests

The test number will appear in the fresh food display. When 'power on-off' is pressed, test results will appear in the freezer display. Refer to the troubleshooting guide for diagnostic flow charts.

Test 28: Dispenser paddle test.

Ensure the fresh food door is closed. Display will show "ON" when paddle is pressed; "OFF" when released.

Test 1: Standard compressor test.

Push 'power on-off' and the compressor will run. Push 'power on-off' again to stop.

NOTE: This test will not show when product has a VCC Compressor. VCC models use test 38.

Test 2: Defrost heater test.

Push 'power on-off' and the heater will come on. Push 'power on-off' again and the heater will go off.

Test 3: Fresh food compartment lighting test.

Push 'power on-off', then open the fresh food door and the fresh food compartment lights will come on low and ramp up. Push 'power on-off' again to cancel test.

Test 8: Water valve (water dispenser test only)

NOTE: Place a cup in the dispenser prior to starting this test to collect the water as both primary and dispenser valve will be activated.

Push 'power on-off' to actuate valve. Push 'power on-off' again to deactivate.

Test 9: Freezer compartment lighting test.

Push the 'power on-off', then open the freezer door and the freezer compartment lights will come on low and ramp up. Push 'power on-off' again to cancel test.

Test 10: Auger motor

Push 'power on-off' to activate. Auger runs with fresh food door closed. Push 'power on-off' again to deactivate.

also, **Auger motor switch**

Push 'power on-off' to activate. Auger stops when fresh food door switch is allowed to open.

Test 11: Cube/Crush solenoid

Push 'power on-off' to activate. Solenoid pulls in. Push 'power on-off' again to deactivate.

Note: The solenoid should only be activated momentarily to prevent damage. Do not leave the solenoid in activated state for an extended period of time.

Test 12: VCC condenser Fan

Push 'power on-off' or '+' and the fan motor will run at full speed. Push 'power on-off' or '+' again and it will stop running.

NOTE: Only used with VCC Compressor.

Test 38: VCC compressor

Push 'power on-off' and the compressor will run at full speed. Push 'power on-off' again and it will stop running.

NOTE: Only used with VCC Compressor. Standard Compressor model uses test 1.

Test 15: Evaporator fan

Push 'power on-off' and the fan will run at low speed. "LOW" will show in freezer display. Push 'power on-off' and the fan will run at full speed. "HI" will show in the freezer display. Push 'power on-off' again and the fan will stop running and "Off" will show in the freezer display.

Test 22: Damper test

Push 'power on-off'. The damper will open and "OP" will show in freezer display. Push 'power on-off' again. The damper will close and "CL" will show in the freezer display.

Test 36: Ice door test; ice chute door micro-switch only.

Displays "OP" when flapper is opened manually.

also, **Ice door test; ice chute door solenoid & micro-switch**

Push 'power on-off'. Dispenser and the solenoid will activate. The Freezer display will show "OP"

Test 23: Fresh food door

Freezer Display will show “OP” open when doors are open and “CL” when door is closed.

Test 24: Freezer door (See Flow Chart 5)

Freezer Display will show “OP” open when door is open and “CL” when door is closed.

Test 26: DTT (Defrost Limit Switch)

Display will show “OP” open when switch is open and “CL” when door is closed.

Test 29: Fresh food thermistor

Push ‘power on-off’ to change between F and C.
The display will show the actual temp if the thermistor is good and “OP” or “SH” if the thermistor is open or shorted, respectively.

Test 30: Freezer thermistor

Push ‘power on-off’ to change between F and C.
The display will show the actual temperature if the thermistor is good and “OP” or “SH” if the thermistor is open or shorted, respectively.

Test 33: Ambient thermistor at main control board.

Push ‘power on-off’ to change between F and C.
The display will show the actual temp if the thermistor is good and “OP” or “SH” if the thermistor is open or shorted.
NOTE: If “Er” is shown in the display, replace the main control board.

Test 34: Ambient thermistor at user interface.

** on some models*

Push ‘power on-off’ to change between F and C.
The display will show the actual temp if the thermistor is good and “OP” or “SH” if the thermistor is open or shorted.
NOTE: If “Er” is shown in the display, replace the main control board.

Firmware Versions

After Test 33 *(or 34 if available),* the system software versions are displayed. There are 5 different software versions numbered 0 to 4. Press fresh food up (∧) or ‘+’ to select the different versions and ‘power on-off’ to display the selected version.

0 - Main board parameter version to distinguish model
1 - Used by board manufacturer only
2 - Main board software version
3 - Used by board manufacturer only
4 - UI software version

Temperature Resistance Chart For Negative Temperature Coefficient Thermistors

Temp F°	Ohms	Temp F°	Ohms
-10	117,240	32	32,566
-9	113,460	33	31,658
-8	109,814	34	30,778
-7	106,298	35	29,926
-6	102,908	36	29,100
-5	99,637	37	28,300
-4	96,481	38	27,524
-3	93,436	39	26,773
-2	90,498	40	26,044
-1	87,662	41	25,338
0	84,925	42	24,653
1	82,283	43	23,989
2	79,732	44	23,346
3	77,268	45	22,721
4	74,890	46	22,116
5	72,592	47	21,528
6	70,373	48	20,958
7	68,229	49	20,405
8	66,158	50	19,869
9	64,156	51	19,348
10	62,222	52	18,843
11	60,352	53	18,352
12	58,545	54	17,876
13	56,798	55	17,414
14	55,109	56	16,965
15	53,476	57	16,529
16	51,897	58	16,106
17	50,369	59	15,695
18	48,892	60	15,296
19	47,462	61	14,909
20	46,076	62	14,532
21	44,741	63	14,166
22	43,447	64	13,811
23	42,193	65	13,465
24	40,981	66	13,130
25	39,806	67	12,803
26	38,670	68	12,486
27	37,569	69	12,178
28	36,503	70	11,878
29	35,471	71	11,587
30	34,472	72	11,304
31	33,504		

+ or - 2 %

Ice and Water Dispense Troubleshooting Guide

General Information

1. During normal operation, certain components can fail independently with no cascading effect to other ice and water related components. These components are listed below:
    a. Water Valve
    b. Auger Motor
    c. Cube/crush Solenoid
2. During normal operation, other components fail with a cascading effect. These components are listed below with the related disabled components:

a. Fresh Food Door Switch – disables auger motor, cube/crush solenoid, ice chute door solenoid

b. Paddle Microswitch – disables water valve, auger motor, cube/crush solenoid, ice chute door solenoid, automatic led illumination

c. Ice chute door solenoid – disables auger motor, cube/crush solenoid

d. Ice chute door microswitch – diables Auger Motor, cube/crush solenoid

3. During normal operation, the dispenser pocket will be lit by a pair of LEDs on the ice and water module. The LEDs can be set to be on 100% of the time or on only when the paddle is pressed for ice or water.

Verify that the LEDs function properly prior to entering service mode below.

4. Definitions:

ERF2500++ – main board located under the refrigerator behind the lower front panel

UI – User interface above the dispenser pocket

Ice and water module – single paddle sub-assembly located behind the UI

Diagnosing Ice and Water Dispense Issues via System Service Mode

1. Enter service mode

Express-Select™

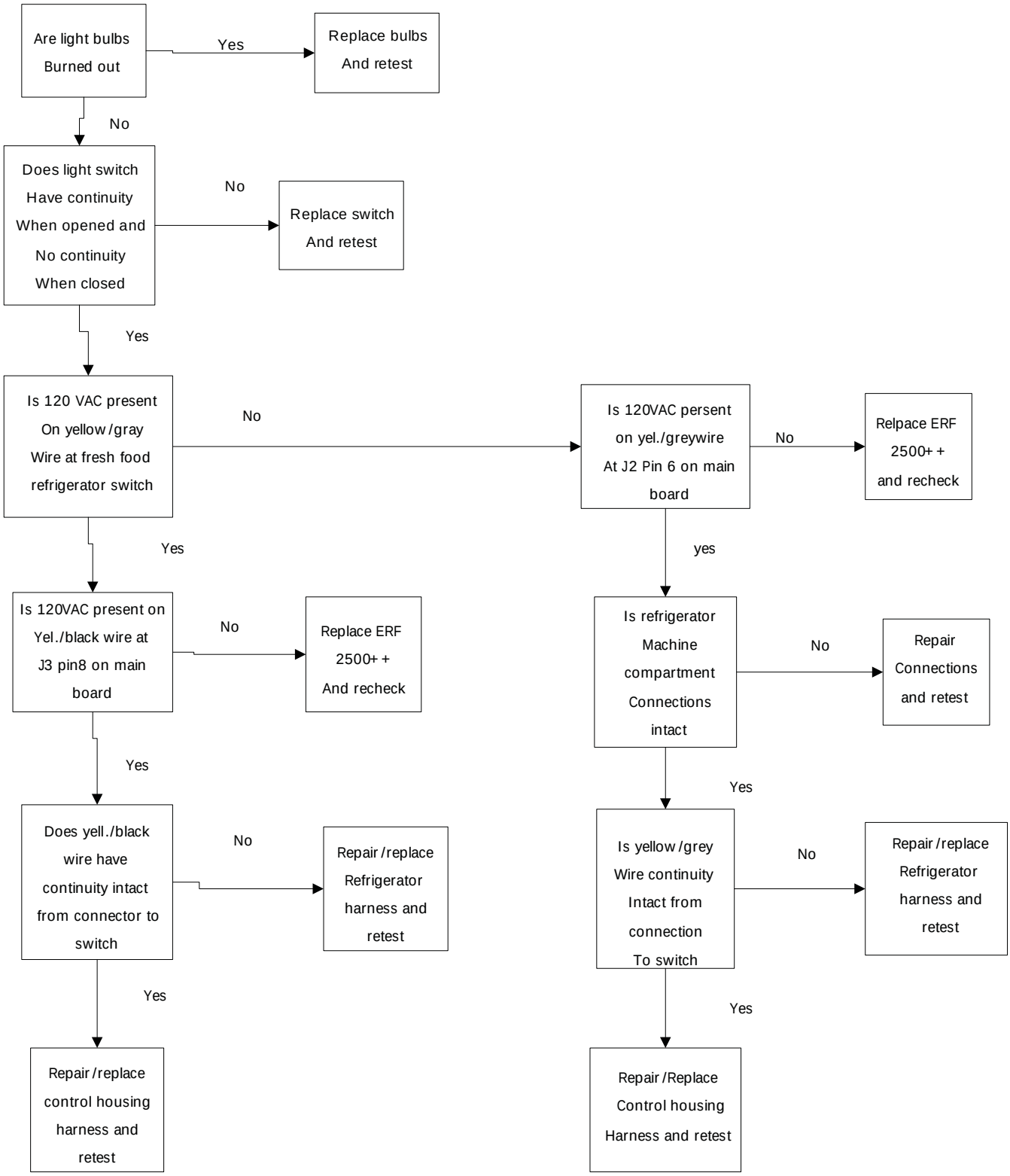
To enter the service mode, press and hold the freezer up (∧) and down (∨) temperature pads simultaneously for up to ten (10) seconds. Press fresh food up (∧) to advance thru the menu options; press 'power on-off' to initiate the selected test.

Pro-Select™

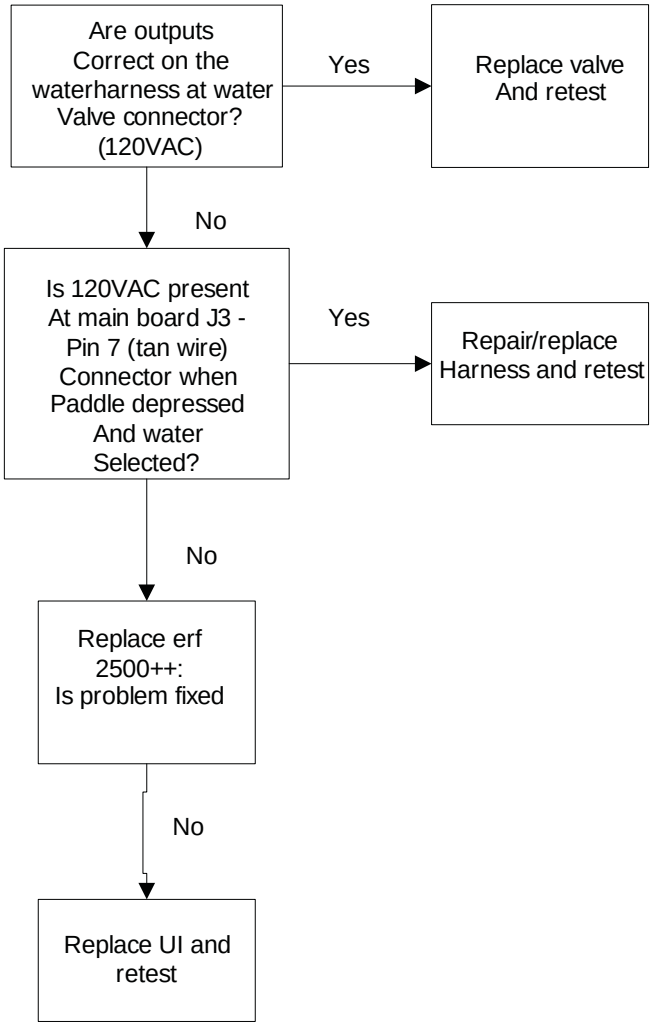
To enter the service mode, press and hold 'control lock' and 'options' simultaneously for up to ten (10) seconds. Press '+' on the LCD display to advance thru the menu options; press 'power on-off' to initiate the selected test.

2. If service mode cannot be accessed, go to Ice and Water Flow Chart 1.
3. Press fresh food (^) to advance thru the menu options; press 'power on-off' to initiate function
4. Perform the following tests:
    8 – Water Valve
    10 – Auger Motor
    10 – Auger Motor Switch
    11 – Cube/Crush Solenoid
    23 – Fresh Food Door Switch
    28 – Paddle Microswitch
    36 – Ice Chute Door Micro-switch only
    36 – Ice Chute Door Solenoid & Micro-switch
5. Follow the direction given below for the flow chart covering individual failures:
    - Fail Test 8 only, go to Ice and Water Flow Chart 2
    - Fail Test 10 only, go to Ice and Water Flow Chart 2
    - Fail Test 11 only, go to Ice and Water Flow Chart 4
    - Fail Test 23 only, go to Ice and Water Flow Chart 5
    - Fail Test 28 only, go to Ice and Water Flow Chart 6
    - Fail Test 36 (micro-switch) only, go to Ice and Water Flow Chart 7
    - Fail Test 36 (micor-switch and solenoid) only, go to Ice and Water Flow Chart 8
    - Fail LED function only, go to Ice and Water Flow Chart 9
6. Follow the direction given below for multiple failures:
    - Fail Tests 8, 10 and 11, go to Ice and Water Flow Chart 10
    - Fail Tests 10, 11 and 23, go to Ice and Water Flow Chart 11
    - Fail Tests 28, 36 and LED function, go to Ice and Water Flow Chart 12

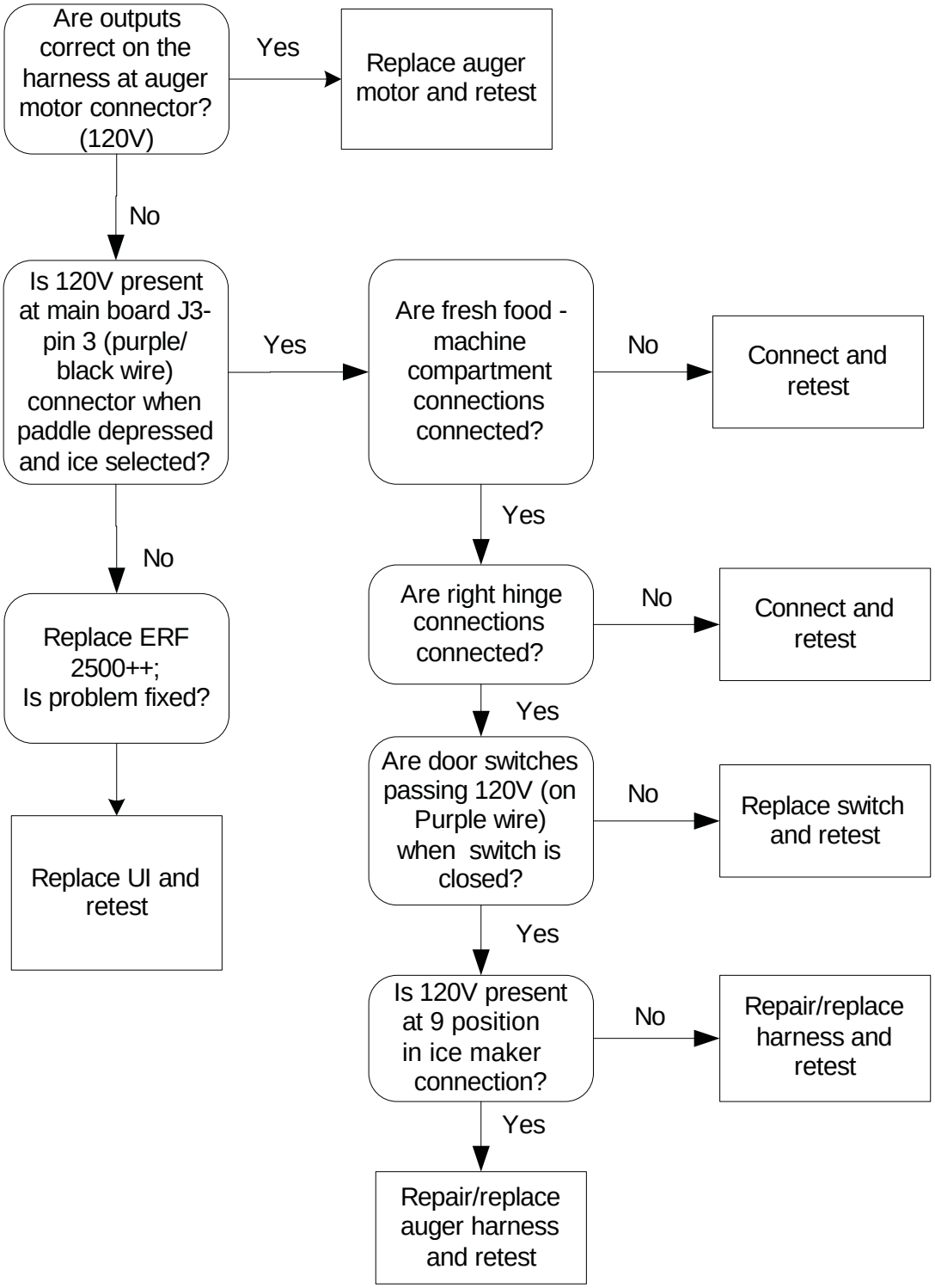
Ice and Water Flow Chart 1



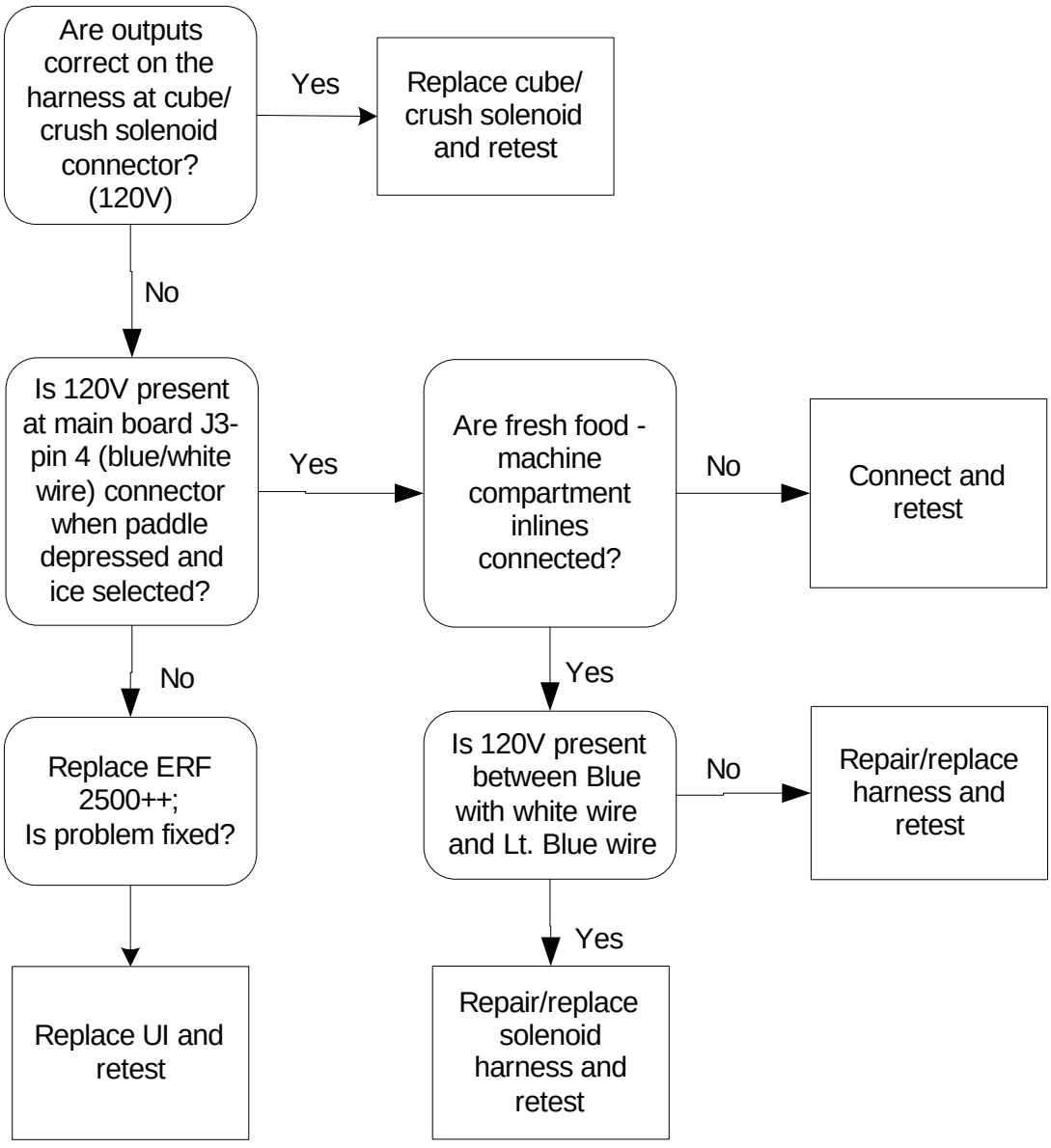
Ice and Water Flow Chart 2



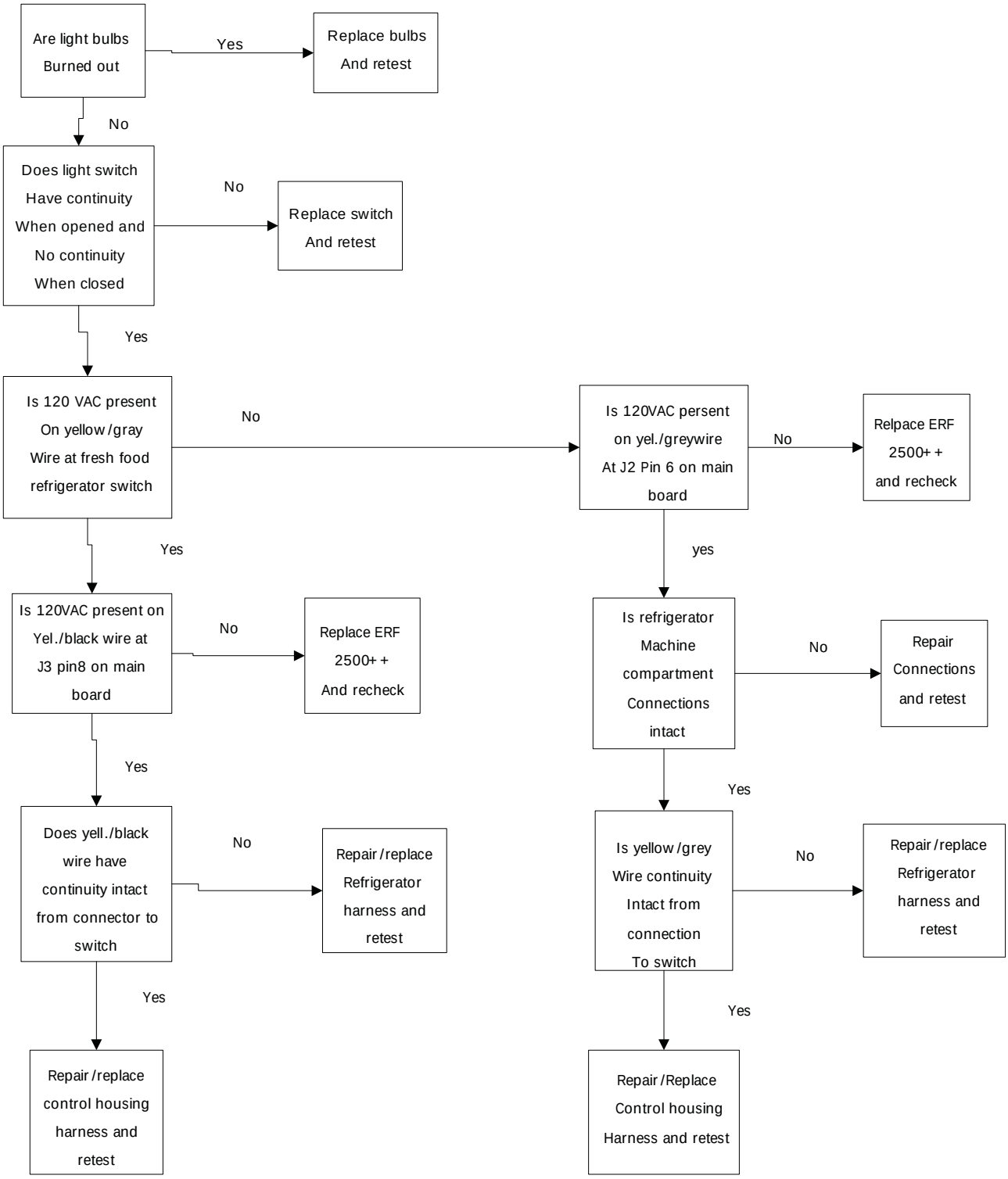
Ice and Water Flow Chart 3



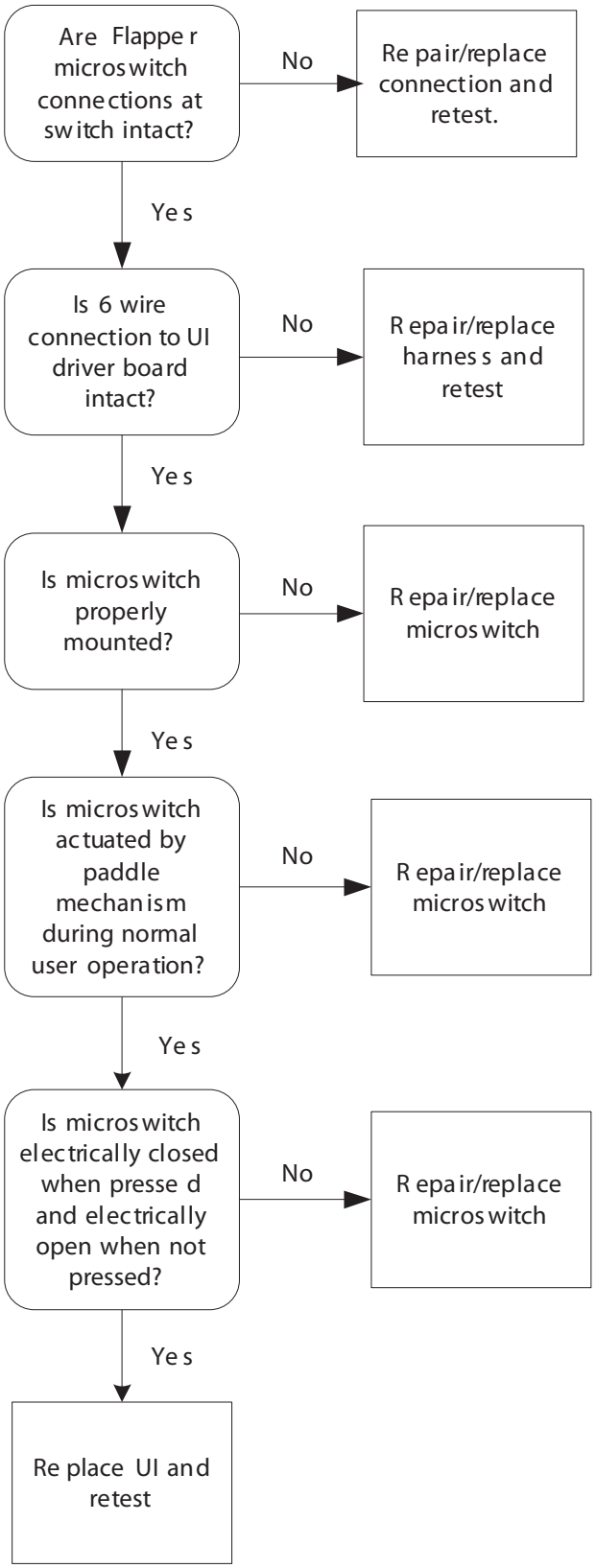
Ice and Water Flow Chart 4



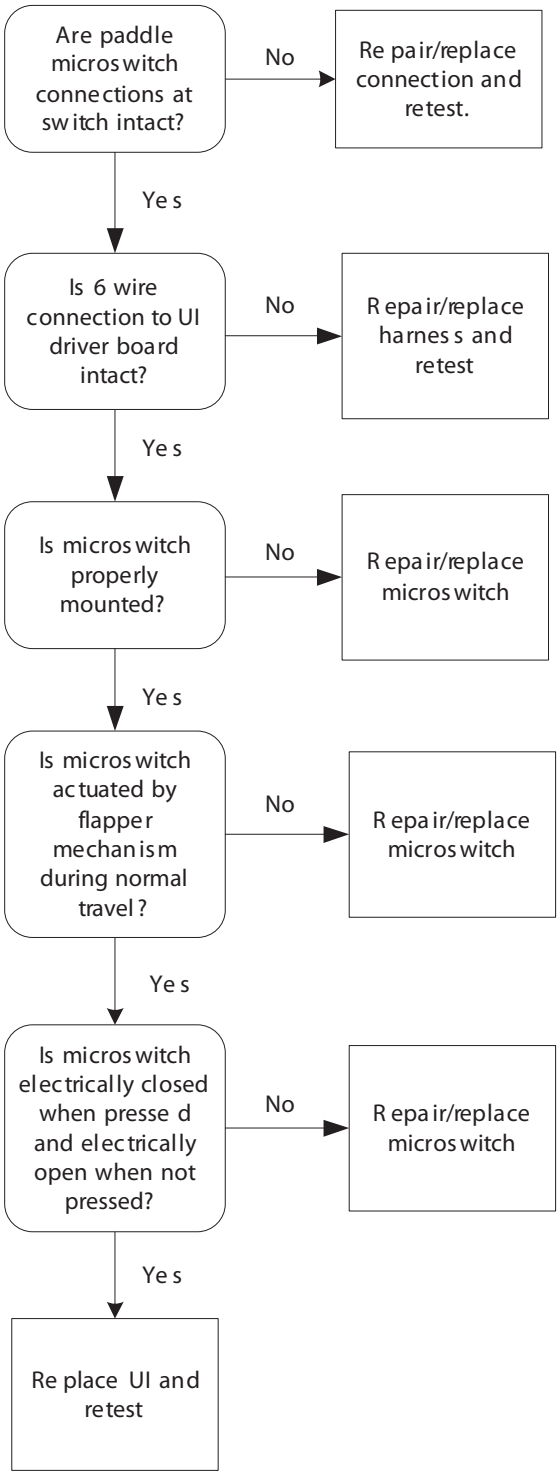
Ice and Water Flow Chart 5



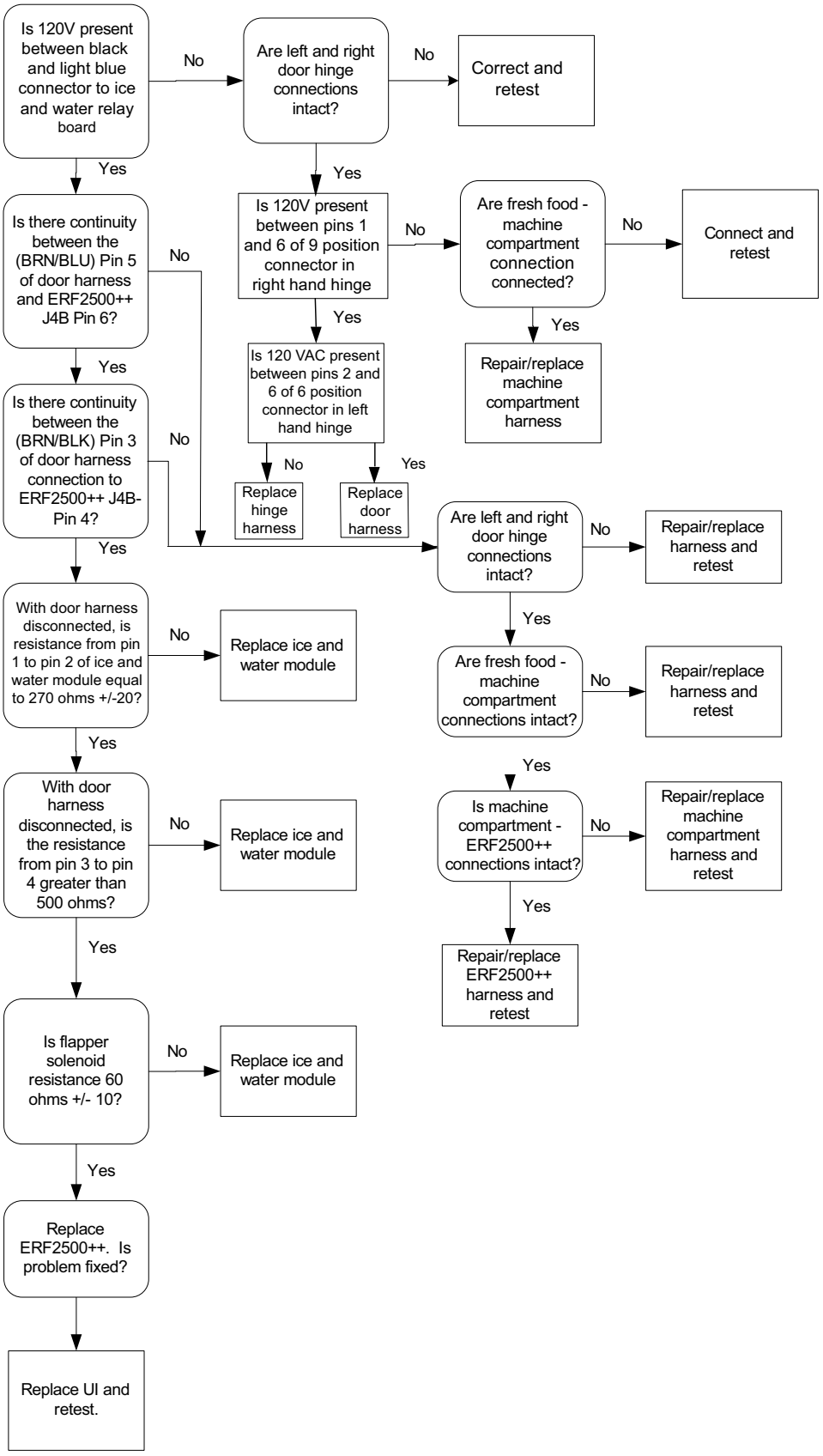
Ice and Water Flow Chart 6



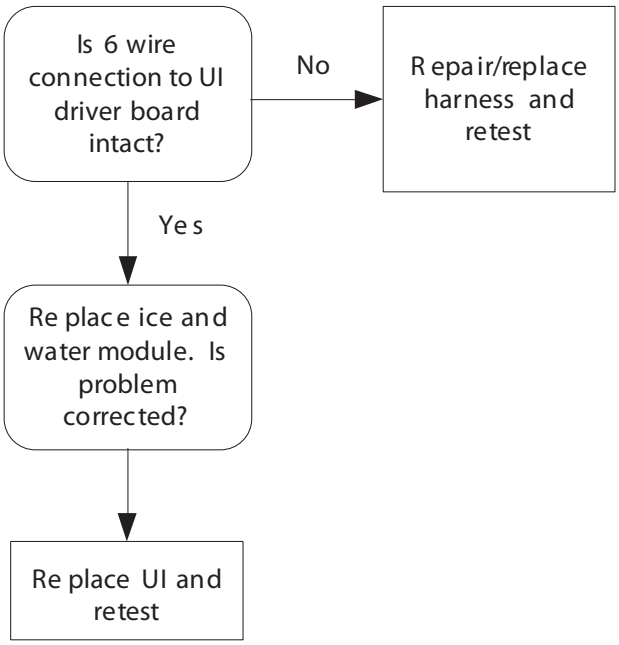
Ice and Water Flow Chart 7



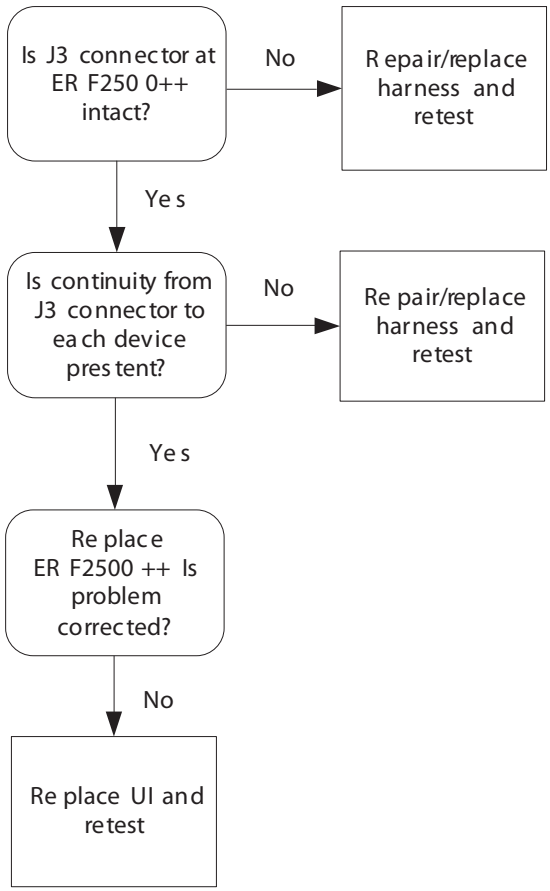
Ice and Water Flow Chart 8



Ice and Water Flow Chart 9



Ice and Water Flow Chart 10



Variable Capacity Compressor Electrical Components

The new series of very high efficiency compressors are equipped with a new electrical power input electronic control, also known as the Inverter, to replace the standard start package. The solid state power input electronic control (Inverter) contains:

1. Low voltage power supply.
2. EMI Filter and Voltage Suppressor Circuit.
3. AC-DC Converter
4. Three-phase Inverter Bridge
5. Serial communication.
6. Microcontroller or DSP Controller Protection.
7. Voltage Sensor

The Inverter replaces the solid state relay, the overload protector and the run capacitor. The Inverter has 115 Volt AC current supplied to it whenever the refrigerator is connected to line voltage through the service cord. The inverter receives a DC signal from the main control board located under the refrigerator in the left front opening behind the bottom grill.

To Check/Replace the Inverter

1. Use your Multimeter or a good volt meter set on 300 volt AC to test the voltage going into the inverter from the product service cord. Do not disconnect the molex connector. Slide the probes from your meter along side the wires until you connect with the terminal itself. You should read 115 or 127 (depending on local codes) Volt AC +/- 10%. If less, check service cord and supply voltage.

NOTE: It is recommended for best results that the meter used for this test is a TRUE RMS MULTIMETER. A voltage test for both the RMS Meter and a standard Multimeter will be provided.

2. Remove the lower power board from under the front of the product. (See Section 6 for detailed procedure). You will use connection J2 terminal 3 (RED/BLK) and terminal 4 (BLK/WHT) on the lower control board to test the voltage. (See Figure 3-9) Do not disconnect the molex connector from the board. Slide the probes from your meter along side the wires until you connect with the terminal itself.

   Set your RMS Multimeter to DCV/HZ setting. You should show from 50 to 155 HZ on the meter.

   With a standard Multimeter, first set the meter on ACV. You should show 10 to 15 Volt AC. Next set your meter for DCV, you should read 2 Volt DC or less. If voltage is outside the listed range, replace the main control board. If the voltage is good proceed to step 3.

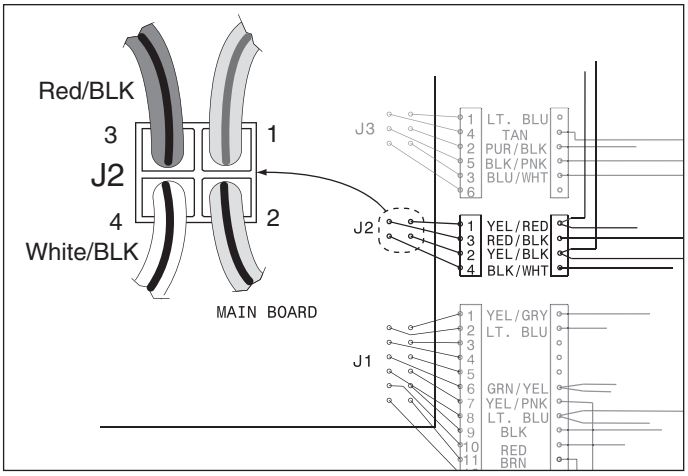


Figure 3-9

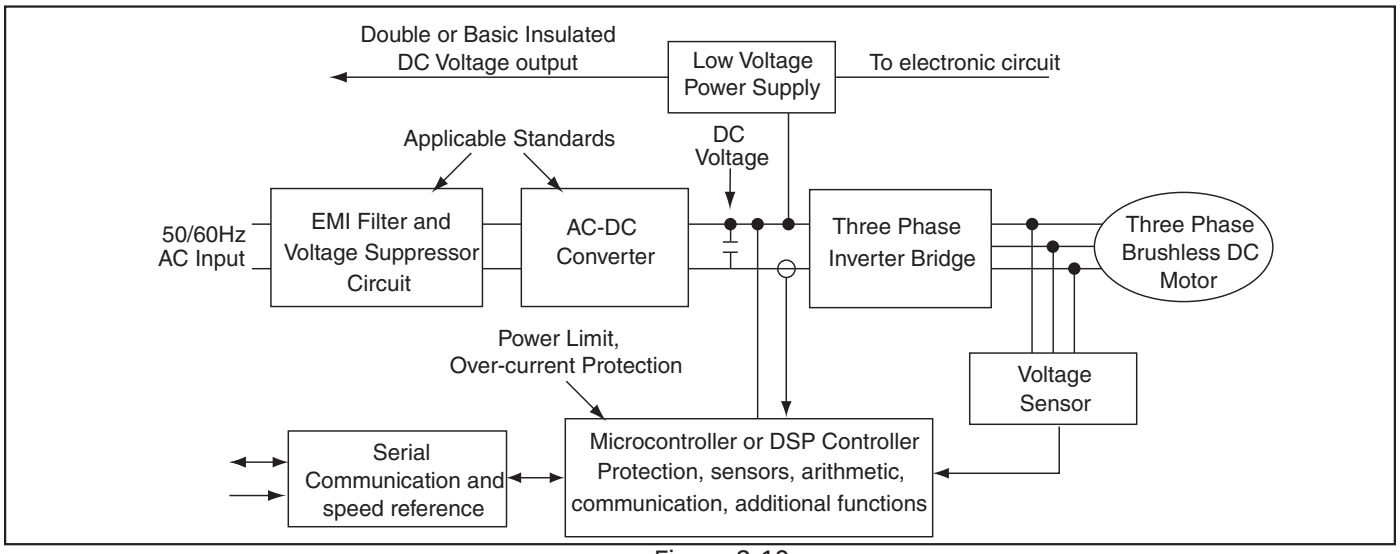


Figure 3-10

3. If the voltage checks good, remove the inverter from the compressor by removing one screw at the bottom of the inverter that goes through the bracket welded to the compressor. (See Figure 3-11) Pull the inverter away from compressor. Use a small flat-bladed screwdriver to remove the plug from the compressor terminals. Using an ohmmeter, check the resistance between the compressor terminals (See testing the compressor). If the compressor checks good, replace the inverter.

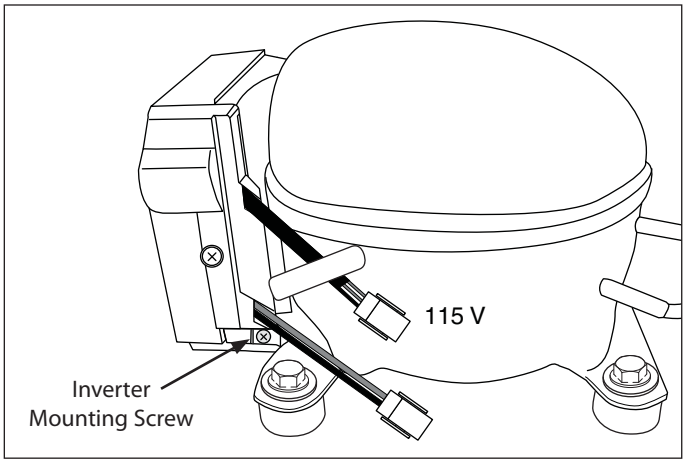


Figure 3-11

Testing the Compressor

The compressor has a 3 phase, 4 pole brushless DC motor. To test the compressor using your Ohmmeter, check the resistance between the terminals. Check should read 10 ohm +/- 10 % when using Figure 3-12 to test.

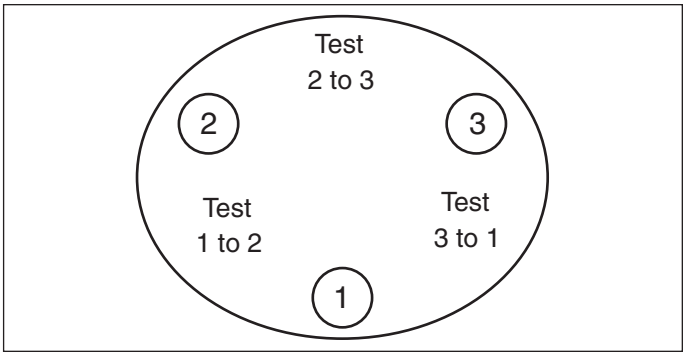


Figure 3-12

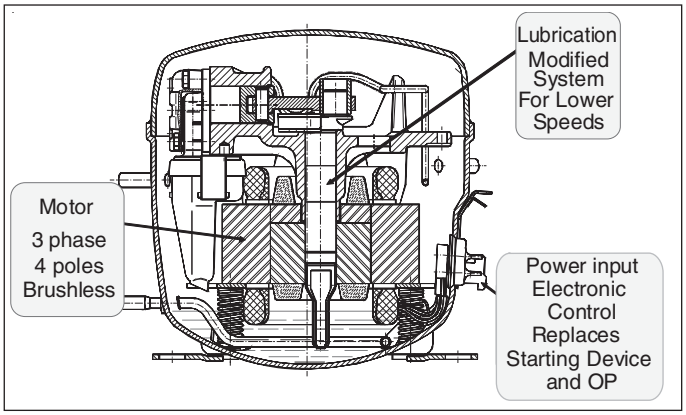


Figure 3-13

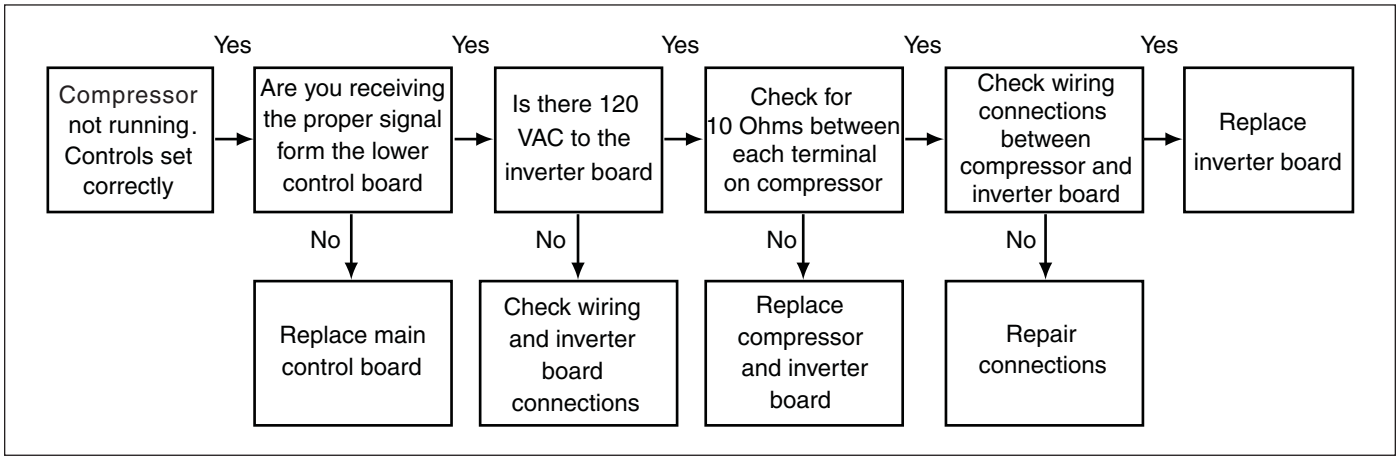


Figure 3-14

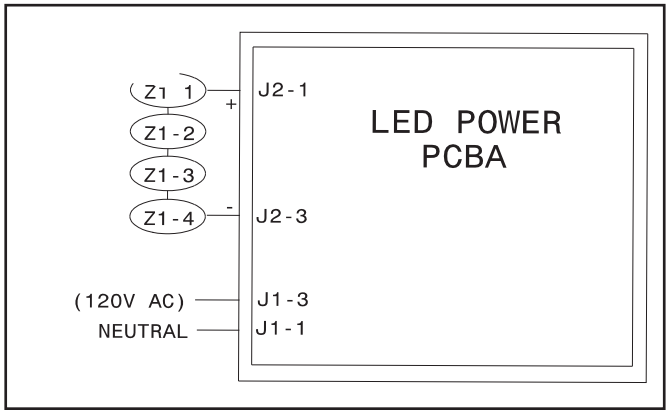


Figure 3-15. LED Power Board For Lighting In Food Compartment

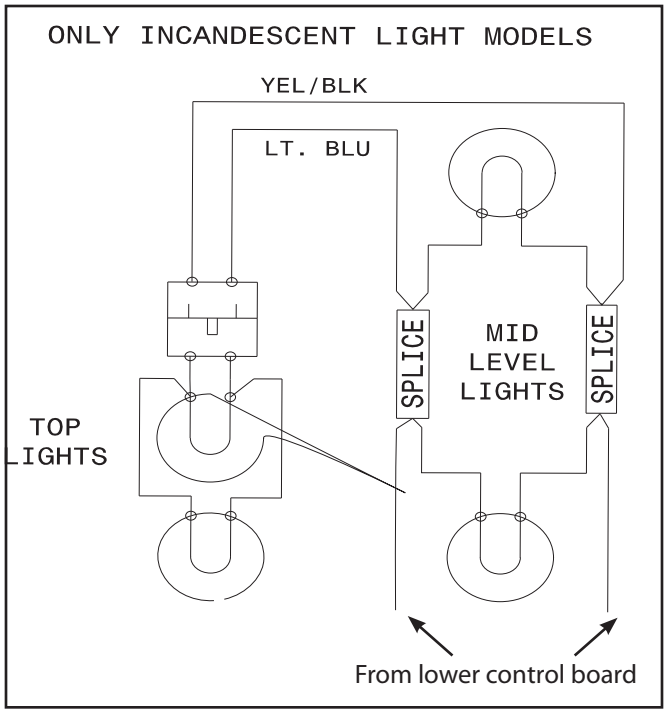


Figure 3-16. Models With Incandescent Lighting in Food Compartment

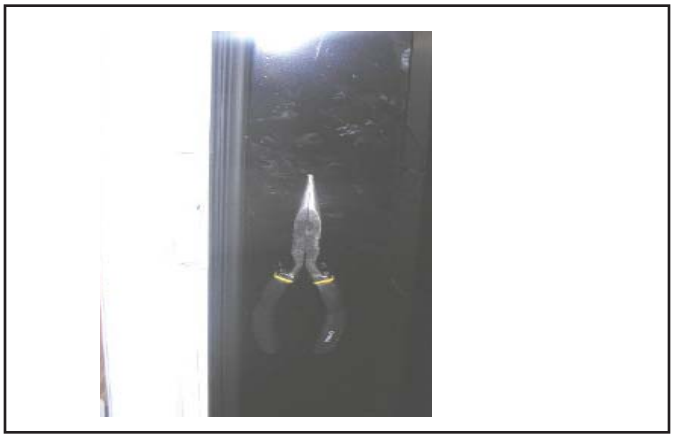


Figure 3-17 Checking Magnet In Door

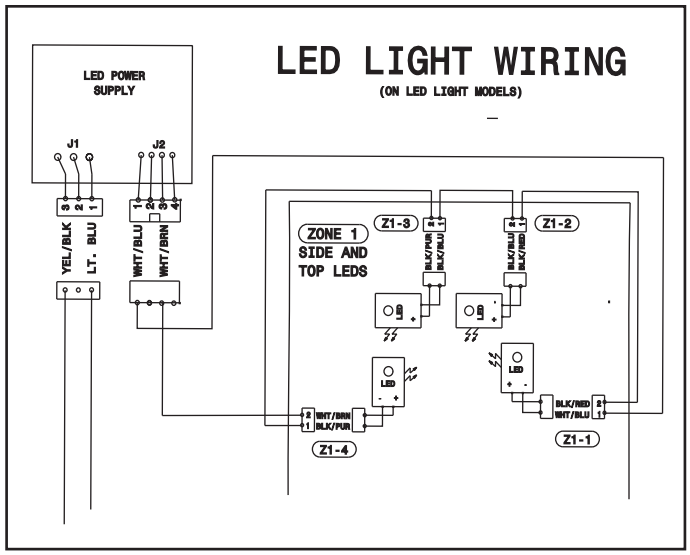


Figure 3-18. LED Lighting in Fresh Food Compartment Only

Fresh Food Lighting

Frigidaire bottom freezer models can have LED or incandescent lighting in the fresh food compartment depending on the model number.

On dispenser models, the light switches are located at the top outer corners on the face of the cabinet. On non-dispenser models, the fresh food compartment light switch is part of the UI board mounted in the left fresh food door. It is controlled by a magnet in the right fresh food door.

Use service mode tests 3 and 23 to diagnose fresh food lighting issues.

Diagnosing LED Fresh Food Lighting

(Dispenser Models)

If test 23 fails, verify connections to the inoperative switch. If no failed connections are identified, replace the failed switch.

If test 3 fails, diagnose as follows:
- Determine if failed LED is causing the failure. LEDs are connected in series. Start by replacing one LED with a known good LED. Continue until the failed LED is replaced and the circuit is completed.
- If no failed LEDs are identified, proceed to check electrical continuity and identify failed connections. Refer to the wiring diagram located in the last section of this manual.
- If no failed connections are identified, check to make sure that the main contorl board is supplying voltage to the LED board. Replace LED board if defective, or main control board if no power is suplied to the LED board.

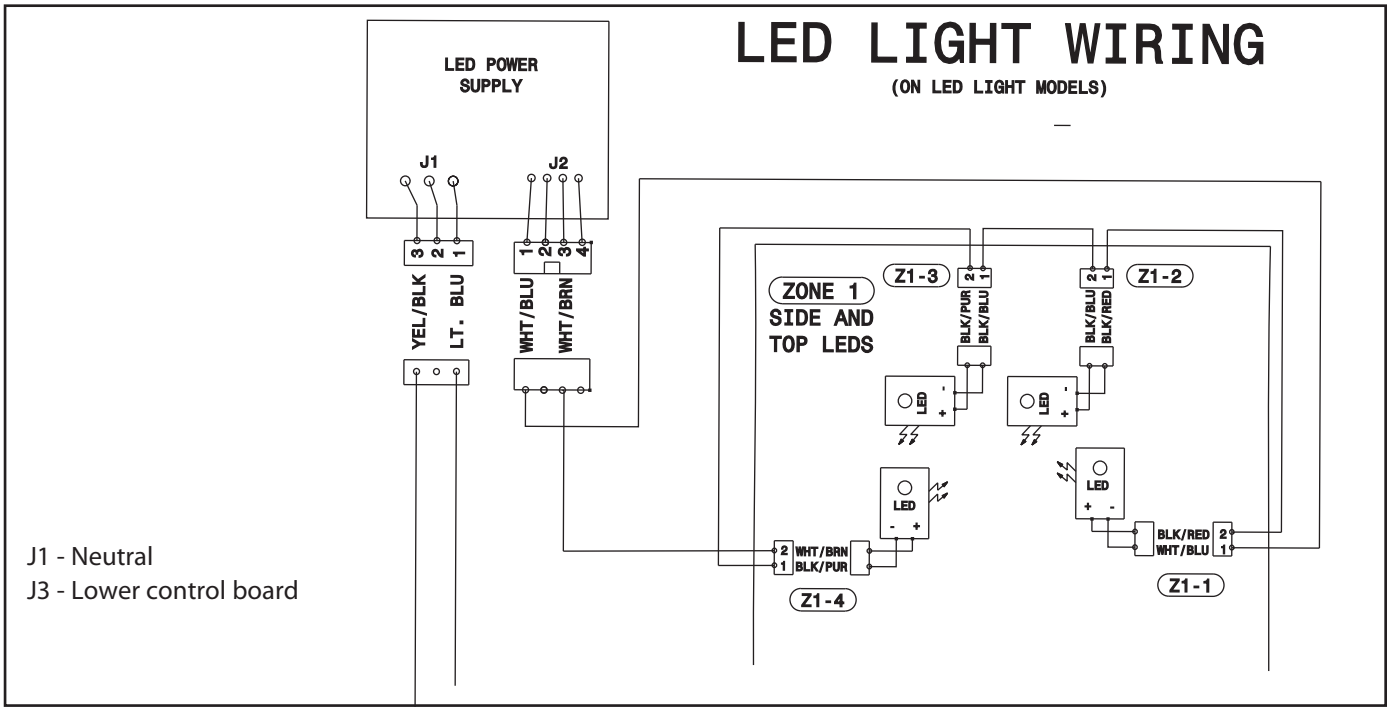


Figure 3-19. Non-Dispenser Models

Diagnosing LED Fresh Food Lighting

(Non-Dispenser Models)

On Non-Dispenser models the light switch is part of the UI board. First check that the UI board lights up when the door is opened. If it does not light up, check the magnet in the right food door. Place a steel tool on the edge of the right food door. See Figure 3-14. The magnet operates the light control on the UI board. If the magnet holds the tool check the connections on the UI board and the lower control board. If the connections are good check for 12 volts DC from the lower control board to the UI at terminals 1 and 3 on the UI. If the voltage is present replace the UI. If voltage is not present replace the lower control board.
If the magnet is not present or is out of place, order a replacement door. As a precaution, verify that the UI and the main board are operative by following procedure outlined above.

Follow procedure for failed test 3 in 'Diagonsing LED Fresh Food Lighting (Dispenser Models)' outlined in the previous section.

Diagnosing Incandescent Fresh Food Lighting

Incandescent fresh food lighting is powered directly from the main control borad. In the event of lighting failure, check electrical continuity, check that the main board provides adequate voltage, check for fault with the light socket, or replace the light bulb.

Diagnosing Incandescent Freezer Lighting

All models are equipped with incandescent freezer lighting. Freezer lights are powered directly from the main control board. In the event of lighting failure, check electrical continuity, check that the main board provides adequate voltage, check for fault with the light socket, or replace the light bulb.

Voltage Flow Chart

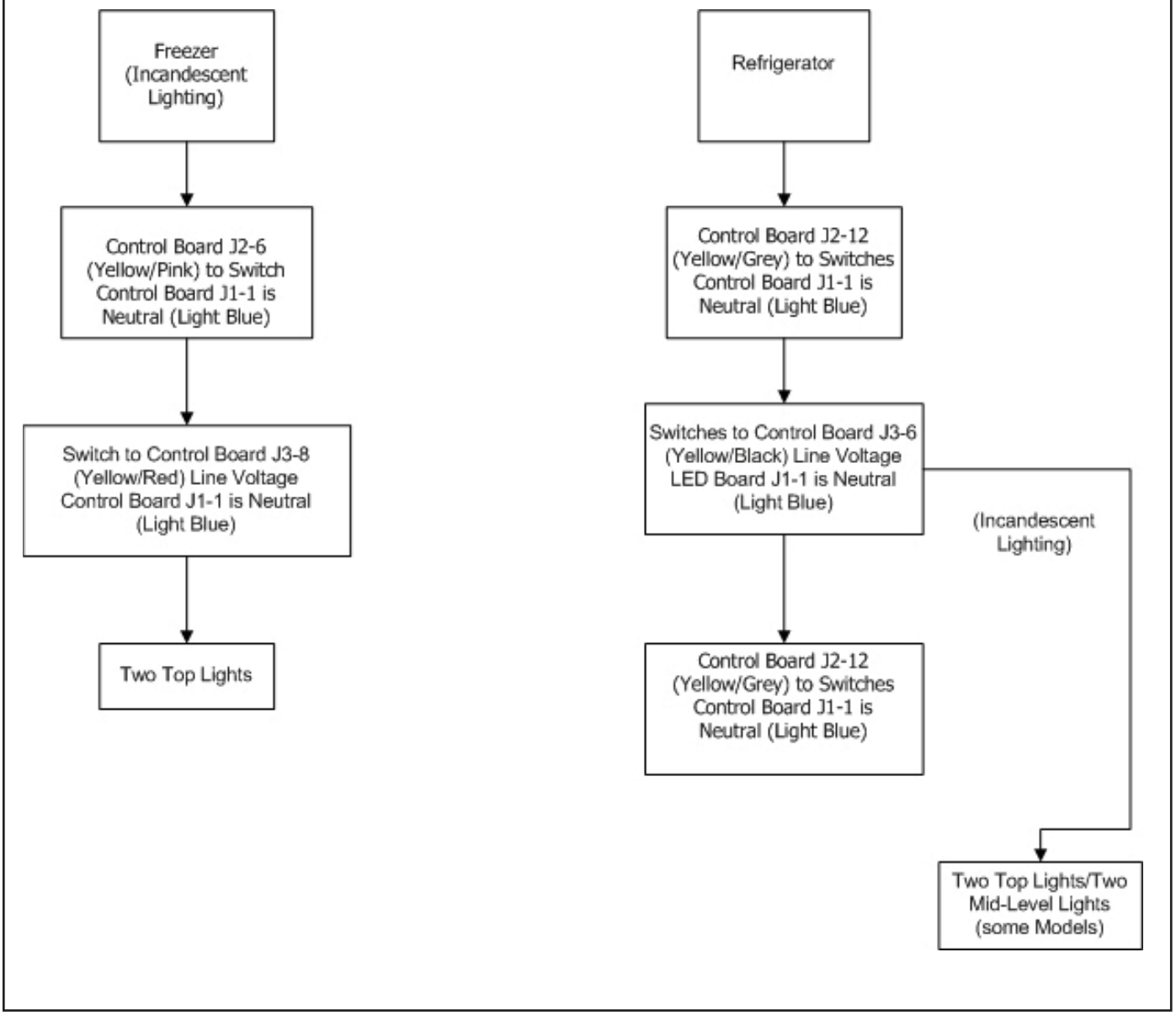


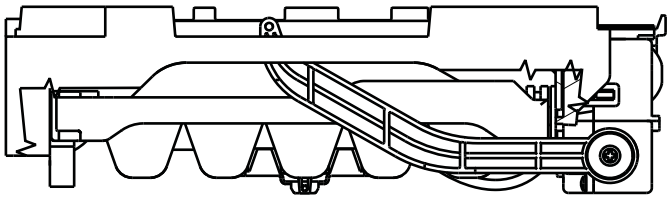
Figure 3-20.

NOTE

Depending on the **Engineering Digit** at the end of the model number, the product may be equipped with a **Flex Tray** or a **Finger Evaporator** ice maker in the fresh food compartment. Models without the dispenser will have an aluminum mold ice maker mounted in the freezer compartment. Select models will be equipped with ice makers in both the fresh food and the freezer compartments.

Fresh Food Compartment Ice Maker

Flex Tray



Operation

The dispenser french door bottom freezer refrigerator has an ice and water dispenser mounted in the left fresh food door and an ice maker mounted in the top left corner of the fresh food compartment. The ice maker is controlled by the main electronic control board mounted under the product in the left front section behind the toe grill. This control oversees the complete operation of the ice maker as well as operation of the rest of the product.

The ice maker compartment has its own fin-and-tube-style evaporator to remove heat from the ice maker compartment. (See Figure 4-2)

The heat exchanger suction line connects to the outlet of the freezer evaporator. The cap tube from the heat exchanger runs to the in inlet of the ice maker compartment evaporator. There is a jumper tube from the outlet of the ice maker compartment evaporator to the inlet of the freezer evaporator.

Heater	Ohms	Watts @ 115 v	Watts @ 120v
Defrost Heater	189	70	73
Heater Manufac turers ra tings Note that there is a +5%/-10% tolerance on wattages			

Figure 4-1. Heater Electrical Specifications

Note: Models with the Flex-Tray ice maker do not have a separate ice maker control board. The ice maker is controlled by the system main board.

The ice maker has a drive motor and gear box assembly in the front section of the ice maker. A bail arm mounted to the side of the gear box and the flex ice tray are driven off the back of the gear box. There is a thermistor mounted to the bottom of the flex tray under a foam insulation block.

In the 'freeze' position, the tray is oriented horizontally, the thermistor mounted on the bottom of the tray is sensing the drop in tray temperature as the water gives up its heat, and the heat is removed from the ice maker compartment by the evaporator located in the back of the compartment. Once the water gets to freezing temperature, the temperature drop rate will slow down until the water changes from a liquid to a solid. At this point the temperature will start to drop rapidly. Once it has dropped another 13 degrees F, the ice maker will go into a harvest cycle. Alternately, once the thermistor reads 11 degrees F, the ice maker will also initiate a harvest cycle. The Drive motor will turn the tray CCW (counter-clock-wise) and the bail arm will start to drop. If the bucket is full, the tray will return to the start position. If the bucket is not full, the tray will continue to turn CCW. The back of the tray will hit a stop on the back of the ice maker housing. The motor will continue to drive the front of the tray twisting it and breaking the cubes free to fall into the ice bucket. The tray will continue to drive CCW until a tab on the drive gear closes the switch in the gear box. The lower control board will now reverse the motor and drive the tray CW back to the home position, which is horizontal.

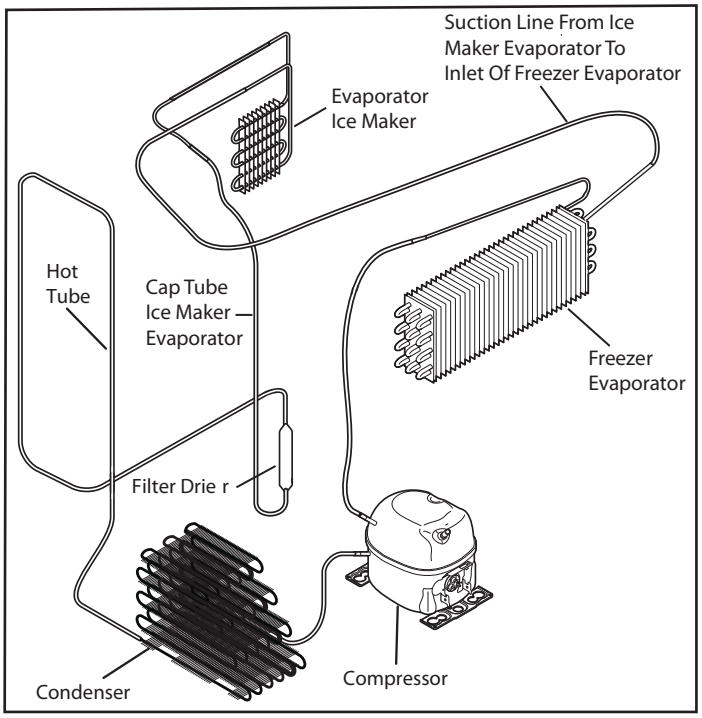


Figure 4-2. Ice Maker Refrigeration Schematic

Ice Maker (Flex Tray Fresh Food Compartment)

Ice maker, bail arm, bail arm switch, gear box, are mounted in the front of the ice maker in a snap out housing. The bail arm drops down to check the amount of ice in the bucket and uses the switch to prevent ice harvest when the ice maker bucket is full. (See Figure 4-3) The motor rotates the ice tray during harvest cycle. The switch is used to sense the location of the bail arm as well as the position of the ice tray during the harvest cycle.

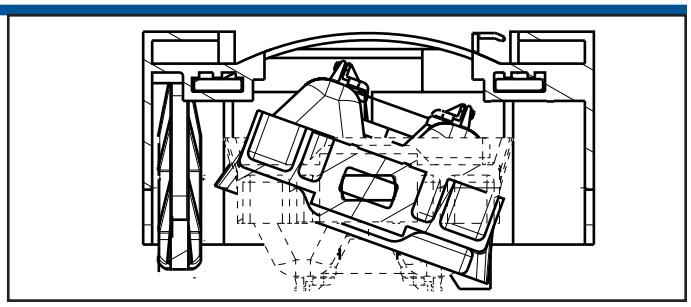


Figure 4-3. Gear Box

The rear section of the ice maker compartment contains the ice maker evaporator, a 70 Watt defrost heater (See Figure 4-4), a defrost bimetal limit thermostat with a contact set that will open at 48°F and close at 25°F.

The Ice Maker defrost heater will turn on at the same time as the defrost heater for the main evaporator located in the freezer.

There is a circulating fan motor to supply air movement to the ice maker compartment. It is mounted in the air Handler which is held in place by 3 screws going into the back of the food compartment liner.

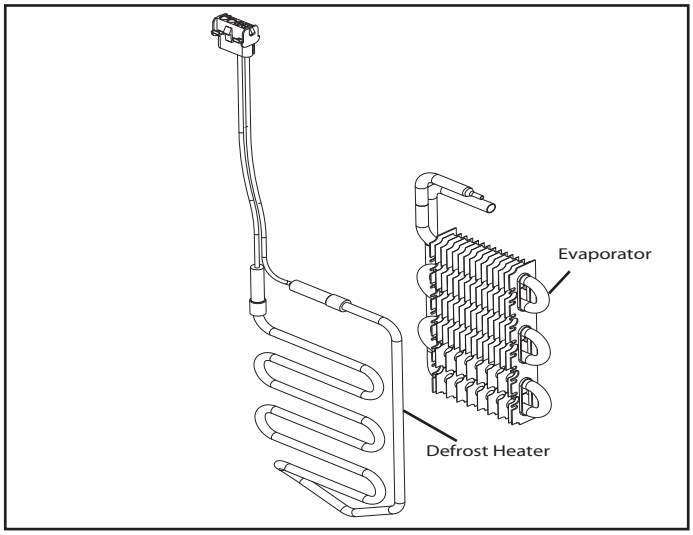


Figure 4-4. Evaporator and Defrost Heater

NOTE: There are 4 screw holes in the air handler, the bottom left screw hole is not used.

The fan motor for the food compartment ice maker is a 12V DC fan motor.
(See Figure 4-5) There is a solenoid to control the cube ice well as the auger motor to dispense ice also mounted in the air handler below the fan motor. The solenoid and auger motor are both 115 V AC components.

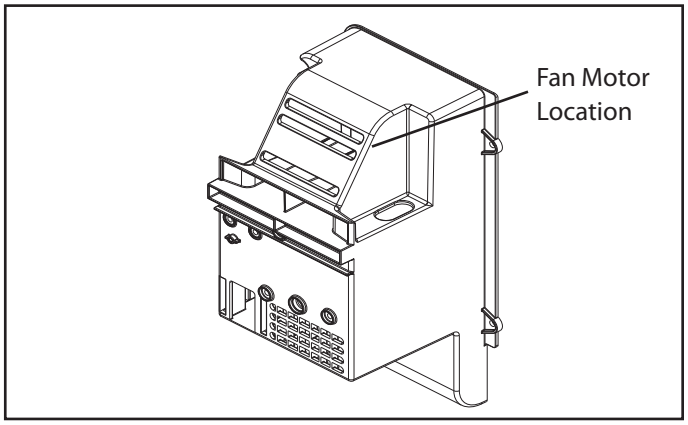


Figure 4-5. Air Handler

Defrost Water Drain

The defrost water from the ice maker compartment evaporator runs into a trough in the bottom of the drain housing. The housing contains an aluminum shield that covers the front of the defrost heater. The housing slides up and around the evaporator and defrost heater from the bottom. This housing fits inside the back of the air handler behind the auger motor The outlet for the trough lines up with a drain line running through the insulation between the cabinet and the liner. The water then runs into the same drain pan under the product as the defrost water from the freezer evaporator. (See Figure 4-6)

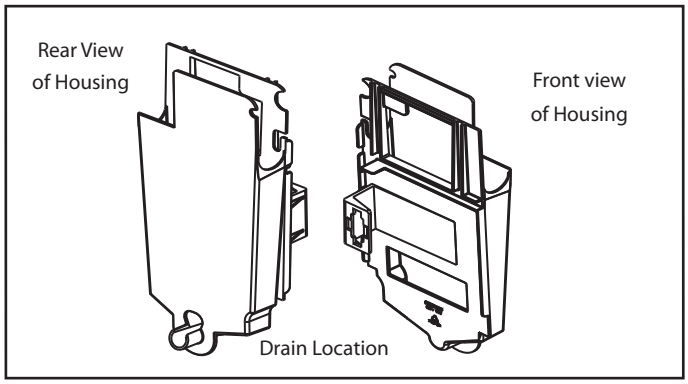


Figure 4-6. Evaporator Cover and Drain

About Ice Cube Production

There is a thermistor located inside a foam insulation cover under the ice maker flex tray that senses the temperature of the water and the ice tray. The signal from the thermistor is sent to the lower control board of the refrigerator. The thermistor looks for the water in the tray to drop to a point that the water is changing from a liquid to a solid in the freezing process. It then looks for the temperature of the cubes to drop another 13 degrees F, at this point the lower control board will start the ice maker drive motor. The drive motor will start to turn the flex tray CCW to about 40 degrees and start to drop the bail arm down. If the bail arm does not hit ice in the bucket (and therefore does not close the internal switch), the drive motor will continue to rotate the tray CCW allowing the end of the tray opposite the drive motor to contact a stop on the ice maker frame. The motor will continue to drive the front end of the tray, twisting it, and breaking the cubes free to fall into the ice bucket. The motor will continue to drive the tray CCW until the tab inside the gearbox closes the internal switch. At this point, the motor will reverse and rotate the tray CW back to the home (horizontal) position. During the twisting process, the bail arm will be dropped and raised twice –once during the CCW rotation and once during the CW rotation. Once the tray is back to the home position, the water valve will immediately be activated to fill the tray with water. If the bail arm hits ice in the bucket (and closes the internal switch), then the motor will immediately reverse and bring the tray back to the home position. At this point, the ice maker will enter “full bucket” mode. It will simply sit and wait for ice to either be dispensed or a fresh food door to be opened (user possibly removing ice manually from the ice bucket). About 1 minute after either event, the tray will rotate and drop the bail arm to check the ice level. If it detects ice, then it will reverse and re-enter full bucket mode. If it does not detect ice, then it will twist and dump the new ice into the bucket, go back to the home position, fill with water, and start the ice making process over again.

Ice Size Selection (for service use only)

There are 3 settings for the water fill time. Settings 1, 2, and 3 correspond to 4.6 sec, 5.8 sec, and 7.0 sec respectively. The proper fill amount for this ice maker is 75 to 105 ml (2.5 to 3.5 oz). For this ice maker, the purpose of the variable fill size is to be able to get the proper amount of water in the tray so that the ice maker can operate correctly across a wide range of water supply pressures. It is not intended for the purpose of making larger or smaller cubes.

The default setting is size 1 (4.6 sec). This setting is intended for normal supply pressure of 45 –50 psi and higher, and should be fine for most installations. If the pressure is below 40 -45 psi, but higher than 25 –30 psi, then setting 2 (5.8 sec) is recommended. If the pressure is below 25 –30 psi, then setting 3 (7.0 sec) is recommended.

Setting 3 should not be used for higher pressures (70+ psi) because of the risk of overflowing the ice maker. The excess water will spill onto the existing ice in the bin and cause it to clump together.

To change the fill size setting, press the CUBE button twice within two seconds. The FZ display will show ICE, and the FF display will show 1, 2, or 3 horizontal bars corresponding to the current fill size. Use the FF Up and Down buttons to change to the desired fill size. Press CUBE again to save the setting.

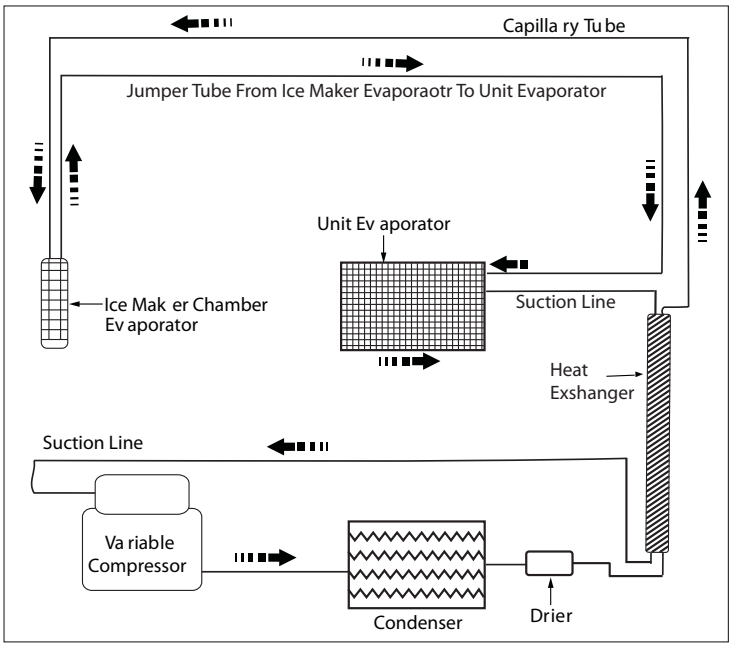


Figure 4-7. Ice Maker Refrigeration Flow Schematic

IMPORTANT

The Ice Maker must be turned on before entering the Service Mode. Check the 'ice off' indicator on the User Interface to verify that the ice maker is in on.

Diagnostic Service Mode

Activation

Express-Select™

To activate the Ice Maker Service Diagnostic Mode, press and hold fresh food and freezer up (∧) simultaneously for up to ten (10) seconds.

Pro-Select™

To activate the Ice Maker Service Diagnostic Mode, press and hold 'options' and 'power on-off' simultaneously for up to ten (10) seconds.

Activation of Ice Maker Service Diagnostic Mode automatically turns off all Ice Maker Control PCBA outputs. The compressor runs at fixed speed of 4500 rpm and the condenser fan turns on until Service Mode is deactivated. The damper is closed and the fresh food and freezer lights are enabled as well as the alarm audio. Defrost of the main system is not allowed.

Deactivation

Express-Select™

To exit service mode, press and hold fresh food (∧) for up to 10 seconds.

Pro-Select™

To exit service mode, press and hold the (+) key for up to 10 seconds.

Service mode is also automatically deactivated after 5 minutes of no key entries (that includes Communication Lost). All outputs are turned Off. Previously selected main system and ice maker operational modes are restored.

Testing

To actuate an ice maker load of the selected test step (turn on or off), use 'power on-off' on the user interface.

To step to the next ice maker sequential test, press fresh food (∧) or '+' on the LCD screen. To step back to the previous ice maker sequential test, press fresh food (∨) or '–' on the LCD screen. The selected test number will be displayed on the fresh food display.

After pushing 'power on-off' to start automatic test or turn on the load, the ice maker control will display the test result on the freezer two digit display. When waiting for the test to be automatically performed and the result displayed, the test number (test ID) will flash on/off. After the automatic test is completed the test result will be displayed as "P" – pass, or "F" – Fail.

For an interactive test, the technician manually activates the load using 'power on-off' and physically verifies the system response. Pressing 'power on-off' again turns the load off. The freezer display shows the current or expected state of the load. During the load transition the fresh food display flashes the test ID. After the last test step in the ice maker test sequence is completed, the next advancing action will scroll back around to the first ice maker test. Stepping back from the first test, will scroll the test sequence backwards to the last test in the sequence.

Note: The only test that the test number will flash during the test is the bail arm test.

Note: If you advance to another test before the present test is completed the ice maker will continue to run until the tray reaches the home position before the next test will start.

Service Diagnostic Mode Test Sequence

Test 52C: Ice maker Thermistor Test.
The current Thermistor temperature is displayed on Freezer display when the test is started. It will show the temperature at the ice maker if the thermistor is good. A "OP" will be displayed for open and "SH" for in short circuit condition of the ice maker thermistor.

Test 55C: Water Valve Test

NOTE: Prior to initiating this test, verify that the ice tray is empty. If not, empty the ice tray to prevent water from overflowing into the ice bucket. To empty the ice tray, remove the ice bin, place catch pan under the ice tray and initiate test 63C. The tray will twist and empty.

Touch 'power on-off' to start the test. The lower control board will turn on the green and brown water solenoid valves for a duration of 4.6 seconds if set for small cubes, 5.8 seconds if set for medium cubes or 7.0 seconds if set for large cubes. Additional 'power on-off' activations are ignored. If you want to re-run the test you will need to advance to another test and then go back after you drain the water out of the tray.

Test 57C: Evaporator Fan Test

To start this interactive test, touch 'power on-off' to activate the fan. Touching 'power on-off' again will turn the fan off. The Freezer display shows current state of the fan "on" or "OFF".

Test 58C: Ice Level Sensor Test

NOTE: Test will start automatically when you enter or pass test 58.

The ice bucket must be removed from the ice maker chamber prior to entering this test. The ice maker motor will run turning the tray and lowering then resetting the bail arm continually until you exit the test. If the bail arm is allowed to fall freely, the tray will return to the home position and no alarm will sound. If you hold the bail arm up as the tray rotates (thus simulating the presence of a full ice bucket), then the alarm will sound as the tray returns to home position.
Unless both conditions are met, the test is considered failed.

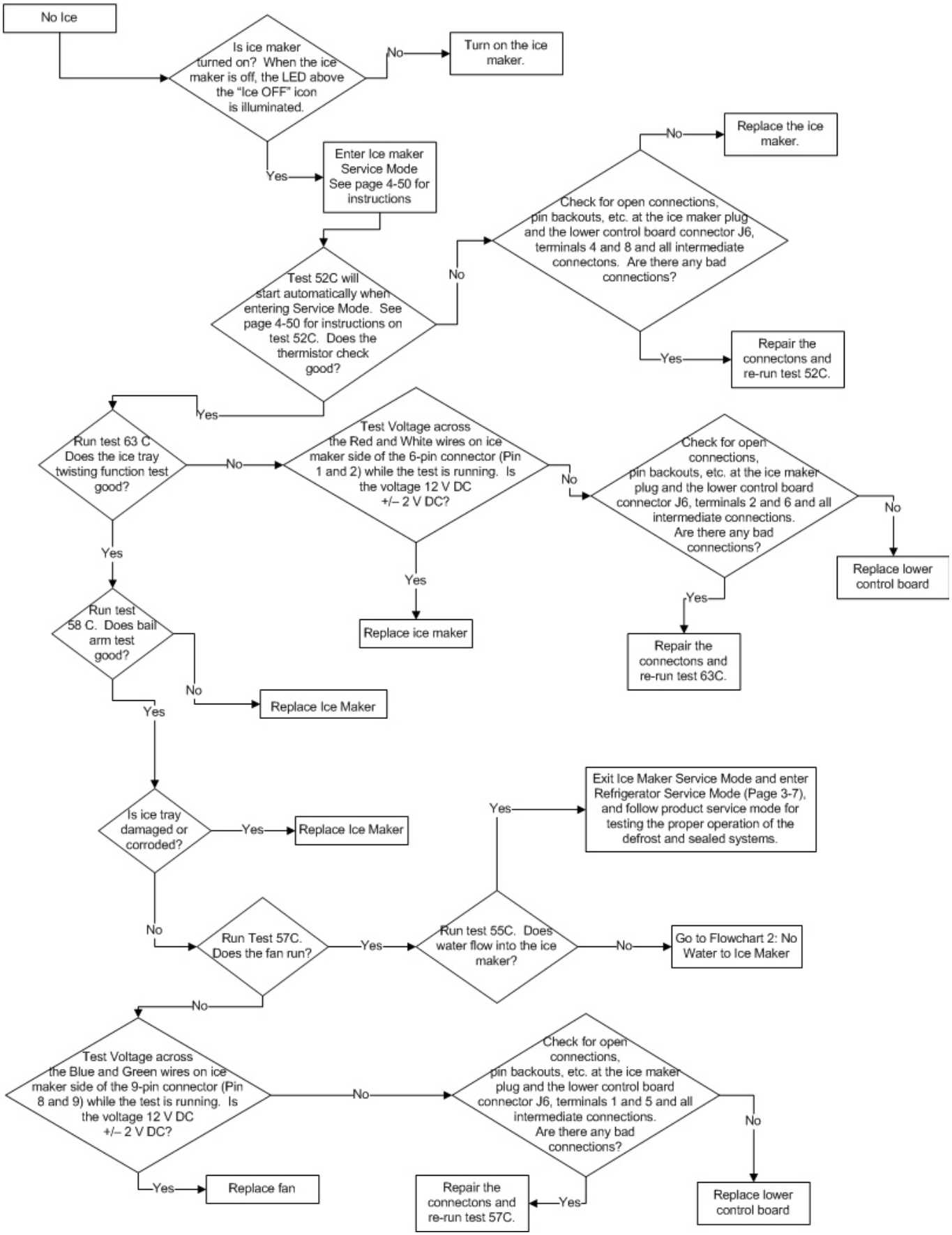
Test 63C: Tray twist test
(See Flow Chart Test #58C)
The ice bucket must be removed from the ice maker chamber prior to entering this test. Start the test by pushing 'power on-off'. The ice maker motor will run turning the tray. You should see a "1" in the freezer display and the "GOOD" light should come on if the test passes. If the "1" and the "GOOD" light does not come on, the test is failed. The test will run continuously until you press 'power on-off' or change to another test.

Temperature Resistance Chart For Negative Temperature Coefficient Thermistors

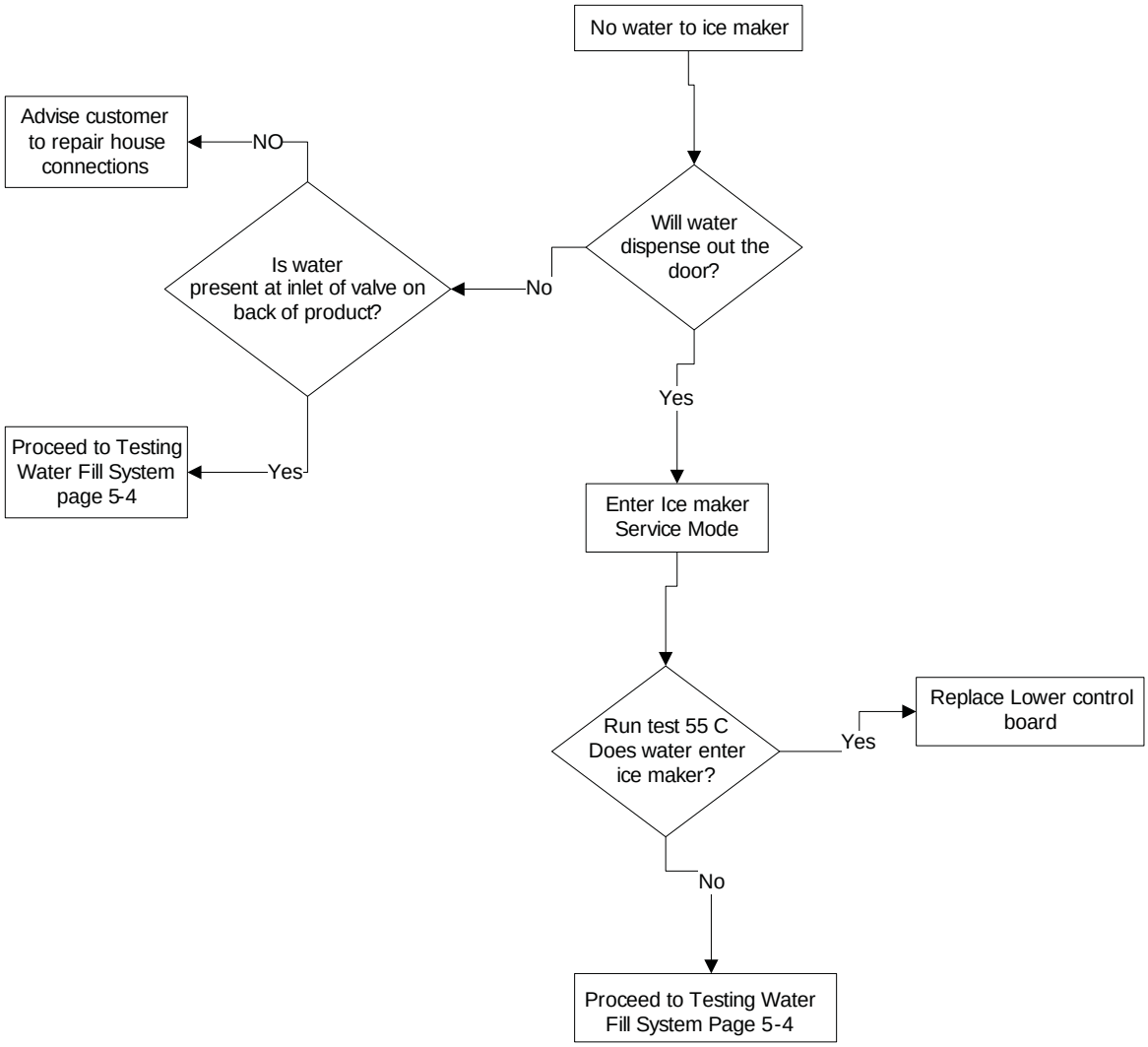
Temp Deg. F	R st k Ohms	Temp Deg. F	R st k Ohms
-10	83.883	32	27.700
-9	81.562	33	27.039
-8	79.318	34	26.383
-7	77.153	35	25.750
-6	75.042	36	25.130
-5	73.020	37	24.530
-4	71.020	38	23.950
-3	69.081	39	23.383
-2	67.164	40	22.834
-1	65.337	41	22.290
0	63.549	42	21.773
1	61.821	43	21.262
2	60.153	44	20.773
3	58.200	45	20.293
4	56.969	46	19.827
5	55.430	47	19.370
6	53.974	48	18.920
7	52.534	49	18.492
8	51.157	50	18.070
9	49.810	51	17.664
10	48.510	52	17.262
11	47.250	53	16.873
12	46.017	54	16.493
13	44.837	55	16.127
14	43.670	56	15.767
15	42.553	57	15.411
16	41.449	58	15.073
17	40.393	59	14.740
18	39.360	60	14.418
19	38.360	61	14.099
20	37.390	62	13.793
21	36.440	63	13.494
22	35.530	64	13.206
23	34.630	65	12.923
24	33.780	66	12.646
25	32.938	67	12.377
26	32.127	68	12.110
27	31.333	69	11.854
28	30.567	70	11.601
29	29.823	71	11.357
30	29.096	72	11.117
31	28.950		
32	28.394		

Ice Maker (Flex Tray Fresh Food Compartment)

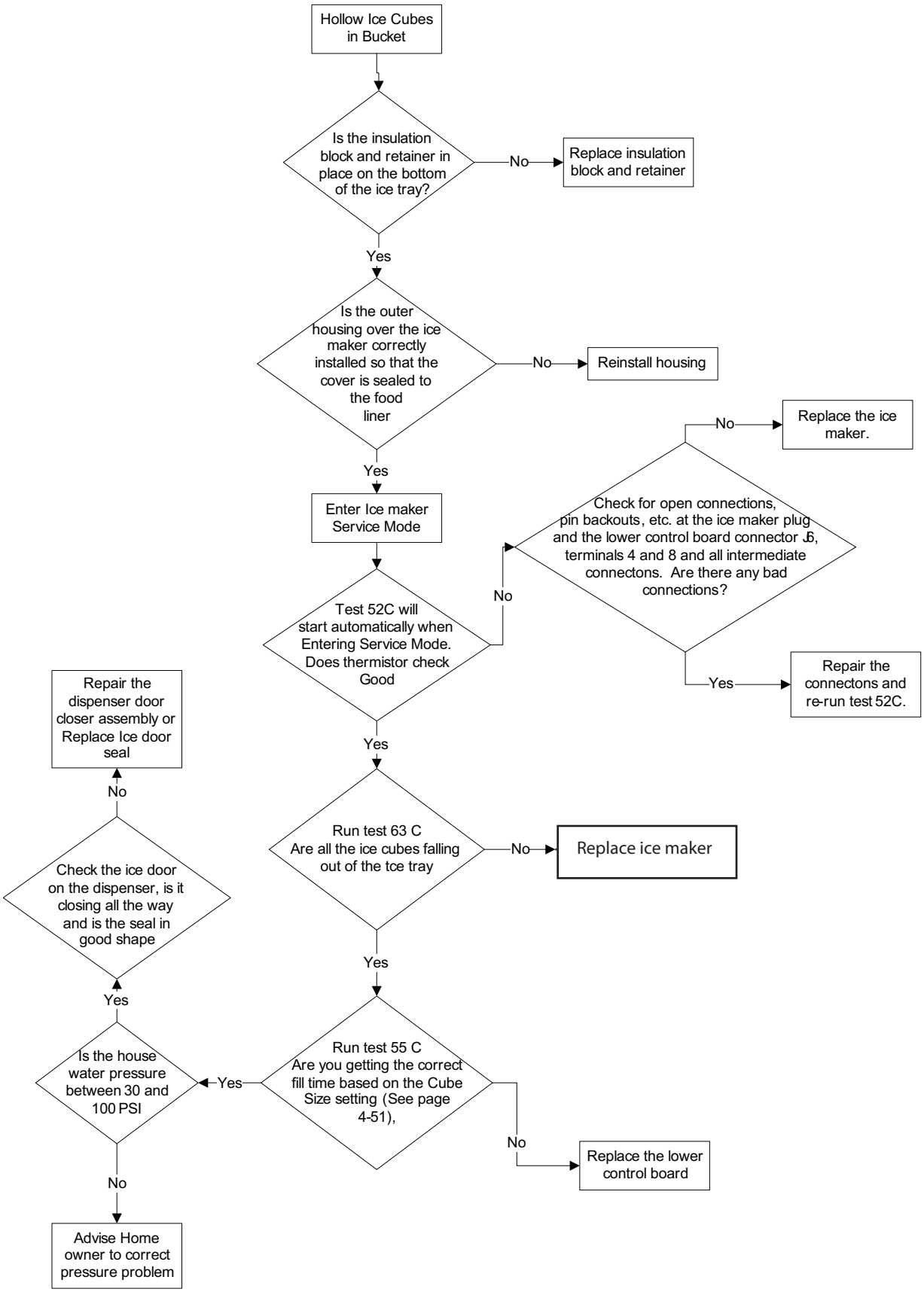
Flow Chart # 1 No Ice



Flow Chart # 2 No water to ice maker



Flow Chart # 3 Hollow Ice Cubes in Bucket



NOTE

Depending on the **Engineering Digit** at the end of the model number, the product may be equipped with a **Flex Tray** or a **Finger Evaporator** ice maker in the fresh food compartment. Models without the dispenser will have an aluminum mold ice maker mounted in the freezer compartment. Select models will be equipped with ice makers in both the fresh food and the freezer compartments.

Fresh Food Ice Maker Operation

(Dispenser Models Only)

The french door bottom freezer refrigerator has an ice and water dispenser mounted in the left fresh food door and an ice maker mounted in the top left corner of the fresh food compartment. The ice maker is controlled by a electronic control board mounted in the top left side of the back panel. This control oversees the complete operation of the ice maker.

The ice maker has its own evaporator for freezing ice in the ice mold and removing heat from the ice maker compartment. The evaporator assembly consists of an electronic control valve, a finger section to freeze ice in the ice mold, and a fin and tube section to remove heat from the ice maker compartment. (See Figure 4-9)

The ice maker has its own internal heat exchanger with the cap tube coming from the machine compartment to the ice maker. A suction line goes from the ice maker through the cabinet, to a pressure regulator mounted in the freezer compartment to the left of the freezer evaporator.

Heater	Ohms	Watts @ 115v	Watts @ 120v
Mold Heater	96	138	150*
Finger Heater	88	150*	164
Defrost Heater	378	35*	38
Jumper Tube Heater	2798	5	6
* Heater Manufacturers ratings Noe that there is a+5%/-10% tolerance on the wattages from the manufacturers.			

Figure 4-8. Heater Electrical Specifications

The ice maker has a drive motor, two position switches for the ice mold, and a bail arm switch mounted in the top front. In the center section is the ice mold, which will move from the fill position on the right to the freeze position on the left after the mold is filled with water.

In the freeze position, the fingers from the ice mold section of the evaporator will extend into the water in the center of each ice cube position of the ice mold. The ice mold has a 150 Watt heater attached. (See Figure 4-8) An NTC (Negative Temperature Coefficient) thermistor is attached to the ice mold to start the harvest cycle when the ice mold has reached 28°F. The heater will heat the mold until the thermistor indicates that the mold temperature reached 34°F. At this point, the controller will shut off the heater, pull the mold away from the cubes and move it to the fill position. Also connected to the mold are a thermostat and a thermo-fuse as safety devices. The thermostat will shut off the heater if the mold reaches 170°F and the thermo-fuse will open if the mold temperature reaches 220°F. The center section also contains the fill spout for water entering the ice maker when ice mold is on the right side. (Water fill position)

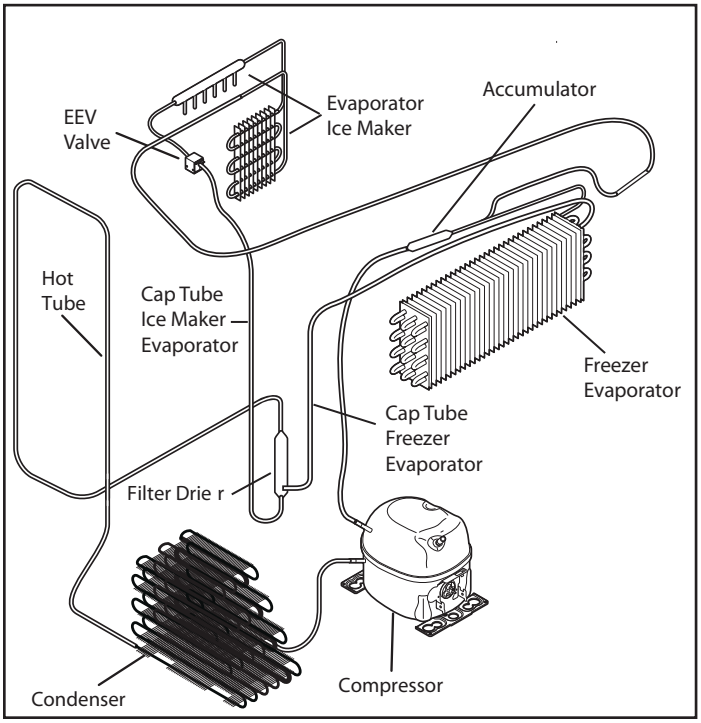


Figure 4-9. Ice Maker Refrigeration Schematic

Ice Maker (Finger Evaporator Fresh Food Compartment)

The top center section contains the finger section of the evaporator. The water will freeze around the finger evaporator that will have a tube attached for the finger evaporator heater to slide into. This heater is a 150 Watt heater (See Figure 4-8). It is used to heat the fingers of the evaporator so the ice cubes release and fall into the ice bucket. There is also a Bi-metal limit switch attached to the finger section of the evaporator to control the heater. The thermostat contact set will open at 77°F and close at 59°F.

In the back section of the ice maker is the electronic expansion valve (EEV), that will control refrigerant flow to the ice maker evaporator.

The valve is operated by a 12V DC stepper motor similar to the motor used to operate the damper. The electronic control board opens the EEV to maintain the correct refrigerant flow through the evaporator depending on the load. A thermistor attached to the suction line of the fin and tube section of the ice maker evaporator will send the temperature to the control board so it can
operate the EEV.

NOTE: The EEV is supplied as part of the ice maker evaporator.

The rear section of the ice maker contains the icemaker evaporator, a 35 W defrost heater (See Figure 4-8), a defrost bi-metal limit thermostat with a contact set that will open at 48°F and close at 25°F.

The defrost heater will turn on at the same time as the defrost heater for the main evaporator located in the freezer.

There is a circulating fan motor to supply air movement to the ice maker compartment. The fan motor for the food compartment ice maker is a 12V DC fan motor.

The last part in the rear section is the suction line thermistor mounted to the suction line coming from the fin and tube section of the ice maker evaporator. The thermistor is mounted inside foam insulating tape. and senses the temperature of the suction line and relays this information back to the control board. This information is used in controlling the EEV.

NOTE: It is critical to proper operation of the EEV that the thermistor is mounted at the bottom of suction line.

Ice maker bail arm, bail arm switch, gear box, and fill and freeze switches are mounted in the front of the ice maker. The bail arm drops down to check the amount of ice in the bucket and uses the switch to prevent ice harvest when the ice maker bucket is full. The fill and freeze switches monitor the ice mold position under the water fill spout and finger evaporator.

Defrost Water Drain

The defrost water from the fin and tube section of the evaporator runs into a trough in the housing that holds the evaporator in place in the back of the ice maker. The outlet for the trough lines up with a drain line running through the insulation between the cabinet and the liner. The water then runs into the same drain pan under the product as the defrost water from the freezer evaporator.

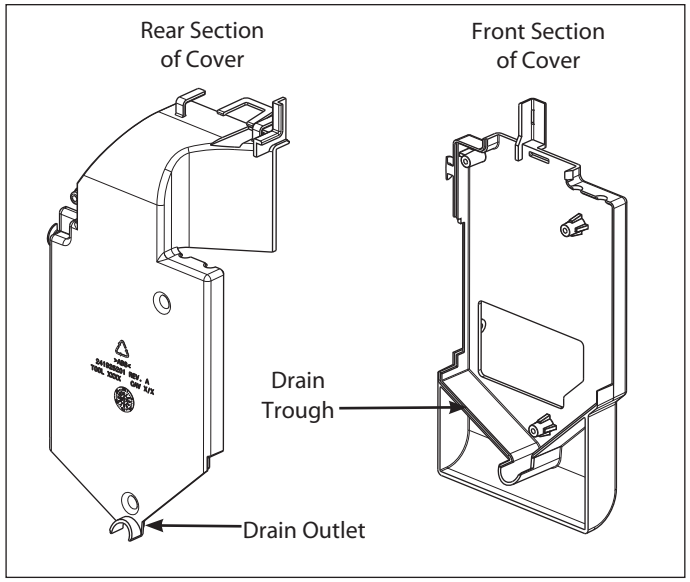


Figure 4-10. Icemaker Water Drain

About Ice Cube Production

When the temperature of the ice mold goes below 28°F and the bail arm is in the down position, the ice mold heater will turn on and the EEV will close as long as the unit is not in Freezer Recovery or Sabbath modes, or the 20 minute delay after defrost or POR. The heater will run until the mold reaches 34°F. Then the motor will move the ice mold from the left hand freeze position around the fingers of the evaporator to the right hand fill position. At this point the electronic control will wait for 45 seconds to allow the compressor to continue to pull the remaining refrigerant from the finger evaporator. Then the control will provide power to the finger heater for 2-1/2 minutes, this will allow the cubes to slide off the fingers. The harvest heater Bi-metal should open prior to the 2-1/2 minute interval, but the system will continue to provide power to the open circuit for the entire time. The control will go through several short internal tests for about 10 seconds. Then the mold will pull away from the fill position and then move back. This is to verify that the fill position switch is working properly. Now the ice mold will fill with water. The fill time is 4 seconds and will supply approximately 75 cc. of water. The control will now hold the ice mold for an additional 5 seconds to allow all water drops to enter the mold. Next, the drive motor will actuate and move the ice mold back under the evaporator fingers. The motor will shut off and the EEV will open, allowing for refrigerant flow through the fingers to start the water freezing process over again.

If the fill switch on the right side does not make connection when the ice mold moves from the freeze position on the left, to the fill position on the right, the mold heater will come back on for five minutes to melt any ice that may be obstructing the ice mold. The mold will then attempt to move to the right again. If the switch still cannot be reached, the IM (Ice Maker) will repeat this process up to five times. If the switch cannot be reached after five tries, the IM will stop trying for thirty minutes. After thirty minutes, it will try five times again. If the switch still cannot be reached after the second series of attempts, then the IM will stop trying and change over to its minimum energy usage mode to cool the compartment and keep any existing ice frozen. The IM will wait in this condition until the next system defrost has completed, at which point it will repeat the process of trying to reach the fill switch.

If the freeze switch on the left side does not make connection when the ice mold moves from the right fill position to the left freeze position, the IM will execute the same process as above except it will turn on both the mold and the finger evaporator heaters.

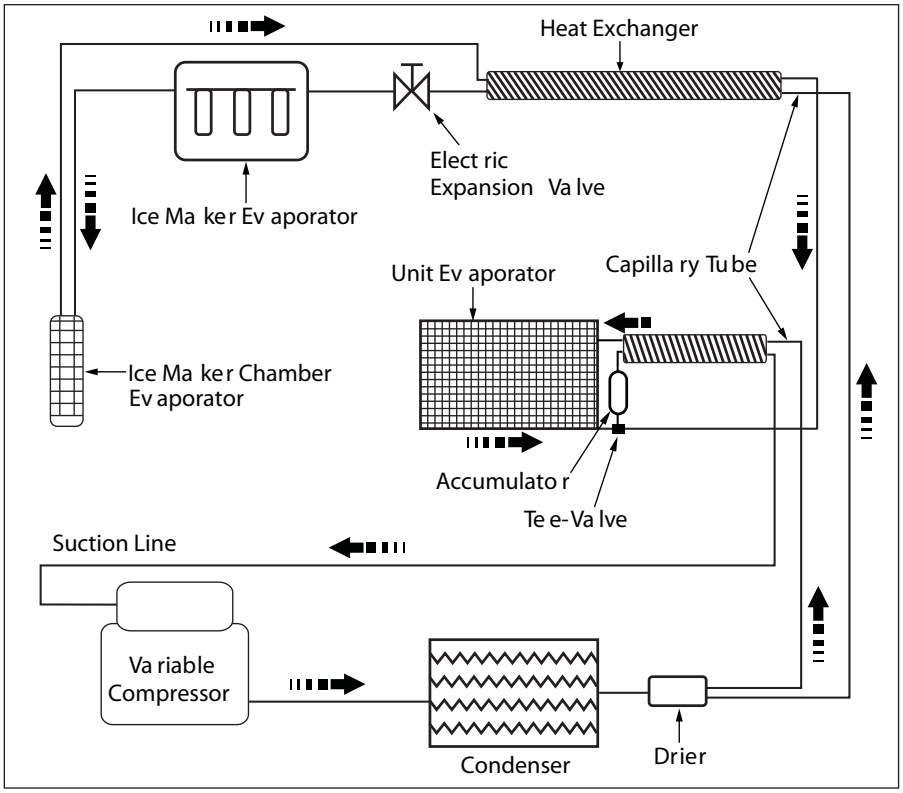


Figure 4-11. Ice Maker Refrigeration Flow Schematic

Freezer Recovery Mode

There is a program on the main control system for the product to limit or stop the flow of refrigerant to the ice maker. This allows the freezer evaporator to get as much refrigerant as is needed to maintain product temperature. If refrigerator is in a defrost cycle, the main control board will stop the flow of refrigerant to the ice maker for 20 minutes after the product comes out of defrost to allow the freezer evaporator temperature to recover from the defrost cycle. The compressor does not run during defrost so there will be no flow of refrigerant to ice maker during defrost. If the temperature in the freezer is 8°F above freezer set point, the lower control board will stop ice maker operation. Once the freezer temperature drops to 4°F above the set point, the lower control board will allow the ice maker to resume making ice cubes.

Example: Freezer is set at +2°F, and freezer temperature rises above 10°F.

The lower control board will stop ice making operations and only allow enough refrigerant to flow to ice maker compartment to maintain temperature to prevent ice melt. Once freezer temperature recovers to +6°F, ice maker will resume normal operation.

IMPORTANT

The Ice Maker must be turned ON before entering the Service Mode. Check the ON/OFF switch on the User Control in the food door to see that the ice maker is in the ON position.

Error Codes

The icemaker control will display error codes for certain problems occurring with the ice maker. Consult the customer on how the unit was operating and any codes that were displayed that resulted in the service call.

Freezer Display	Fresh Food Display	Error Condition and Corrective Action
Ice	Er	IM/RAM Error Check J4-4, J4-5 and J4-6 Connector on Icemaker board. Check J4 connector at Main Control board. Check 15 pin inline connector at control board, Pin#'s 4,9 & 14. If all connections test good, replace main control board.
Ice	t3	TH3 Sensor (open or short) Go to flow chart for Ice t3
Ice	CE	IM Com Lost Go to flow chart 50C. Put into service mode to verify.

Diagnostic Service Mode

IMPORTANT

The ice maker must be turned ON before entering the Service Mode. Check the ON/OFFswitch on the user interface in the fresh food door.

Activation

Express-Select™

To activate the Ice Maker Service Diagnostic Mode, press and hold fresh food and freezer up (∧) simultaneously for up to ten (10) seconds.

Pro-Select™

To activate the Ice Maker Service Diagnostic Mode, press and hold 'options' and 'power on-off' simultaneously for up to ten (10) seconds.

Activation of Ice Maker Service Diagnostic Mode automatically turns off all Ice Maker Control PCBA outputs. The compressor runs at fixed speed of 4500 rpm and the condenser fan turns on until Service Mode is deactivated. The damper is closed and the fresh food and freezer lights are enabled as well as the alarm audio. Defrost of the main system is not allowed.

Deactivation

Express-Select™

To exit service mode, press and hold fresh food (∧) for up to 10 seconds.

Pro-Select™

To exit service mode, press and hold the (+) key for up to 10 seconds.

Service mode is also automatically deactivated after 5 minutes of no key entries (that includes Communication Lost). All outputs are turned Off. Previously selected main system and ice maker operational modes are restored.

Testing

To actuate an ice maker load of the selected test step (turn on or off), use 'power on-off' on the user interface.

To step to the next ice maker sequential test, press fresh food (∧) or '+' on the LCD screen. To step back to the previous ice maker sequential test, press fresh food (∨) or '–' on the LCD screen. The selected test number will be displayed on the fresh food display.

After pushing 'power on-off' to start automatic test or turn on the load, the ice maker control will display the test result on the freezer two digit display. When waiting for the test to be automatically performed and the result displayed, the test number (test ID) will flash on/off. After the automatic test is completed the test result will be displayed as "P" – pass, or "F" – Fail.

For an interactive test, the technician manually activates the load using 'power on-off' and physically verifies the system response. Pressing 'power on-off' again turns the load off. The freezer display shows the current or expected state of the load. During the load transition the fresh food display flashes the test ID. After the last test step in the ice maker test sequence is completed, the next advancing action will scroll back around to the first ice maker test. Stepping back from the first test, will scroll the test sequence backwards to the last test in the sequence.

Service Diagnostic Mode Test Sequence

Test 40C: Mold Heater Failure Error
(See Flow Chart Test # 54 C)
The mold heater failure is saved by ice maker and the Freezer display will show "E1" when the test is entered. If no error present, the display shows "1".

Test 41C: Harvest Heater Failure Error
(See Flow Chart Test # 56 C)
The harvest heater failure is saved by ice maker and the Freezer display will show "E2" when the test is entered. If no error present, the display shows "1".

Test 42C: Bail Arm Switch Failure Error
(See Flow Chart Test # 58 C)
The bail arm switch failure is saved by ice maker and the Freezer display will show "E3" when the test is entered. If no error present, the display shows "1".

Test 43C: HV Motor Stuck in Fill Error
(See Flow Chart Test # 63 C)
The harvest motor failure to move from Fill to Freeze is saved by ice maker and the Freezer display will show "E4" when the test is entered. If no error present, the display shows "1".

IMPORTANT

Prior to sealed system evacuation, the service technician needs to open the ice maker EEV and then power down the system (unplug refrigerator's AC power cable). The valve will close automatically on system (POR) when the ice maker is turned "ON" and the system AC power is restored. The POR sequence is followed and, if needed, the reentry back into the diagnostic mode can be performed.

Temperature Resistance Chart For Negative Temperature Coefficient Thermistors

Temp Deg. F	R st k Ohms	Temp Deg. F	R st k Ohms
-10	83.883	32	27.700
-9	81.562	33	27.039
-8	79.318	34	26.383
-7	77.153	35	25.750
-6	75.042	36	25.130
-5	73.020	37	24.530
-4	71.020	38	23.950
-3	69.081	39	23.383
-2	67.164	40	22.834
-1	65.337	41	22.290
0	63.549	42	21.773
1	61.821	43	21.262
2	60.153	44	20.773
3	58.200	45	20.293
4	56.969	46	19.827
5	55.430	47	19.370
6	53.974	48	18.920
7	52.534	49	18.492
8	51.157	50	18.070
9	49.810	51	17.664
10	48.510	52	17.262
11	47.250	53	16.873
12	46.017	54	16.493
13	44.837	55	16.127
14	43.670	56	15.767
15	42.553	57	15.411
16	41.449	58	15.073
17	40.393	59	14.740
18	39.360	60	14.418
19	38.360	61	14.099
20	37.390	62	13.793
21	36.440	63	13.494
22	35.530	64	13.206
23	34.630	65	12.923
24	33.780	66	12.646
25	32.938	67	12.377
26	32.127	68	12.110
27	31.333	69	11.854
28	30.567	70	11.601
29	29.823	71	11.357
30	29.096	72	11.117
31	28.950		
32	28.394		

Test 44C: HV Motor Stuck in Freeze Error
(See Flow Chart Test # 63 C)

The harvest motor failure to move from Freeze to Fill is saved by ice maker and the Freezer display will show "E5" when the test is entered. If no error present, the display shows "1".

Test 45C: HV Motor Stuck in Intermediate Position Error
(See Flow Chart Test # 63 C)

The harvest motor failure to reach Fill or Freeze position is saved by ice maker and the Freezer display will show "E6" when the test is entered. If no error present, the display shows "1".

Test 46C: HV Motor Switches Fill/Freeze High Error
(See Flow Chart Test # 59 & 60C)

The harvest motor failure when detects both Fill to Freeze switches High is saved by ice maker and the Freezer display will show "E7" when the test is entered. If no error present, the display shows "1".

Test 47C: Freeze Switch Shorted/Frozen Error
(See Flow Chart Test # 60C)

The Freeze switch failure in the High state is saved by ice maker and the Freezer display will show "E8" when the test is entered. If no error present, the display shows "1".

Test 48C: Freezer Recovery Mode (FRM)
(See Flow Chart Test #48C)

If the FRM Exceed Flag is True, then Freezer Temp window of the UI will display "Fr". If the FRM Exceed Flag is False, then Freezer Temp window of the UI will display "1". While in 48C, the ON/OFF icon will be illuminated. If pressed and held for 5 seconds, the value display in the Freezer display will flash 3 times and then the display will be updated to show "1" and the FRM Timer will be reset to 0 and the FRM Exceeded Flag shall set to False.

Test 49C: EEV Manual On/Off
(See Flow Chart Test #49C)

To start this interactive test, touch the ON/OFF key to fully open the valve. Fresh Food display starts flashing the test ID until EEV is fully open and fresh food displays "on". Pushing the ON/OFF key again will close the valve. Fresh food display will flash the test ID while the EEV is driven back to the closed position and freezer display shows "OFF". If ON/OFF key is pressed during transitional state of EEV, the input is ignored.

Test 50C: Com Link Status - Ice Maker Communication (See Flow Chart Test #50C)

The current Com Link Status is saved by ERF2500++ control and displayed on the Freezer display when the test is started. The "1" indicates Com OK.
"Er" = indicates Com Lost.
"CE" = indicates temporary Com interruption detected.
"IP" = indicates incompatible protocols of PB and IM.

Test 51C: TH1 Status
(See Flow Chart Test #51C)

The current Thermistor 1 status (ice mold thermistor) is saved by the ice maker and displayed on Freezer display when the test is started. A "1" and icon "good" will be displayed if TH1 value is O.K.: "OP" will be displayed for TH1 open and "SH" for TH1 in short circuit condition.

Test 52C: TH3 Status
(See Flow Chart Test #52C)

The current Thermistor 3 status (suction line thermistor) is saved by the ice maker and displayed on Freezer display when the test is started. A "1" and icon "good" will be displayed if TH3 value is O.K.: "OP" will be displayed for TH1 open and "SH" for TH1 in short circuit condition.

Test 54C: Ice Mold Heater Test
(See Flow Chart Test #54C)

To start this interactive test, touch the ON/OFF key to activate the heater. The heater is turned Off automatically after 60 seconds. Touching the ON/OFF key again will turn the heater Off. The Freezer display shows the heater current state "on" or "OFF" and displays current TH1 temperature in deg. F.

Test 55C: Water Valve Test
(See Flow Chart Test #55C)

This test has the requirement that the ice bucket be removed from the ice maker chamber prior to entering this test. Also, if the ice mold is in the "Fill" position, no ice can be on the evaporator fingers. Touch the ON/OFF key to start the test. The ice maker controller will drive the ice mold to the "Freeze" position. During the travel, the test "ID" flashes on the Fresh Food display.

Test 55C: Water Valve Test (continued)

After ice mold arrival to "Freeze" position, or if the mold was already in the " Freeze" position, the Test ID stops flashing and the ice maker will turn on the water solenoid valve and the city water solenoid valve for a duration of four (4) seconds
Water can be dispensed into a 4 oz. cup placed or held under the ice maker water spout (typically 80 ml). Only one water dispensing 4 second cycle is allowed after the test is started. Additional ON/OFF key activations are ignored.

Test 56C: Finger Evaporator Heater Test
(See Flow Chart Test #56C)

To start this interactive test, touch the ON/OFF key to activate the heater. The heater is turned Off automatically after 60 seconds. Touching the ON/OFF key again will turn the heater Off. The Freezer display shows the heater current state "on" or "OFF".

Test 57C: Evaporator Fan Test
(See Flow Chart Test #57C)

To start this interactive test, touch the ON/OFF key to activate the fan. Touching the ON/OFF key again will turn the fan Off. The Freezer display shows current state of the fan "on" or "OFF".

Test 58C: Ice Level Sensor Test
(See Flow Chart Test #58C)

Interactive test with audio.

This test has the requirement that the ice bucket be removed from the ice maker chamber prior to entering this test. Also, if the ice mold is in the "Fill" position there can be no ice on the evaporator fingers.

Start the test by pushing the ON/OFF key. The ice maker controller drives the mold to the Freeze position if it is not already there. The Freezer will display ice maker sensor status "OFF", indicating that the bale arm is in its lower position. Manually raise the bale arm and observe the display changing status to "on" with repeatable audio continuously sounding "wrong Key" alarm as long as the switch is "on". Let the arm go back down and the display will change back to "OFF" with no sound.

NOTE: To verify sensor switch, manually push and release the switch plunger. See "OFF" and "on" (with sound) displayed accordingly.

Test 59C: "Fill" Limit Switch Test
(See Flow Chart Test #59C)

Interactive test with audio

Upon entering the test, the ice mold position is checked. If is not already in "Freeze" position, the mold is driven to "Freeze". The Freezer display will show the current status of the "Fill" limit switch, which should be "OFF". Remove the ice maker cover for better switch access. Activate the switch manually to observe the "on" status displayed on the Freezer display and hear the audio alarm (See test 58C). Release the switch and display will change to 'OFF" with no sound.

Test 60C: "Freeze" Limit Switch Test
(See Flow Chart Test #60C)

Interactive test with audio.

Upon entering the test, ice mold position is checked. If is not already in the "Fill" position the mold is driven to the "Fill" position. The Freezer display will show the current status of the "Freeze" limit switch, which should be "OFF". Remove the ice maker cover for better switch access. Activate the switch manually to observe the "on" status displayed on Freezer display and hear the audio alarm (See test 58C). Release the switch and display will change to 'OFF" again with no sound.

Test 61C: Ice Maker Evaporator Heater Test
(See Flow Chart Test #61C)

Interactive.

Pull the cartridge heater out of the ice maker assembly before staring this test. The electric wires are to be connected and the ambient air temperature less then 48°F in order for bi-metal in-line switch to remain closed. Touch the ON/OFF key to activate the heater. Verify manually if the heater is working. Touching the ON/OFF key again will turn the heater Off. The Freezer display shows the heater current state "on" or "OFF".

Test 62C: EEV Test
(See Flow Chart Test #62C)

Automated.

Touch the ON/OFF key to start the test. When waiting for the automated test result, the Fresh Food display will be flashing the test ID and the Freezer display will be showing the TH3 current temperature. (The ice maker controller will fully open the EEV and wait 120 seconds for the TH3 temperature to drop off a minimum 2°F). After the delay, the test result is displayed on the Freezer display as "P" for "Pass" or "F" for "Fail".

Test 63C: Harvest Motor System Test
(See Flow Chart Test #63C)

Interactive

This test has the requirement that the ice bucket be removed from the ice maker chamber prior to entering this test. Also, if the ice mold is in the "Fill" position there can be no ice on the evaporator fingers. Push the ON/OFF key to start the test. The ice mold should move to the "Freeze" position and the Freezer display shows the current motor status codes, "0" = no errors detected. From that moment, the ice mold will alternate its positions continuously between "Freeze" and "Fill". After completing the first full cycle (freeze – fill- freeze) the Freezer display will show a "1" and icon "good". Pushing the ON/OFF key again will stop the harvest motor. The ice maker controller will monitor functionality of the "Fill" and the "Freeze" limit switches as well as the travel time between "Freeze" and "Fill". If any of the harvest motor errors are detected, the motor stops. The Freezer display will show the error code ("2" –harvest motor time out or "3" -both switches On). After error condition detection, pushing the ON/OFF key will reset the Freezer display and restart the test.

Test 64C: Software Revision (XX) ID

The current ice maker controller firmware revision ID (two digits: from 01 to 99) is saved by ice maker and displayed on Freezer display when the test is entered.

No Ice Conditions

To diagnosis a no ice condition, follow the steps in section 6 "Ice Bin Housing Removal". This will allow access to the determine the condition of the ice mold, and so the following flow charts can be used to assist in diagnosis.

Flow Chart No Ice #1- Mold in Freeze position (Left) and frozen solid.

NOTE: At the start of Flow Chart 1 it will ask you to check test 48C (Freezer recovery Mode) if you get a "1" in the freezer temp window the product is not in recovery mode and you should proceed through flow chart #2 to #6 listed below. If the freezer temp window is displaying a "Fr" the product is in freezer recovery mode. In recovery mode the EEV valve is only open enough to maintain a cold enough temperature in the ice maker compartment to prevent the ice from melting. The control system is diverting the bulk of the refrigerant to the freezer evaporator the pull the product temperature down to the set temperature. The product can go into recovery mode for a number of reasons.

1. Freezer door is not sealing all the way around.
2. Freezer evaporator is not defrosting.
3. Evaporator fan motor is not running.
4. There is a problem in the sealed system,
   a. Low charge
   b. Inefficient compressor
   c. Partly restricted sealed system.
5. There is a problem in the product control system. (You will need to enter the product test mode to check the product control system see page 3-7.)

Flow Chart No Ice #2 - Mold in Freeze position (left) not frozen solid with water in mold.

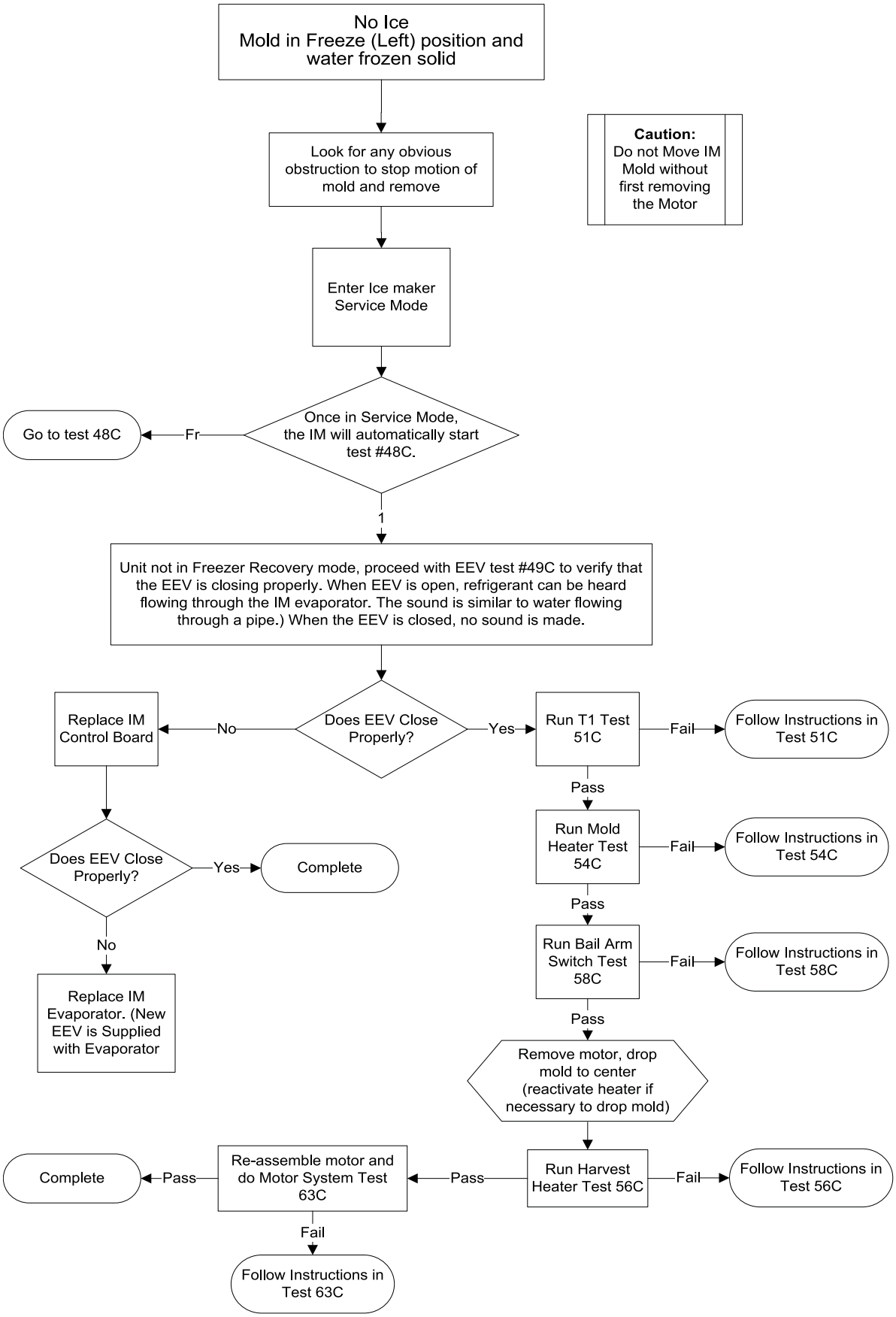
Flow Chart No Ice #3 - Mold in Freeze position (left) no water or ice in mold.

Flow Chart No Ice #4 - Mold in fill position with ice cubes in mold.

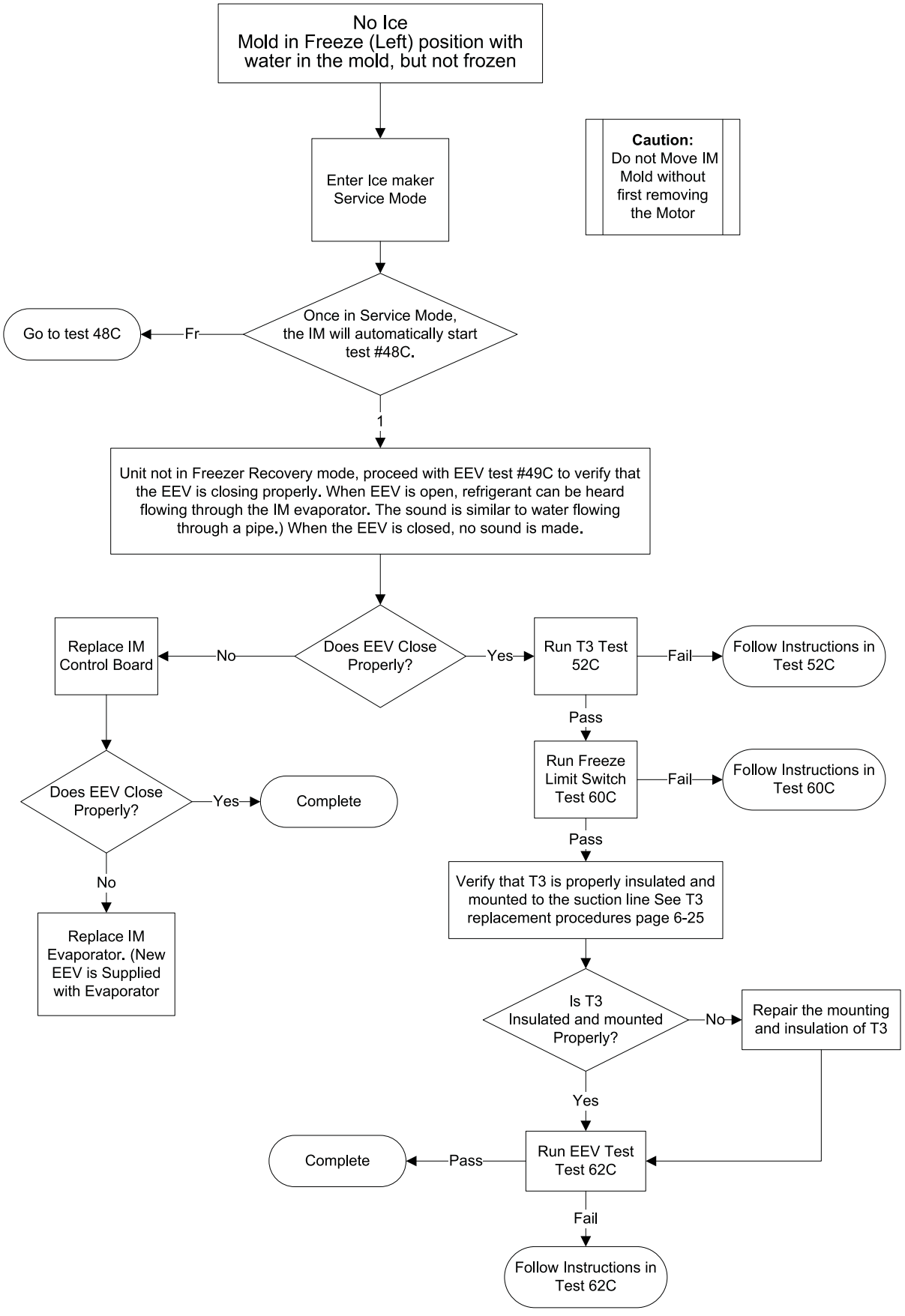
Flow Chart No Ice #5 - Mold in Fill position with no water.

Flow Chart No Ice #6 - Mold in intermediate position.

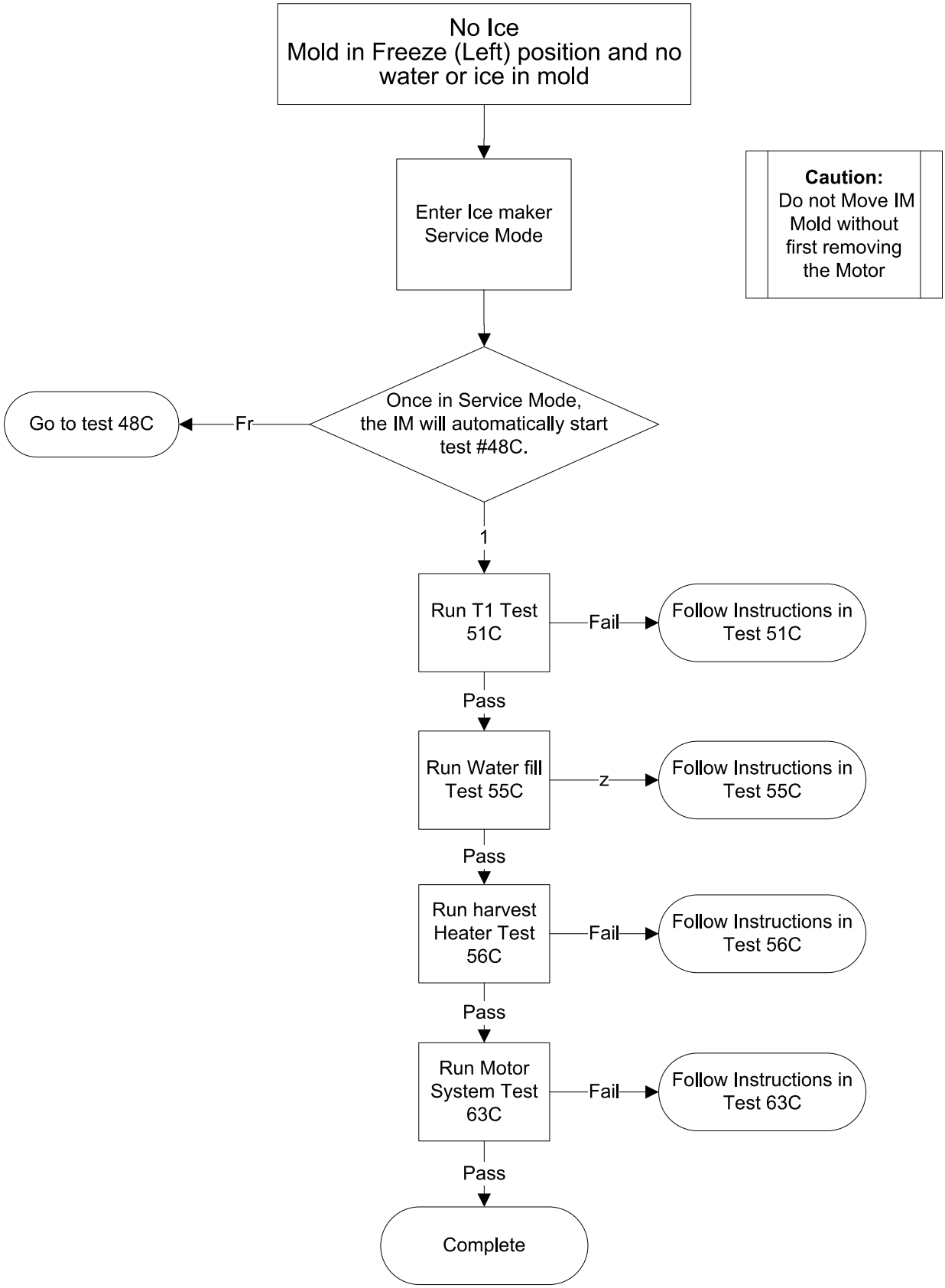
Flow Chart No Ice #1



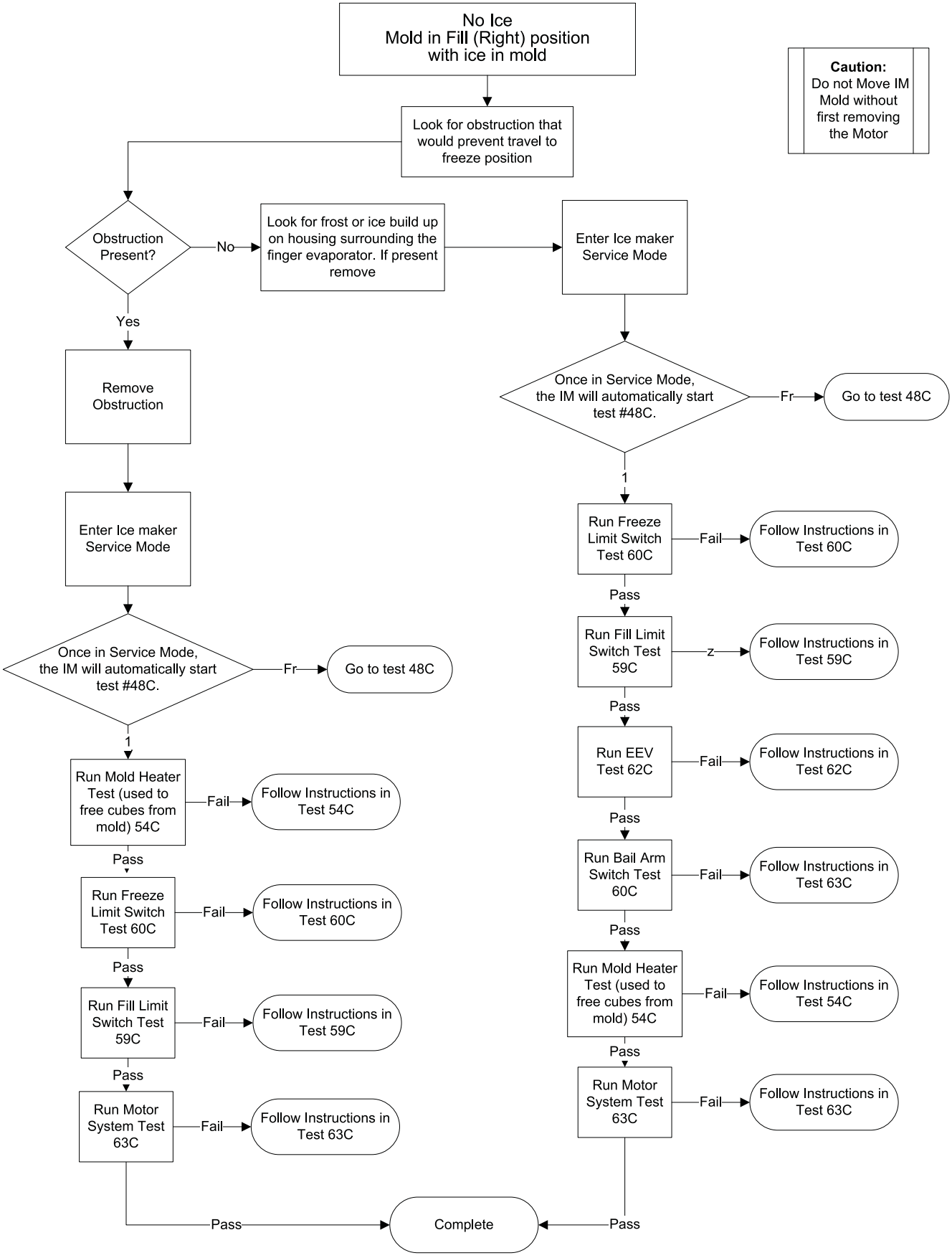
Flow Chart No Ice #2



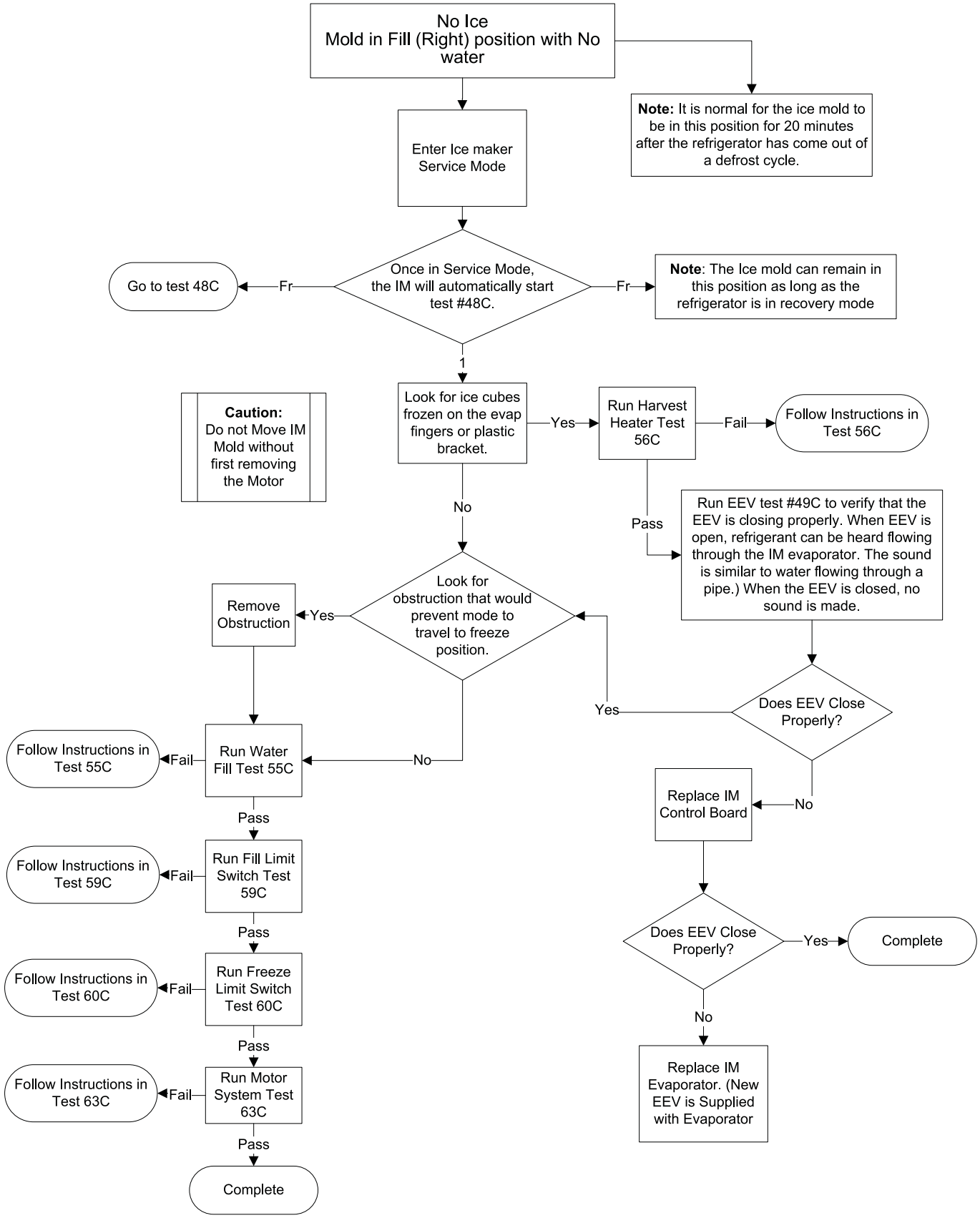
Flow Chart No Ice #3



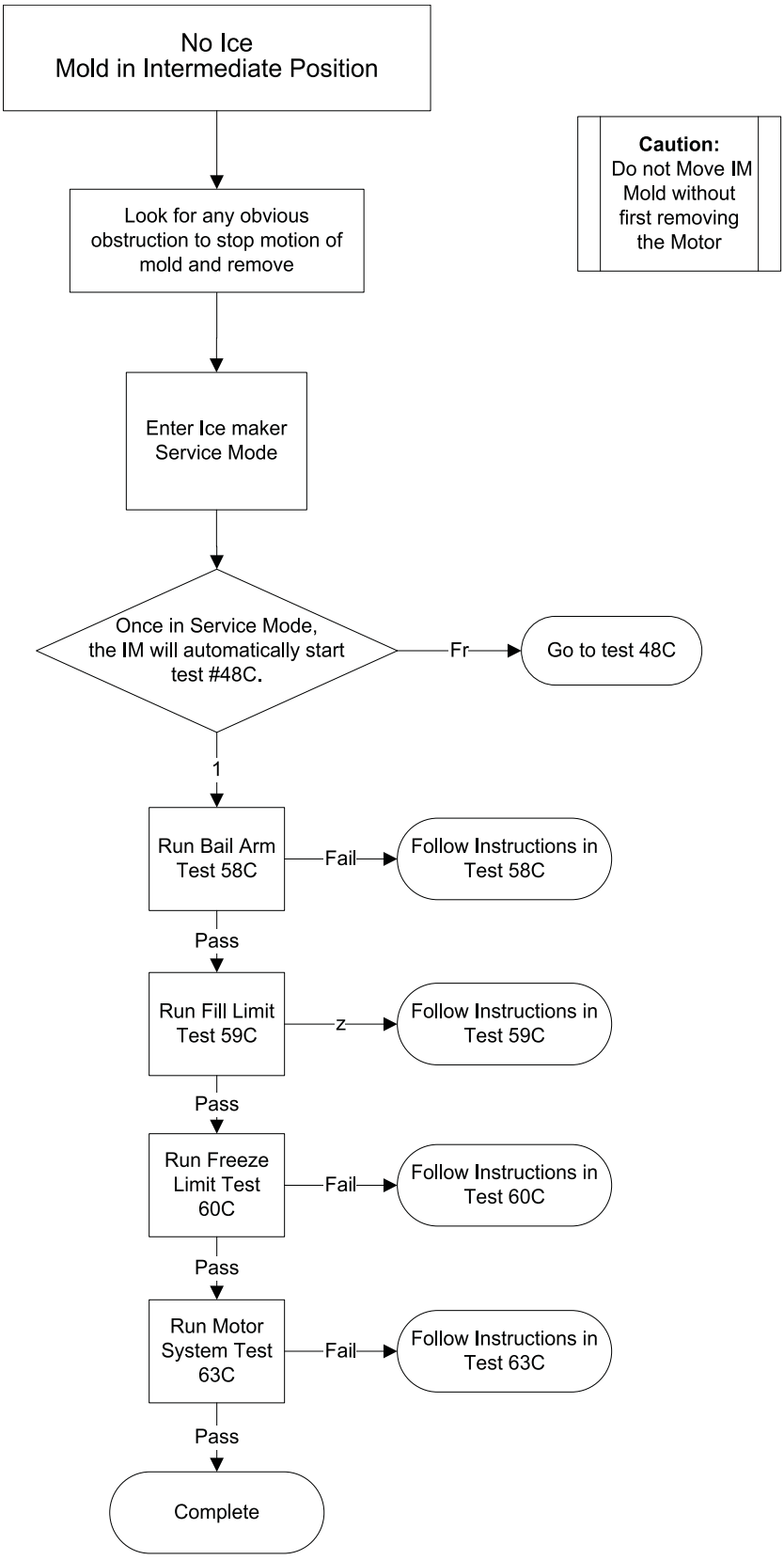
Flow Chart No Ice #4



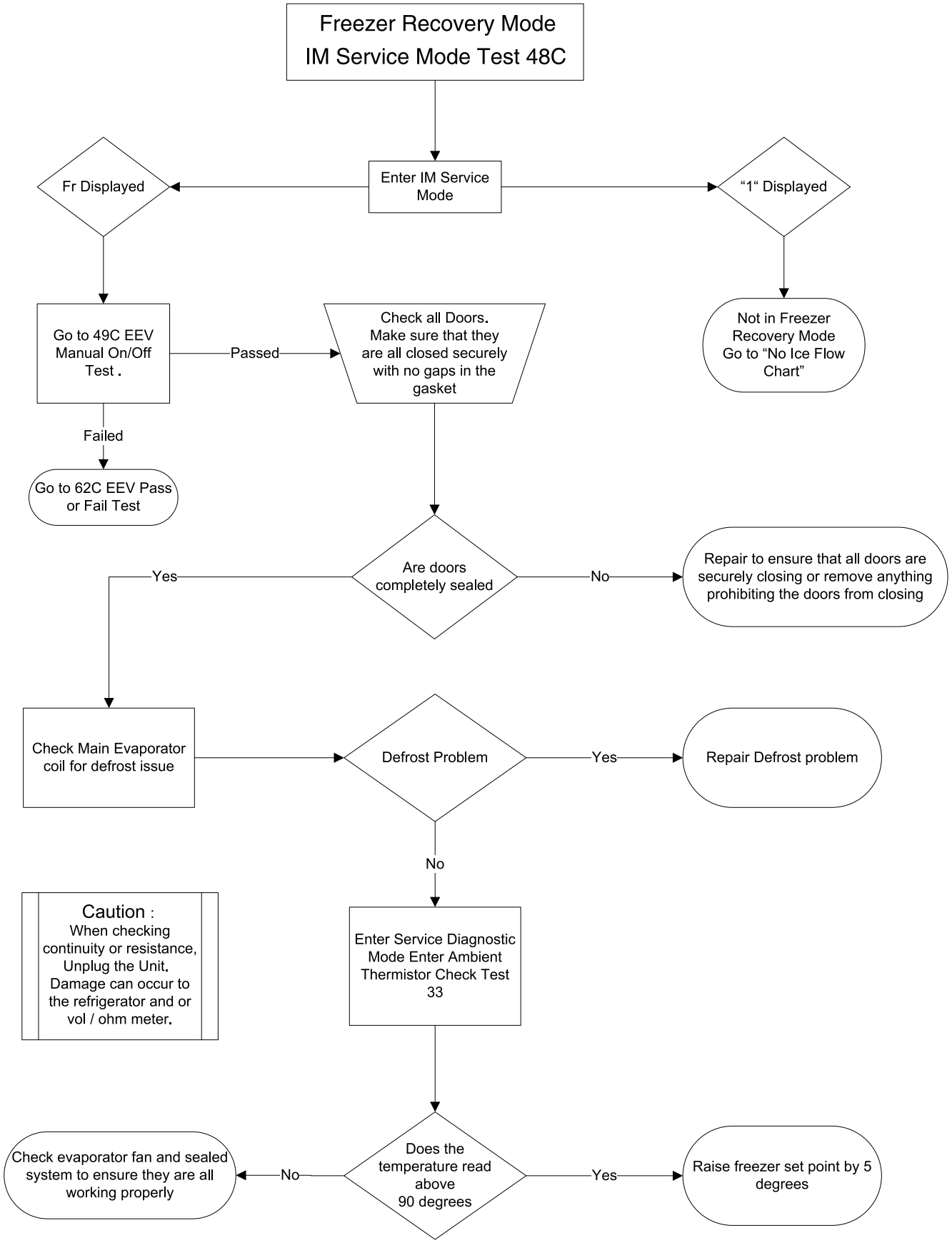
Flow Chart No Ice #5



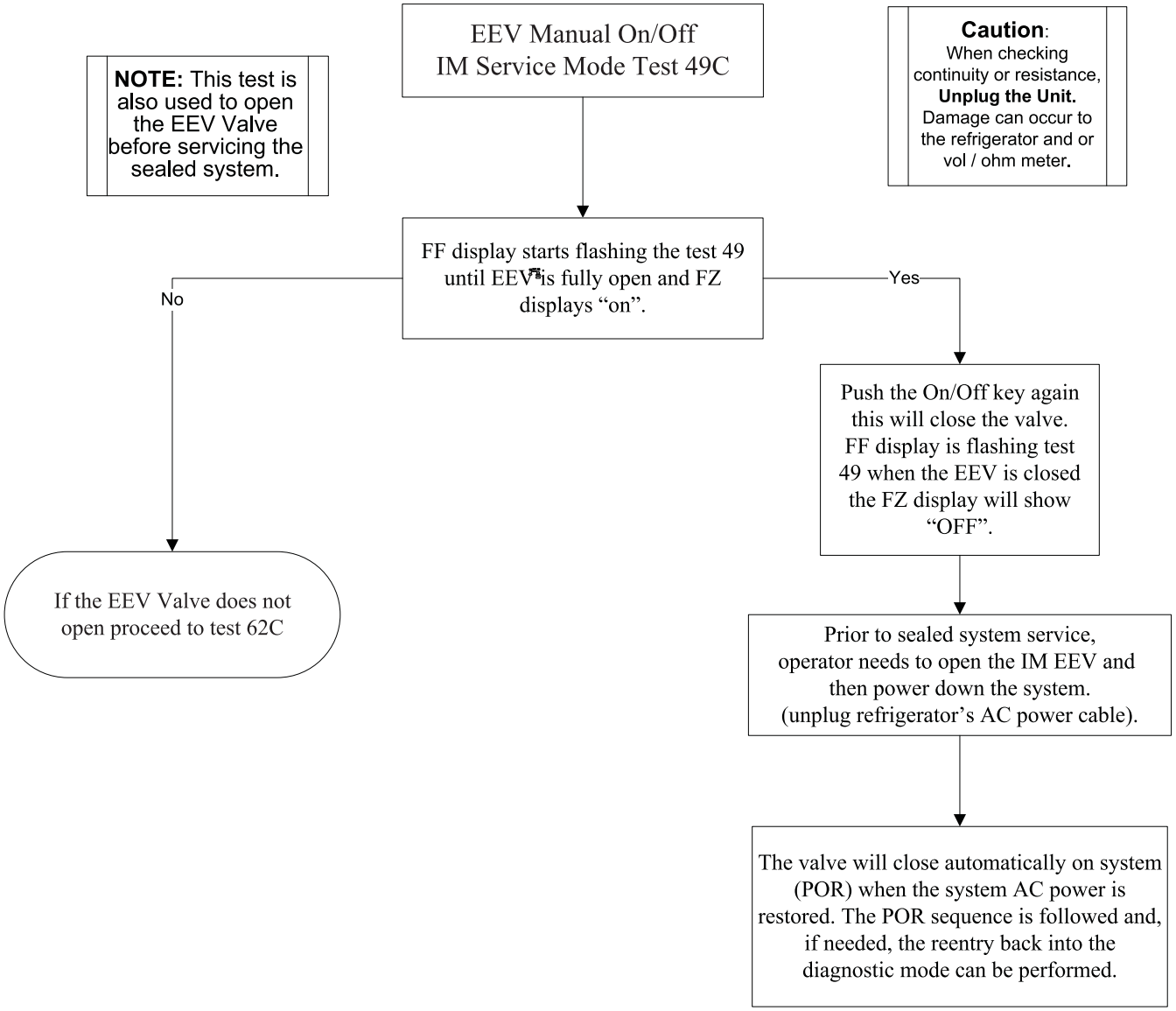
Flow Chart No Ice #6



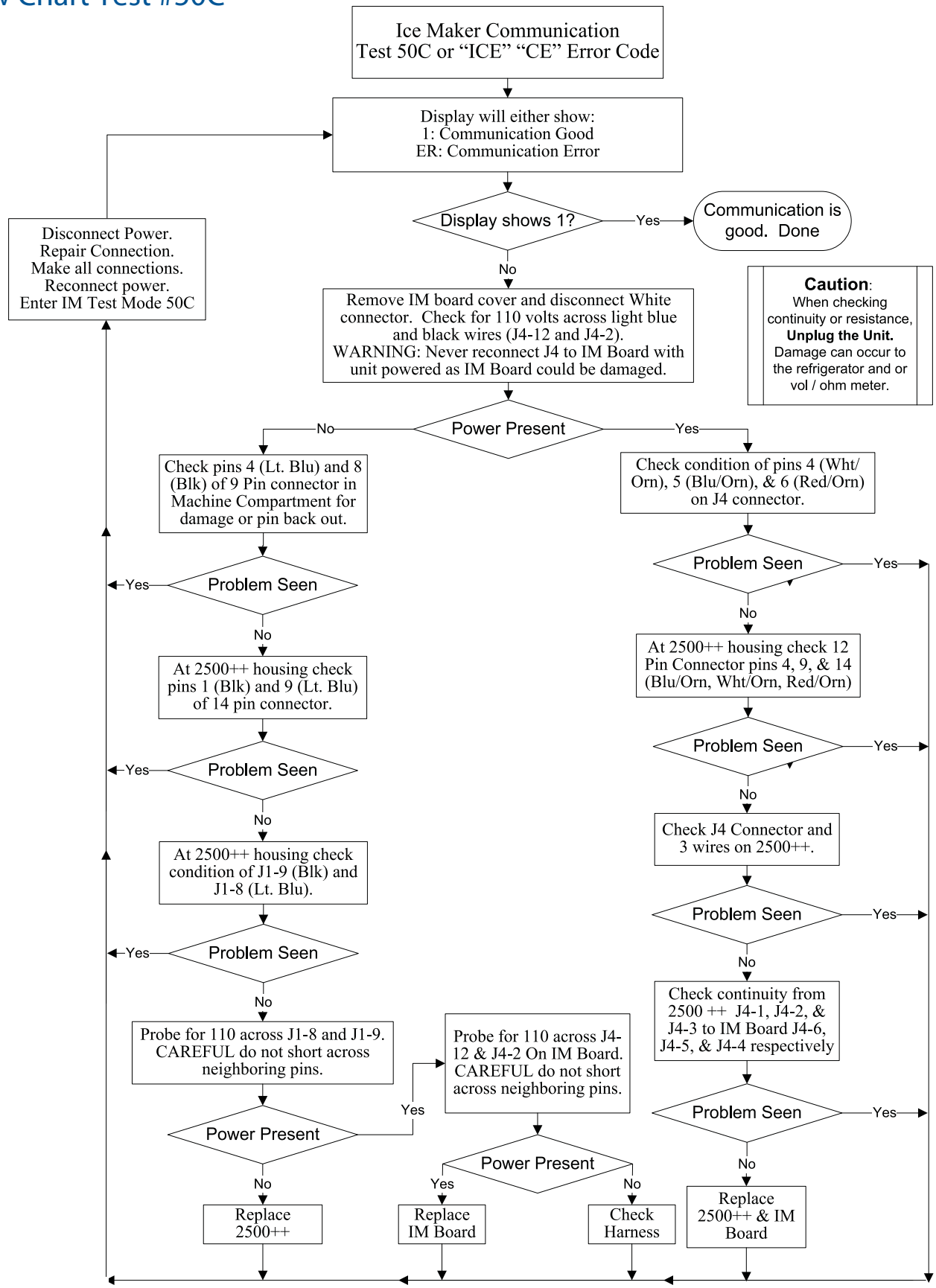
Flow Chart Test #48C



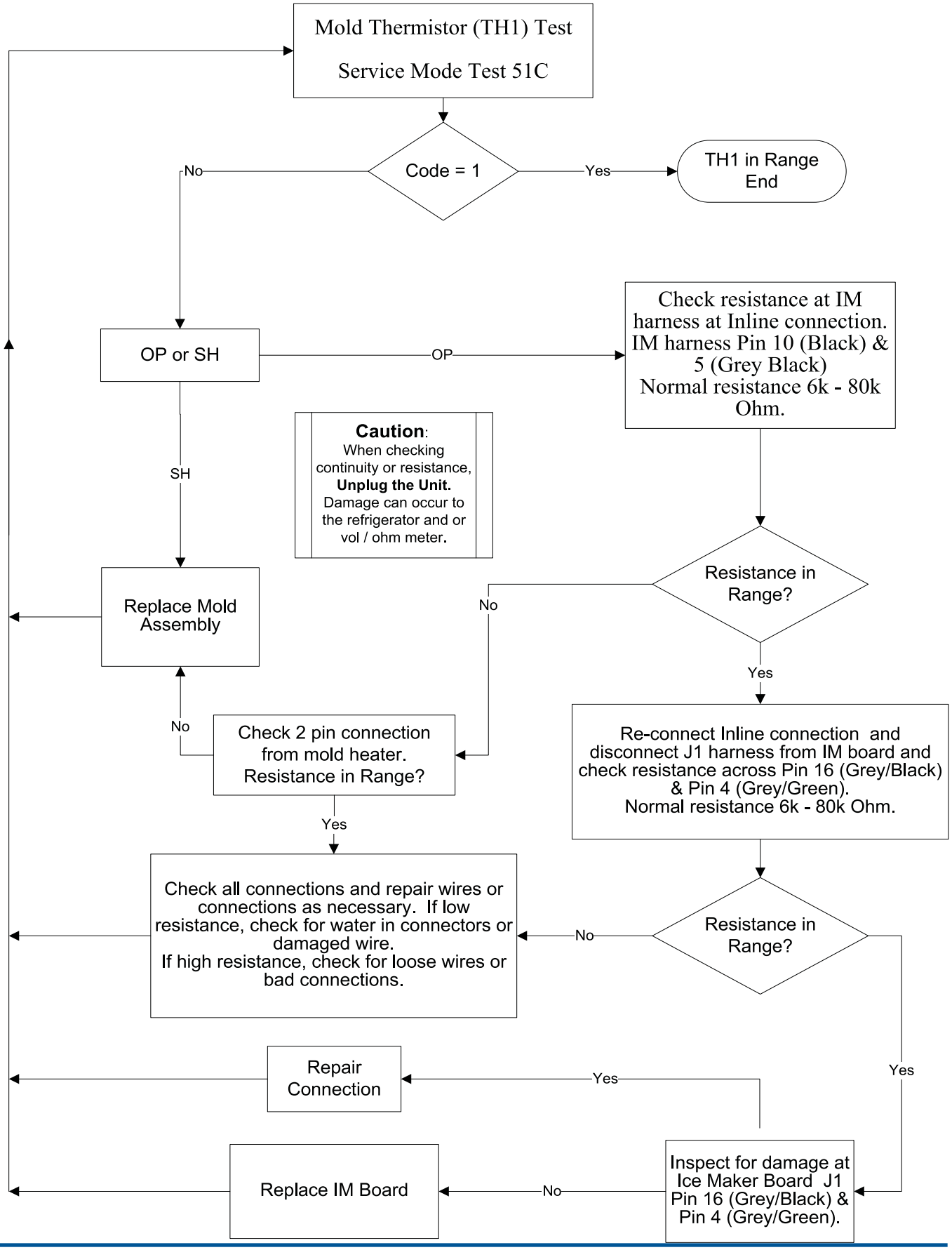
Flow Chart Test #49C



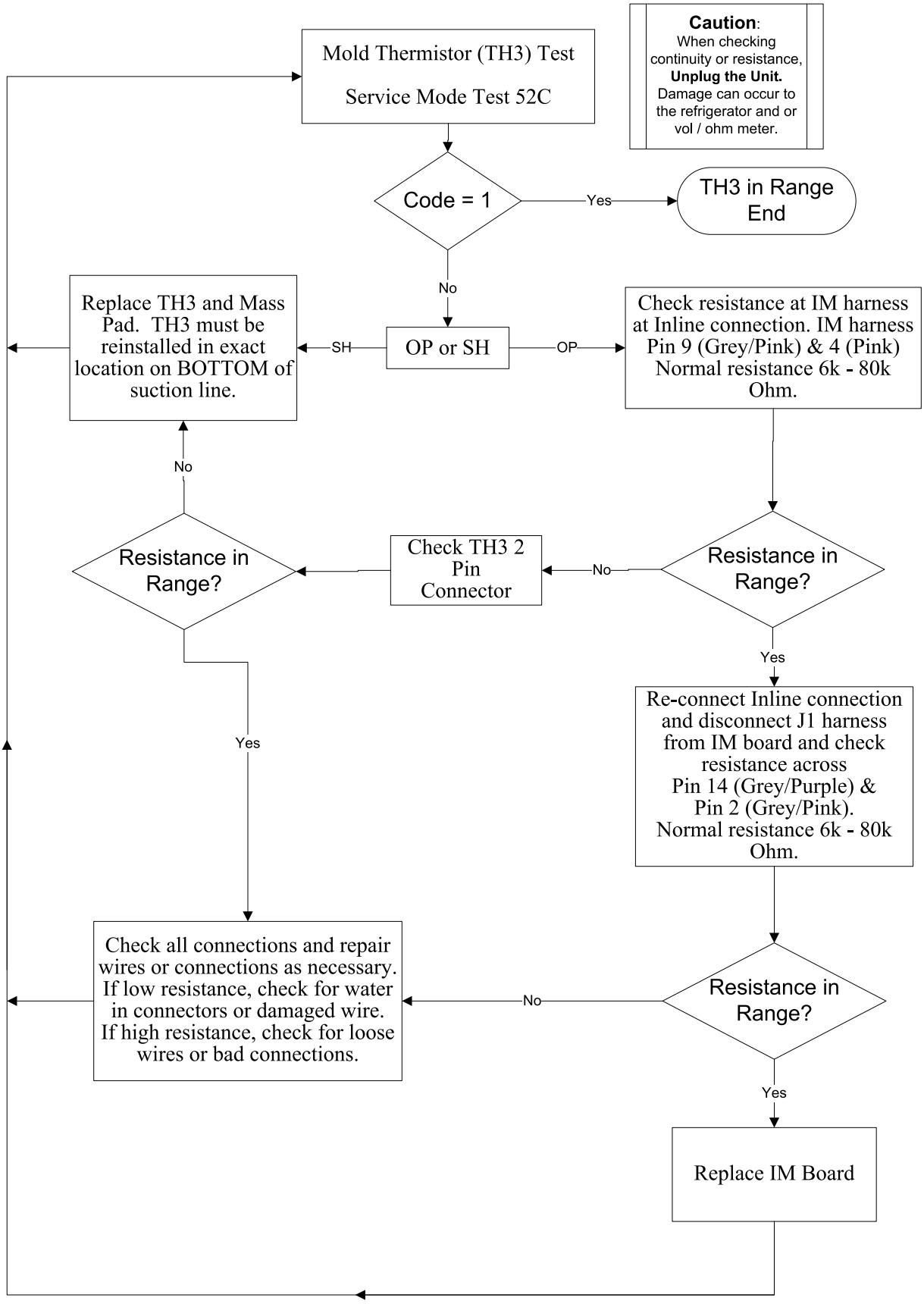
Flow Chart Test #50C



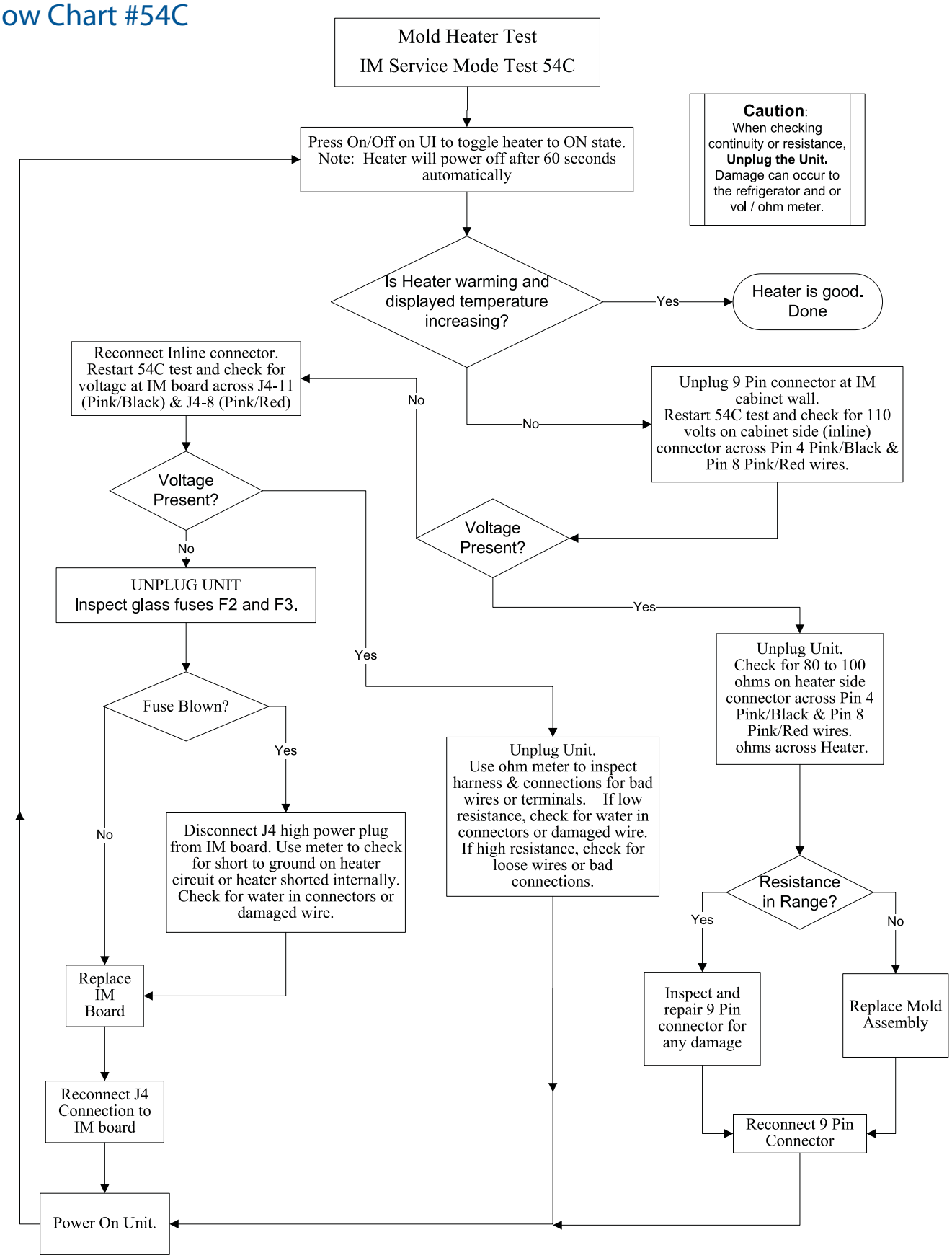
Flow Chart #51C



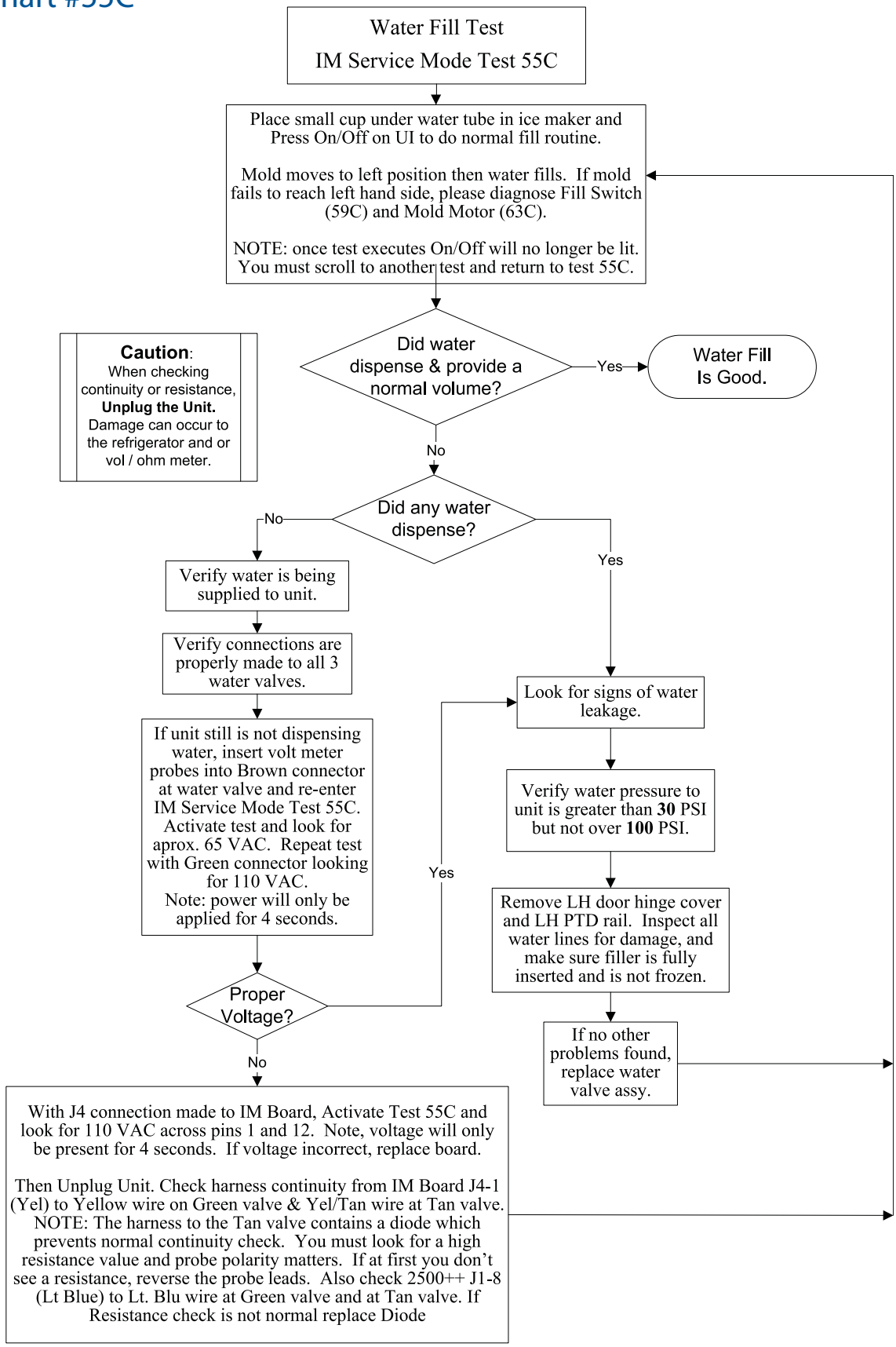
Flow Chart #52C



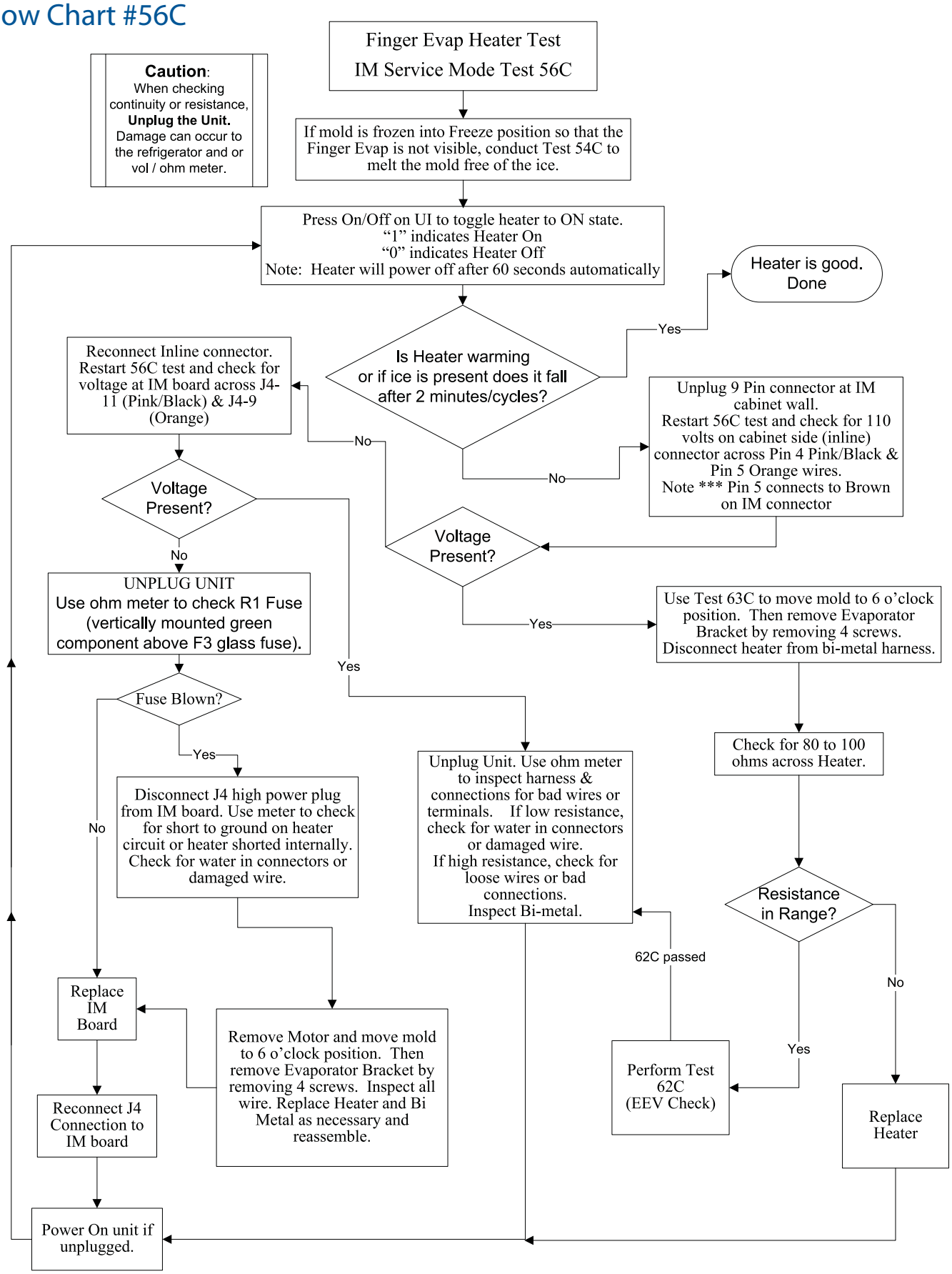
Flow Chart #54C



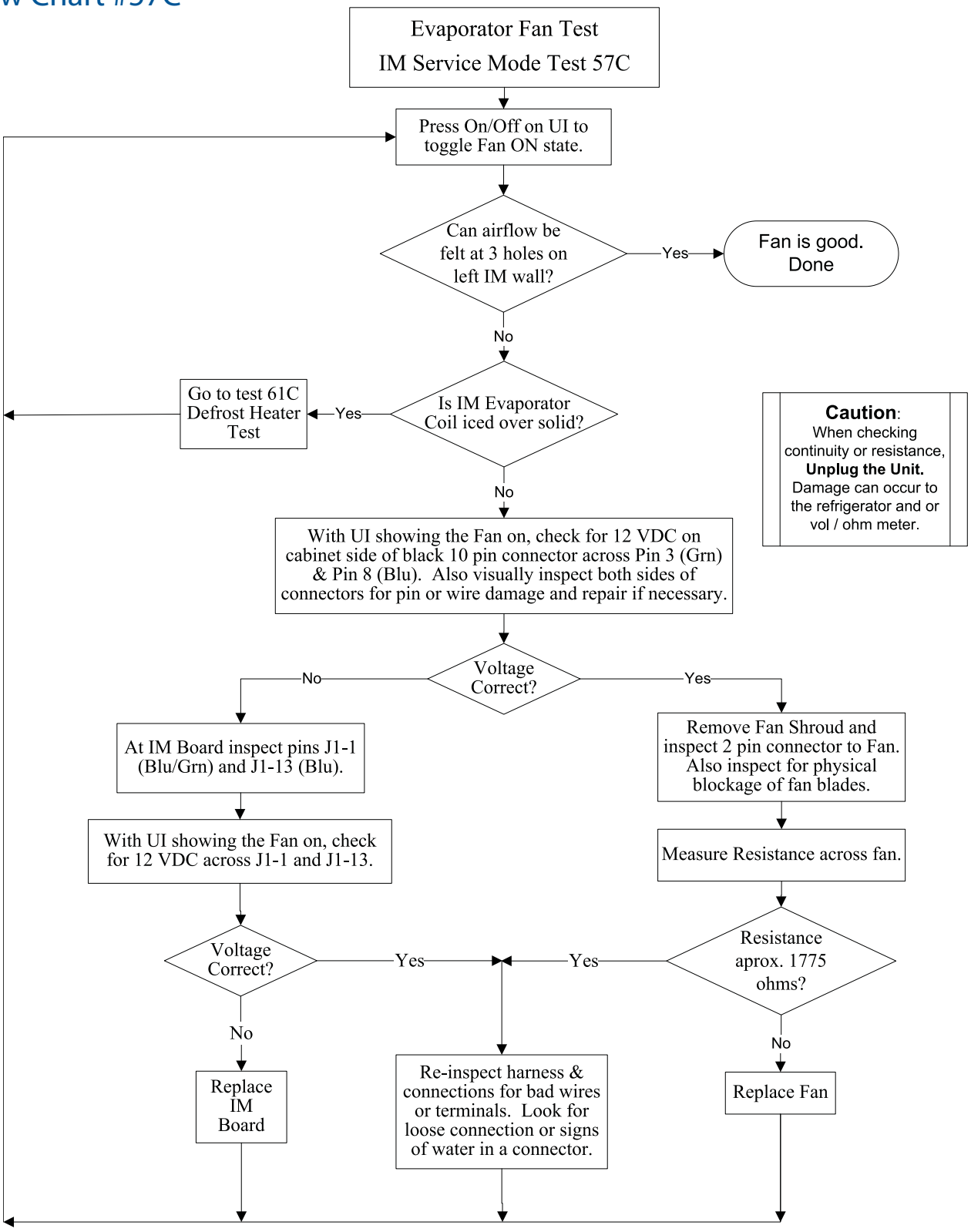
Flow Chart #55C



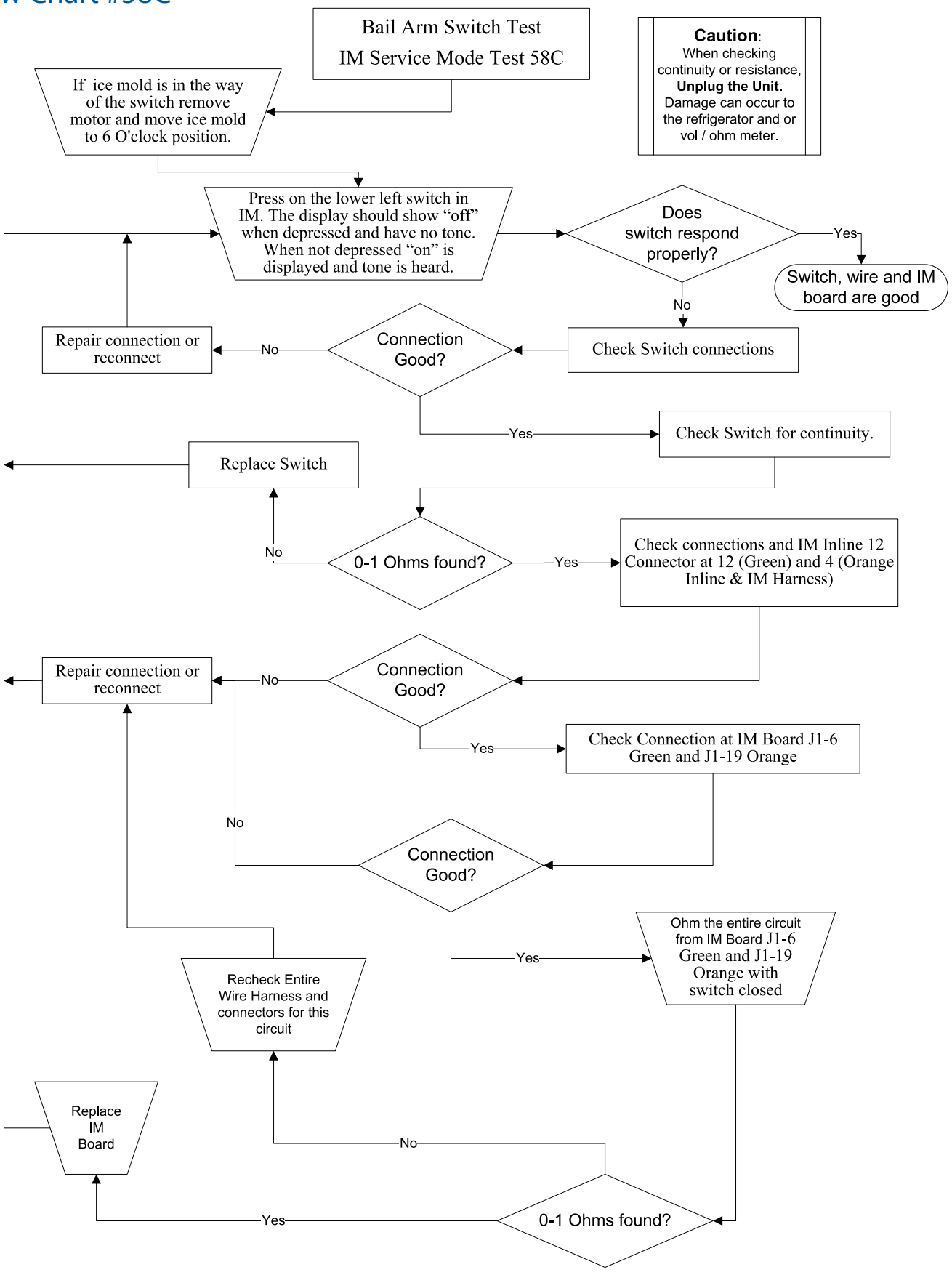
Flow Chart #56C



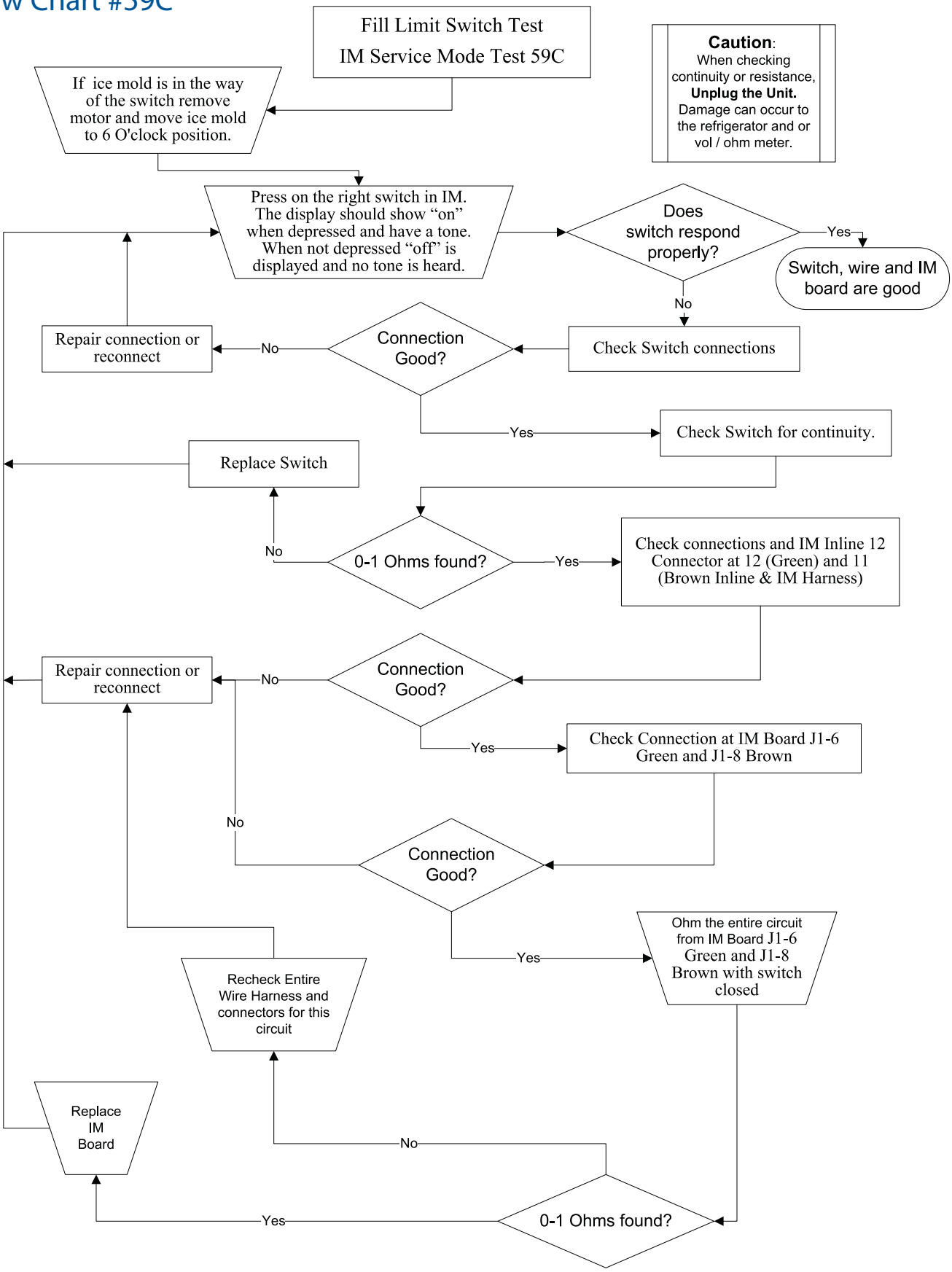
Flow Chart #57C



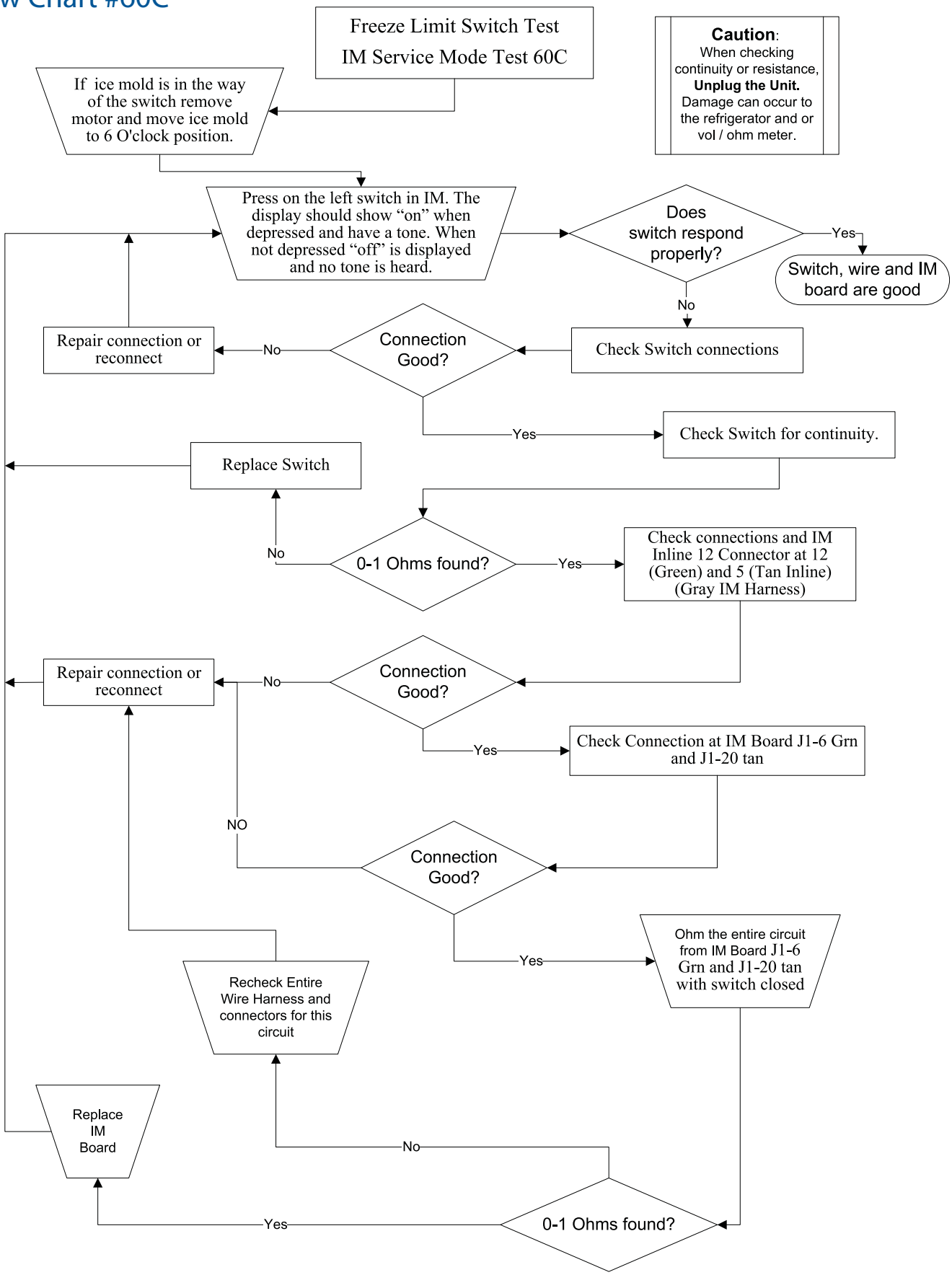
Flow Chart #58C



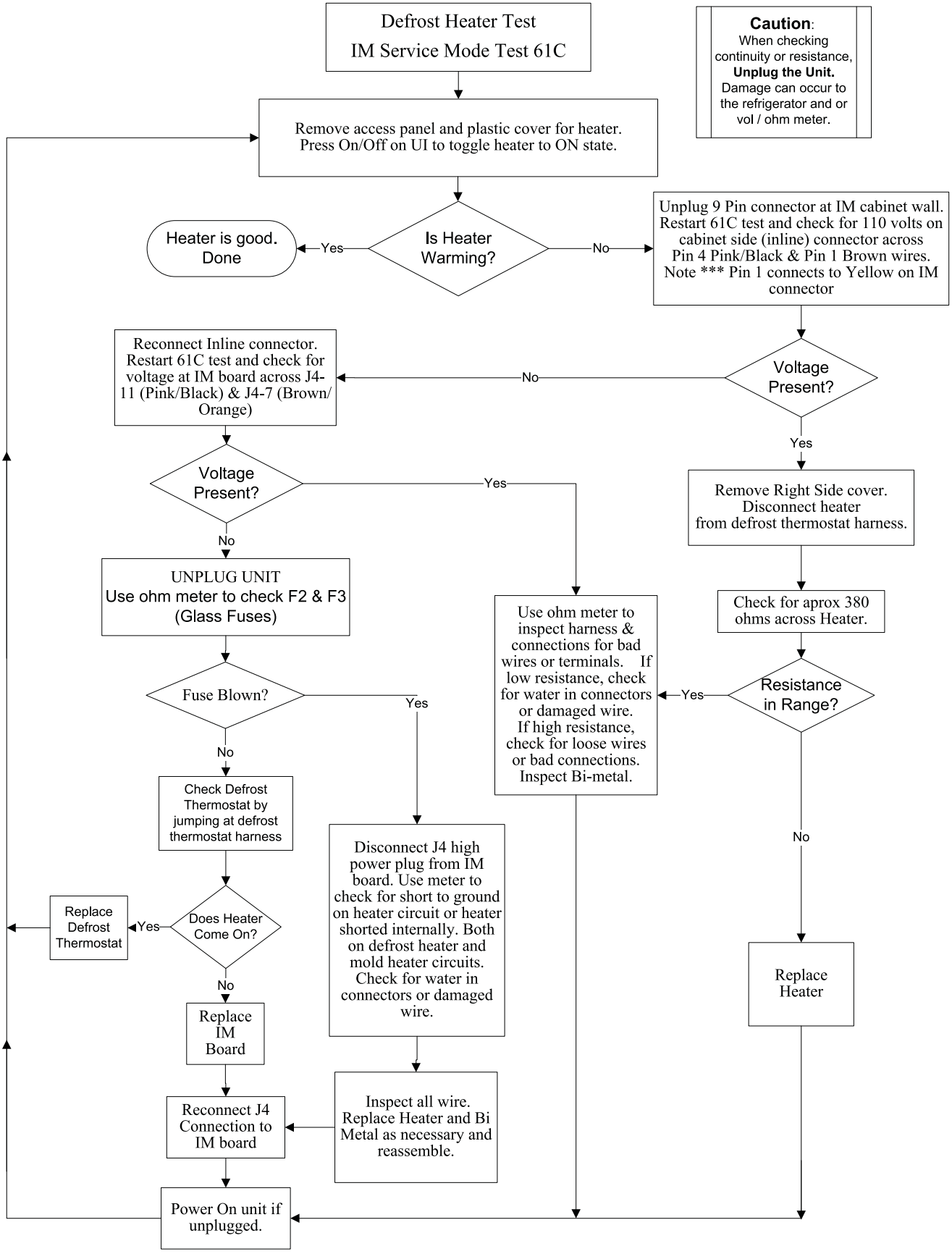
Flow Chart #59C



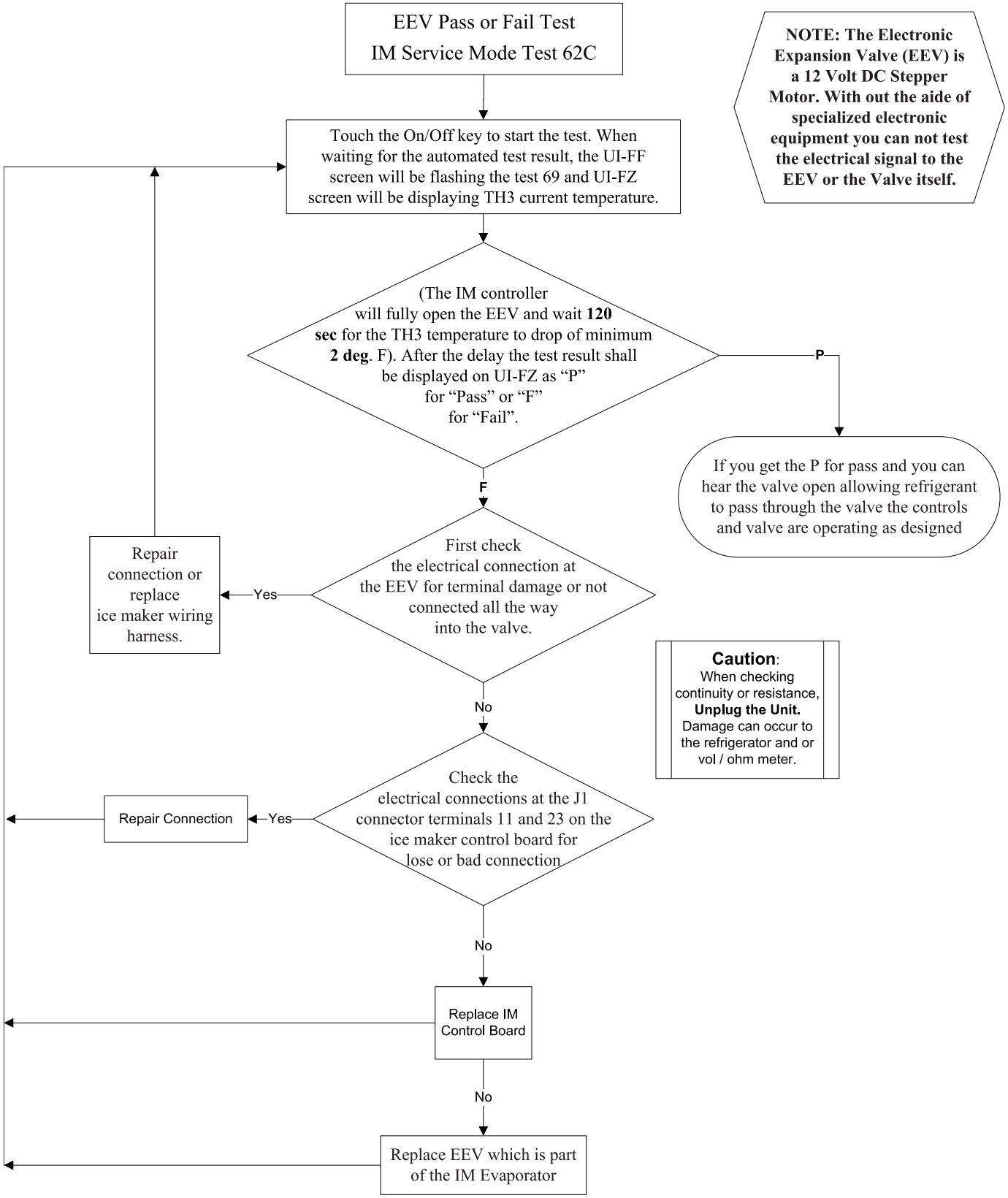
Flow Chart #60C



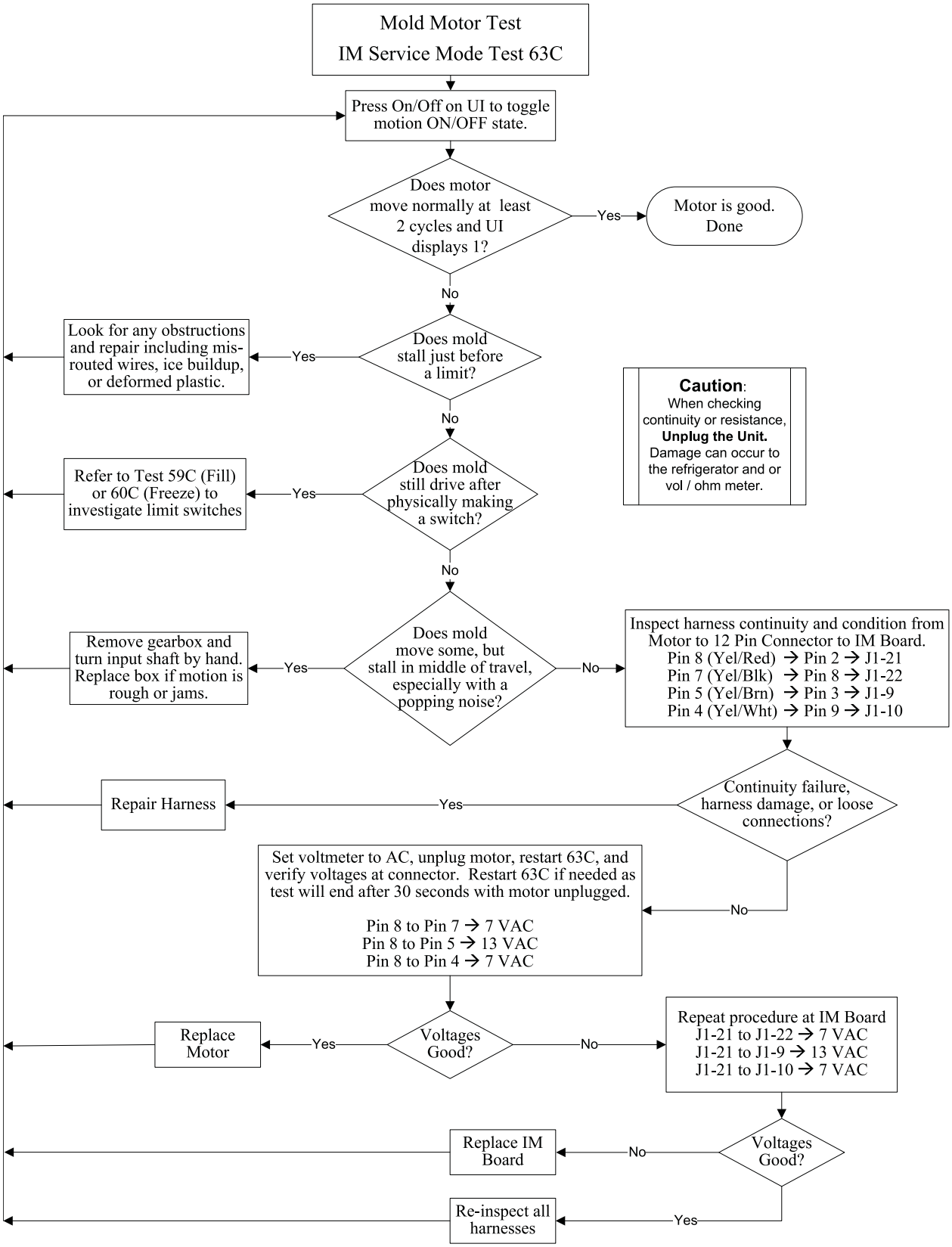
Flow Chart #61C



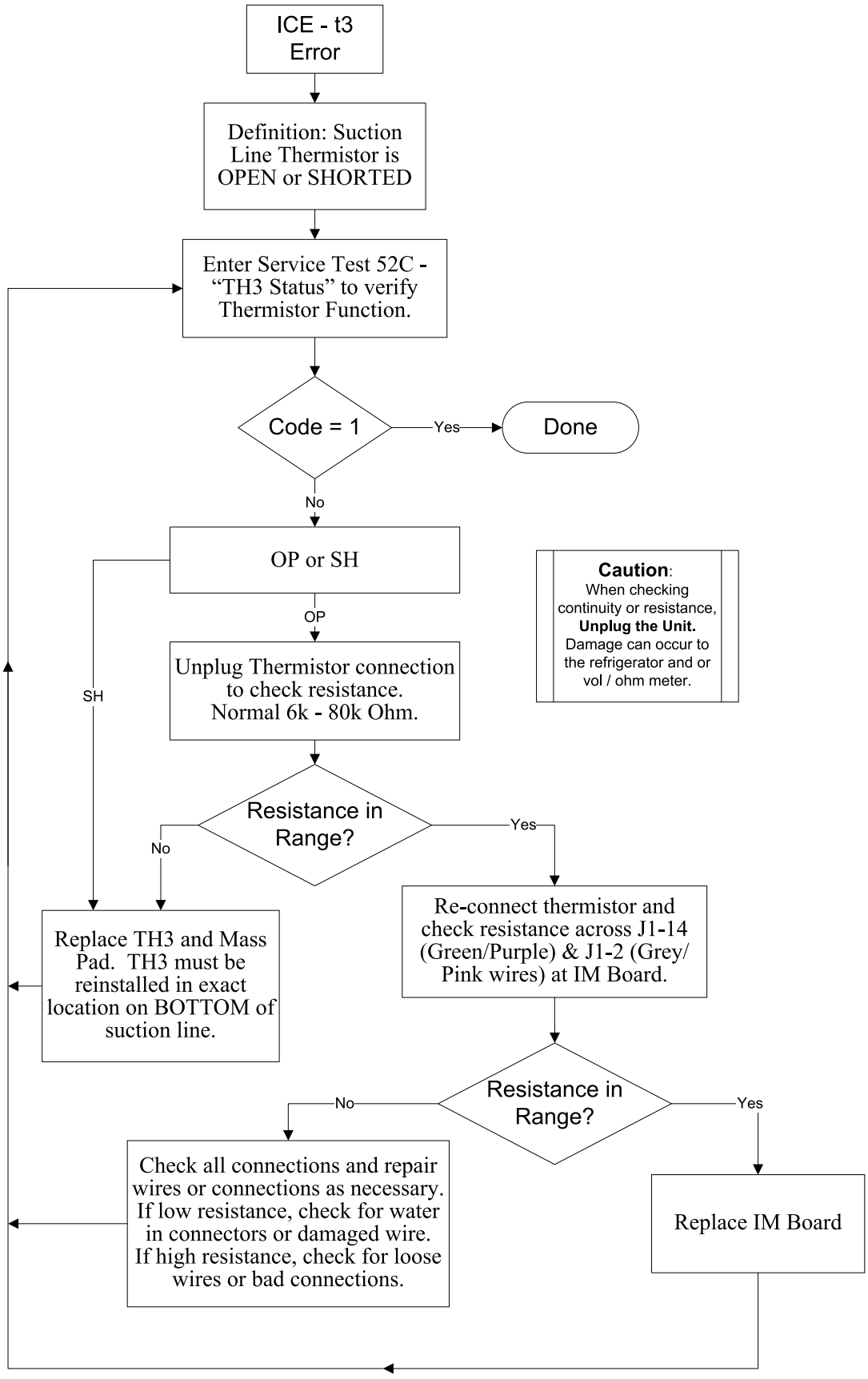
Flow Chart #62C



Flow Chart #63C

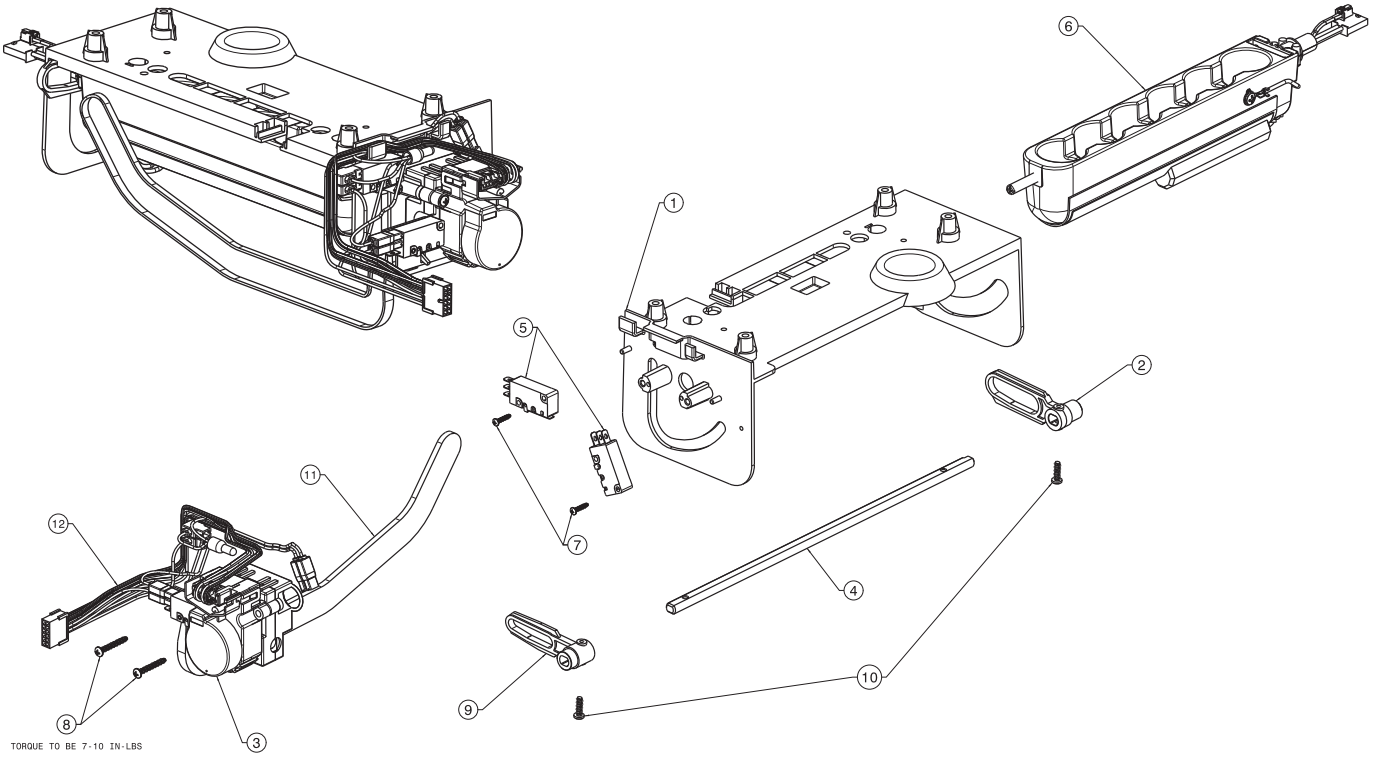


Flow Chart ICE-t3 Error



Ice Maker Body and Switches

For Component Teardown Procedures See Section 6

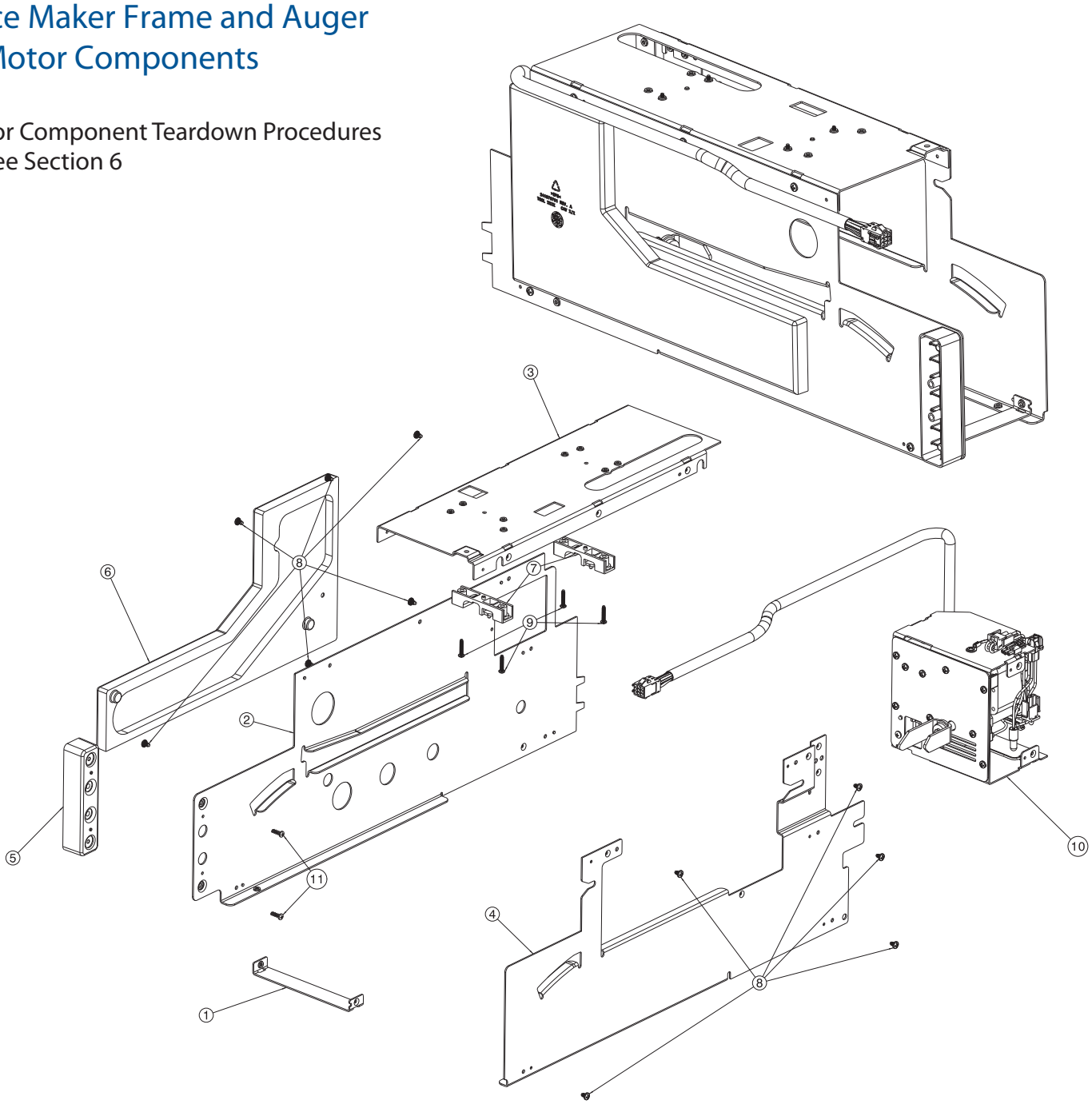


BRACKET EVAP COIL BM	BRACKET ICE TRAY	MOTOR ICEMAKER BM	SHAFT MOTOR ICEMAKER	SWITCH LIMIT BM	S/A ICE TRAY	SCREW-#4 X 1/2 PANHEAD	SCREW #6-19 X 1" THREADFORMING	BRACKET ICE TRAY	SCREW #8-18 HILO PANHEAD	S/A PUR BALE ARM ASSY.	WIRE HARNESS
1	2	3	4	5 x2	6	7 x2	8 x2	9	10 x2	11	12

Figure 4-12

Ice Maker Frame and Auger Motor Components

For Component Teardown Procedures
See Section 6



BRACE CROSS MEMBER	FRAME LEFT	FRAME TOP	FRAME RIGHT	FRAME SPACER	AIR DUCT	BRACKET-COIL	PAN HEAD SCREW	THREADFORMING SCREW	MOTOR ASSEMBLY	SCREW-8/18 HILO
1	2	3	4	5	6	7 X2	8 X11	9 X4	10	11 X2

Figure 4-13

Ice Maker Evaporator Components

For Component Teardown Procedures See Section 6

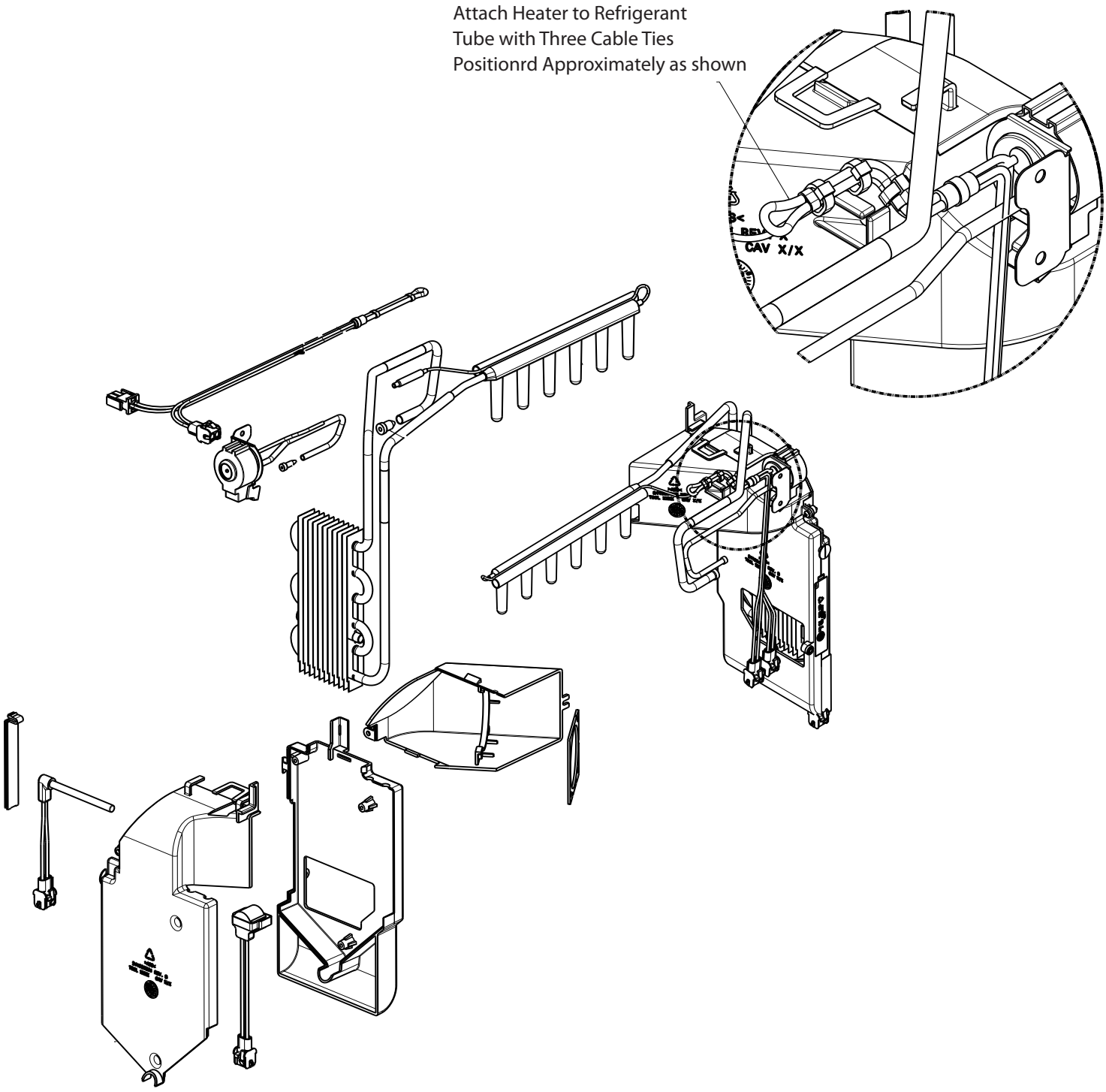


Figure 4-14

Ice Maker Mounted In The Freezer Compartment

(available on select models)

The Ice Maker is designed to produce ice automatically. The length of time between harvest cycles will vary depending on load conditions, door openings, ambient temperature and freezer temperature and water temperature. These factors must be taken into consideration when checking the ice production rate.

With a temperature of -2°F to +5°F in the freezer, the rate of harvest will be 8 - 12 cycles per 24 hour period. The ice maker is wired across the line and will harvest ice in the refrigeration or defrost cycles.

The water valve assembly is mounted in the compressor compartment. A 1/4" polyethylene tube extends from the water valve up the rear wall of the refrigerator just above the divider. The tube enters to the left side of the lower drawer in the food compartment and connects to the water filter. From the water filter a tube connects to a water inlet spout that directs the water into the fill trough. A bead of sealer around the inlet water tube prevents the migration of air and moisture into the food compartment.

Front Cover

A decorative front cover, made of molded plastic, encloses the operating mechanism of the Ice Maker that protects it from moisture. It is essential that the cover be in place on an operating Ice Maker to protect against possible user contact with the mechanism. (See Figure 4-15)

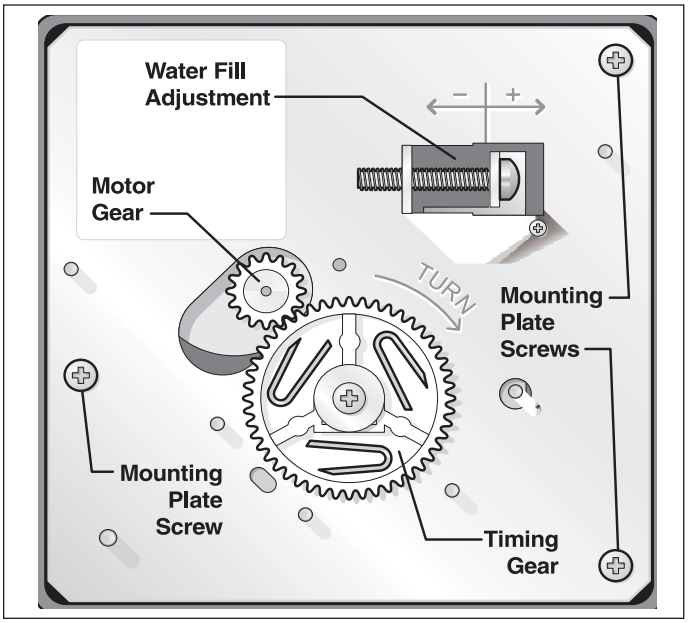


Figure 4 -15

Ice Maker Components

Ice Mold

The ice mold is die-cast aluminum with the ice maker thermostat bonded to its front surface and has a semi-circular interior partitioned into equal size compartments. Water enters at the rear of the mold through a fill trough and a film of silicon grease on the top edge of the mold prevents siphoning of water by capillary action.

Mold Heater

A mold heater, rated at 115 volts, 81 ohms ± 10% or 230 volts, 340 ohms ± 10%, and covered with an aluminum sheath, is embedded in the grooved section on the underside of the mold. When mold heater is energized, the ice contact surface within the mold is heated enough to allow harvest of ice pieces. The mold heater is wired in series with the ice maker thermostat, which acts as a safety device. The original heater is staked in place, but can be removed for replacement. The replacement heater is secured to the mold by 3 flat head retaining screws that thread into holes in the mold adjacent to the heater. A thermal mastic sealer is placed between heater and mold to ensure good thermal contact.

Ice Stripper

An ice stripper is attached to the mold to prevent ice pieces from falling back into the mold. It also serves as a decorative side cover.

Ice Ejector

The ejector blades are molded from delrin and extend from a central shaft, which turns in nylon bearings at the front and rear. Each blade sweeps an ice section out of the mold. The drive end of the ice ejector is "d" shaped. Silicone grease is used to lubricate the bearing surfaces.

Water Valve Assembly

The water valve is solenoid operated and when energized, releases water from the supply line into the ice mold. The amount of water released is directly proportional to the length of time the water valve switch is energized. A flow washer inside the water valve maintains a constant rate of water flow over a supply line pressure ranging from 15 to 100 psi. It will not compensate for pressures below 15 psi, or greater than 100 psi. A no. 80-Mesh screen, placed ahead of the flow washer, filters out foreign materials. The solenoid coil draws 10 to 115 watts of power. The coil is wired in series with the mold heater, across the supply voltage.

Thermostat

The thermostat is a single-pole, single throw (SPST), bimetallic, disk-type, thermal switch. It automatically starts the harvest cycle when the ice is frozen. The thermostat closes at a temperature of 15°F ± 6°. Wired in series with the mold heater, the thermostat acts as a safety device against overheating in the event of mechanical failure. A thermal mastic bond is provided where the thermostat is mounted against mold. A gasket prevents water from leaking into the support housing.

Sensing Arm & Linkage

The sensing arm is cam-driven and operates a switch that controls the quantity of ice produced. In the harvest cycle, the arm is raised and lowered during each of the two revolutions of the timing cam. If the sensing arm comes to rest on top of ice in the storage compartment during either revolution, the switch will remain open and stop the ice maker at the end of that revolution. When sufficient ice is removed from the storage container, the sensing arm lowers and ice production resumes. To manually stop the ice maker raise the sensing arm until it locks in the upper position. Operation is resumed when the sensing arm is manually lowered.

Timing Switches

The three timing switches used are single-pole, double throw (SPDT). They are identical except for function, and can be used interchangeably.

1. Hold Switch - assures completion of a revolution once the ice maker operation has started.
2. Water Fill Switch - opens the water valve during the fill cycle. It is the only adjustable component in the ice maker.
3. Shut-off Switch - stops ice maker operation when the storage container is full of Ice. The switch is opened after the sensing arm is raised to its most upright position. The switch is mounted to the top right wall of the ice maker support.

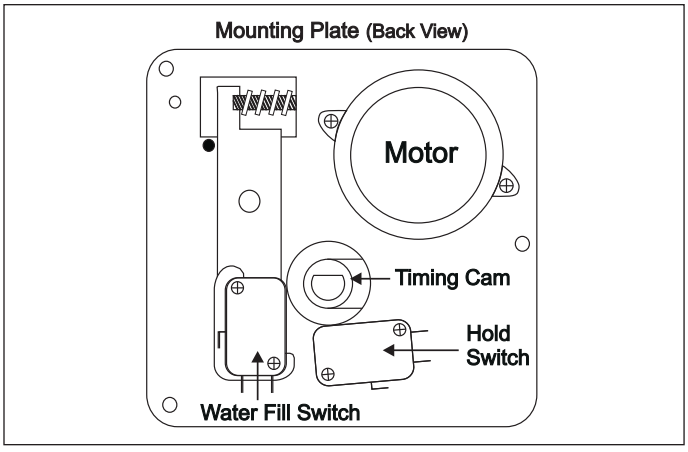


Figure 4-16.

Thermal Cut-Out (TCO)

The thermal cut-out is a one-time limit fuse used as a safety device. It is located under the mounting plate, in the head of the ice maker, between the thermostat and wire connector.

If the thermal cut-out opens, the cause of failure must be determined and corrected prior to replacing the TCO. Normals causes of the TCO failing are a bad thermostat or a shorted coil on the water valve.

Timing Cam & Coupler

Three separate cams are combined in one molded Delrin part:

1. Inner cam operates shut-off switch lever arm.
2. Center cam operates hold switch.
3. Outer cam operates water fill switch.

One cam end is attached to a large timing gear. The other cam end is coupled to the ejector.

Timing Gear

This large molded plastic gear is driven by the motor and, in turn, rotates the cam and ejector. A “D” shaped hole in the gear fits over the timing cam hub. Spacer tabs on the backside of the gear prevent the gear from binding on the mounting plate.

Motor

A low wattage, stall-type motor drives the timing gear. This gear turns the timing cam and ejector blades approximately one revolution every three minutes (1/3 RPM).

Wiring

A four-prong plug connects the ice maker wiring to the cabinet wiring harness. The ice maker assembly is wired across the line and will harvest in either the refrigeration or defrost cycles. A wiring diagram is located inside the front cover of the ice maker.

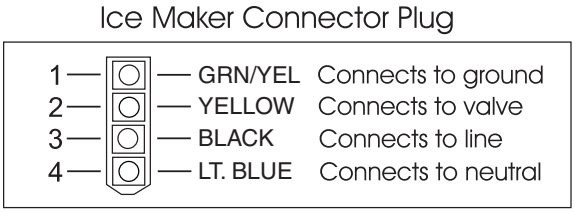


Figure 4-17.

Installing Water Supply Line to Ice Maker

Supply line installation must comply with all applicable plumbing codes. The ¼" tubing and any other plumbing materials required should be obtained locally.

The ice maker should be connected to a frequently used cold water line to ensure a fresh water supply. Be sure to leak test all connections after the water supply has been turned on.

NOTE

A vertical cold water line should be selected for the water supply. If a vertical line is not available, a horizontal line may be used, providing the connection is on the side or top of the pipe, but not on the bottom. Scale and foreign material in the pipe could cause stoppage of water flow if the connection is on the bottom.

Water Valve Switch – Water Fill Volume

The amount of water fill is directly proportional to the length of time terminals "C-NC" of the water fill switch are closed. Closing occurs when the switch plunger drops into a cavity formed in the cam.

Different water valves have different flow rates. For this reason, anytime a water valve is replaced, the water fill must be checked and the fill switch must be adjusted if needed.

The correct water fill volume is 102 - 130 cc. To measure the fill volume, test-cycle the Ice Maker and collect the water. Measure in a container calibrated in cubic centimeters (CC).

The fill volume is adjusted by increasing or decreasing the length of time the water fill switch remains closed.

To adjust the water fill switch, first determine how much water is needed. The adjusting screw is calibrated so that one complete revolution changes the water fill about 18 cubic centimeters. Turning the screw clockwise decreases the fill, while turning counterclockwise increases the fill.

EXAMPLE: An Ice Maker is test-cycled and the water fill sample is 158 cubic centimeters. Subtracting 130 cc from 158, the adjustment needed is 28 cc. Since one turn of the adjusting screw changes the fill 18 cc, 1-¾ turn clockwise would reduce the fill about 28 cc, the desired amount. (This example is for manual models only.)

Test Cycling Ice Maker

Operation of the ice maker, water refilling, and controlled ice storage, require proper functioning and timing of all components.

Consider the following:

- Has refrigerator been properly installed and connected to sources of electrical power and water?
- Has freezer compartment evaporator pulled down to temperature?
- Have several ice making cycles been completed and is the Ice Maker in the Freeze Cycle?
- Do the ejector blades make two revolutions per cycle? Is ice stored on blades after harvest?
- Is the water solenoid wired in series with the mold heater?

It may be necessary, on occasion, to test-cycle an ice maker to check its operation. This can be done on the repair bench or while mounted in the refrigerated compartment.

If ice maker is in an operating freezer, take precautions against the formation of condensate by allowing the cold metal components to warm up before removing the front cover. This can be expedited by cycling the assembly with the cover in place and water supply valve closed.

To manually cycle the ice maker, slowly turn the ejector blades clockwise until the hold switch circuit to the motor is completed. When the motor starts, all components except the ice maker thermostat should perform normally. Once the ice maker completes its cycle, remove the front cover.

To replace front cover:

1. Ensure that ice maker is at room temperature before removing cover.
2. Place straight blade of screwdriver in slot at bottom of Mold support and pry cover loose.

If further test cycling is necessary, place screwdriver blade in slot located in the motor drive gear and turn counterclockwise until the hold switch circuit to the motor is completed.

Fault Diagnosis

Complaint - Ice Maker Fails to Start

1. Check to see if ice maker control arm is locked in raised position.
2. Check terminals from cabinet wiring to ice maker for open circuit in wiring or components.
3. Check operation of ice maker with test service cord.
4. Check mold temperature at a mounting screw. If temperature is above 15°F, freezer air temperature is not cold enough to switch ice maker thermostat to closed position. If mold is below 9°F, manually start ice maker by rotating timer gear. If motor fails to start, check motor for continuity. If motor starts, thermostat, shut-off switch, or hold switch is inoperative.
5. Check hold switch first. With ejector blades in the starting position, check terminals "C" and "NC" for continuity. Replace switch if continuity readings are open. Check shut-off switch linkage. Then check terminals "NO" and "C" for continuity with ice maker control arm in lowest position. Replace switch if continuity readings are open. If hold switch and shut-off switch are operative, then replace thermostat.

Complaint-Ice Maker Fails to Complete Cycle.

1. With ejector blades at 10 o'clock position, Hold switch plunger depressed, Check terminals "C" and "NO" for continuity. Replace switch if continuity readings are open.
2. With ejector blades at 12 o'clock position, check shut-off switch terminals "C" and "NC" for continuity. Replace thermostat if continuity readings are open.
3. With ejector blades at 4 o'clock position, check mold heater and ice maker thermostat for continuity. Replace heater if continuity readings are open. If heater shows continuity, replace thermostat.
4. Check motor operation with a test cord. Replace motor if it fails to start.

Complaint-Ice Maker Continues to Eject When Container is Full.

1. Check for loose linkage to the ice maker control arm shut-off switch. Switch should open when arm is in raised position. Adjust, if required.
2. Check shut-off switch terminals "C" and "NO" for continuity with ice maker control arm raised. Replace switch if continuity readings are indicating a closed circuit.

Complaint-Ice Maker Fail to Stop at End of Cycle

1. With the ejector blades in the starting position, check the hold switch terminals"C" and "NO" for continuity. Replace the switch if the continuity readings are indicating a closed circuit.

Complaint-Ice Maker Produces Undersized Ice Pieces.

1. Ensure that ice maker mold is level.
2. Check for partial restriction in supply line or water valve strainer.
3. Ensure that the water pressure to water valve is sufficient. (30 psi min., 100 psi max.)
4. Ensure that the water valve switch is adjusted for proper water fill, 102 - 130 cc's.
5. Check thermal bond between thermostat and mold. If necessary, reapply thermal mastic sealer.

Operating Cycle Illustrations - Manual Cycle

To manually cycle ice maker:

1. Remove cover from ice maker head.
2. Insert a phillips head screwdriver into screw on timing gear.
3. Turn gear clockwise until motor starts to run.

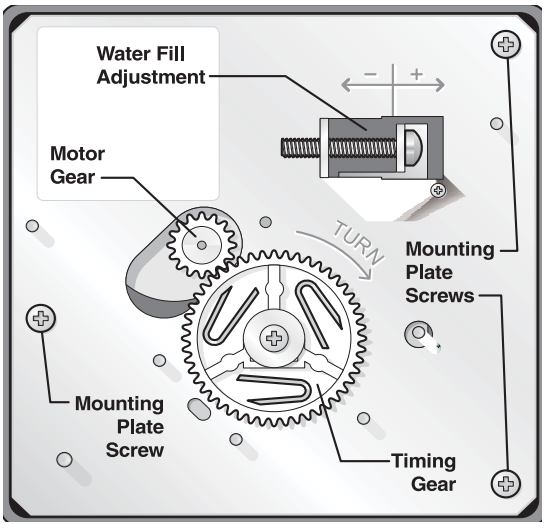
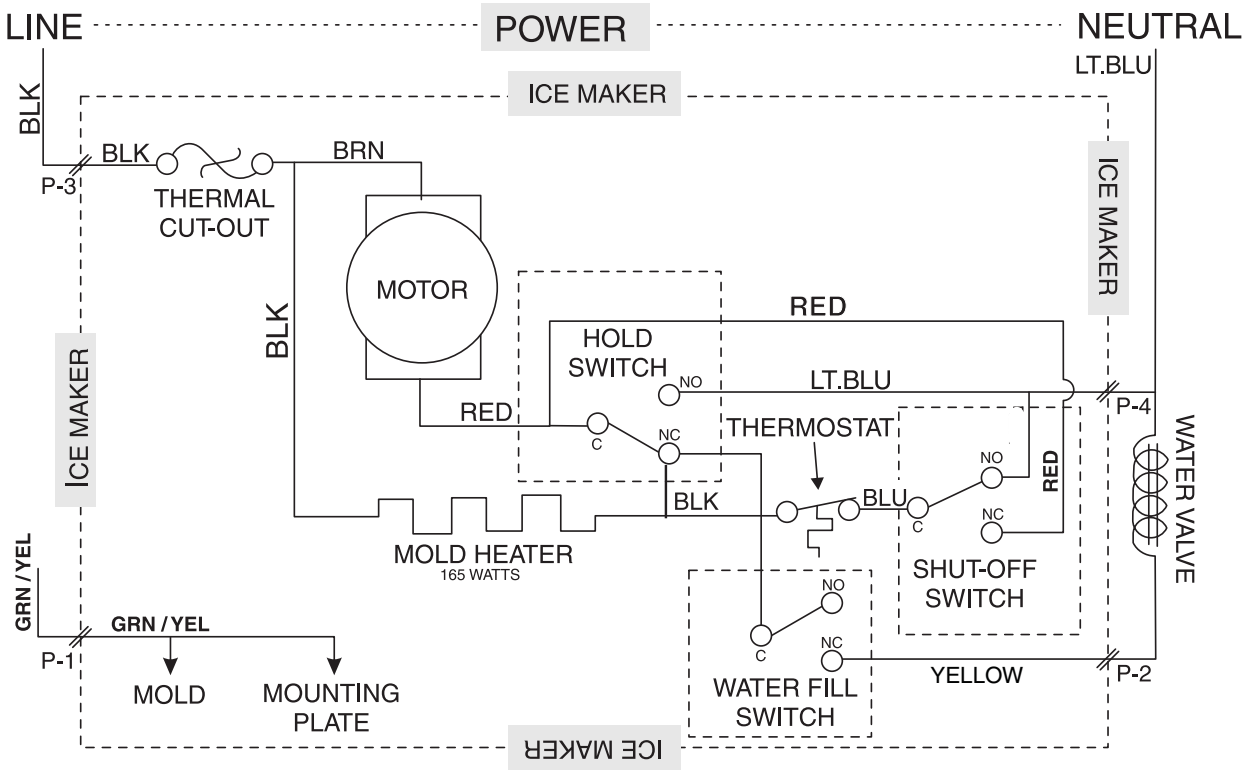


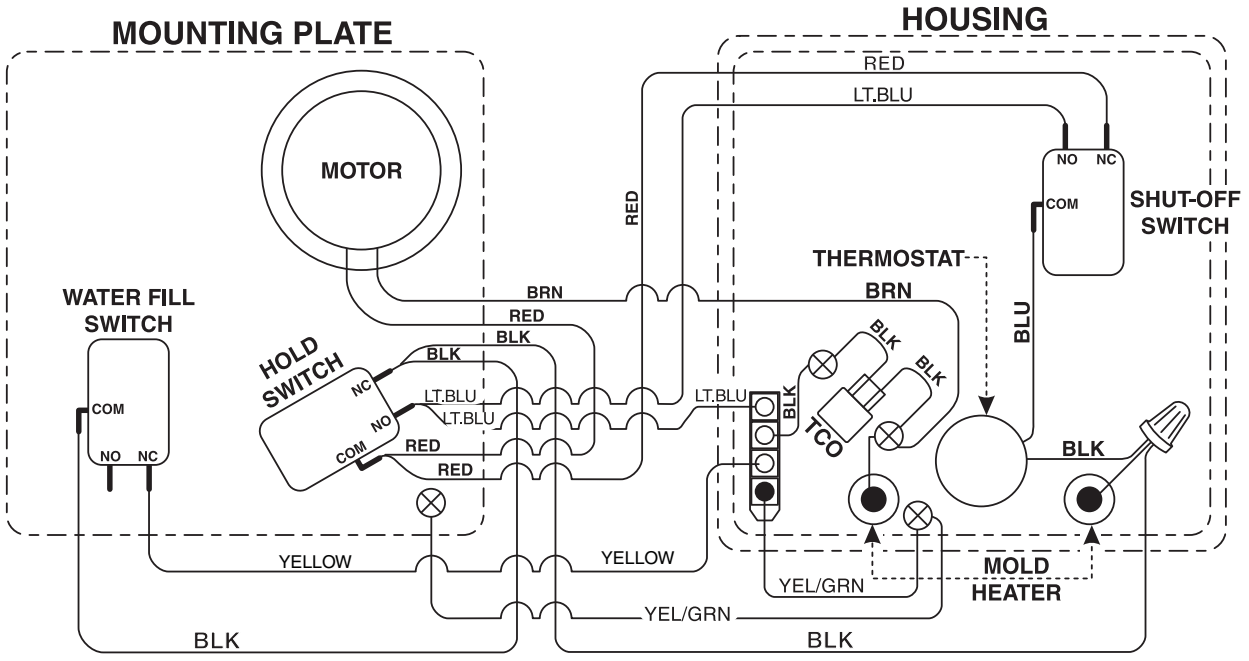
Figure 4-18.

Freezer Compartment Ice Maker Electrical System

⚠ WARNING

The Ice Maker mounted in the freezer compartment is NOT a Mid-South Ice Maker. Use the schematic below for servicing the Ice Maker.





Operating Cycle Illustrations - Electrical

The following wiring diagrams illustrate the electrical operation of an ice maker. This procedure is on the Internet at http://www.frigidaire.com/tip/

1. • Ice Maker connected to electricity.
   • Mold temperature above 15°F.
   • Thermostat open.
   • Motor not rotating.
   • Mold Heater off.
   • Control Arm in the down position.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.

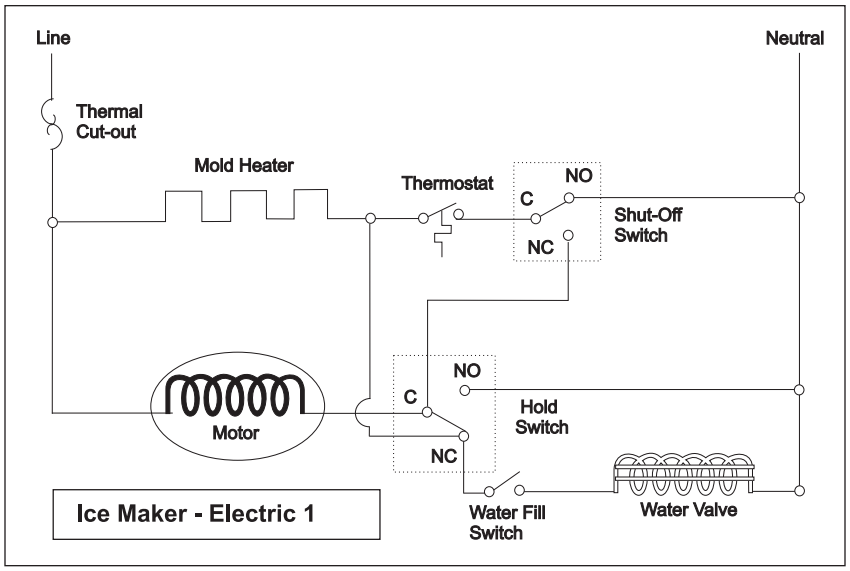


Figure 4-19.

2. • Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closes.
   • Motor starting.
   • Mold heater starting to heat.
   • Control Arm in the down position.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.

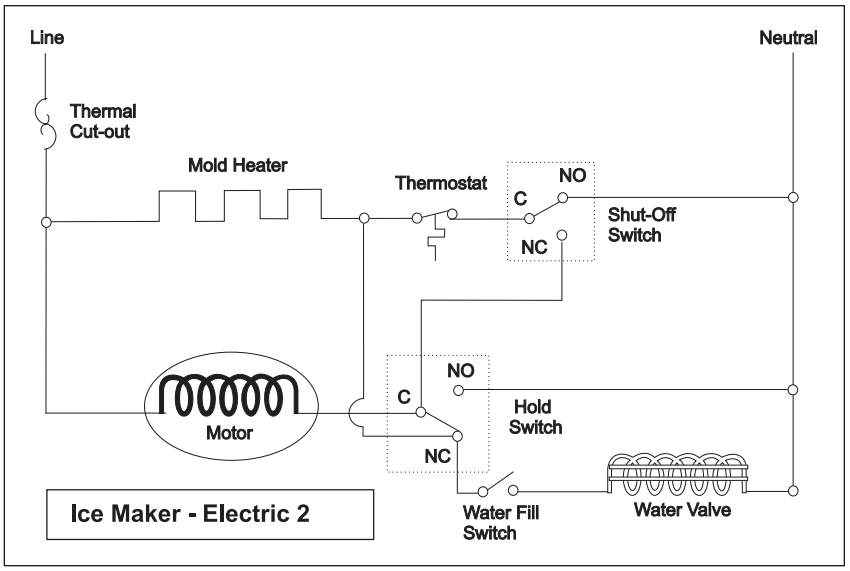


Figure 4-20.

3. • Maker connected to electricity.
   • Mold temperature above 15°F.
   • Thermostat closes.
   • Motor starting to rotate.
   • Power on heater.
   • Thermostat closed.
   • Control Arm in the down position.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.

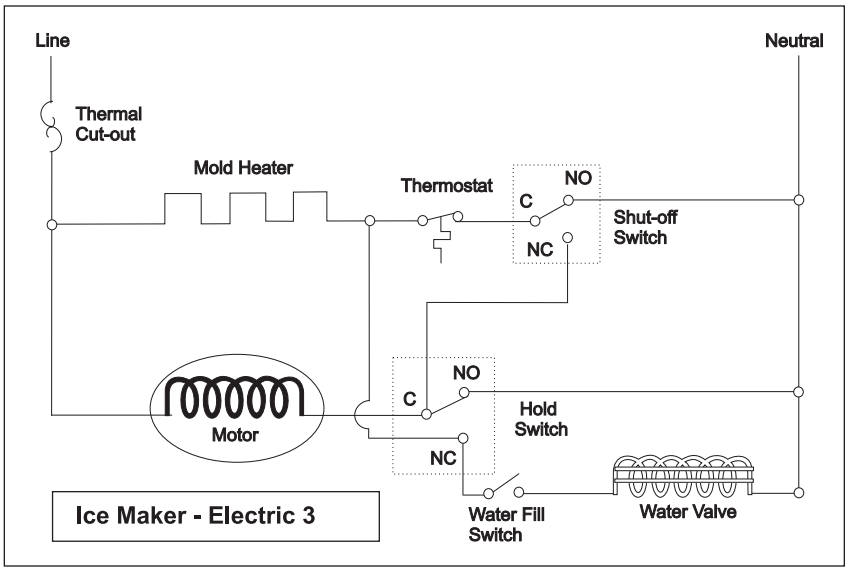


Figure 4-21.

4. • Ice Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closed.
   • Motor rotating.
   • Power on heater.
   • Control Arm swinging up.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.

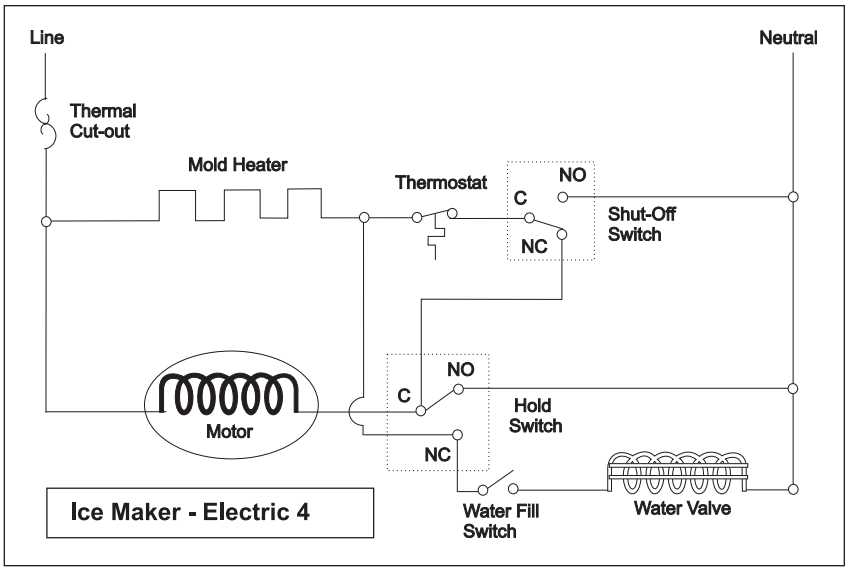


Figure 4-22.

5. • Ice Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closed.
   • Motor stalls as finger hits ice cubes.
   • Power on heater.
   • Control Arm swinging up.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.
   • Control Arm swinging down.

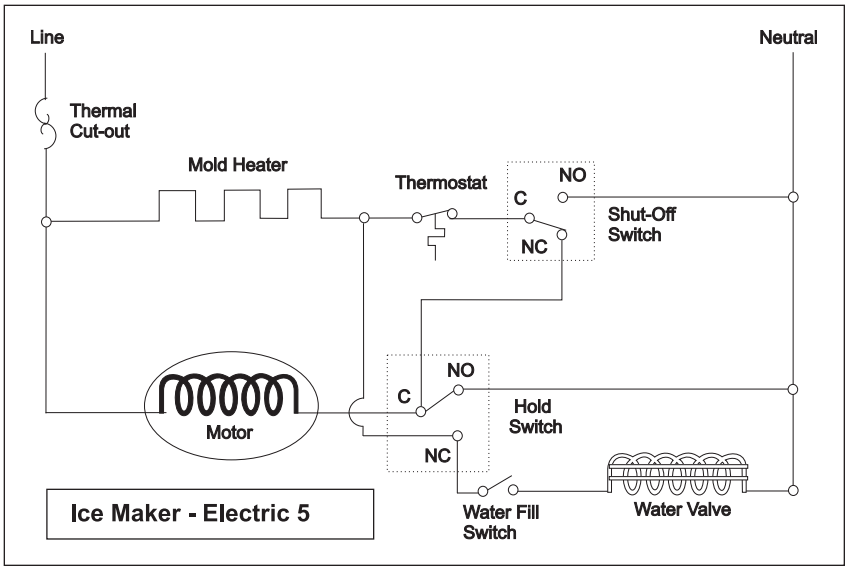


Figure 4-23.

6. • Ice Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closed.
   • Motor starts to rotate as ice breaks loose.
   • Power on heater.
   • Control Arm is down.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NO.
   • Water Fill Switch closed but shorted open by thermostat.

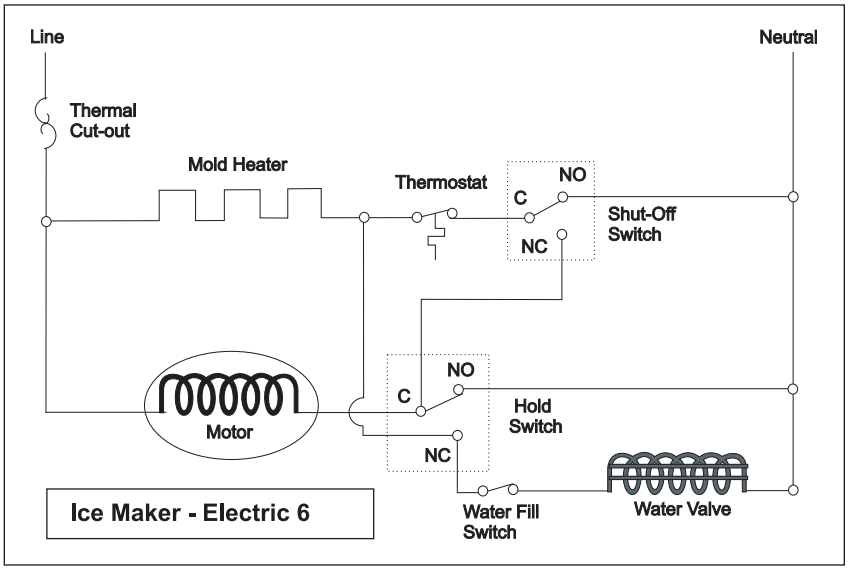


Figure 4-24.

7. • Ice Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closed.
   • Motor rotating.
   • Power on heater.
   • Control Arm is down.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.

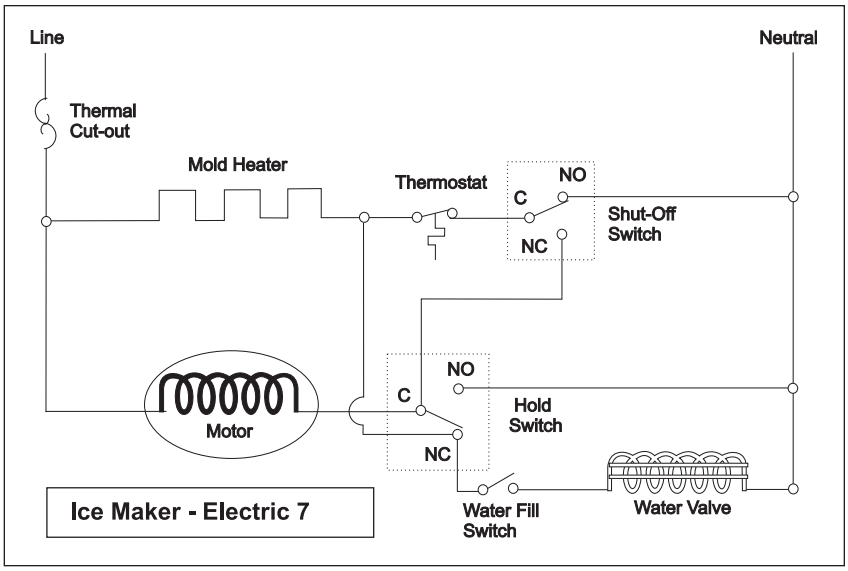


Figure 4-25.

8 . • Ice Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closed.
   • Power on heater.
   • Control Arm swinging up.
   • Shut-off Switch closed C to NO.
   • Hold Switch closed C to NC.
   • Water Fill Switch open.
   • Control Arm swinging up.

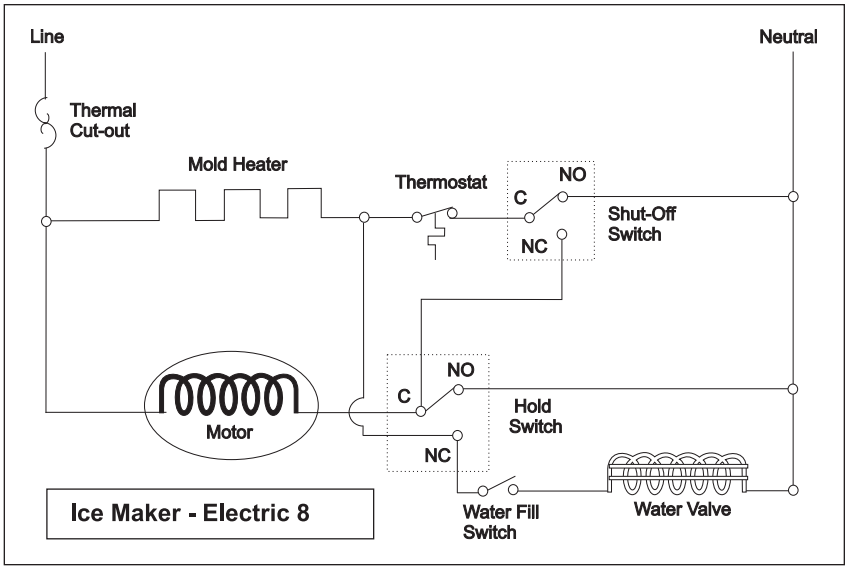


Figure 4-26.

9. • Ice Maker connected to electricity.
   • Mold temperature below 15°F.
   • Thermostat closed.
   • Motor is rotating.
   • Power on heater.
   • Control Arm swinging up.
   • Shut-off Switch closed C to NC.
   • Hold Switch closed C to NO.
   • Water Fill Switch open.

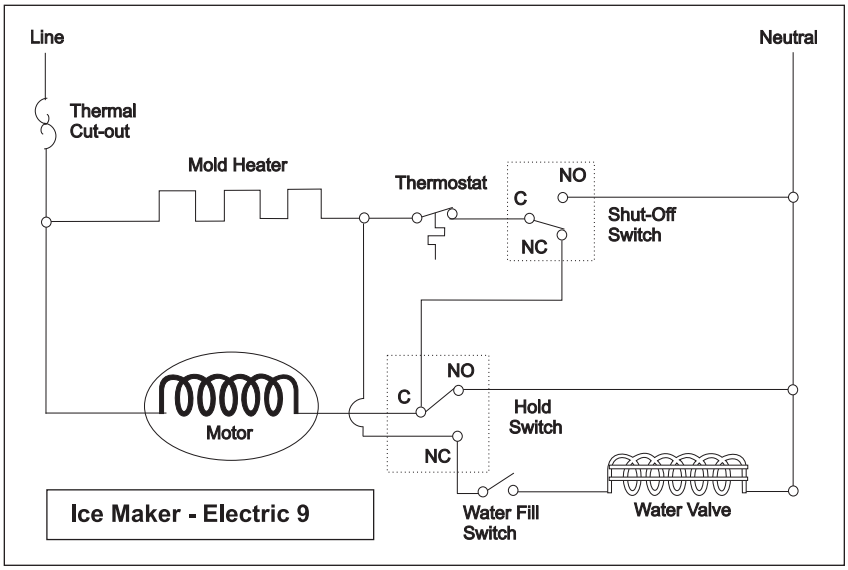


Figure 4-27.

10. • Ice Maker connected to electricity.
    • Mold temperature above 15°F.
    • Thermostat opens.
    • Motor is rotating.
    • Mold heater off.
    • Control Arm swinging up.
    • Shut-off Switch closed C to NC.
    • Hold Switch closed C to NO.
    • Water Fill Switch open.

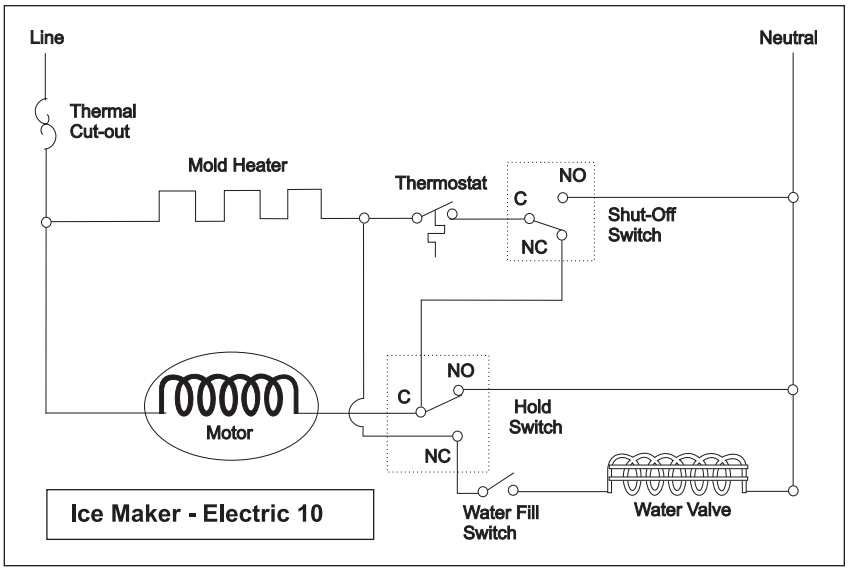


Figure 4-28.

11. • Ice Maker connected to electricity.
    • Mold temperature above 15°F.
    • Thermostat open.
    • Motor is rotating.
    • Mold heater off.
    • Control Arm swinging down.
    • Shut-off Switch closed C to NO.
    • Hold Switch closed C to NO.
    • Water Fill Switch open.

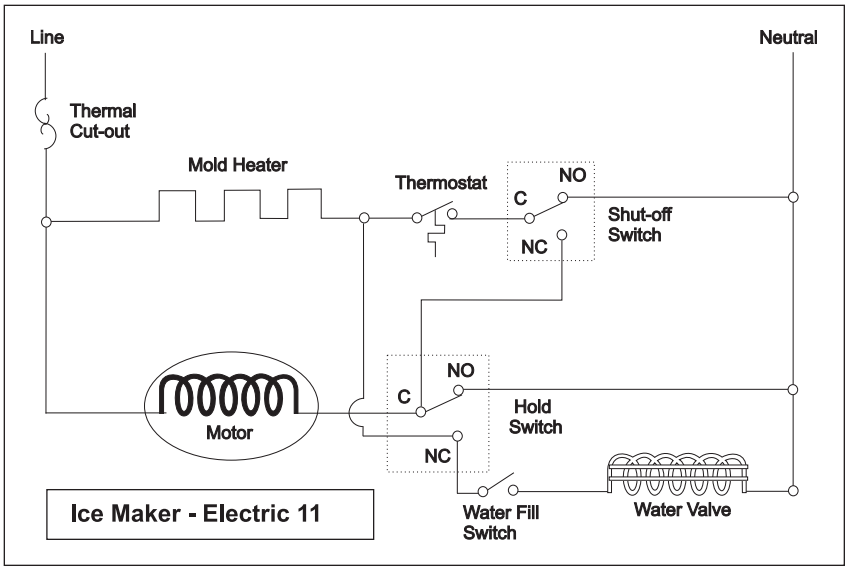


Figure 4-29.

12. • Ice Maker connected to electricity.
    • Mold temperature above 15°F.
    • Thermostat open.
    • Motor is rotating.
    • Mold heater is in series with water valve.
    • Control Arm swinging down.
    • Shut-off Switch closed C to NO.
    • Hold Switch closed C to NO.
    • Water Fill Switch closed.

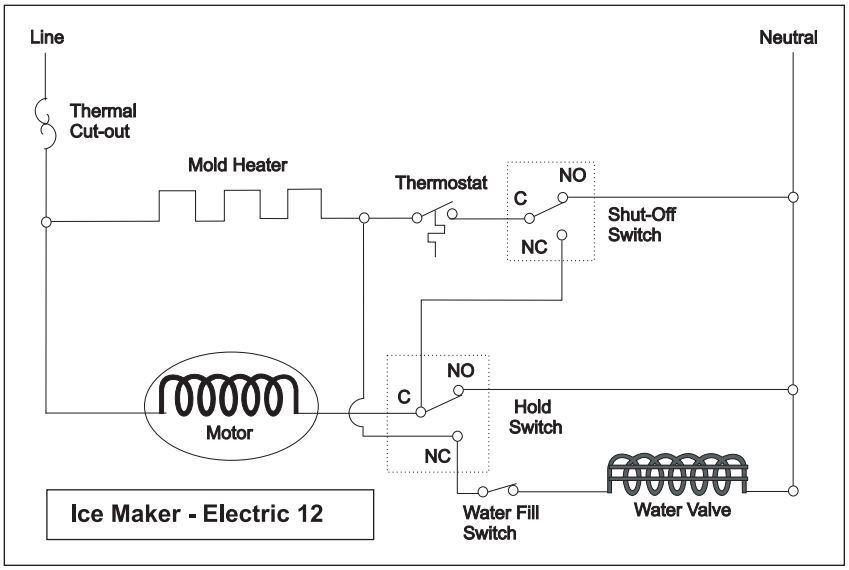


Figure 4-30.

13. • Ice Maker connected to electricity.
    • Mold temperature above 15°F.
    • Thermostat opens.
    • Motor is rotating.
    • Mold heater off.
    • Control Arm swinging down.
    • Shut-off Switch closed C to NC.
    • Hold Switch closed C to NO.
    • Water Fill Switch open.

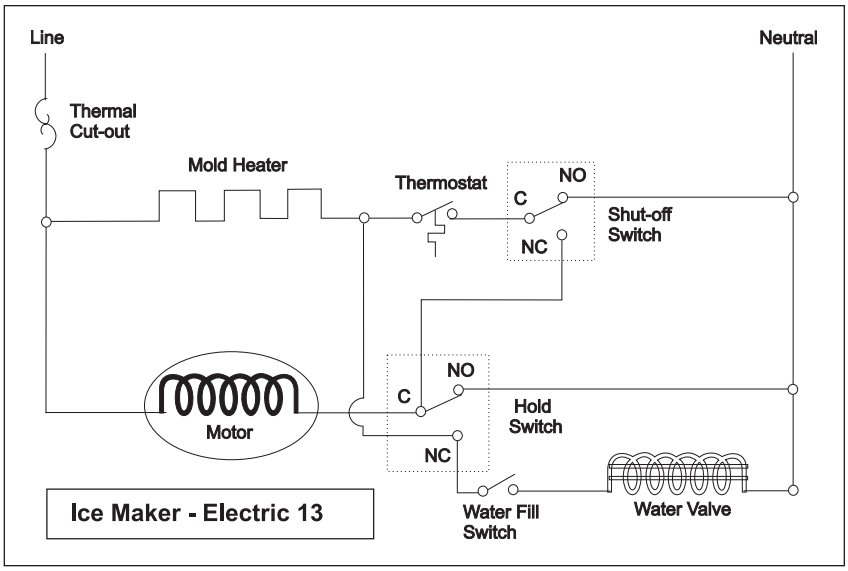


Figure 4-31.

14. • Ice Maker connected to electricity.
    • Mold temperature above 15°F.
    • Motor not rotating.
    • Mold heater off.
    • Control Arm in down position.
    • Shut-off Switch closed C to NC.
    • Hold Switch closed C to NO.
    • Water Fill Switch open.

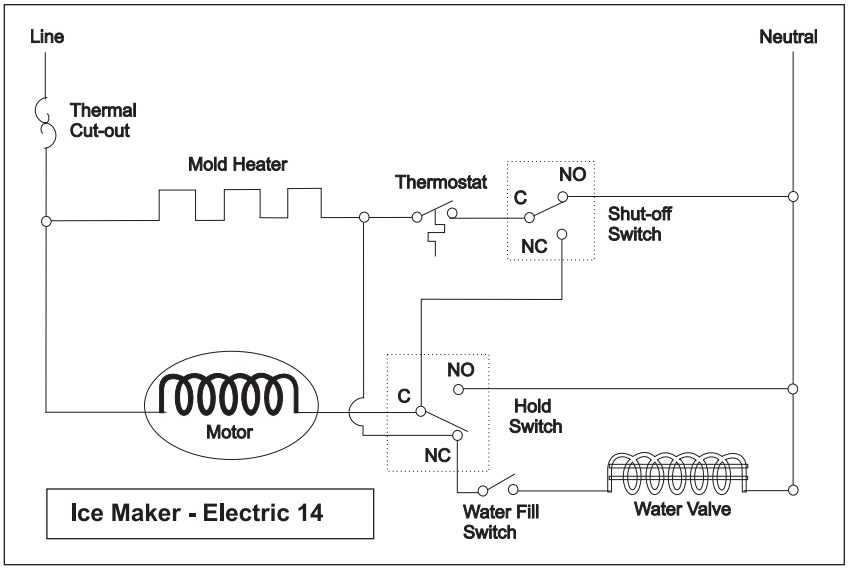
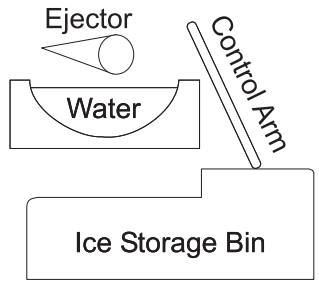


Figure 4-32.

Operating Cycle Illustrations - Mechanical

The following diagrams illustrate the mechanical operation of an ice maker.

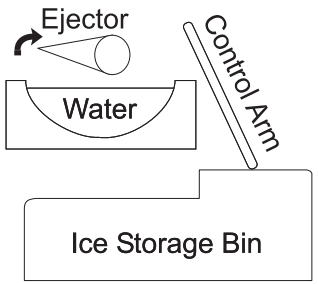
Step 1



Freezer Cycle

1. Mold is filled with water.
2. Thermostat is open.
3. All components are de-energized.

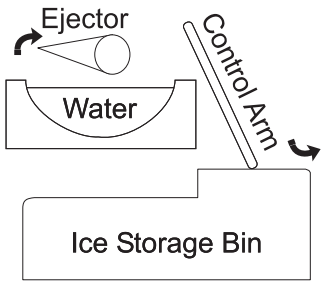
Step 2



Start of Harvest Cycle

1. Thermostat closes.
2. Mold heater & Motor is energized.
3. Ejector begins to turn.

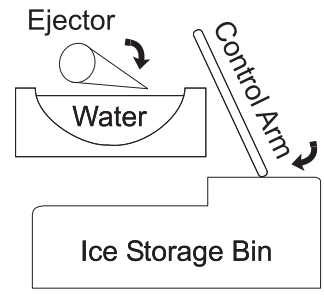
Step 3



Harvest Cycle

1. Holding Switch in normally open position.
2. Heater remains energized.
3. Control Arm is rising.

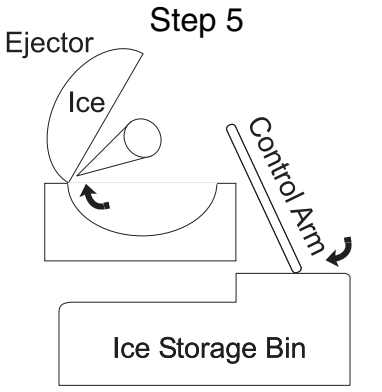
Step 4



Harvest Cycle

1. Ejector reaches ice.
2. Motor stalls until ice loosens.
3. Heater remains energized.

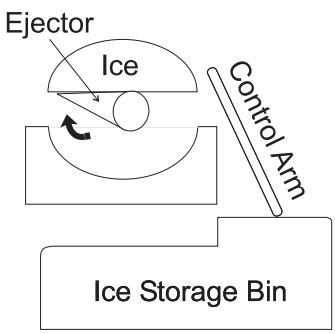
Step 5



Harvest Cycle

1. Completing 1st revolution of Ejector .
2. Water Fill Switch closes, but heater remains on, preventing water fill.

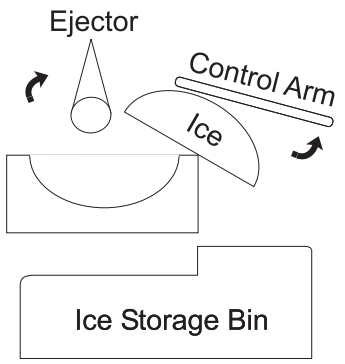
Step 6



Harvest Cycle

1. End of 1st revolution.
2. Hold Switch opens.
3. Since Thermostat is still closed, 2nd revolution of Ejector begins.

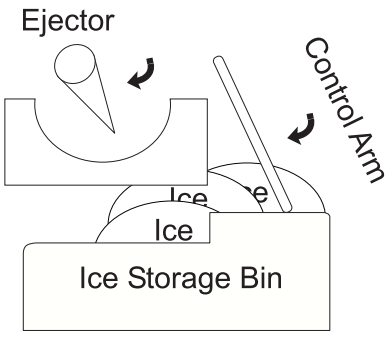
Step 7



Harvest Cycle

1. Hold Switch closes.
2. Motor energizes.
3. Mold Heater remains energized.
4. Control Arm raises and lowers.
5. Ice dumps into bin.

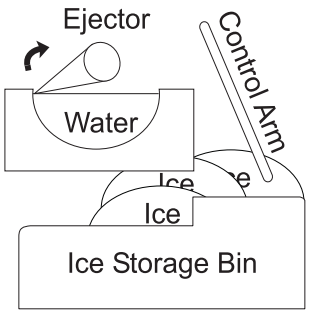
Step 8



End of Harvest Cycle

1. During end of 2nd revolution, Mold Heater resets Thermostat.
2. Mold Heater de-energized.
3. If container is full, Control Arm opens Shut Off Switch.

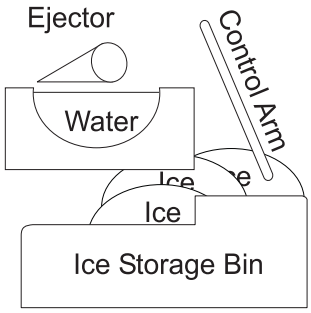
Step 9



Fill Cycle

1. Near completion of 2nd revolution of Ejector, Water Fill Switch closes and water fills mold.

Step 10



End of Fill Cycle

1. Hold Switch goes to normally closed position.
2. Water Fill Switch opens.
3. Freeze Cycle begins.

Ice Maker Exploded View

For Component Teardown Procedures See Section 6

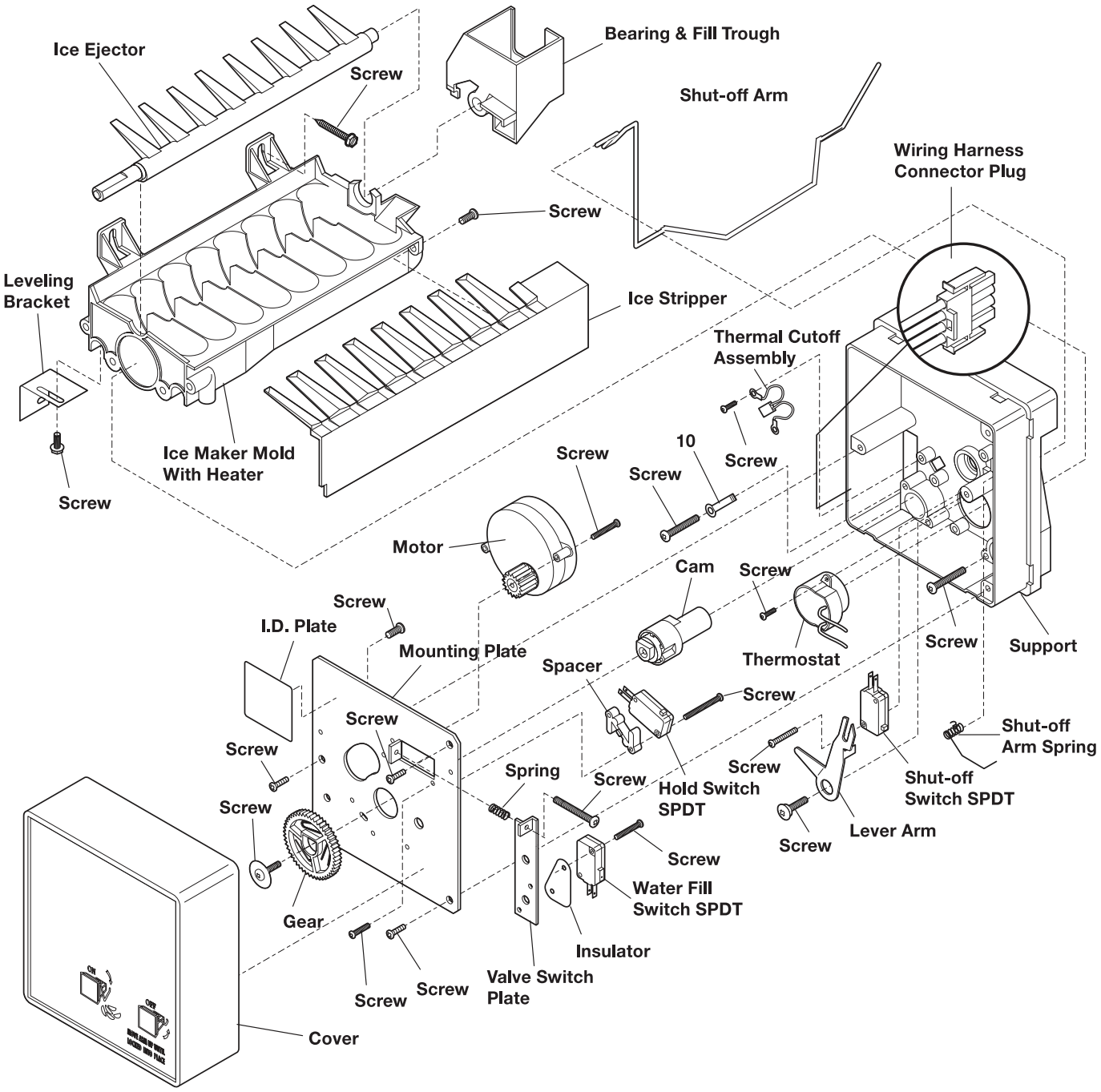


Figure 4-34

Notes

Water System Operation

Water for both ice makers and the water dispenser is controlled by a triple coil valve and a single coil valve joined together as one, mounted just to the right of the condenser on the cabinet. Plastic tubing connects the water valve/valves to the ice maker fill tubes, the water dispenser and water filter on models so equipped.

Water Valve

The french door bottom freezer refrigerator models have one triple coil valve and one single coil valve (See Figure 5-1). The green coil on the triple coil valve is for the fresh food compartment ice maker, blue coil for the freezer ice maker, and the yellow coil for the water dispenser. The beige coil on the single coil valve is energized for both water for the ice makers, and water for the dispenser. Plastic tubing connects the primary water valve to the filter, water tank and to the secondary valve.

On models with a single coil valve for a primary, there are 3 diodes in the wiring harness connecting the coil of the single coil valve to the 3 coils of the triple coil valve. The diodes are used to prevent current leakage from opening all coils on the triple coil valve every time the single coil valve is energized. (See Figure 5-2)

If a diode is shorted and the single coil valve opens, current leakage through the shorted diode will cause all coils on the secondary valve to open causing water to go into both ice makers and to the water dispenser at the same time. If the diode fails in the open position, the coil on the secondary valve will open, but the coil on the primary valve will not. As a result, water will not be supplied to the ice makers or the dispenser. All diodes can be checked with an ohmmeter to see if they are opened or shorted. The coils on all water valves can be checked with an ohmmeter to see if the coils are opened or shorted. If the coil checks bad, replace the coil. If the coils check good and water pressure is between 30-120 psi, and the valve will not allow water to flow through, replace the valve. It is not necessary to replace the whole valve assembly if one coil is bad. The three valves can be separated and replaced individually.

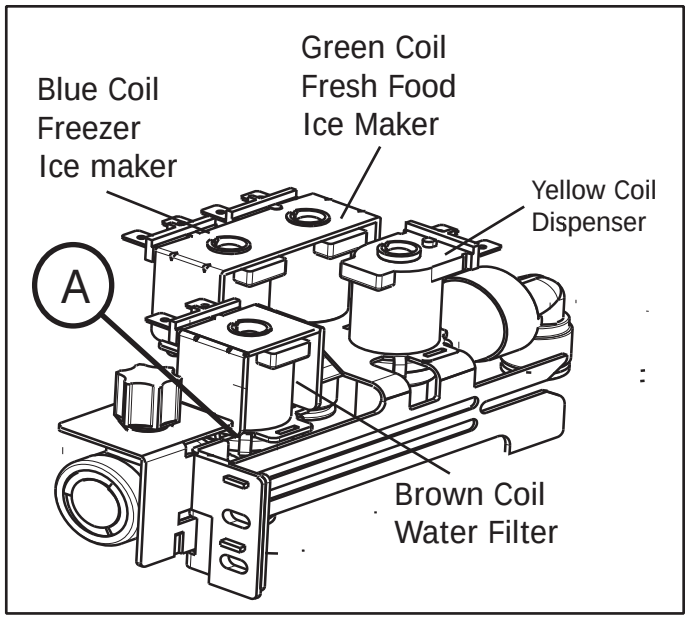


Figure 5-1. Water Valve (Dispenser Model Shown)

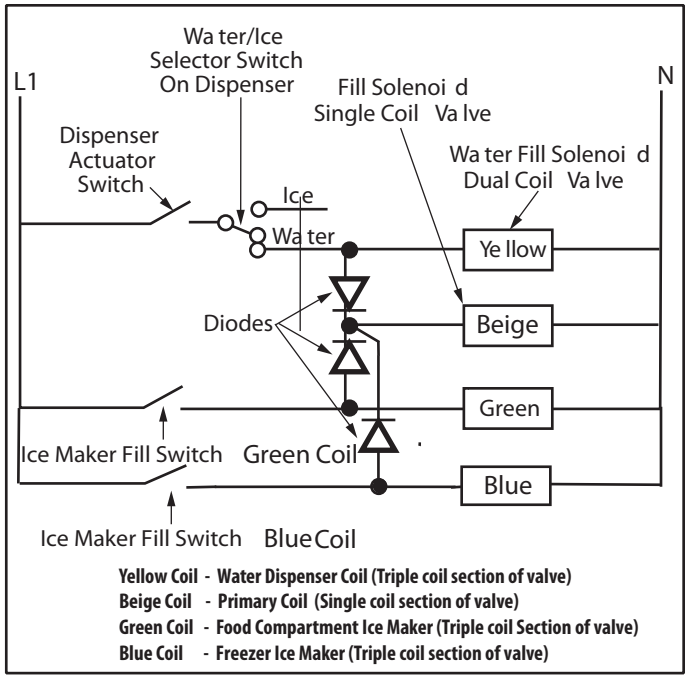


Figure 5-2. Diode Schematic

Pure Source Ultra Water Filters

Locating the Filters

The water filter system filters all dispensed drinking water, as well as the water used to produce ice. The water filter is located at the top right side of the fresh food compartment (See Figure 5-3)

In general, the water filter needs to be replaced every six months to ensure the highest possible water quality. “Water Filter Status” on the user interface prompts you to replace the filter after a standard amount of water (200 gallons/757 liters for Pure Source Ultra) has flowed through the system. If your refrigerator has not been used for a period of time (during moving for example), change the filter before reinstalling the refrigerator.

To replace your PureSource Ultra water filter:

It is not necessary to turn the water supply off to change the filter. Small amounts of water may be released during filter replacement.

1. Turn Off the ice maker power switch.
2. Remove the filter by pushing on the end/face of the filter (See Figure 5-3).
3. Slide the old water filter cartridge straight out of the housing and discard it.
4. Unpack the new filter cartridge. Using the alignment guide, slide it gently into the filter housing until it stops against the snap-in connector at the back of the housing.
5. Push firmly until the cartridge snaps into place (you should hear a click as the cartridge engages the snap-in connector).
6. Press a drinking glass against the water dispenser while checking for any leaks at the filter housing. Any spurts and sputters that occur as the system purges air out of the dispenser system are normal.
7. After filling one glass of water, continue flushing the system for about four minutes.
8. Turn On the ice maker.
9. Press and hold the Water Filter button on the Ice & Water Dispenser control panel for three seconds. When the display changes from Red to Green, the status has been reset.

IMPORTANT

The condition of the water filter has a significant effect on the operation of the ice maker. When the filter slows down flow to the door, it is also slowing down flow the ice maker. This can result in reduced number of ice cubes made per cycle as well as decreased size of cubes.

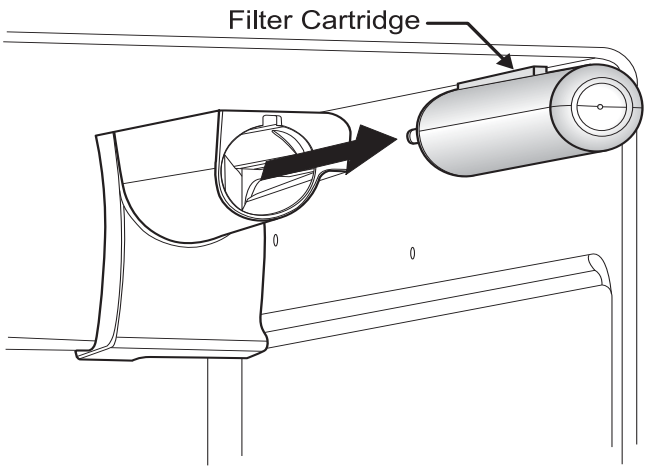
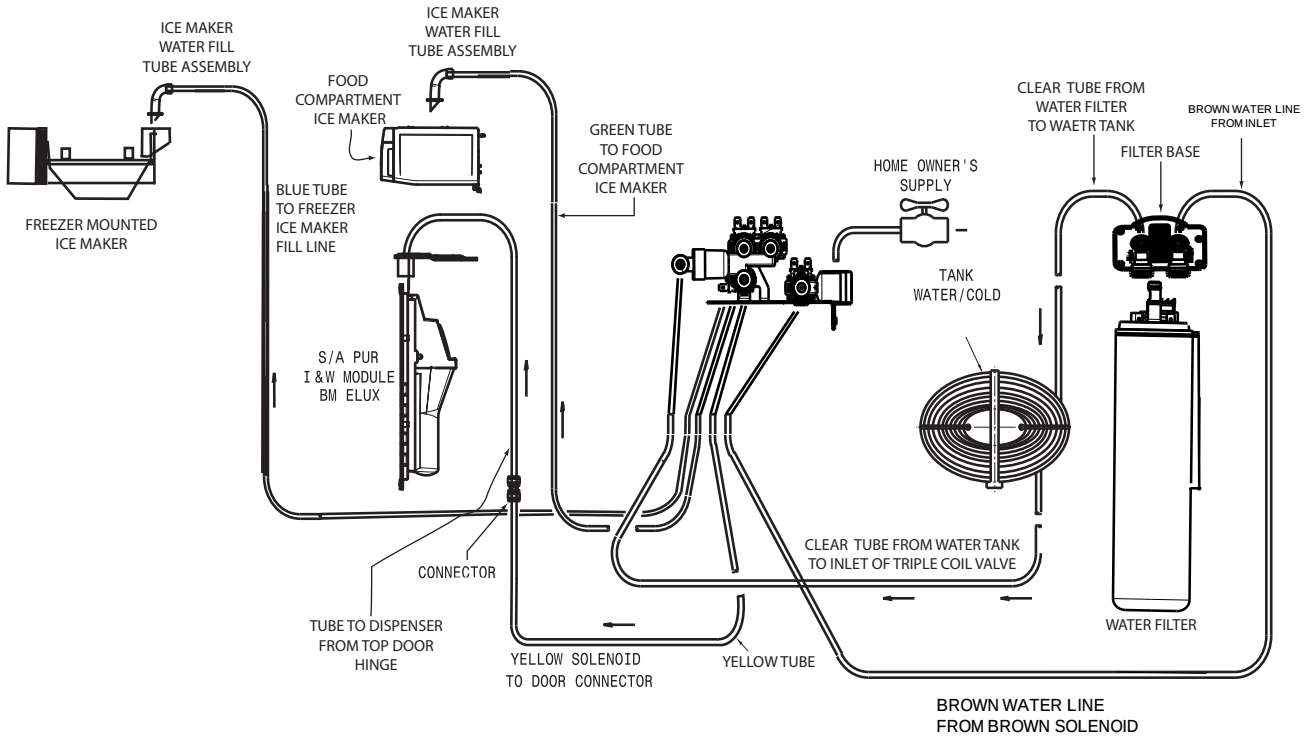


Figure 5-3. Removing Water Filter Cartridge

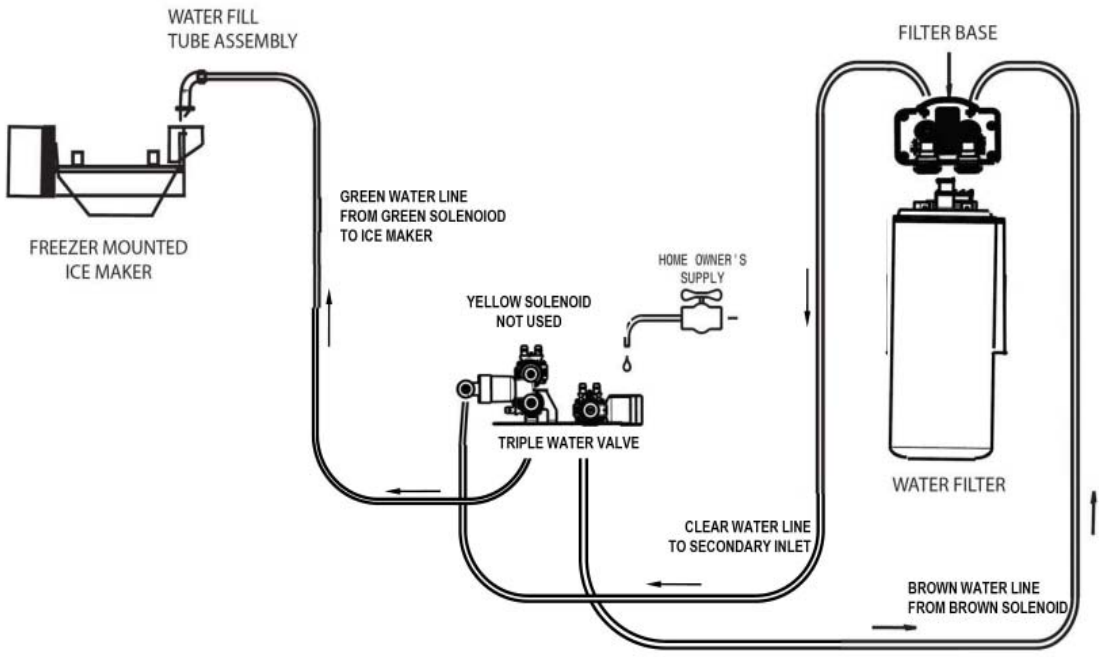
Water Tank

The dispenser models of french door bottom freezer refrigerators have a roll tube tank assembly behind the lower deli pan on the left side of the fresh food compartment. It is shielded under a protective cover. The water line from the primary water valve is routed to the water filter. The water from the water filter goes to the water tank, then to the secondary water valve (three coil valve). The three coil valve dispenses water to the ice makers and to the dispenser in the door. See next page for water system flow diagrams. Non-dispensing models do not have a water tank.

Dispensing Models Water Schematic



Non-Dispensing Models Water Schematic



Note: Some non-dispenser models are constructed with a single water valve.

Testing Water Fill System

The wiring harness has three diodes in the line between the fill switch on the ice maker and the green coil of the secondary water valve, as well as between the water switch or relay on the freezer door and the secondary valve. The diodes are part of the wiring harness. (See Figure 5-1)

If the diodes fail open, the primary valve will not open for ice and/or water depending on what diode is open. The open diode will not affect the coil on the secondary valve. The secondary valve will open but if the primary valve does not open, water is not supplied to the secondary valve.

Resistance Check

To test diodes, use an ohm meter with at least a 10K ohm or higher scale. Take a reading across the diode, then reverse the leads and take another reading. The diode should check 10 times higher in one direction than the other.

Voltage Check

You can also use a volt meter to check the circuit. Connect a volt meter to the valve coil of the primary valve, and connect a second volt meter to the green coil of the secondary valve if the problem is with the ice maker, or the connect the second volt meter to the yellow coil of the secondary valve if the problem is with the water dispenser.

Digital Meter

If using a good volt meter you will read between 0 and 10V with a open diode on the primary valve but you will have over 90V at the secondary.

Voltage Drop From Heater

In checking the voltage on a ice maker fill, you must keep in mind that the coils of the water valves are in series with the heater on the ice maker. The resistance of the heater will cause a drop in voltage. Example, if you have 110V to 120V at the outlet with the product running, between 92V and 101V will be present at the green coil of the secondary valve.

Valve Coil

The production valves use a 15 watt coil to open the primary water valve. The Ice Maker coil (green coil) of the secondary water valve is a 35 watt coil. This should open the valve down to about 90V at the green coil of the secondary valve. The water through the door coil of the secondary water valve (yellow coil) is a 15 watt coil.

Voltage Readings Are Different Between Primary And Secondary Valve Coils

If you are getting 10V or less at the primary valve, but you are getting 85V to 100V at the secondary, you have a bad diode. If you are getting 48V to 58V at the primary valve and 90V or higher at the secondary, this is normal. With the current flowing to the primary valve coil through the diode, you are getting 30 cycle instead of 60 cycle current at the coil of the primary valve. Because of this, your meter will only read about 1/2 the voltage that is going to the coil.

No Water at Door

If the ice maker is operating but you can not get water out the door, the test and operation of the diode is the same as the ice maker except for the voltage readings. On the water side you should read the same voltage at the coil of the secondary valve as you have at the outlet. On the primary valve, the voltage should read 60V to 70 VAC. If the voltage is low at the primary, but good at the secondary, the diode is faulty. If the voltage is low at both the primary and secondary valve, there is a bad connection or a bad switch in the door dispenser.

Diodes

The diodes are part of the wiring harness for the machine compartment. (See Figure 5-6)

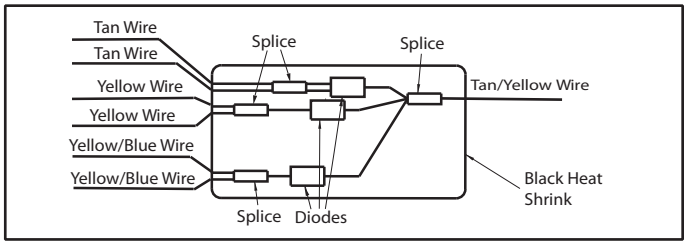


Figure 5-6. Diode Replacement Kit

Checking Water

If you do your voltage checks and find you have the correct voltage at the coils and the valve is not letting water through, replace the valve. To see which valve is bad, disconnect the water line from the filter to the inlet of the secondary valve. Place the line in a bucket.

Ice Maker Valve

Run the ice maker through a fill cycle and see if water will pass through the valve (Green Coil) and the filter into the bucket. If it does, replace the secondary valve. If it does not, remove the primary valve, disconnect the outlet line from the primary valve, and run the ice maker through a fill cycle. If there is still no water, replace the primary valve. If water is coming through, replace the water filter.

Low/No Voltage At Coil(s)

There are a number of connections in the wiring harness of a refrigerator. Check for good connections at all connection points in the ice and water wiring harness.

On the ice maker, the wiring runs through the plug by the condenser fan motor up to the ice maker, back down to the same plug and into the diode harness.

On the water dispenser, the wiring runs from the plug by the condenser fan motor to the plug at the bottom of the freezer door, up to the dispenser, and back down through the same plugs to the diode harness. A bad connection at any of the plugs or wire terminals can stop the valves from operating.

One common problem is that the connector on the water valve coil is pushed on with the valve terminal over the top of the terminal in the plug.

Chilled Water Valve

Place a glass against the actuator and push in to see if water will pass through the valve (Yellow Coil) and the filter into the bucket. If it does, replace the secondary valve. If it does not, remove the primary valve, then disconnect the outlet line from the primary valve and place a glass against the actuator and push. If there is still no water, replace the primary valve. If water is coming through, replace the water filter.

Voltage Readings At Green Coil Of Secondary Valve

When Ice Maker is Filling

Voltage at Outlet	Voltage at Coil	Condition
120VAC	120±10% VAC	Normal
100VAC	100±10% VAC	Normal at 105VAC
100-120VAC	20-76 VAC	Bad connection, Bad Ice Maker control board

Voltage Readings At Yellow Coil Of Secondary Valve

When Filling A Glass With Water

Voltage at Outlet	Voltage at Coil	Condition
120VAC	119±10% VAC	Normal
100VAC	99±10% VAC	Normal
100-120VAC	0-80 VAC	Bad connection or bad Fill Switch

Voltage Readings At Beige Coil Of Primary Valve

When Ice Maker is Filling

Voltage at Outlet	Voltage at Coil	Condition
120VAC	56±10% VAC	Normal
100VAC	48±10% VAC	Normal at 105VAC (Will require use of 50 Watt coil)
100-120VAC	10-43 VAC	Bad connection, Fill Switch, or Heater in Ice Maker
100-120VAC	0 VAC	Open Diode (If current is normal at secondary coil)

Voltage Readings Blue Coil Of Secondary Valve

When Ice Maker is Filling

Voltage at Outlet	Voltage at Coil	Condition
120VAC	100±10% VAC	Normal
100VAC	85±10% VAC	Normal at 105VAC (Will require use of 50 Watt coil)
100-120VAC	20-76 VAC	Bad connection, Fill Switch, or Heater in Ice Maker

IMPORTANT

When testing the current flowing to the Primary Valve Coil through the Diode, you are measuring 30 cycle current instead of 60 cycle current. Therefore, the volt meter will read about 1/2 the voltage that is going to the coil. The change in cycle of current does not effect the efficiency of an electromagnetic coil.

COMPONENT TEARDOWN

This section explains how to access and remove components from an Electrolux French Door Bottom Freezer Refrigerator, and has been arranged in such order as to simulate the sequence in which components would need to be removed in order to gain access to other components. When following a component removal procedure, it may be necessary to reference another component removal procedure outlined earlier in this section.

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

⚠ WARNING

- IF IT IS NECESSARY TO REMOVE A FRENCH DOOR BOTTOM FREEZER REFRIGERATOR UNIT FROM ITS INSTALLATION, USE PROPER LIFTING TECHNIQUES AS UNITS ARE HEAVY AND COULD FALL RESULTING IN SERIOUS INJURY OR DEATH. PULLING A UNIT FROM ITS INSTALLATION SHOULD ONLY BE PERFORMED BY A TRAINED AUTHORIZED SERVICE TECHNICIAN OR INSTALLER.
- TO AVOID ELECTRIC SHOCK, POWER TO A FRENCH DOOR BOTTOM FREEZER REFRIGERATOR MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS.
- AFTER SERVICE IS COMPLETED, BE SURE ALL SAFETY-GROUNDING CIRCUITS ARE COMPLETE, ALL ELECTRICAL CONNECTIONS ARE SECURE, AND ALL ACCESS PANELS ARE IN PLACE.
- IF UNIT WAS USED PRIOR TO SERVICE, THE COMPRESSOR ASSEMBLY WILL BE HOT. WEAR PROTECTIVE GLOVES AND THE APPROPRIATE SAFETY GEAR WHEN WORKING WITH COMPRESSORS.
- IF REMOVING A DOOR OR DRAWER FROM A UNIT, REMEMBER THAT DOORS AND DRAWERS ARE HEAVY. IF THEY WERE TO FALL, THEY COULD CAUSE SERIOUS PERSONAL INJURY.

⚠ CAUTION

- Metal edges may be sharp. Use caution and wear appropriate safety equipment when servicing evaporators and condensers to avoid personal injury.
- If working in the compressor area, remember that compressor and tubing may be hot.

⚠ CAUTION

When handling and or replacing a control board it is important that the technician have a wrist ground strap on and connected to the cabinet or another grounding position to prevent static electricity from damaging the board.

Dispenser Frame Removal

Dispenser Models

To service the control board you must remove the frame around the dispenser housing by pulling straight out at a corner and working your way around the frame, pulling it out of the groove in the door. (See Figure 6-1)

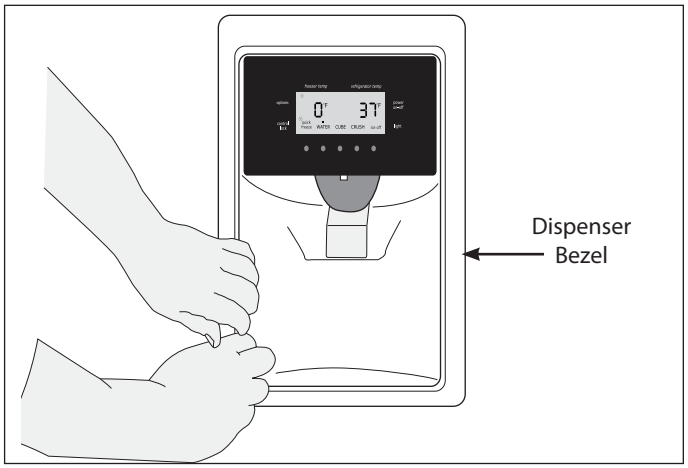


Figure 6-1.

Control Assembly Removal

Dispenser Models

1. Remove two screws at the top of the control.

⚠ CAUTION

When handling and or replacing a control board it is important the a technician have a wrist ground strap on and connected to the cabinet or another grounding position to prevent static electricity from damaging the board.

Then lift up on the control assembly while tipping it out at the top. This will allow you to remove the control assembly from the door. (See Figure 6-2)

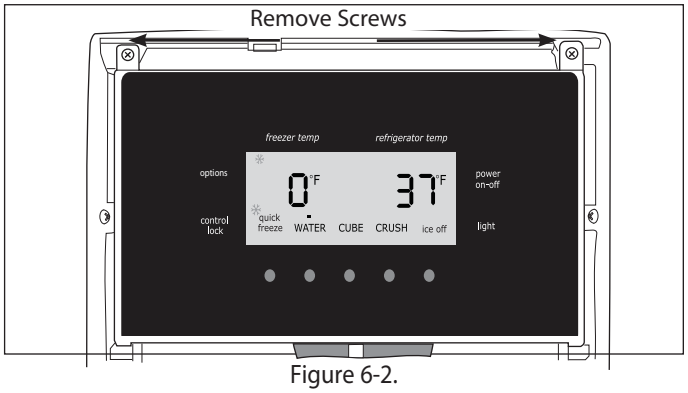


Figure 6-2.

NOTE: If you push straight back on the ice chute while lifting the control out it will help in removing the control.

2. With the control out, disconnect the Molex™ plugs from the dispenser housing to the control assembly. This will allow for complete removal of the control.
3. Remove water line from dispenser.
4. Extract the two screws securing the dispenser in the housing. (See Figure 6-3)
5. Pull dispenser away from housing. Disconnect the Molex™ plug from the rear of dispenser.
6. To service the control board, disconnect the electrical lead from the control board.
7. Push back the retaining clips while gently pushing the control board out from the housing. (See Figure 6-4)
8. Remove the power supply board from the back of the control board housing by removing the 4 screws and disconnecting the wiring harness connector for the power board to the control.
9. Reinstall in reverse order.

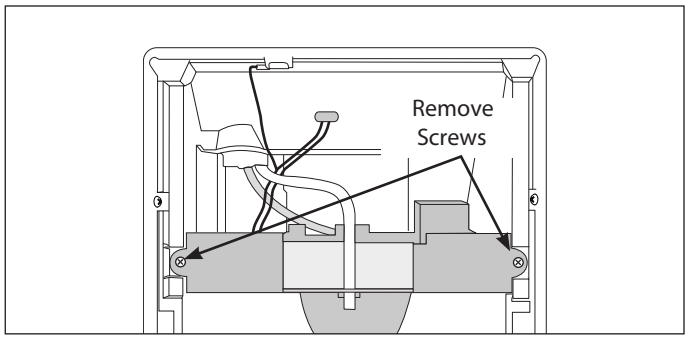


Figure 6-3.

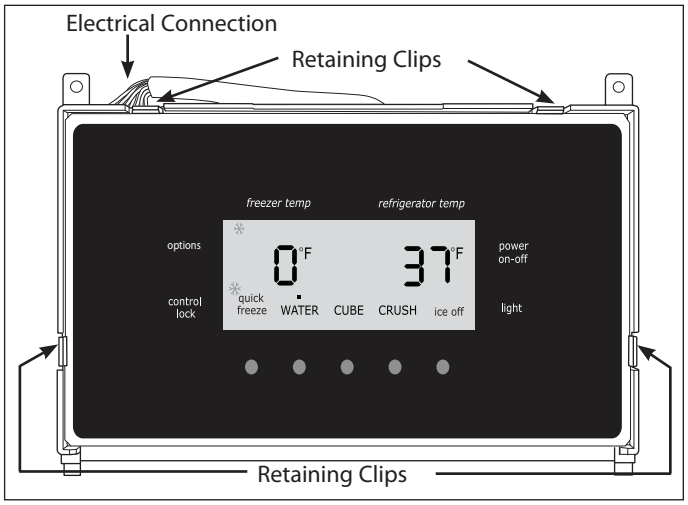


Figure 6-4.

Ice Chute Extension

Dispenser Models

The extension on the ice chute is used to better direct crushed and cube ice into a glass or container. To replace the chute:

1. Turn water off to refrigerator.
2. Push straight back on the extension to release the rear tabs. (See Figure 6-5)
3. Pull straight down and tip out of dispenser housing.
4. Reinstall in reverse order.

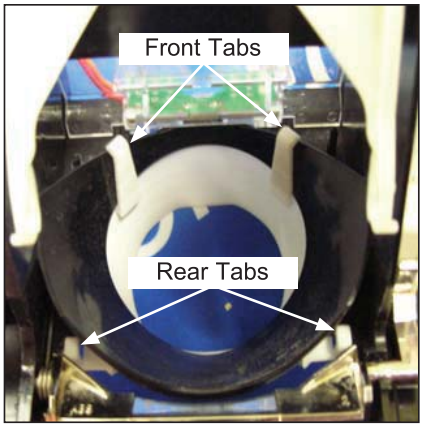


Figure 6-5.

Control Assembly Removal

Non-Dispenser Models

⚠ CAUTION

Before servicing any part of the control system, the product must be unplugged, the fuse pulled or circuit breaker turned off to prevent damage to the product control system or personal injury to the servicer.

⚠ CAUTION

When handling and or replacing a control board it is important the a technician have a wrist ground strap on and connected to the cabinet or another grounding position to prevent static electricity from damaging the board.

To replace the user interface on non-dispenser models:

1. Open the left food door.
2. Place a putty knife between the top of the Express-Select ™ touch control and the door panel. Use the putty knife to slide the top of the control out of the door panel. (See Figure 6-6)
3. Slide the control out from the top and lift it out of the door.
4. Disconnect the single harness connector at the top of the control board.
5. With the control out of the door, remove the board from the touch control. Disconnect the ribbon connector at the bottom of the control. (See Figure 6-7)
6. Push out on the 6 retainer tabs, one at a time, starting from the bottom of the board and lift the board up past the retainer. This will allow removal of the control board from the touch panel.

Figure 6-6.

Figure 6-7.

To reassemble:

1. Place the board over the touch control housing. Press the board past the retainers, one at a time, starting at the top.
2. Reconnect the ribbon connector.
3. Reconnect the door harness to the board.
4. Place bottom of board into the housing in the door.

NOTE: Use caution not to damage the ribbon connector.

5. Push the control into place starting at the bottom and working up.

Door Handle Removal

Refer to 'Installation' section of this manual for instructions on removal and reassembly of the door handles.

Storage Bin Removal

To change the position of an adjustable door bin:

1. Before adjusting a bin, remove all food.
2. Grip the bin firmly with both hands and lift it upward.
   (See Figure 6-8)
3. Remove the bin.
4. Place the bin just above desired position.
5. Lower the bin onto supports until locked in place.

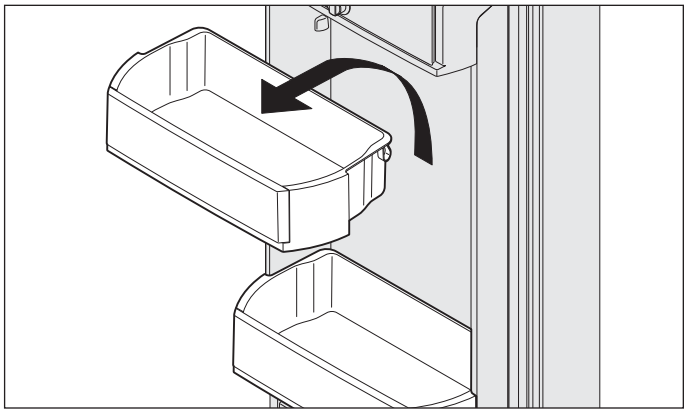


Figure 6-8.

Dairy Compartment Removal

The dairy compartment is designed to be warmer than the open area and includes (See Figure 6-9)

NOTE: The dairy compartment is located in the left side fresh food door on non-dispenser models.

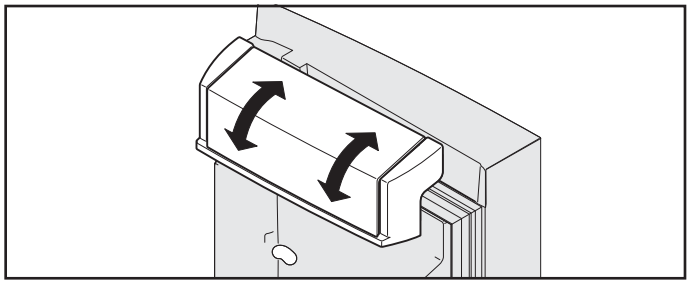


Figure 6-9.

Tall Bottle Retainer Removal (Optional)

The tall bottle retainer keeps tall containers in the bin from falling forward when opening or closing the refrigerator door. To remove, pull the ends of the retainer out the holes. (See Figure 6-10)

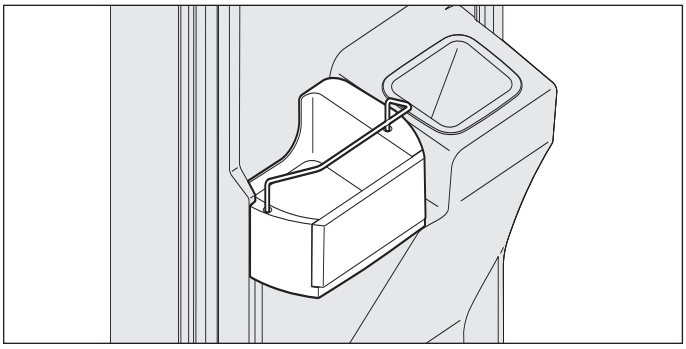


Figure 6-10.

Can Rack Dispenser Removal (Optional)

The can rack allows you to fill from the top with cans and remove them one at a time from the bottom. To remove, lift the dispenser up and out. (See Figure 6-11)

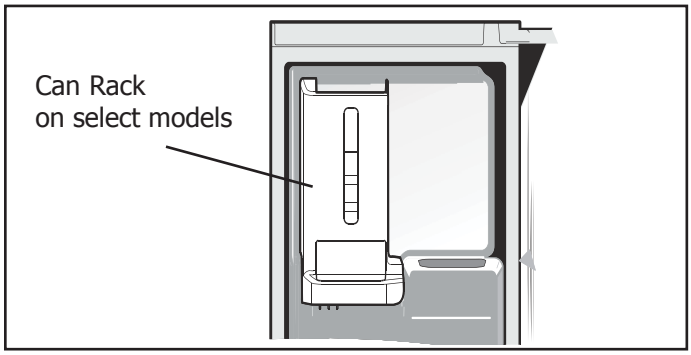


Figure 6-11.

Door Mullion and Heater Removal

There is a mullion attached to the right hand food door that fill the gap between the doors when the right door is closed. This mullion contains a heater that is used to control condensation on the mullion.

The heater is supplied as part of the mullion. The mullion swings flat against the inner door panel of the right food door. A roller on the top of the mullion engages in the guide fastened to the top of the food liner when the right door is opened.

To remove the door mullion:

1. Disconnect power from unit.
2. Open the right food door. Press latch to open mullion. (See Figure 6-12)
3. Remove the retainer screw located in the center pivot bracket. (See Figure 6-13)
4. Lift the mullion straight up off the 3 pivot pins.
5. Disconnect the electrical connector located behind the center pivot bracket and remove the mullion.
6. Resemble in reverse order.

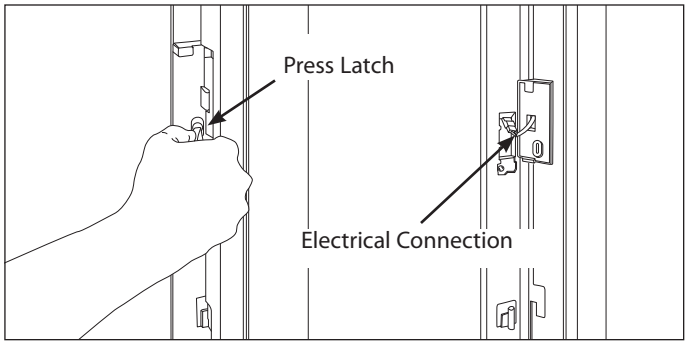


Figure 6-12.

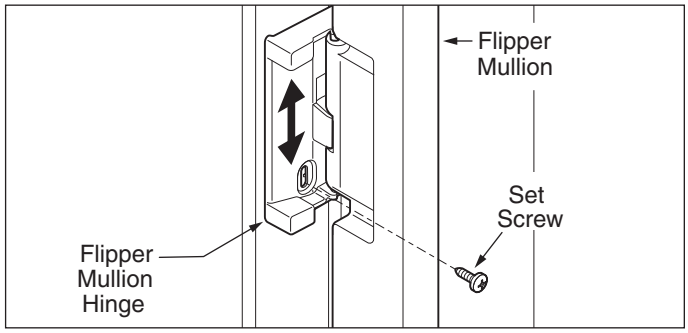


Figure 6-13.

Top Door Hinge Cover Removal

To prepare for removing the doors:

1. Make sure the electrical power cord is unplugged from the wall outlet.
2. Remove any food from the door shelves and close the doors.

To remove the top hinge covers:

1. Remove the two (2) screws from the cover over the top door hinge of the door being removed. (See Figure 6-14 and Figure 6-15)
2. Lift inside edge of hinge cover and tilt back.

NOTE: DO NOT remove the ground screw from hinge.

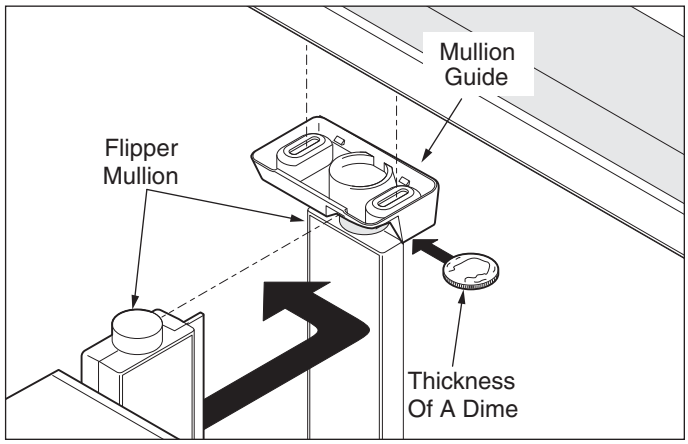


Figure 6-14.

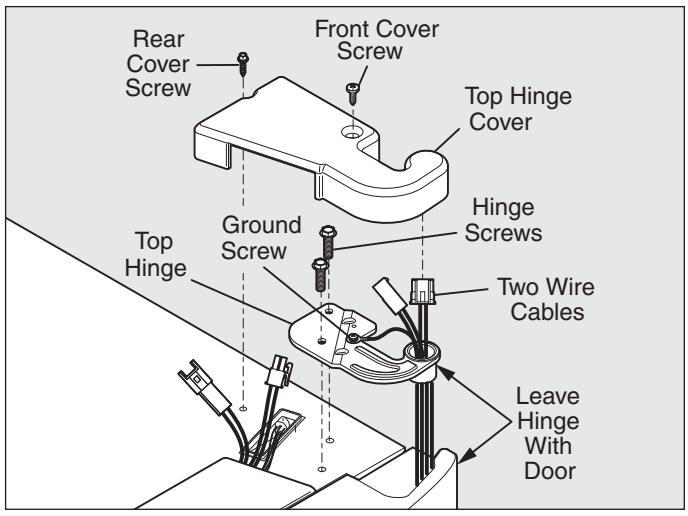


Figure 6-15.

Door Hinges and Door Removal

1. Disconnect power from unit.
2. Trace lightly around the door's top hinges with a pencil. This will make reinstallation easier.
3. Disconnect the harness by grasping both sides of the connector firmly, depress the latch, and pull apart. Remove the two (2) screws from the top hinge. Lift the door off of the bottom hinge and set it aside. (See Figure 6-15 and Figure 6-16)
4. Detach the water tube from the connector located behind the refrigerator and pull the tube back out to the front of the unit. The connector releases when you press inward on the outer sleeve while pushing the tube toward the connector then while continuing to hold in the sleeve, pull the tube away. (See Figure 6-15 and Figure 6-18)
5. Unscrew the three (3) lower hinge screws and hinge if necessary. (See Figure 6-19)

To reinstall the doors, reverse the above steps. Once both doors are in place, ensure they are aligned with each other and level. Replace the top hinge cover.

⚠ CAUTION

Be sure doors are set aside in a secure position where they cannot fall and cause personal injury, or damage to the doors or handles.

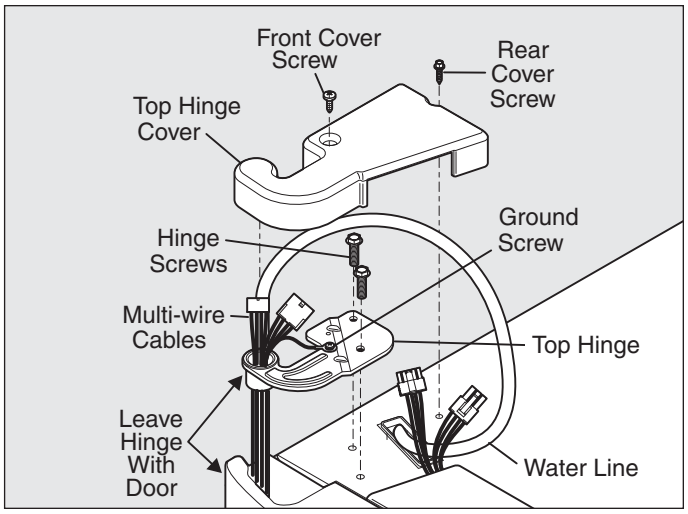


Figure 6-16.

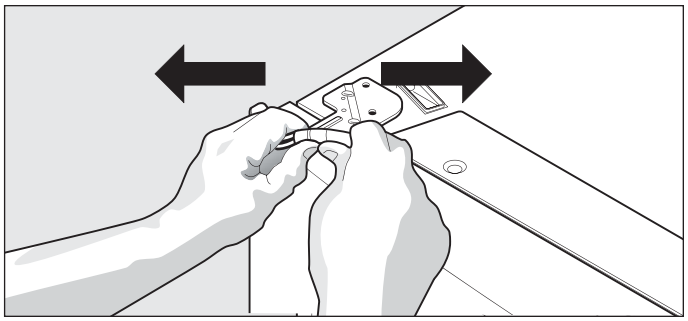


Figure 6-17.

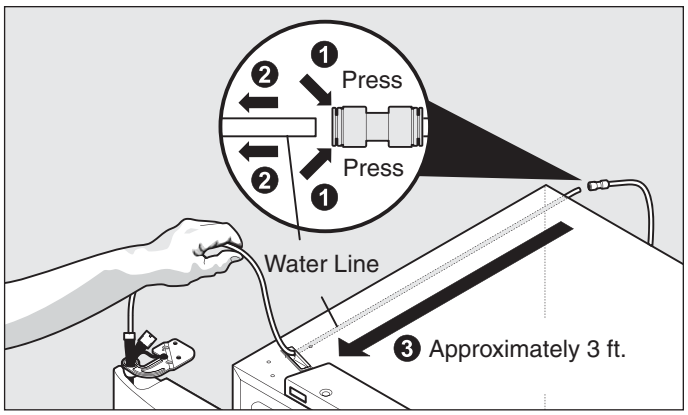


Figure 6-18.

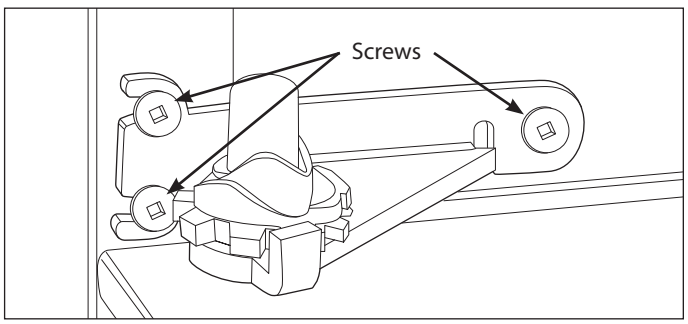


Figure 6-19.

Freezer Upper Basket Removal

1. Remove all items from baskets.
2. Remove basket by pulling basket out to the full extension and lift out.

To reinstall upper baskets:

Position basket onto the retainer clips making sure the front of the basket rests in the retainer clips on the stabilizer bar.

If the upper basket is installed with the tabs towards the front of the unit, the upper basket will "kick out" when the drawer is opened. (See Figure 6-20)

If the upper basket is installed with the tabs towards the rear of the unit (backwards), the upper basket will remain inside the freezer when the drawer is opened.

NOTE: If basket is not resting on stabilizer bar retainer clips, the drawer will not close properly.

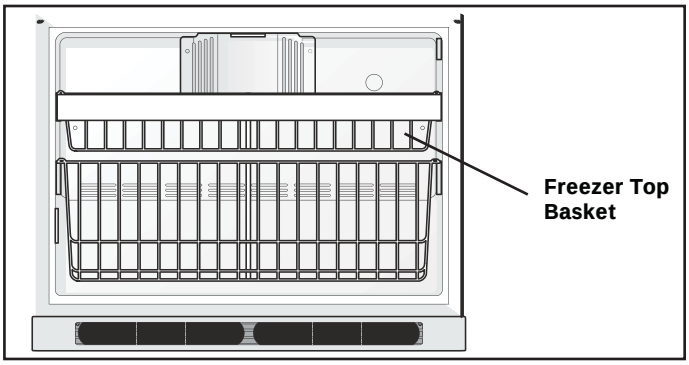


Figure 6-20.

Freezer Lower Basket Removal

1. Remove all items from basket.
2. Remove the basket by tilting it forward and lifting it from the retainer clips. (See Figure 6-21)
3. To reinstall lower basket, insert basket into retainer clips.

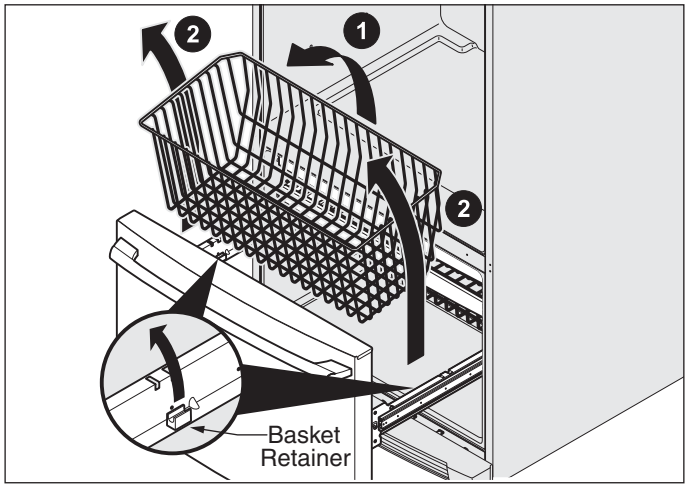


Figure 6-21.

Freezer Drawer

1. Open freezer drawer.
2. Remove drawer screws on right and left sides two (2) screws on each side. (See Figure 6-22)
3. When reinstalling, snug drawer screws then turn another 1/4 turn.

IMPORTANT

DO NOT remove center screw from freezer drawer.
This is a factory adjustment.

3. Close freezer drawer. The freezer drawer must mount parallel to the cabinet face. Measure the distance from the top and bottom of drawer to the cabinet face, adjust drawer screws until distance is equal. Check gasket seal around freezer drawer. Make adjustments on drawer screws if necessary.

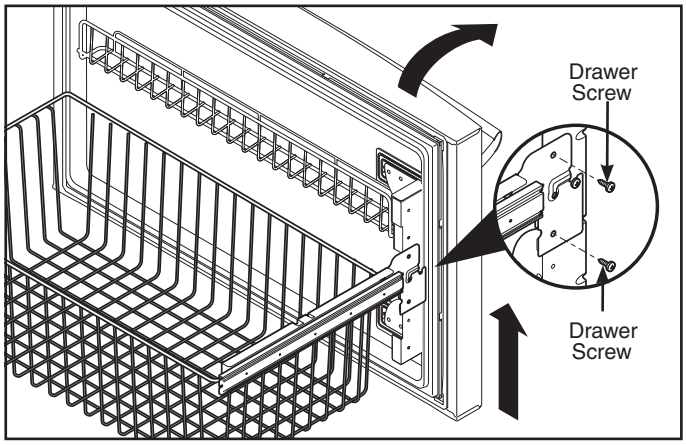


Figure 6-22.

Door and Drawer Gasket Removal

The door and drawer gaskets are removed by pulling the gasket from the channel molded in the unit door or drawer frame. (See Figure 6-23)

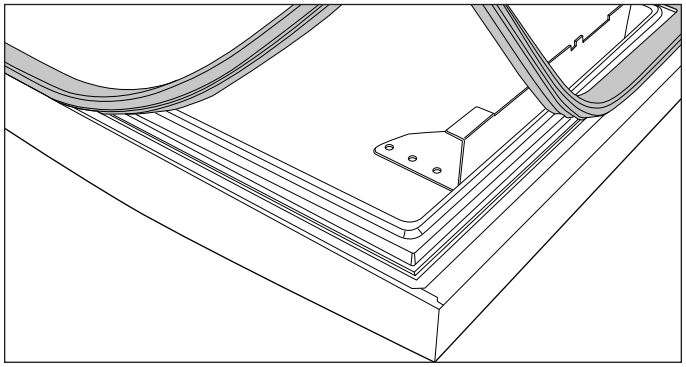


Figure 6-23.

Toe Grille Removal

To remove the toe grille, press the locking tabs on the bottom of toe grille then lift straight up until the three clips are free of the spacer screws.

To reassemble:

1. Three clips slide over spacer screws
2. Tabs lock into place in slots on outside edge of the anti-tip bracket. (See Figure 6-24)

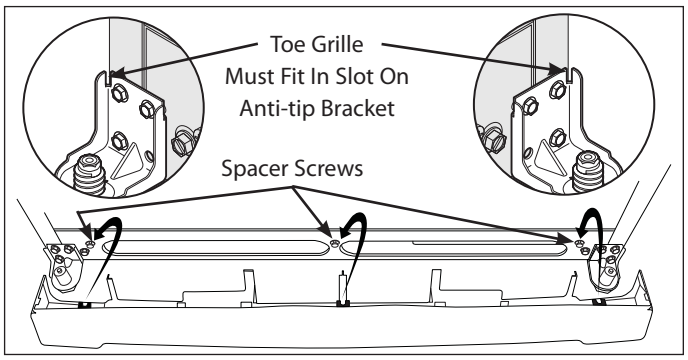


Figure 6-24.

Anti-tip Leg Removal

To remove the anti-tip leg

1. Slightly open freezer drawer and remove toe grille.
2. Rotate anti-tip leg clockwise until it does not contact the floor.
3. Extract the three bolts securing the anti-tip leg to the unit frame and remove from unit. (See Figure 6-25)

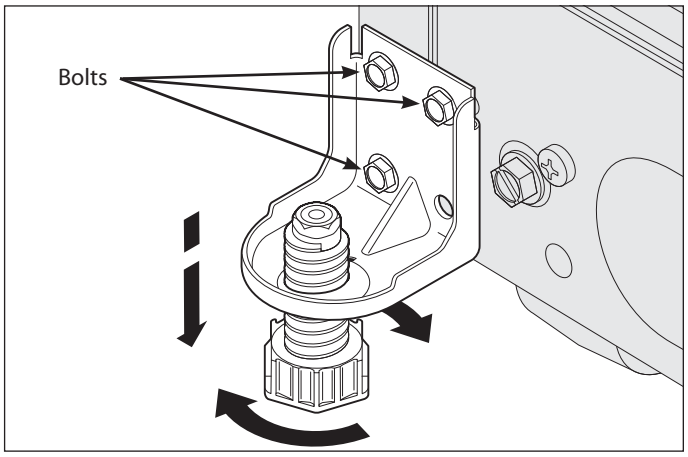


Figure 6-25.

Eyebrow Trim Removal

NOTE: The eyebrow trim, switches and humidity sensor mounted under the eyebrow trim are only used on models equipped with a dispenser.

The eyebrow trim extends across the front top of the unit cabinet and covers the door switches, wire harness and humidity sensor.

To remove the eyebrow trim:

1. Remove upper hinge covers.
2. Extract the screws securing the eyebrow trim to the unit frame.
3. Turn the eyebrow trim over to access the wire harness connections to the door switches and humidity sensor. Disconnect from the wire harness at the connections from under the hinge covers. (See Figure 6-26)

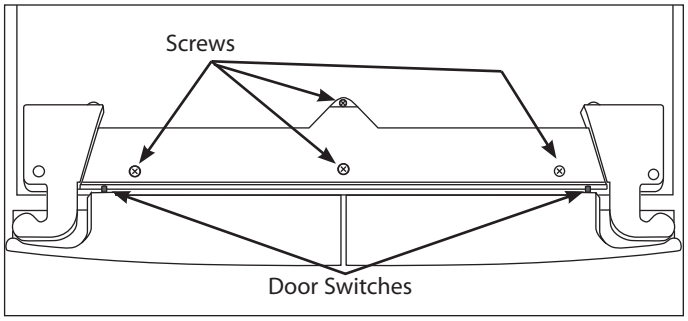


Figure 6-26.

Fresh Food and Freezer Light Switch Removal

Dispenser Models

The food compartment light switches (one for each door) are installed in the eyebrow trim across the top of the cabinet.

To remove the switch:

1. Disconnect power from unit.
2. Extract the screws securing the eye brow trim in position, then lift it up and expose the underside. (See Figure 6-27)
3. Remove the switch from the eyebrow trim by pressing in on the retaining latch and push through the eyebrow trim. Reinstall in reverse order.

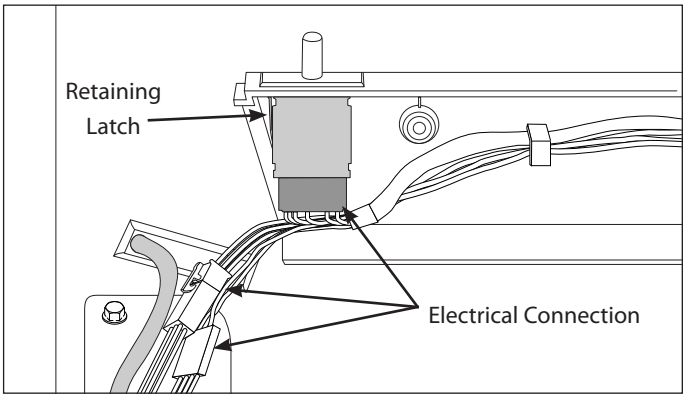


Figure 6-27.

Humidity Sensor Removal

Dispenser Models

The humidity sensor is used to control the heater in the fresh food door mullion strip and is located in the top trim across the top front of them cabinet between the hinge covers. The sensor will turn on the heater when the humidity in the room is over 50% and turn the heater back off when the humidity drops below 50%.

To replace the sensor:

1. Disconnect power from unit.
2. Remove the screws securing the eyebrow to the cabinet exterior between the top hinge covers.
3. Tip the cover forward and lift it free of the cabinet.
4. Disconnect the humidity sensor from the wire harness. (See Figure 6-28)
5. Push the retaining latches away from the humidity sensor and pull from bracket.
6. Resemble in reverse order.

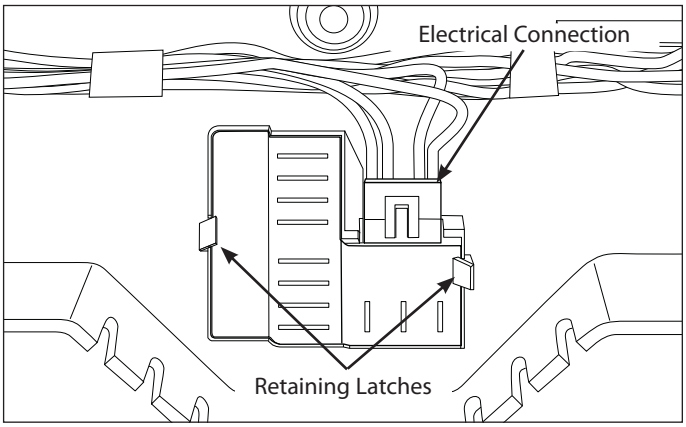


Figure 6-28.

NOTE: The humidity sensor is mounted on the control board for the non-dispensing models. Failure of the humidity sensor for those models requires replacement of the control board.

Interior Components

Half and Full Spill Safe™ Shelf Removal

The shelves have mounting brackets that attach to slotted supports at the rear of each compartment.

To change the position of a shelf:

1. Before adjusting a shelf, remove all food.
2. Lift the front edge up and pull the shelf out. (See Figure 6-29)
3. Replace by inserting the mounting bracket hooks into the desired support slots.
4. Lower the shelf and lock into position.

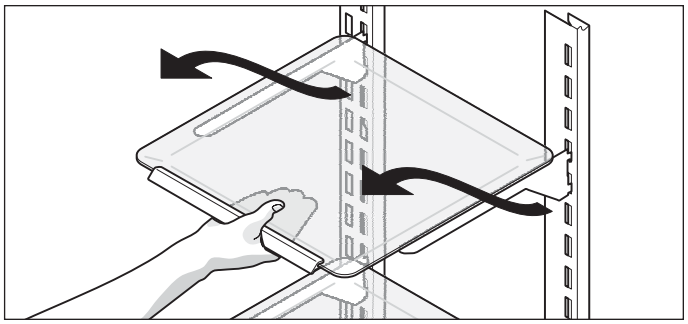


Figure 6-29.

Deli Keeper and Crisper Removal

Crisper drawers include a sliding control for adjusting the humidity inside the crisper. This feature can extend the life of certain fresh vegetables that keep longer in high humidity.

To remove the crisper drawer:

1. Pull the drawer out until it stops.
2. Lift the front slightly and remove the drawer. (See Figure 6-30)

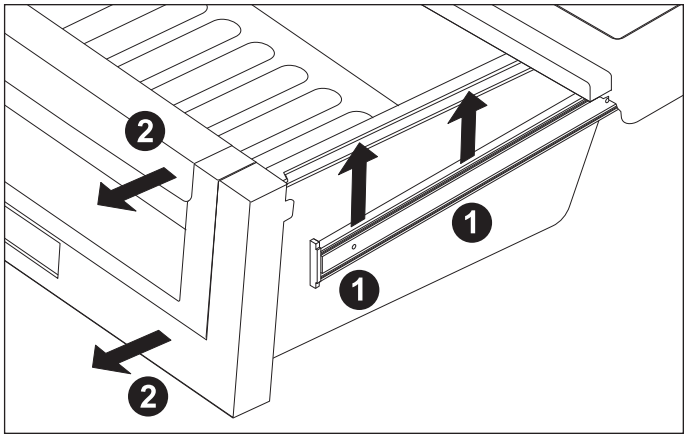


Figure 6-30.

Water Filter

The water filter is located at the top right side of the fresh food compartment. (See Figure 6-31)

Replacing the Water Filter

In general, you should change the water filter every six months to ensure the highest possible water quality. Water Filter Status on the user interface prompts you to replace the filter after a standard amount of water (200 gallons/757 liters for PureSource 3) has flowed through the system.

If your refrigerator has not been used for a period of time (during moving for example), change the filter before reinstalling the refrigerator.

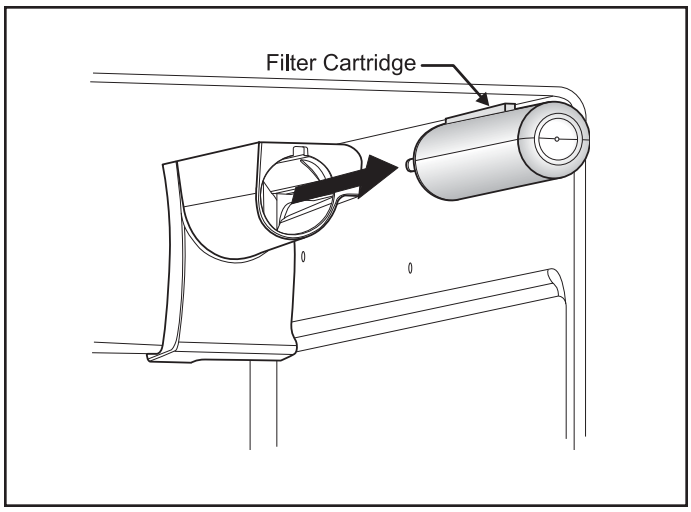


Figure 6-31.

Ordering Replacement Filters

To order your replacement filters, please visit our online store at www.frigidaire.com/store, by calling toll-free at 877-808-4195, or by visiting the dealer where you purchased your refrigerator. Frigidaire recommends that you order extra filters when you first install your refrigerator, and that you replace your filters at least once every six months.

Here is the product number to request when ordering:

PureSource 3™ Water Filter
Part #WF3CB

Air Filter Removal

The air filter is located under the utility bin. To ensure optimal filtering of refrigerator odors, the air filter should be changed every six (6) months (the filter status light on the Touch Panel prompts to replace the filter after six (6) months).

To replace the PureAdvantage™ air filter:

1. Open the air filter door. (See Figure 6-32)
2. Remove the old filter and discard it.
3. Unpack the new filter and slide it into the housing.
4. To close the air filter door, push the top and bottom to lock the door closed.
5. Press and hold the Air Filter Reset button on the control panel for three (3) seconds. When the display changes from "Replace" to "Good," the status has been reset.
6. The Air Filter Reset will turn itself off after a few seconds.

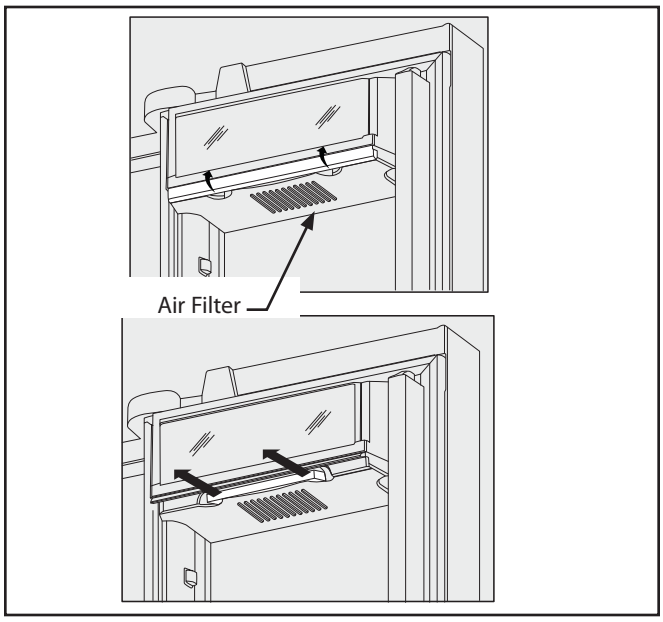


Figure 6-32.

Fresh Food Compartment Thermistor Removal

The food compartment thermistor is located to the right of the center shelf support bracket, just above the crisper on the back wall of the food compartment. (See Figure 6-33)

To remove the food compartment thermistor:

1. Disconnect power from unit.
2. Extract the screw securing the air vent to the back wall of the unit.
3. Pull thermistor out of the bracket and disconnect the Molex™ connector coming out of the back of the liner.

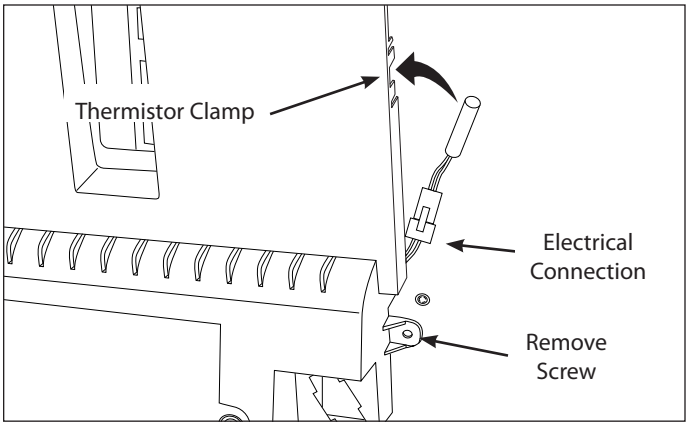


Figure 6-33.

Light Shield Removal

To remove the light shield, remove any adjustable shelves and then simply grab the light shield along one side and flex out at the center until retaining tabs are clear of the liner sidewall. (See Figure 6-34)

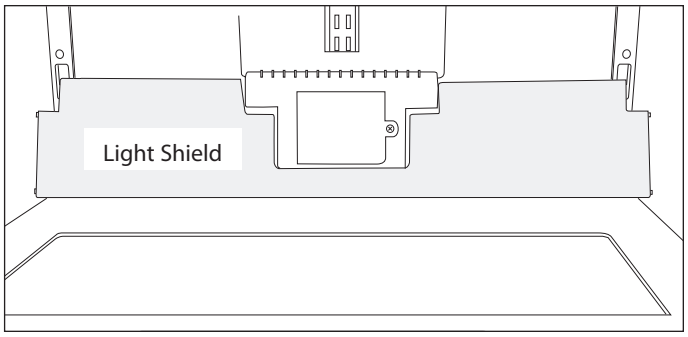


Figure 6-34.

Air Duct Removal

Non-Dispenser Models

The fresh food air duct is different on the non-dispenser models. There is now a single plug to connect to the main wiring harness. The damper assembly and the fresh food thermistor can still be replaced separately. (See Figure 6-35)

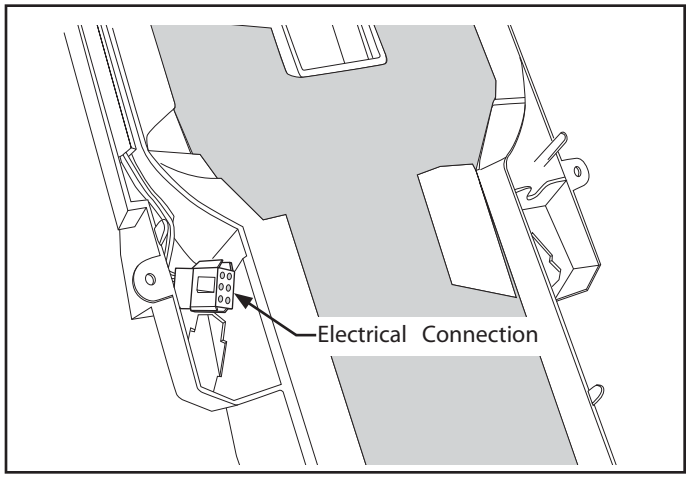


Figure 6-35.

Upper Light Fixture Removal

To remove the upper light fixture, disconnect power from the unit first. Pull the light diffuser away from the light fixture. Disconnect the electrical leads at the Molex™ connector. Remove the light bulb by turning the bulb counter-clockwise. The light fixtures are removed by extracting the two bolts and pulling the assembly out from the cabinet. (See Figure 6-36)

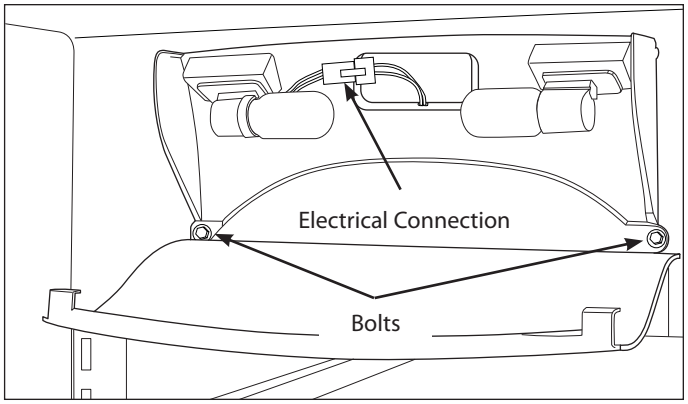


Figure 6-36.

Freezer Compartment Light Switch Removal

The freezer compartment light switch is located in the left side center of the freezer liner toward the back of the freezer.

To remove the freezer compartment light switch:

1. Disconnect power from unit.
2. Remove the upper two freezer baskets if equipped.
3. Using a putty knife inserted between the liner and switch, push down and out on the top of the switch until it clears the liner. (See Figure 6-37)
4. Pull the switch out of the liner and transfer the wires from the bottom of the old switch to the new switch.
5. To reinstall, put the bottom of the switch and wires in the opening first and then push the top back in place.

NOTE: This light switch is activated by a arm sticking up on the lower freezer basket rail. If the basket rail arm is bent, it may not hit the switch which will result in the lights staying on. If the lights do not shut off on the switch the lower control board will shut the lights off after 15 minutes.

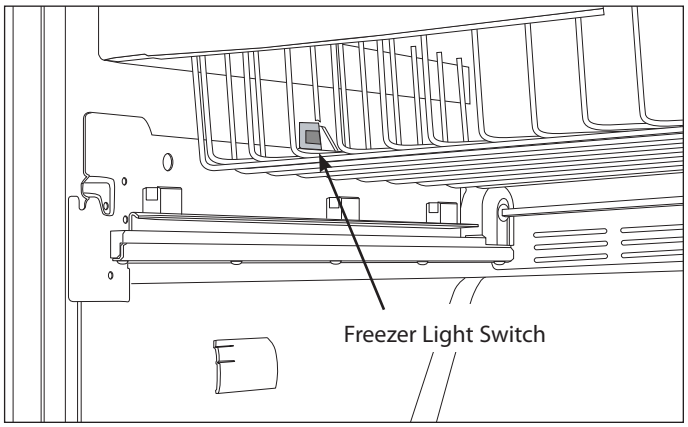


Figure 6-37.

Freezer Compartment Thermistor Removal

The freezer compartment temperature sensor is located on the lower left side of the freezer liner behind a cover beside the lower basket. (See Figure 6-38)

To replace the sensor:

1. Disconnect power from unit.
2. Open the freezer and remove the lower freezer basket.
3. Slide screw access cover from thermistor cover. Extract screw securing thermistor cover to liner.
4. Snap the cover away from the liner.
5. Snap the sensor out of the cover. Disconnect from the Molex™ connector plug and replace.

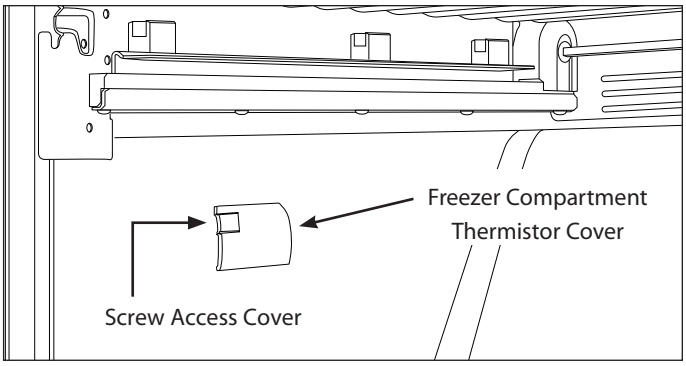


Figure 6-38.

Freezer Compartment Thermistor Removal
Non-Dispenser Models

The thermistor in the freezer has been moved to the ceiling forward of the LED light housing. Removal is similar to the side mounted thermistor as described above.

Upper and Lower Freezer Drawer Rail Removal

To release the freezer basket drawers from the rails push the release lever as shown and pull drawers from rails. (See Figure 6-39)
On some models you will need to remove the front trim for the top two baskets. Remove one screw from each side of the basket rail going into the trim and pull the trim straight out. On the lower basket rail assembly there is a linkage bar between the two gears. Pull the rails out and expand them enough to remove the bar.

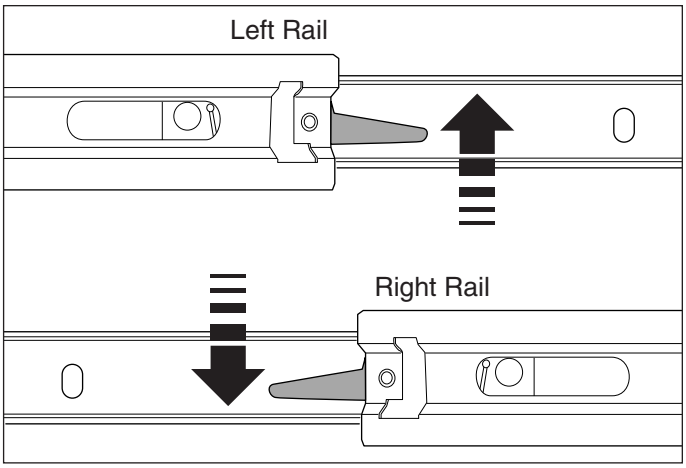


Figure 6-39.

Freezer Drawer Main Support Rail Removal

To remove the freezer drawer main support rail, remove one screw from main roller assembly and then pull forward until the three retaining screws heads can pass through the keyhole slots. (See Figure 6-40)

On the lower basket rail assembly there is a linkage bar between the two gears. Pull the rails out and expand them enough to remove the bar.

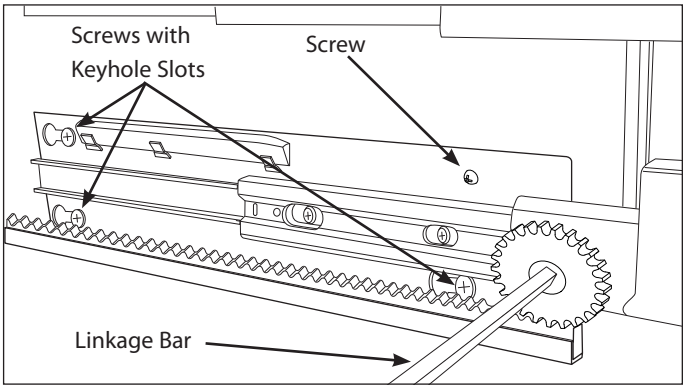


Figure 6-40.

LED Assembly Removal

Before accessing any of the LED assemblies, disconnect power from the unit. The LED's are held in place by snap clips on the cover. The LED and cover will come as one part and can be removed by pulling straight out on the cover. Once it is pulled out, disconnect the wire connector and remove the LED. (See Figure 6-41)

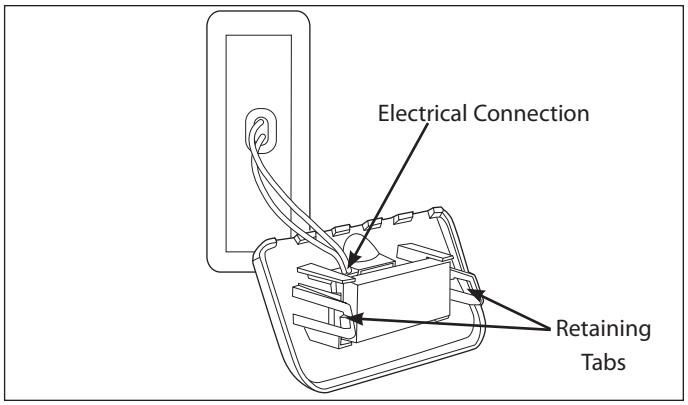


Figure 6-41.

Lighting Control

The lighting control allows the LED lights to ramp up to full intensity when a door is opened and ramp down when the door is closed. The lighting control is located to the left of the main power board located under the freezer compartment behind the toe grill.

To service the lighting control board:

NOTE: There are two boards under the product. The larger box is the main control board (gray box). The smaller box is the lighting control board (white box).

1. Disconnect power from unit.
2. Open the freezer.
3. Remove the toe grill from the bottom of the cabinet. The plastic box containing the power board will now be visible. (See Figure 6-42)
4. Remove the screw in the middle of the front of the box and slide the control box forward. The back of the control box sits on a rail. Pull the control box out from the front of the refrigerator.
5. Disconnect the power board and pull the control box out from the front of the refrigerator.

See Section 3 for complete lighting diagnostic procedures.

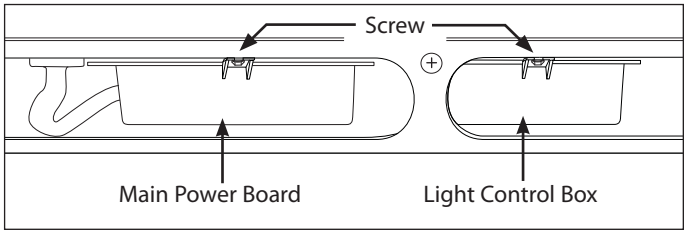


Figure 6-42.

⚠ CAUTION

When handling and or replacing a control board it is important the a technician have a wrist ground strap on and connected to the cabinet or another grounding position to prevent static electricity from damaging the board.

Ice Maker Air Duct

Non-Dispenser Models

There is an air duct that mounts to the evaporator cover and directs air onto the ice maker mold. The air duct also serves as a cover for the ice maker wire harness connector. The air duct must be removed to disconnect the ice maker wire harness.

To remove the ice maker air duct:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.
4. Extract screw from air duct. Remove air duct from unit. (See Figure 6-43)

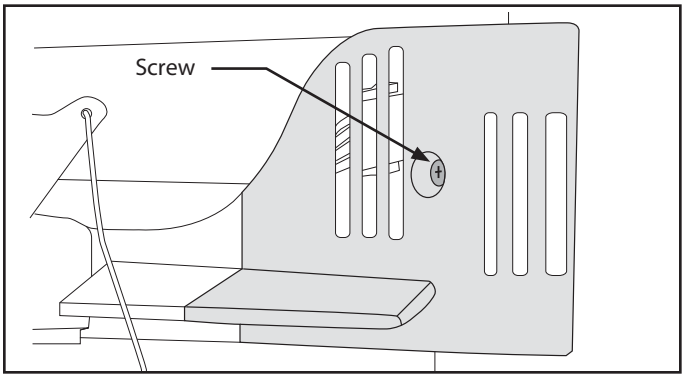


Figure 6-43.

Ice Maker and Mounting Plate

Non-Dispenser Models

To remove the ice maker:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.
4. Remove ice maker air duct.
5. Disconnect ice maker from wire harness connection.
6. Extract the one screw at the front of mounting plate. (See Figure 6-44)
7. The ice maker will then slide forward to allow the shoulder screws in the liner to pass through the key-hole slots in the mounting plate.
8. The mounting plate is removed from the ice maker by extracting the three screws from the bottom of the assembly. (See Figure 6-45)

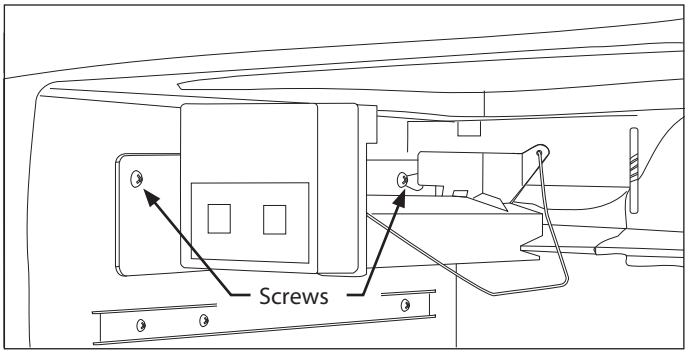


Figure 6-44.

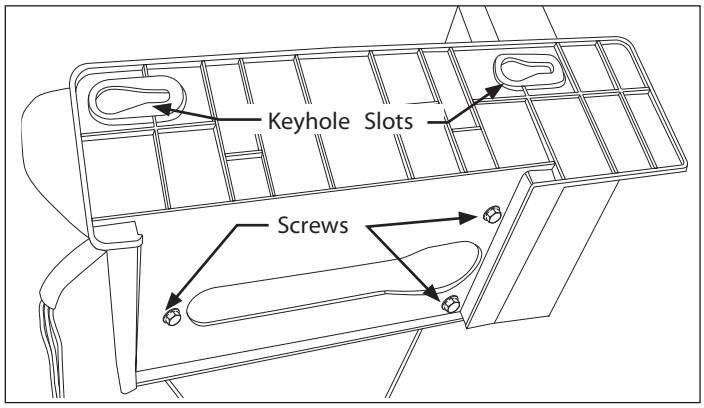


Figure 6-45.

Evaporator Cover Removal

To remove the evaporator fan motor:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.

NOTE: On some models you will need to remove the front trim for the top two baskets. Remove one screw from each side of the basket rail going into the trim and pull the trim straight out. On the lower basket rail assembly there is a linkage bar between the two gears. Pull rails out and expand them enough to remove bar.

4. Remove 3 screws from fan motor cover and lift out of evaporator cover. (See Figure 6-46)
5. Remove screws from evaporator cover and remove from freezer.

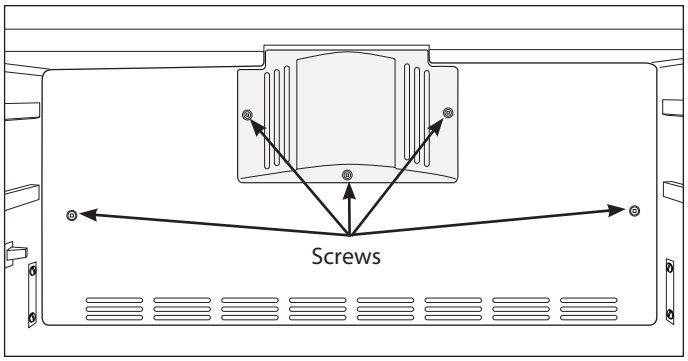


Figure 6-46.

Evaporator Fan Motor Removal

To remove the evaporator fan motor:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.

NOTE: On some models you will need to remove the front trim for the top two baskets. Remove one screw from each side of the basket rail going into the trim and then pull the trim straight out. On the lower basket rail assembly, there is a linkage bar between the two gears. Pull rails out and expand them enough to remove bar.

4. Remove 3 screws from fan motor cover and lift out of evaporator cover. (See Figure 6-47)
5. Remove evaporator cover.
6. Remove 2 screws from fan motor mounting bracket. Lift the fan assembly up and out away from the liner.
7. Disconnect wire harness connector. Evaporator fan motor assembly can now removed from the freezer. (See Figure 6-48)
8. Remove fan blade and washer.
9. Remove the back bracket holding fan motor by pushing in and releasing tabs.
10. Remove fan motor from bracket, remove rubber bushings from each end of motor and transfer to the new motor.

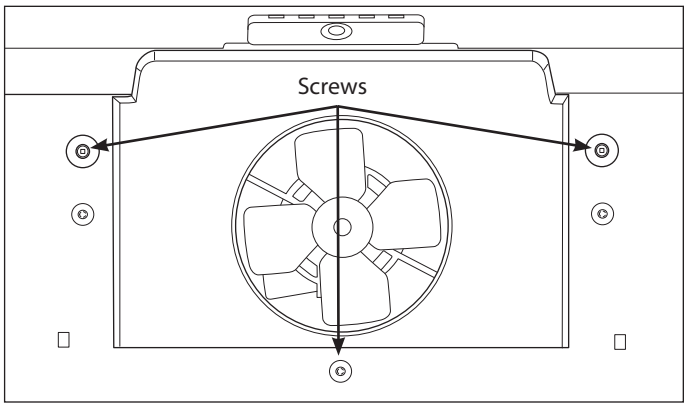


Figure 6-47.

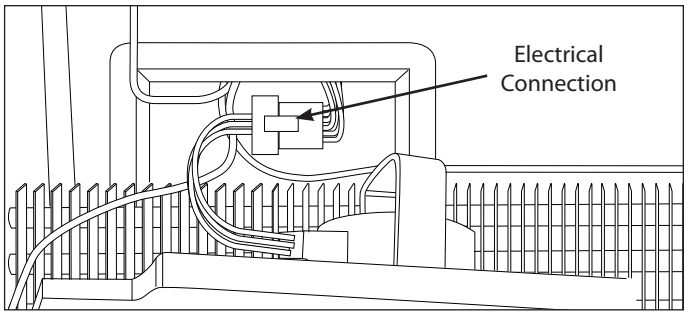


Figure 6-48.

Connection Path:

At Fan	12 pin Freezer in-line at Main Control Board	On Main Control Board
BRN	BRN/WHT 2	J7-6
BLU	BLU/WHT 6	J7-8
YEL	YEL/WHT 5	J7-5
RED	RED/WHT 1	J7-7

Purpose:

BRN / WHT : Common/ground/return

BLU / WHT : Tachometer feedback from the Evap Fan. This is the only way the Main Control Board can know if the fan is actually moving or not as it is a varied voltage.

YEL / WHT : Voltage that is varied by the Main Control Board in order to change the speed.

RED / WHT : Constant 12V from Main Control Board

Evaporator Defrost Thermostat Removal

The evaporator defrost limit switch mounts on the copper tube leading to the evaporator inlet.

To remove the evaporator defrost limit switch:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.
4. Remove screws from fan motor cover and lift out of evaporator cover.
5. Remove screws from evaporator cover and remove from freezer.
6. Disconnect wire leads at Molex™ connectors. (See Figure 6-49)
7. Remove faulty thermostat from copper tubing.

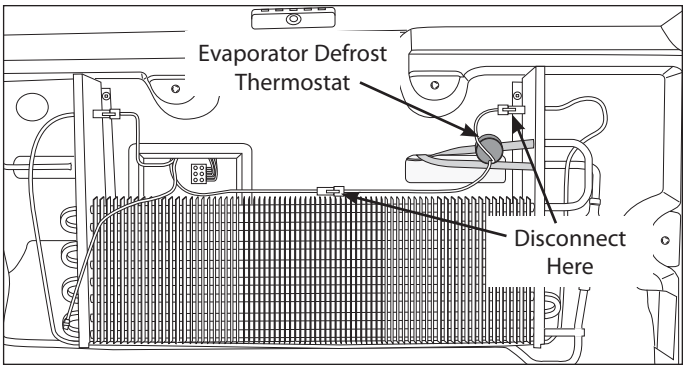


Figure 6-49.

Defrost Heater For Evaporator Removal

The defrost heater is a radiant "U" shaped resistance heater, rated at 450 watts. The defrost heater is energized during that period of the cycle when the defrost thermostat contacts are closed. The length of time the heater is energized depends on the amount of frost accumulation on the evaporator.

To remove the defrost heater:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.
4. Remove screws from fan motor cover and lift out of evaporator cover.
5. Remove screws from evaporator cover and remove from freezer.
6. Disconnect two leads to defrost heater. (See Figure 6-50)
7. Unclip ground wire hooked to drain trough.
8. Remove screw holding evaporator bracket through drain trough to cabinet.
9. Remove rivet holding bracket to trough and set bracket aside for reuse.
10. Remove screw holding drain trough to cabinet.
11. Lift up and pull evaporator and drain trough out at bottom. Use caution not to damage suction line or cap tube.
12. Slide drain trough off evaporator.
13. Remove retainer clamp from bottom of evaporator that holds heater in place.
14. Grab heater from bottom and pull free of evaporator. The heater fits very tight to the evaporator, and will require some force to remove.
15. Replace with new defrost heater.
16. Re-assemble in reverse order.

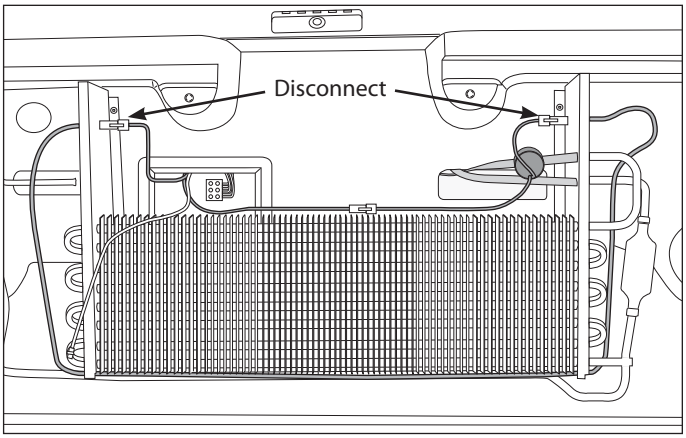


Figure 6-50.

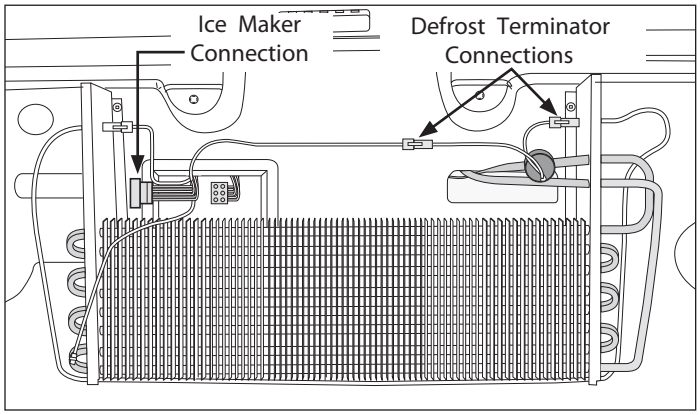


Figure 6-51. Non-Dispenser Evaporator

NOTES: The non-dispenser model evaporators do not have a tee connector or accumulator. (See Figure 6-51)

The defrost terminator has two quick connectors.

The ice maker wire harness receptacle mounts in the evaporator cover and must be removed from the back side of the evaporator cover when it is removed from its installation position.

Fresh Food Compartment Refrigerated Ice Maker

Flex-Tray

IMPORTANT NOTE ABOUT ICE MAKER GASKETS:
All gasket seals in the ice maker housing assembly are critical to ensure proper management of air flow, moisture and defrost water. Anytime a gasket seal is broken, the affected gasket must be inspected for signs of wear or deformation and must be replaced if necessary. Failure to inspect and replace gaskets may compromise proper function of the ice maker and result in undesirable water leaks.

Ice Bucket Removal

To service the Fresh Food Flex Tray ice maker you must first remove the ice bucket. Open the left fresh food compartment door and pull the ice bucket out of the ice maker housing assembly located in the top left corner of the food compartment. Figure 6-52.

Ice Maker Removal

Disconnect power from the unit before performing this procedure.

1. Remove the two screws holding the Housing Front Cover to the Ice Maker Housing. Figure 6-53.
2. Pull the bottom left of the Housing Front Cover forward so that the notch is clear of the raised edge around the front opening of the Housing.
3. Pull the Housing Front Cover downward to remove.
4. Remove the screw holding the Harness Cover in place, and remove the Harness Cover. Figure 6-54.
5. Disconnect the two wiring harnesses.
6. Grip the ice maker underneath the ice tray as shown in figure 6-55, and pull the ice maker forward to slip it off the four shoulder screws. Unhook the wiring harness from the top of the ice maker frame, cut the wire ties holding the harness to the ice maker if present, and remove the ice maker from the unit.

Figure 6-52

Figure 6-53

Figure 6-54

Figure 6-55

Ice Maker Housing Removal

Disconnect power from the unit before performing this procedure.

1. After completing the Ice Maker Removal Procedure, remove the screws at the front of the Housing. Figure 6-56.

NOTE: One or both of the side screws may not be used.

2. With all the screws removed, pull the front end of the housing body downward about an inch and feed the harnesses up through the square hole. Figure 6-57.
3. Pull the cover forward and out of the unit. The wiring harness coming from the rear of the housing will slide out the back of the housing. Figure 6-57.

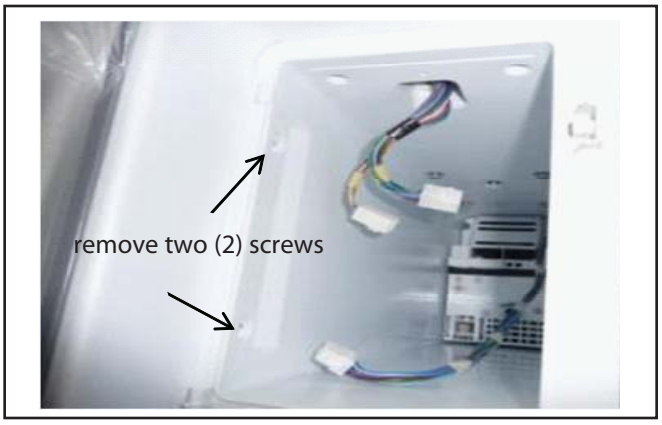


Figure 6-56

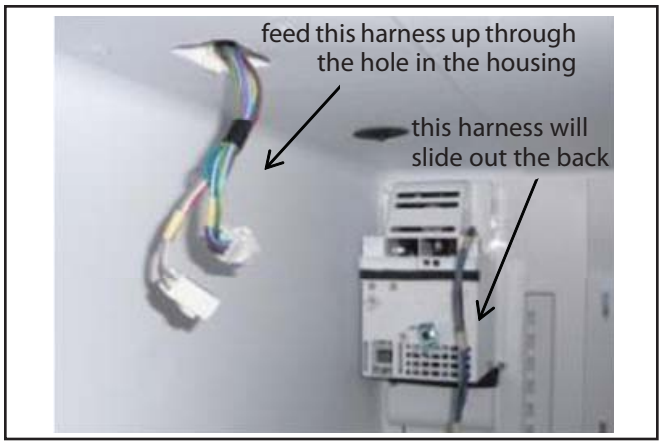


Figure 6-57

Fill Funnel Removal and Replacement

Disconnect power from the unit before performing this procedure.

The Fill Funnel is the black, plastic part that is inserted into the top of the Ice Maker Housing. It serves to direct the incoming water directly into the ice maker.

1. After completing the Ice Maker Housing Removal procedure, remove the foam gasket covering the funnel. Figure 6-58.
2. Pull the Funnel out of the housing.
3. To replace the Funnel, insert the funnel into the oblong hole in the top of the Housing. Be sure the long end of the Funnel is oriented toward the rear of the housing.

IMPORTANT: The slotted opening in the funnel must not be squeezed or deformed in any way.

4. Place a new gasket over the Funnel. The gasket must be centered over the funnel so the opening of the funnel is not obstructed.

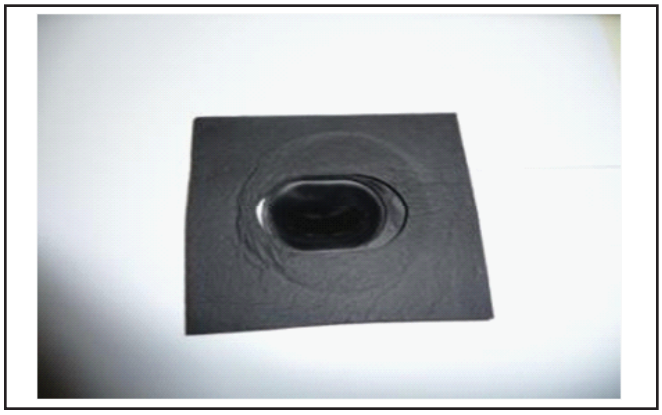


Figure 6-58

Fill Tube Removal and Replacement

Disconnect power from the unit before performing this procedure.

The 1/4" green fill tube from the water valve is adapted to a 5/16" green tube approximately two feet above the valve on the back of the unit.

1. After completing the Ice Maker Housing Removal procedure, disconnect the larger green tube from the in-line connector.

NOTE: There will likely be some water that will spill from the green tube. Be prepared to collect or wipe.

2. Push the tube forward about an inch into the back, top of the unit. The tube will now protrude into the fresh food compartment far enough to be gripped. Figure 6-59.
3. From the front of the unit, pull the tube downward and out of the unit.

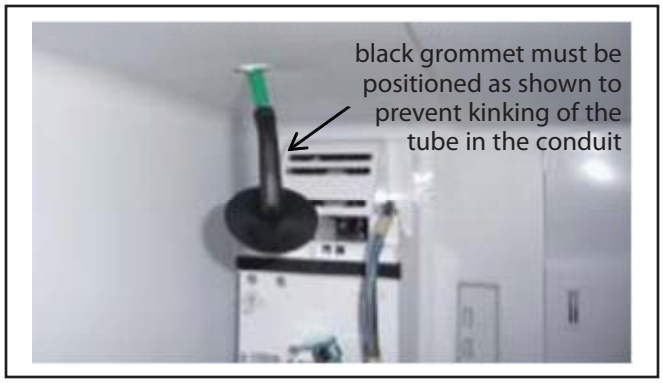


Figure 6-59

4. To replace the tube, insert the green end into the opening of the conduit inside the fresh food compartment.
5. Push the tube through the conduit and out the back of the unit.

IMPORTANT: Be sure the black portion of the tube is oriented as shown in figure 6-59, otherwise, the black portion may kink when inserted into the conduit.

6. Push the black portion of the tube about halfway into the conduit.
7. From the back of the unit, pull the green tube until the black portion snaps into place. It is in position when the flat disk is against the top of the liner.
8. Connect the green tube to ¼" green tube from the water valve at the in-line connector.

Figure 6-60

Air Handler Removal

Disconnect power from the unit before performing this procedure.

NOTE: When the Air Handler assembly is removed, the gaskets on the Evaporator Housing are compromised. The rear-most gasket must always be replaced, and all other Evaporator Housing gaskets must be evaluated and replaced if deformed or damaged. This is essential to ensure that any water collected within the ice maker air handler assembly during normal operation is contained and drains properly.

1. After completing the Ice Maker Housing Removal procedure, remove the three screws that hold the Air Handler in place. Figure 6-60.

NOTE: There are 4 screw holes in the Air Handler, but only 3 are used – the 2 top holes and the bottom right hole.

2. Carefully pull the Air Handler off of the Evaporator Housing.
3. While holding the Air Handler in one hand, unplug the internal wire harness with the other. Figure 6-61.

NOTE: the Air Handler is heavier that you may expect due to the Auger Motor that is mounted inside it. Be careful that you do not drop it, as you may damage the wiring harness or the glass shelf underneath the ice maker.

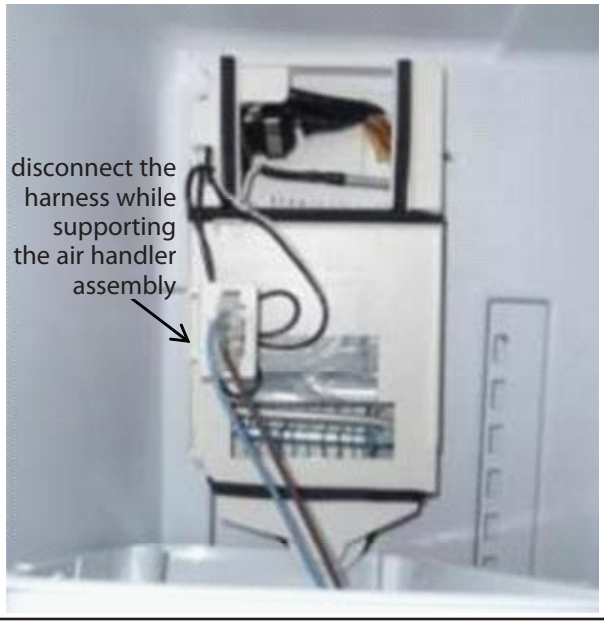


Figure 6-61

Auger Motor, Crusher Solenoid, and Fan

Disconnect power from the unit before performing this procedure.

The Auger Motor is attached with 3 screws driven in from the front of the Air Handler. Note that the top screw is covered by a foam gasket.

1. After completing the Air Handler Removal procedure, disconnect the purple and blue wires from the terminals on the Auger Motor. Figure 6-62.
2. Unscrew the Auger Drive Bar. Note that it has left-hand threads (turn right to loosen). Then remove the three screws holding the Auger Motor to the Air Handler.
3. When replacing the Auger Motor, be sure to replace the foam gasket that covers the topmost of the 3 screws.

The Crusher Solenoid is attached with two screws on the front of the Air handler. The slides for the Solenoid Plunger are built in to the Air Handler.

4. Remove the two screws and lift the Solenoid out of the Air Handler and disconnect the blue and blue/white wires. Figure 6-62.
5. When replacing the Solenoid, connect the blue and blue/white wires, and then place the Solenoid in the Air Handler and drive in the two screws. Note: The Solenoid position must be adjusted so that the Plunger will operate freely without binding, and will fall to its bottom position under its own weight.

The Fan is held in only by the foam gaskets wrapped around it. There are no screws.

6. To remove the Fan, grasp it by the blades, lift it out of the Air Handler, and disconnect the lead wire. Figure 6-62.
7. To replace the Fan, connect the lead wire, and carefully push the fan into the square pocket in the Air Handler as far as it will go.

Note: Use care that the foam gasket is compressed evenly around the Fan as it is inserted into the square pocket. Figure 6-63.

IMPORTANT: The Fan must be oriented so the airflow is pulled in from the rear of the Air Handler and is pushed out the front grid opening of the Air Handler.

Note: The fan must be oriented so that the lead wire is placed in the notch in the partition beneath the fan.

Figure 6-62

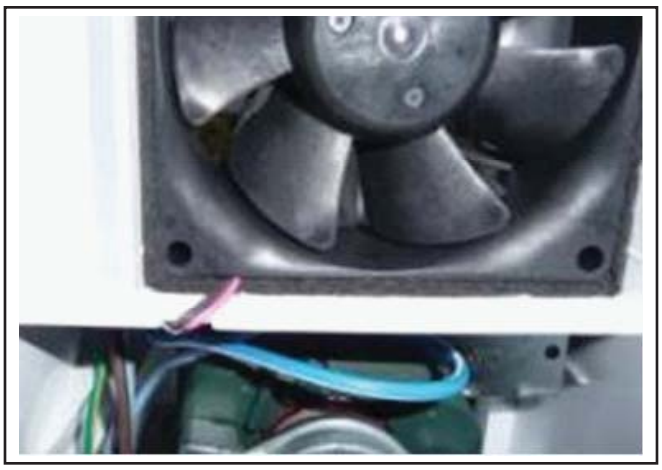


Figure 6-63

Evaporator Housing Removal

Disconnect power from the unit before performing this procedure.

The Evaporator Housing is slipped onto the Evaporator from the bottom. There is a drain tube at the bottom of the Evaporator that allows the defrost water to drain into a conduit in the cabinet wall, and down into the drain pan on the bottom of the unit. The Housing has an aluminum liner inside against the front and right side walls to protect the plastic Housing from the heat of the Defrost Heater.

Evaporator Housing Removal - continued

The liner has a tab that extends down to the drain tube to conduct heat during defrosts to melt any ice accumulation in the drain tube. There is also a piece of aluminum tape that wraps onto the front wall of the Housing. The tape conducts heat to the back of the Auger Motor to melt any ice off of it during defrosts.

1. After completing the Air Handler Removal procedure, push the harness connector out of the clip on the front of the Housing. Figure 6-64.
2. Pull the harness up and out of the "L" shaped slot on the Housing.
3. Carefully pull the Housing outward so that the drain tube is free of the drain conduit, and then downward to remove it from the Evaporator. Note: If there is frost buildup on the Evaporator, the housing will be tighter, and you may need to hold the refrigerant lines with one hand while removing the Housing to avoid damage to the lines.

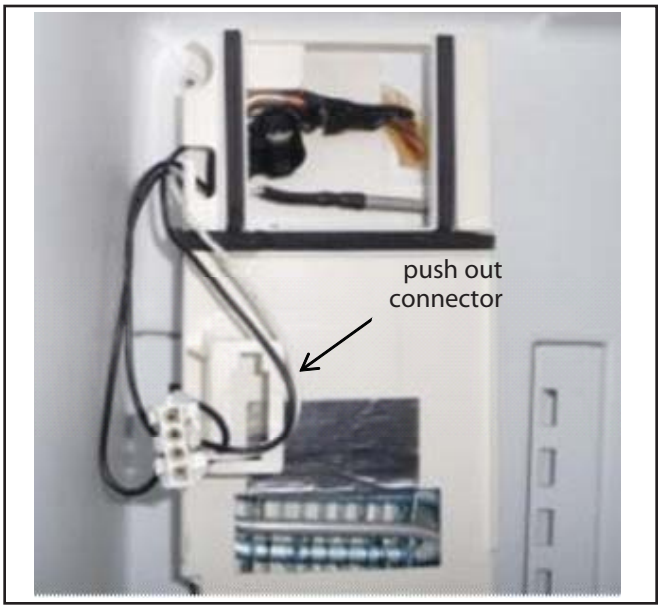


Figure 6-64

Heater and Bimetal Thermostat Removal and Replacement

Disconnect power from the unit before performing this procedure.

The Defrost Heater is a contact heater. Its rating is 70W @ 115V. The resistance through the heater should be 189Ω ± 7.5%. The heater is pressed into channels in the front face of the Evaporator. There are wire ties that are wrapped around the heater and the Evaporator tubing to hold the heater in place. The Bimetal Thermostat is wired in series with the heater. The Thermostat will open at approximately 47°F and close at approximately 25°F. The Heater and Thermostat must be replaced together. The replacement Heater and Thermostat will come as a complete assembly.

1. After completing the Evaporator Housing Removal procedure, cut the wire ties that hold the Heater to the Evaporator.
2. Unclip the Thermostat from the refrigerant line.
3. Carefully spread the Heater front to rear enough to the clear of the Evaporator, and then pull it down and to the right off the evaporator.
4. To replace the Heater and Thermostat Assembly, carefully spread the heater enough to be clear of the Evaporator and slip it onto the Evaporator from the right side.
5. Align the heater so that it sits in the channels in the front of the Evaporator as shown. It is not necessary to reattach the wire ties.
6. Snap the Thermostat onto the rear-most refrigerant line as shown. Figure 6-65.

IMPORTANT: Failure to connect the Thermostat as shown could cause the Thermostat to interfere with the Fan blades, creating noise or an inoperable fan.

Figure 6-65

Evaporator Housing Replacement

Disconnect power from the unit before performing this procedure.

IMPORTANT: When the Evaporator Housing is removed, (and when the Air Handler is removed), the rear "U" shaped gasket on the Evaporator Housing must be replaced. This is because the gasket gets crushed during installation and permanently takes on the shape of the liner where it contacts the liner. Once the Evaporator Housing is removed or loosened, it will never be put back in exactly the same place and the gasket will not properly seal – leading to the possibility of melted frost bypassing the gasket and causing water droplets that run down the back wall of the fresh food compartment underneath the ice maker.

1. Check all the gaskets on the Evaporator Housing. Replace any that are deformed or damaged. The rear-most "U" shaped gasket must be replaced. Figure 6-66.
2. When replacing the rear gasket, be sure that the edge of the new gasket is aligned with the tips of the small "wings" on either side of the Housing as shown. Figure 6-67.
3. Be sure the aluminum liner and the tape are in place, and carefully slip the Housing onto the bottom of the Evaporator and slide it upward.

Note: Use care to make sure the Heater stays in the proper position.

4. Push the Housing all the way to the top of the Evaporator. It is in the proper position when the top of the Evaporator coil is even with the bottom of the large window in the Housing as shown. Figure 6-68.
5. Route the wires from the Heater and Thermostat assembly down through the "L" shaped slot and to the left of the "L" shaped post on the Evaporator Housing, and snap the connector into the clip on the front of the housing from behind as shown. Figure 6-69.

IMPORTANT: The wires must be routed as shown. Failure to do so could cause damage to the wires due to pinching and interference with the Auger Motor.

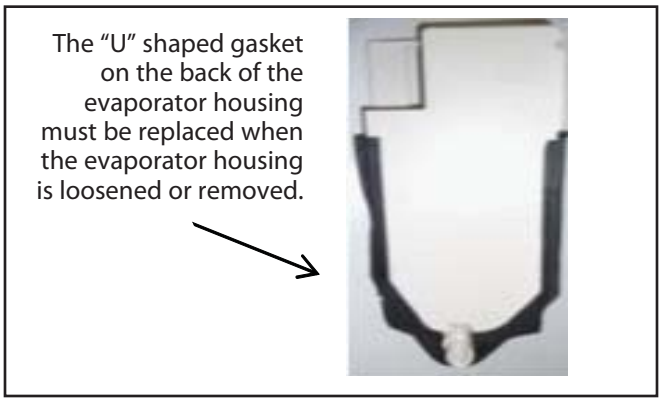


Figure 6-66

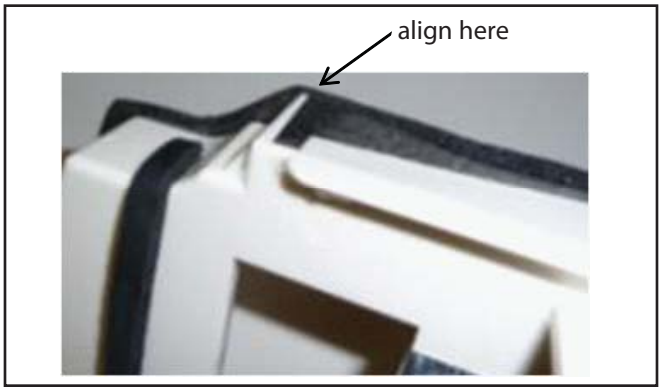


Figure 6-67

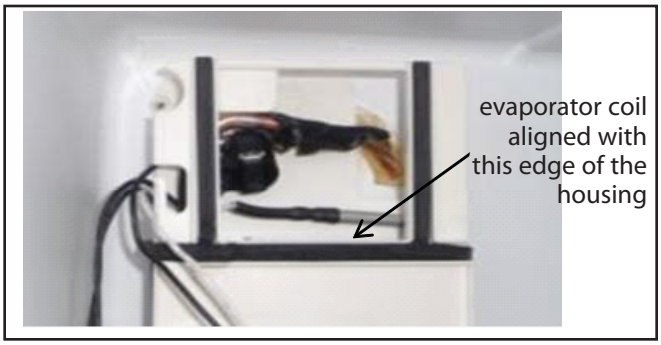


Figure 6-68

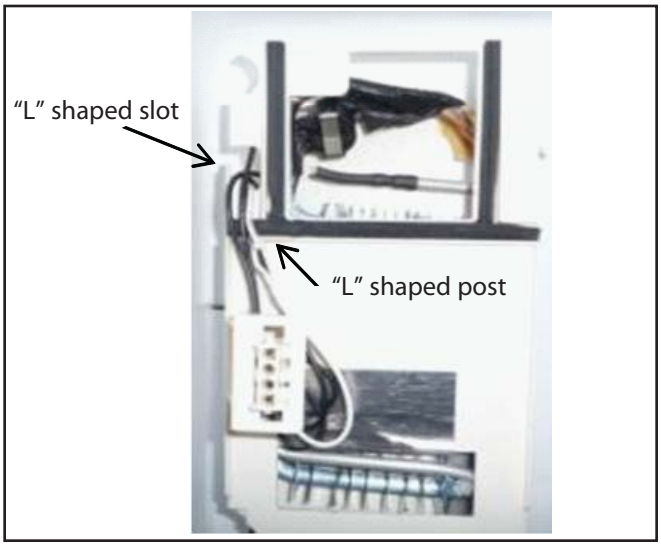


Figure 6-69

Air Handler Replacement

Disconnect power from the unit before performing this procedure.

1. Replace any foam gaskets on the Air Handler that have been damaged.
2. Align the notch in the Evaporator Housing with the top, left screw hole for the Air Handler as shown. Figure 6-70.
3. Hold the Air Handler with one hand and plug in the harness connector for the Heater and Thermostat assembly with the other.
4. Place the Air Handler over the Evaporator Housing and push into place.
5. Install the three screws for the Air Handler. Note: The bottom, left screw hole is not used.

Figure 6-70

Ice Maker Housing Replacement

Disconnect power from the unit before performing this procedure.

1. Check and replace any gaskets that are damaged on the Ice Maker Housing.
2. Hold the Housing up to the Air Handler and insert the Air Handler wiring harness into the Housing from the rear. Figure 6-71.
3. Slide the Housing onto the Air handler so that the back of the housing is supported by the Air Handler.
4. Insert the two wiring harnesses through the square hole at the top, front of the Housing. Figure 6-71.
5. Push the Housing into position all the way against the back of the fresh food liner and up into the top, left corner of the fresh food compartment.
6. Install the screws in the front of the Housing.

Note: One or both of the left side screws may have not been used.

Figure 6-71

Ice Maker Replacement

Disconnect power from the unit before performing this procedure.

1. After completing the Ice Maker Removal procedure, route the Air Handler harness along the top of the Ice Maker as shown in figure 6-72. The harness must be placed in the channel along the top of the ice maker and hooked underneath the tab on the ice maker frame.

IMPORTANT: Failure to properly route the harness can lead to ice maker failure due to the harness getting tangled in the plastic twist-tray as it rotates.

2. Hold the end of the harness with one hand, and the ice maker with the other. Pull the harness to slide it through the channel and keep the slack out of it as you install the ice maker onto the four shoulder screws in the top of the Ice Maker Housing.

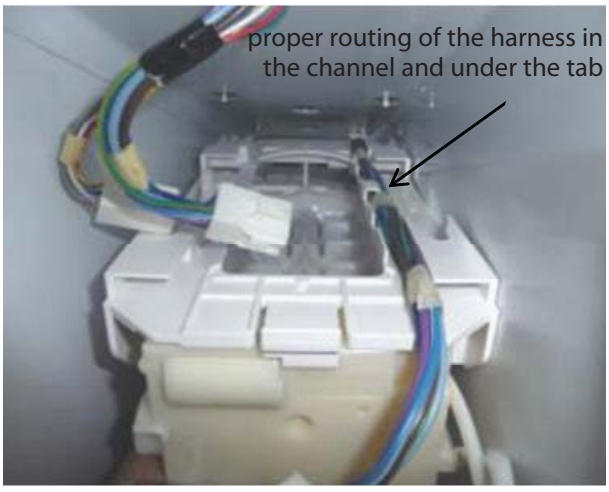


Figure 6-72

Ice Maker Replacement - continued.

3. As you slide the ice maker onto the shoulder screws, you cannot see the two rear screws. Therefore, after installing the ice maker, you must pull down on the two back corners to be sure it is attached to the two rear screws. If not, then pull the ice maker off the screws and repeat the previous step.
4. Connect the two harnesses at the front of the Ice Maker Housing.
5. Install the Harness Cover so that the two tabs on the back of the Cover are inserted over the top of the ice maker frame.
6. Tuck the harnesses into the cover as shown. Be sure that the harness coming from the ice maker and the Air Handler are inside the notch in the Harness Cover. Figure 6-73.

Note: Use care to make sure that all the wires are completely inside the cover so they do not get pinched.

7. Push the Cover into position and drive in the screw. The extended lip on the front of the cover is to be inserted into the slot on the top of the ice maker housing. Figure 6-74.
8. To install the Ice Maker Housing Front Cover, slip the tab on the back of the cover underneath the corresponding tab on the Ice Maker Housing. Figure 6-75.
9. Install the two screws that hold the Front Cover to the Housing.
10. Reinsert the Ice Bucket into the Ice Maker Housing.

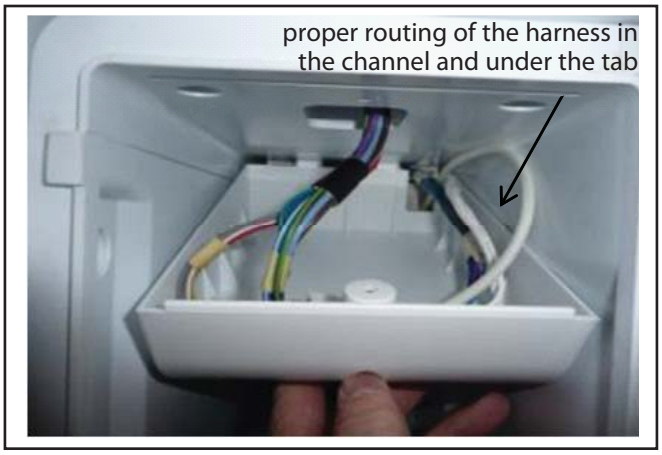


Figure 6-73

Figure 6-74

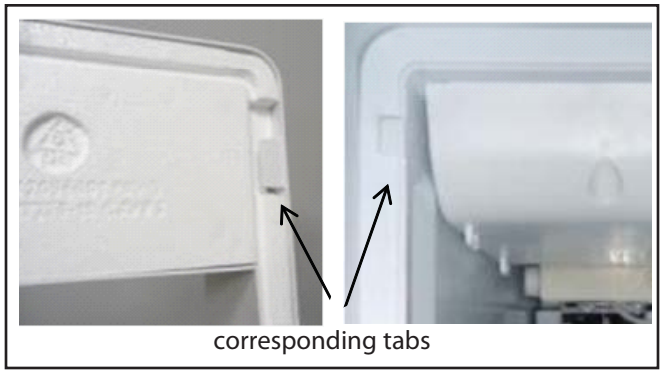


Figure 6-75

Fresh Food Compartment Refrigerated Ice Maker Finger Evaporator

Ice Maker Control Cover Removal

To service the ice maker control board, unplug unit from wall outlet. Remove the two screws securing the cover to the rear of the unit. (See Figure 6-76) With the screws removed, the cover containing the board can now be removed to gain access to the ice maker electronic control.

Ice Maker Control Removal

⚠ CAUTION

When handling and or replacing a control board it is important the a technician have a wrist ground strap on and connected to the cabinet or another grounding position to prevent static electricity from damaging the board.

To remove the ice maker control board, unplug unit from wall outlet. Remove cover and disconnect the wire harness from both ends of the control board. Then carefully pull the board from the four retainers securing the control board in position. (See Figure 6-76)

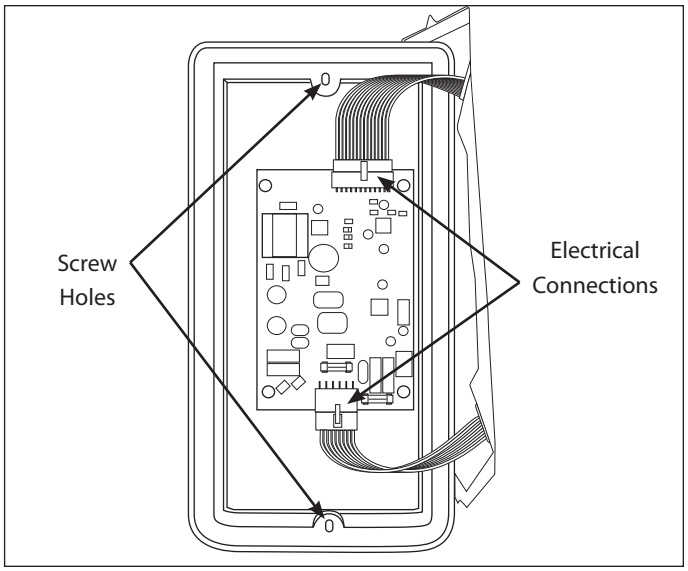


Figure 6-76.

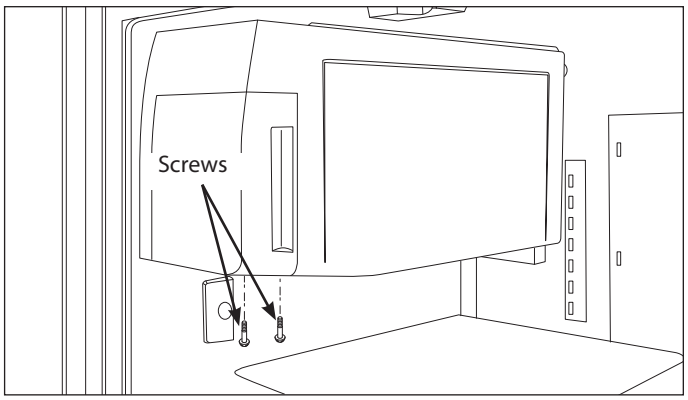


Figure 6-77.

Ice Bucket Removal

To service the ice maker you will need to remove the Ice bucket by pulling the ice bucket out of the ice maker assembly.

Ice Bin Housing Removal

To remove the ice bin housing from the ice maker:

1. Remove the fresh food compartment shelves to aid in access the ice maker components.
2. Remove three 1/4” mounting bolts that pass through the housing and fasten into the frame of the ice maker assembly. (See Figure 6-5877
3. Slide housing forward until the two shoulder screws mounted to the right inner sidewall and lower left inside edge drop out of locating slots cut in the ice maker assembly and remove from unit.

Ice Maker Left and Right Mold Switch Removal

To replace the left freeze, and right fill mold switches:

1. Unplug unit from wall outlet. Remove the ice bin housing.
2. Disconnect the wire leads from the switch terminals.
3. Extract the single mounting screw. Remove the switch and replace with a new one. (See Figure 6-78)

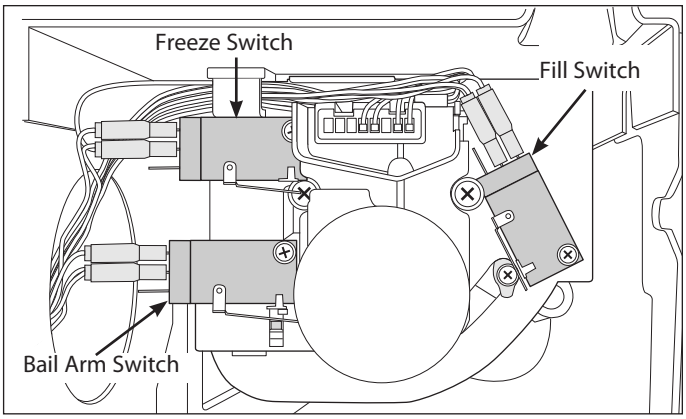


Figure 6-78.

Bail Arm Ice Level Switch Removal

To replace the bail arm ice level switch:

1. Unplug unit from wall outlet. Remove the ice bin housing.
2. Disconnect the wire leads from the switch terminals.
3. Extract the single mounting screw. Remove the switch and replace with a new one. (See Figure 6-78)

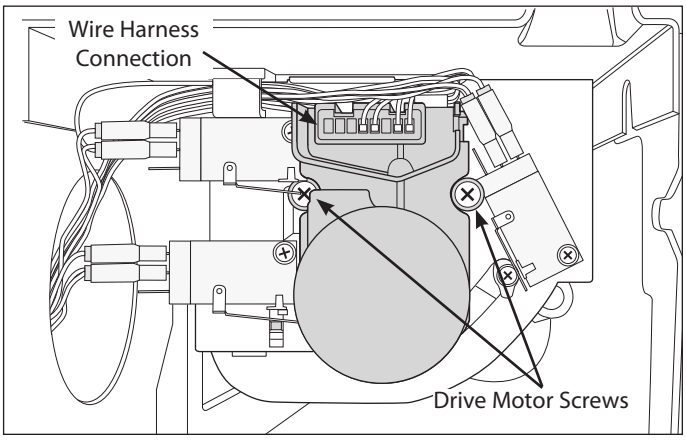


Figure 6-79.

Ice Maker Drive Motor Removal

To replace the drive motor:

1. Unplug unit from wall outlet. Remove the ice bin housing.
2. Disconnect the wire harness from drive motor.
2. Extract the two screws securing the drive motor to the gear box. (See Figure 6-79)
3. Slide the motor straight back off the shaft.

Install the new motor using caution to line the gear on the shaft up with the gear in the motor.

NOTE: To prevent damage to the gear box assembly never move the ice mold by hand with out first removing the motor.

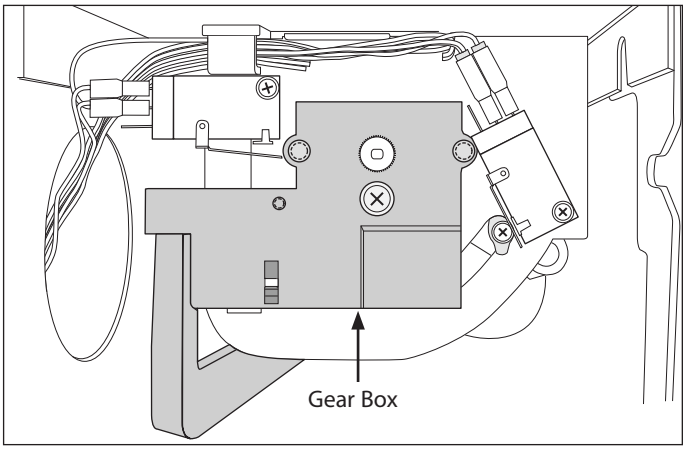


Figure 6-80.

Ice Maker Gear Box Removal

To replace the gear box:

1. Unplug unit from wall outlet. Remove the ice bin housing.
2. Remove the bail arm switch and the drive motor.
3. Slide the gear box and bail arm off the ice mold drive shaft. (See Figure 6-80)

On reassembly use caution to make sure the flat section of the ice mold drive bar is lined with the correct position on the inside of the gear box.

Ice Maker Side Plate Removal

To replace the ice maker side plate, remove the seven (7) screws shown in Figure 6-81. Carefully slide the cover out, paying special attention to the back portion aroung the EEV assembly and the copper tubing.

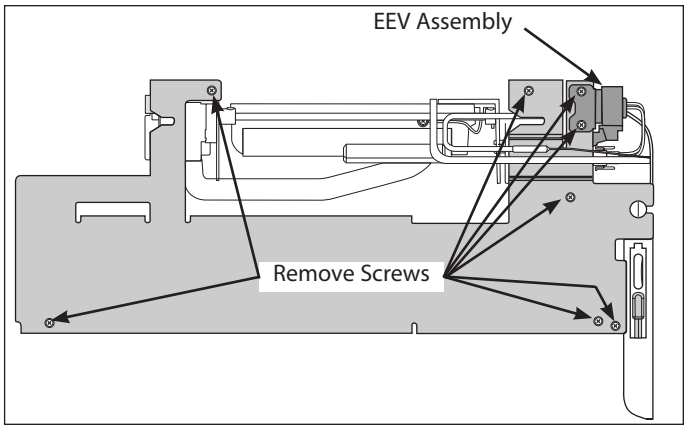


Figure 6-81.

Removal of Ice Mold, Heater and Defrost Limiter for Finger Evaporator

To replace the heater and/or the defrost limit switch on the finger evaporator:

1. Unplug unit from wall outlet. Remove the ice bin housing and side plate.
2. Disconnect the two wire and three wire Molex™ connectors located by the EEV that lead to the ice mold.
3. Disconnect all switches at the front of the ice maker and remove the drive motor to prevent damage while moving the ice mold.
4. Extract the 2 front screws, located just behind the pivot plate in front of the ice mold, that secure the ice mold assembly in position. (See Figure 6-82) The ice mold may need to be moved to provide access to the screws.
5. Extract the back 2 screws just above the back of the ice mold. (See Figure 6-82)
6. Remove the ice mold assembly.
7. Extract the front pivot pin. This will allow the front of the ice mold to drop away from the front pivot plate.
   NOTE: There is a clear plastic bushing that covers the first 1/4 inch of the pivot pin. You do not need to remove the bushing to remove the pin. If you replace the pin you must transfer the bushing form the old to the new pin. (See Figure 6-83)
8. Pull the back of the ice mold off the guide and carefully feed the wires through the guide.
9. To replace the defrost limit switch, disconnect the two wires to the defrost thermostat at the Molex™ connector and snap the clip off the evaporator holding the defrost thermostat in position. (See Figure 6-84)
10. To replace the finger evaporator heater, disconnect the Molex™ connector to the left of the finger evaporator and the connector below the EEV. Pull heater out of tube at the front of the ice maker assembly. (See Figure 6-84)

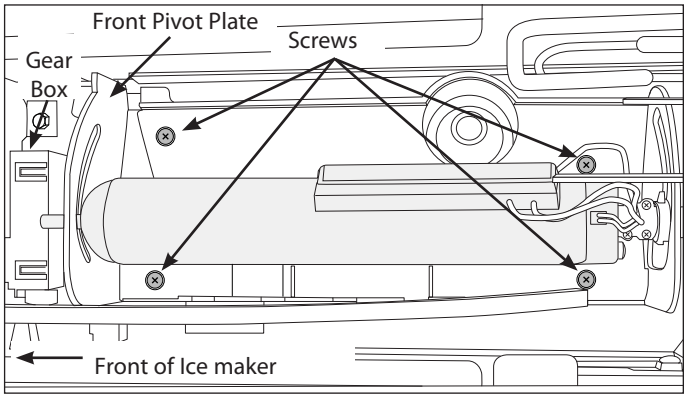


Figure 6-82.

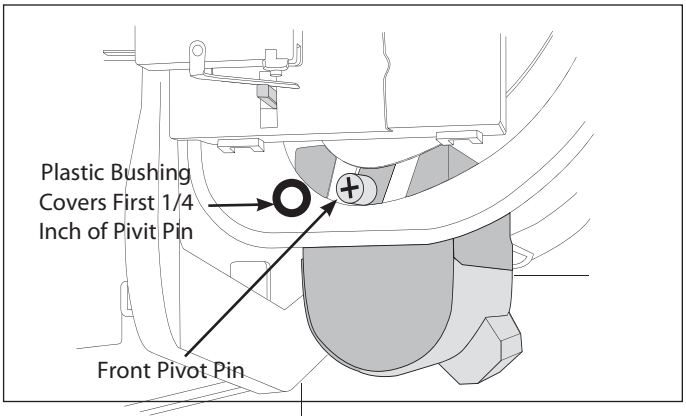


Figure 6-83.

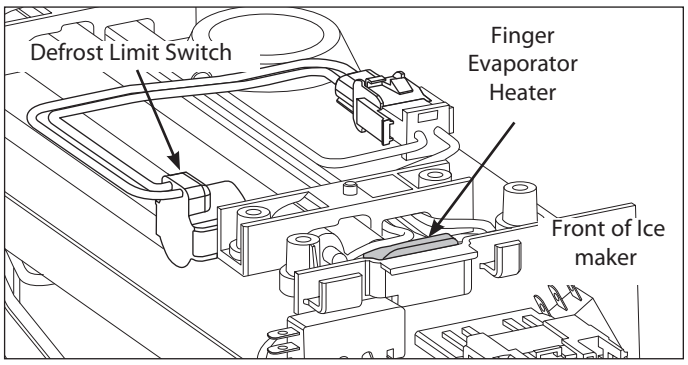


Figure 6-84.

Ice Maker Defrost Heater Removal

To replace the defrost heater on the fin and tube evaporator:

1. Unplug unit from wall outlet. Remove the ice bin housing.
2. Remove the cover by pushing down on the retaining clip at the top. (See Figure 6-85)
3. Extract the two screws holding the side plate in place.
4. Pull the housing out enough the get the wiring out and disconnect to heater. The heater can now be pulled straight out of the retainer tube on the evaporator.

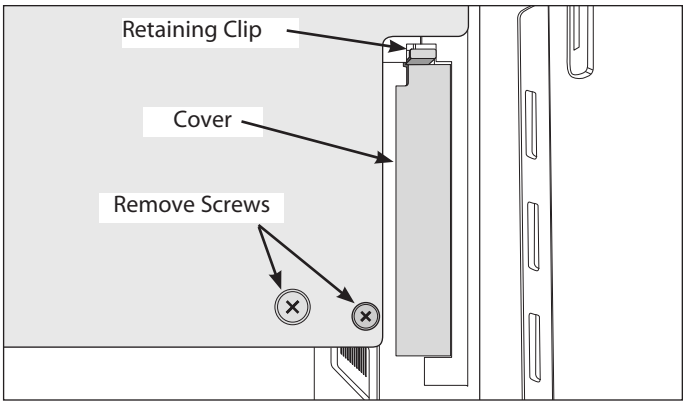


Figure 6-85.

Ice Maker Suction Line Thermistor Removal

The suction line thermistor is mounted to the suction line coming from the fin and tube section of the ice maker evaporator. The thermistor is mounter inside foam insulating tape and senses temperature of the suction line and relays this information back to the control board for EEV operation. (See Figure 6-86)

To replace the suction line thermistor (T3), disconnect power from the unit and remove the side plate. Remove the thermistor from the suction line and disconnect the wiring at the connector.

NOTE: It is critical to proper operation of the EEV valve that the thermistor is mounted at the bottom of the suction line.

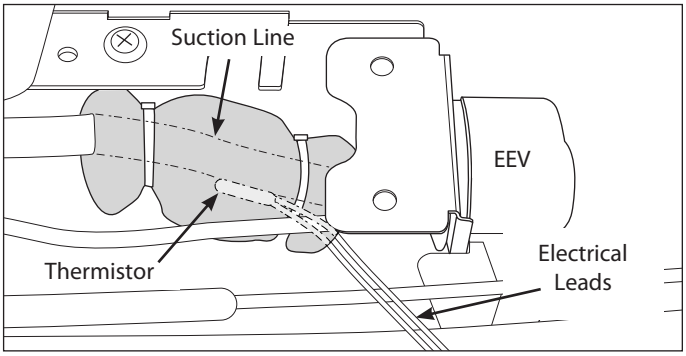


Figure 6-86.
View is shown looking up at the EEV from the lower right with the side plate removed.

Dispenser Auger Motor & Solenoid Assembly Removal

The dispenser auger motor and solenoid assembly are mounted in the back of the fresh food compartment ice maker behind the ice bucket. The motor and solenoid mounting screws are located on the front of the auger motor cover.

To remove auger motor and solenoid assembly:

1. Unplug unit from wall outlet. Remove the ice bin housing and side plate.
2. Some Models you remove the four screws securing the auger assembly to the ice maker frame. (See Figure 6-87 A)
   Other models do not have the 4 screws shown in Figure 6-87 B. On models with out the 4 screws you must:
   a. Remove the outer cover from the ice maker.
   b. Remove the right side panel from the ice maker.
3. Disconnect the two wire leads hooked to auger motor winding terminals.
4. Disconnect two wire leads hooked to cube ice solenoid terminals.
5. Remove the auger bar-drive from the auger motor shaft by holding the motor shaft with a vise grips or pliers and turning the drive-bar counterclockwise until free of auger motor shaft.
6. Extract the three motor mounting screws (labeled A in Figure 6-87) then remove from mounting plate.
7. Extract the four screws (labeled B in Figure 6-87) from the solenoid assembly then remove from mounting plate.
8. Replace assembly in reverse order.

To Test Auger Motor:

1. Read ohmic value of motor windings using Multimeter on resistance scale. (Put test leads on terminals where purple and white wires were disconnected from Step 3 above. (See Figure 6-88)
2. Resistance reading should be low ohms. If there is any other reading, replace motor.

To Test Solenoid Assembly:

1. Read ohms value of solenoid coil using Multimeter on Resistance scale. (Put test leads on terminals where blue with white stripe and white wires were disconnected from Step 4 above. (See Figure 6-88)
2. If Resistance reading is extremely high or low, replace solenoid coil.

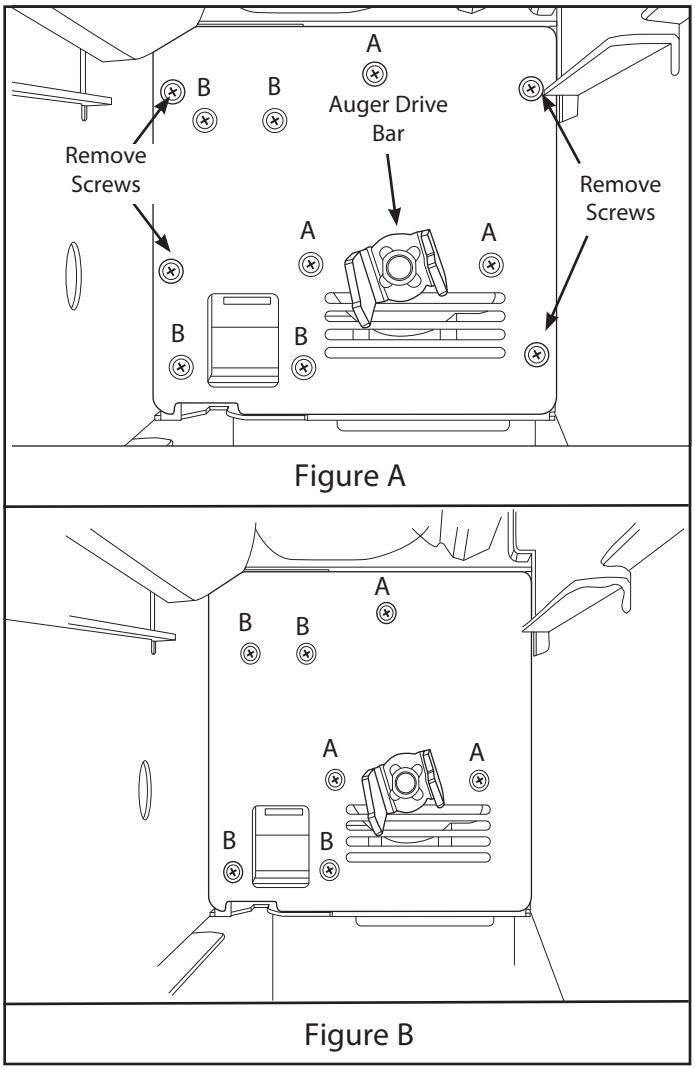


Figure 6-87.

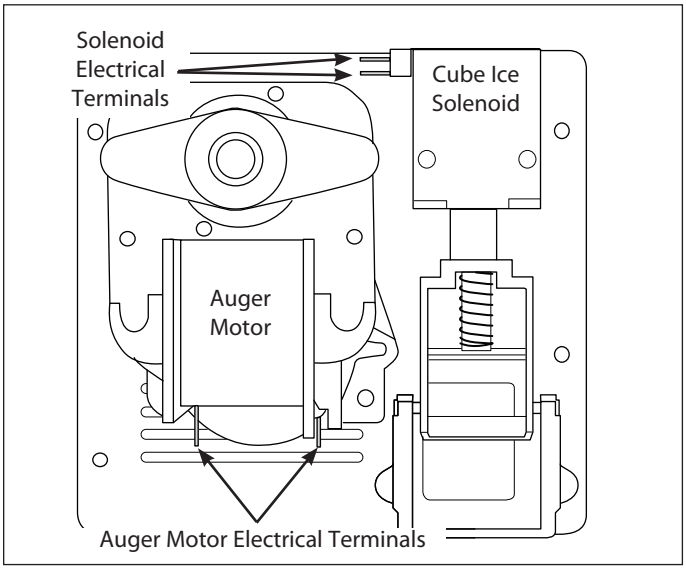


Figure 6-88.

Ice Maker Evaporator Fan Motor & Defrost Limit Thermostat Removal

To replace the evaporator fan motor or the defrost limit thermostat for the ice maker fin and tube evaporator:

1. Unplug unit from wall outlet. Remove the ice bin housing and side plate.
2. Remove the ice mold assembly.

NOTE: Wires must be put back to their original installation positions to avoid possible strain and/or damage to moving components and wire harness.

3. Extract the two screws securing the fan and thermostat housing to the rear and left sidewalls. Release retaining latch and slide the housing forward and remove from area above ice maker evaporator. Use caution not to strain fan electrical leads. (See Figure 6-89)
4. Disconnect electrical leads at Molex™ connector.
5. Extract the two screws securing the fan motor to the mounting bracket.
6. Replace the motor and reinstall in reverse order..

The defrost limit thermostat is snapped over a tab inside the fan motor housing. To remove it, simply snap it off the tab and disconnect the wire harness. Reassemble in reverse order.

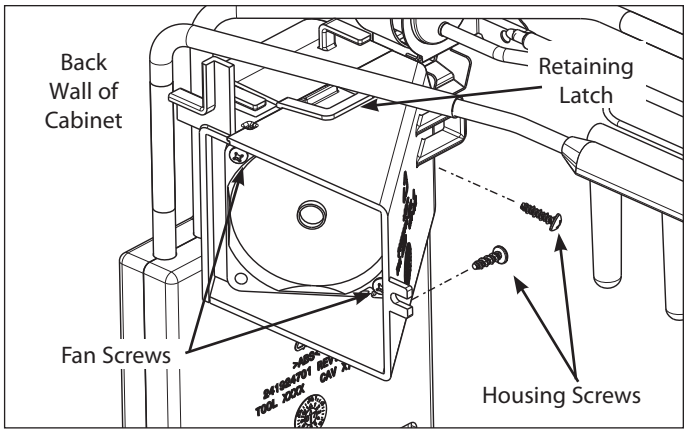


Figure 6-89.
View is shown from left sidewall.

Ice Maker Frame Assembly Removal

To replace the ice maker frame assembly, remove all previously listed ice maker components that are mounted to the frame assembly.

1. Unplug unit from wall outlet. Remove the ice bin housing and side plate.
2. Remove the ice mold assembly and ice auger motor.
3. Remove the fan and thermostat housing.
4. Extract the screws from the two ground wires attached to the frame assembly in and above the auger motor area.
5. Disconnect the evaporator heater at the Molex™ connector. (See Figure 6-90)
6. Extract the four screws securing finger evaporator to frame assembly top panel. (See Figure 6-90)
7. Free all wire harness leads from frame assembly. Pull frame assembly forward and down. Wire harness may be taped to sidewall of frame assembly, remove tape as needed. Carefully pull frame assembly from unit. Use care not to strain wire harness.

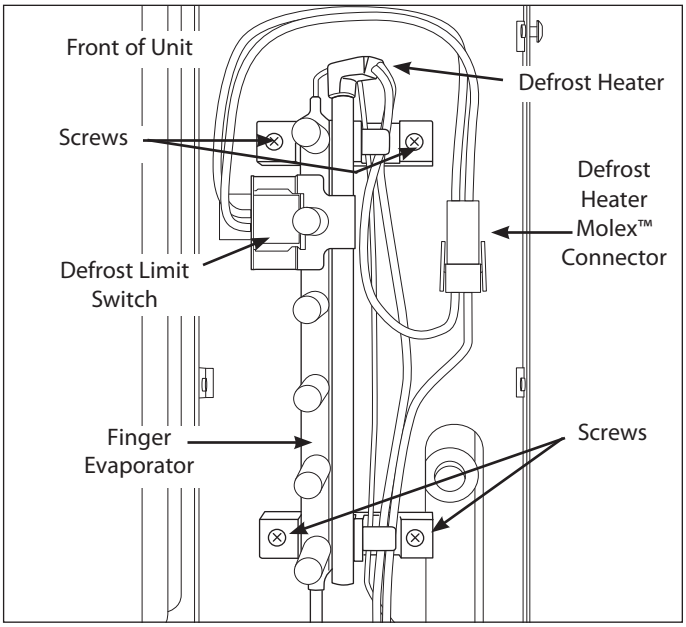


Figure 6-90.
View shown from under finger evaporator.

Ice Auger and Crusher Assembly Removal

To remove the ice auger & crusher assembly:

1. Extract the four screws securing the ice container front to ice container. (See Figure 6-91)
2. Remove E-ring and washer on front of crusher housing.
3. Extract the two screws securing the control rod to the bottom of the ice bin container. Remove control rod from steel plate by pressing in on the ice gate and rotating the control rod out from under the arm of the ice gate. Rotate control rod until the crimps line up with the slot in the steel plate, then slide control rod out from steel plate. (See Figure 6-92)
4. Rotate steel plate, crusher assembly and auger out of bucket.
5. Extract the four screws securing crusher housing to the steel mounting plate. (See Figure 6-93)
6. Slide crusher housing off of the steel plate.
7. The auger nut is a left hand thread round plastic nut. Remove to gain access to the crusher blades. Each blade is separated by a spacer. A crusher hammer is mounted between crusher blades number two and four. A pin is pressed into the crusher hammer securing it to the crusher blades. Remove crusher hammer by removing the crusher blades from the shaft, then using a 3/16" diameter or smaller punch, and press out pin. (See Figure 6-94)
8. With crusher blades and spacers removed, remove the drum and drive bar from the auger.
9. Replace assembly in reverse order.

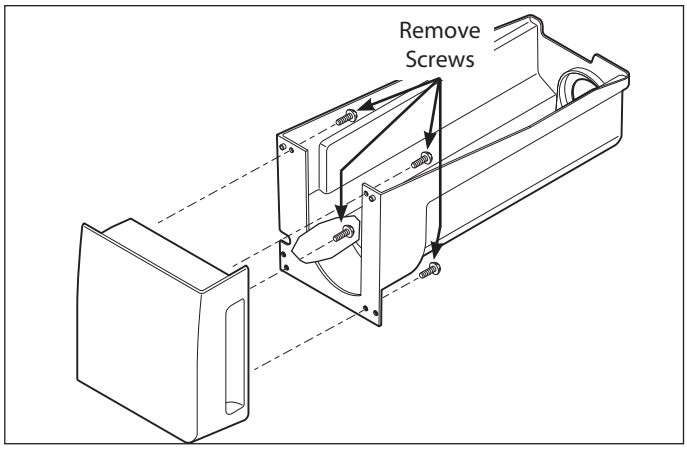


Figure 6-91.

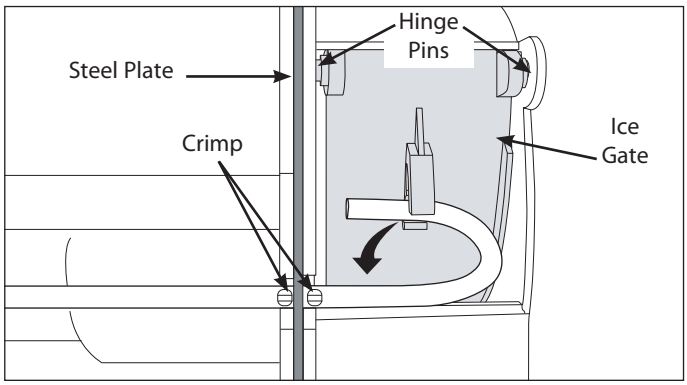


Figure 6-92.

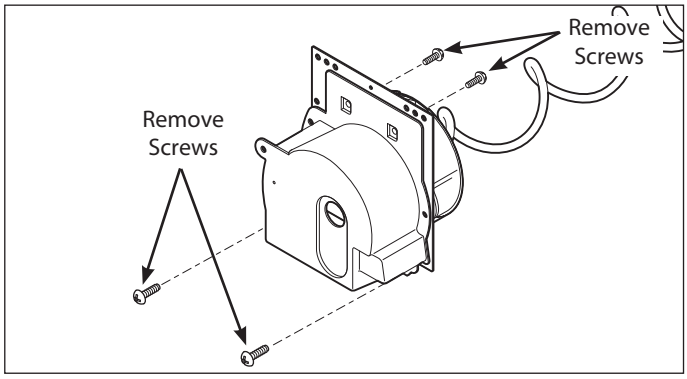


Figure 6-93.

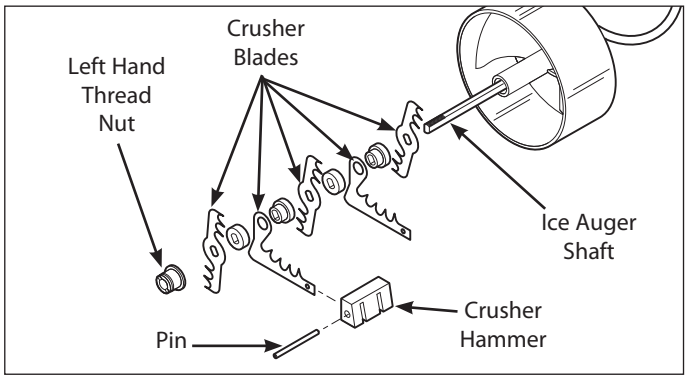


Figure 6-94.

Freezer Compartment Ice Maker

Ice Maker and Mounting Plate

To remove the ice maker:

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door.
3. Remove freezer section baskets.
4. Remove ice maker air duct.
5. Disconnect ice maker from wire harness connection.
6. Extract the one screw at the front of mounting plate. (See Figure 6-95)
7. The ice maker will then slide forward to allow the shoulder screws in the liner to pass through the keyhole slots in the mounting plate. (See Figure 6-96)
8. The mounting plate is removed from the ice maker by extracting the three screws from the bottom of the assembly. (See Figure 6-96)

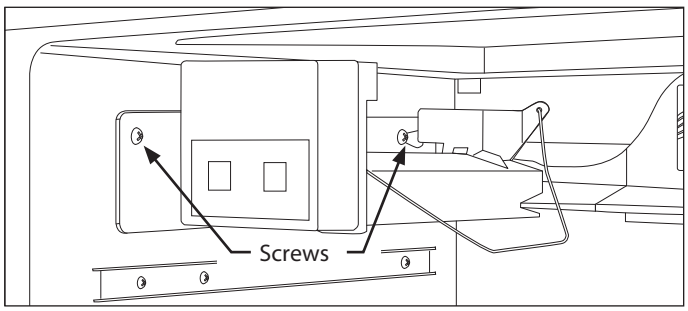


Figure 6-95.

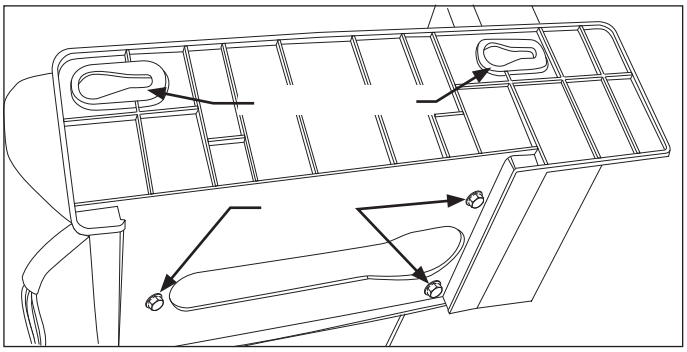


Figure 6-96.

Front Cover Removal

If the unit is operating and cold, allow the ice maker to warm up to room temperature before removing the front cover. This prevents moisture from condensing on the metal components.

To remove the front cover:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment.
3. Ensure that ice maker is at room temperature before removing front cover.
4. Place straight blade of screwdriver in slot at bottom of mold support and pry cover loose. (See Figure 6-97)

NOTE: Ensure that retaining tabs inside the cover are located on the top and bottom when installing the cover.

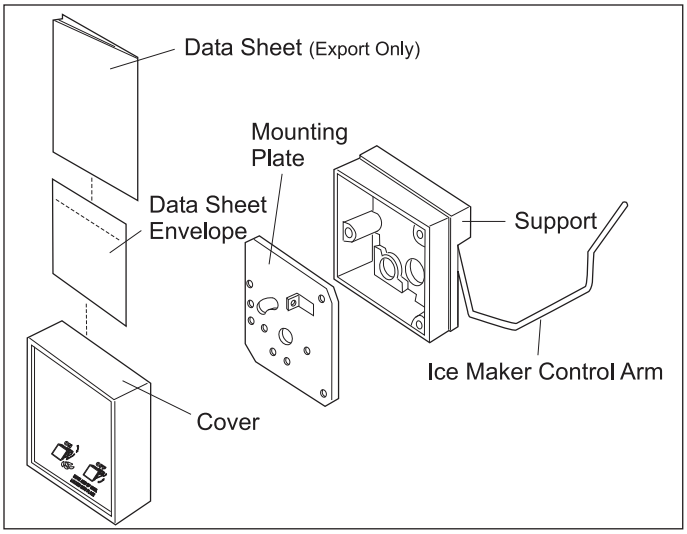


Figure 6-97.

Fill Trough and Bearing Removal

To remove the fill trough and bearing:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment.
3. Push fill trough retaining tab back away from mold. (See Figure 6-98)
4. Rotate fill trough counterclockwise until it is clear.
5. Pull from back to detach from mold and ejector blades.

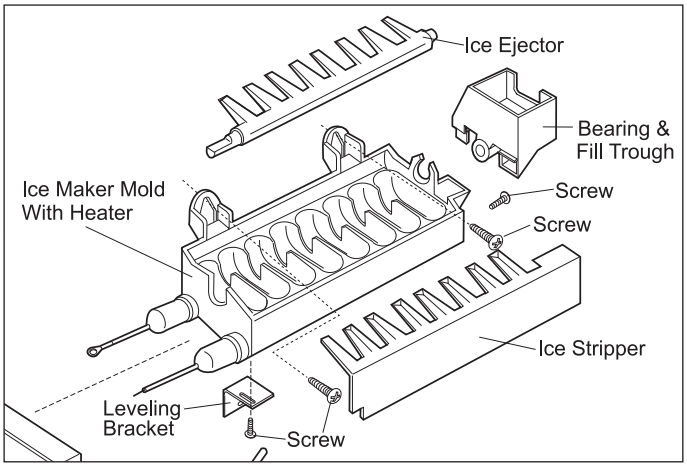


Figure 6-98.

Ice Stripper Removal

To remove the ice stripper:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Remove retaining screw at back of mold.
4. Pull back on ice stripper to disengage it from front of mold support housing.

Ejector Blades Removal

To remove the ejector blades:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment.
3. Remove front cover.
4. Carefully remove mounting plate, disengaging end of ice maker control arm and ejector blades from motor coupling, noting relative position of ice maker control arm spring.
5. Remove fill trough and bearing.
6. Turn blades to 12 o'clock position.
7. Slide ejector blades back and up to remove.
8. Replace in reverse order.
9. Lubricate bearing ends of ejector with silicone grease.

Motor and Switch Mounting Plate Removal

1. Disconnect refrigerator from electrical supply.
2. Remove front cover.
3. Remove three screws that attach mounting plate to support housing.
4. Carefully remove mounting plate, disengaging end of sweep arm and noting relative position of sweep arm spring.
5. Transfer motor, switches, cam, gear, and water fill adjusting spring and arm to replacement mounting plate.
6. Attach new mounting plate to support housing with three screws.

NOTE: Ensure that the wiring harness is properly positioned and the sweep arm is in place.

7. Check water fill cycle and adjust as required.
8. Replace front cover.

Motor Removal

To remove the motor:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Disconnect two motor leads.
4. Remove two motor mounting screws.
5. Replace motor in reverse order.

Water Fill Switch Removal

To remove the water fill switch:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Disconnect two water fill switch wire leads.
4. Remove two switch mounting screws.
5. Remove switch.
6. Replace switch in reverse order, ensuring that switch insulator is in place.
7. Check water fill cycle and adjust as required.

Hold Switch Removal

To remove the hold switch:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Disconnect six hold switch wire leads.
4. Remove two hold switch mounting screws.
5. Remove hold switch.
6. Replace in reverse order.

Ice Maker Control Arm Shut-OFF Switch Removal

To remove the ice maker control arm shut-off switch:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Disconnect three ice maker control arm shut-off switch wire leads.
4. Raise ice maker control arm lever.
5. Remove two ice maker control arm shut-off switch mounting screws.
6. Remove switch.
7. Replace switch in reverse order.

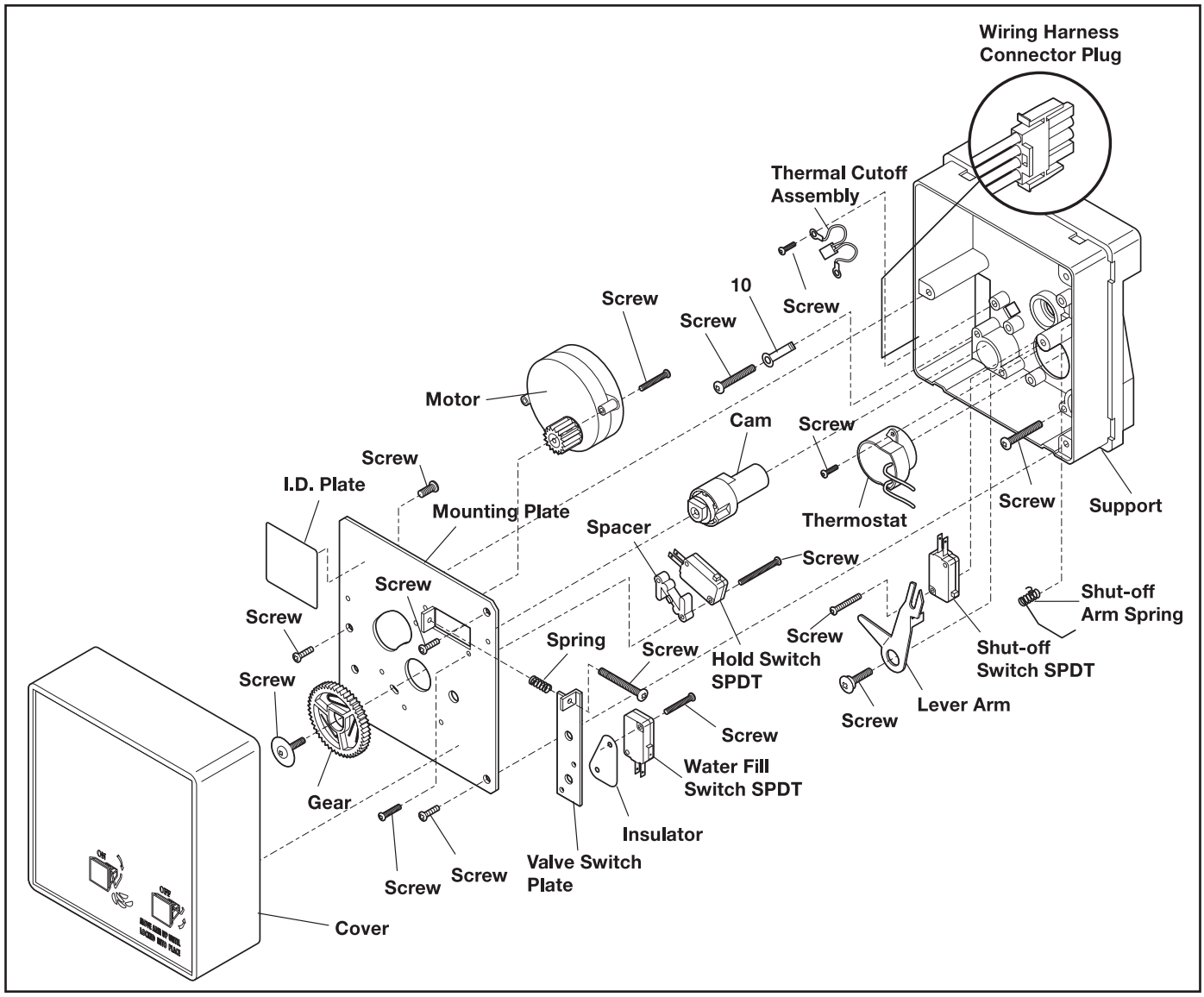


Figure 6-99.

Ice Maker Thermostat Removal

To remove the ice maker thermostat:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Loosen two thermostat retaining clip mounting screws.
4. Disconnect two thermostat wire leads and remove thermostat.
5. Apply thermal mastic sealer to sensing surface of replacement thermostat to ensure a positive bond to mold.
6. Replace thermostat in reverse order.

Thermal Cut-Out (TCO) Removal

To remove the thermal cut-out (TCO):

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment. Remove mounting bracket.
3. Remove front cover.
4. Pull cable assembly free from support housing. It will slide out easily.
5. Loosen screw securing clamp to TCO. TCO should come free after tension from clamp is released.
6. Disconnect TCO from two wire nuts. One end is connect to the cable assembly and the other end is connected to the motor and mold heater.
7. Replace with new TCO.
8. Reassemble in reverse order.

Mold Heater Removal

To remove the mold heater:

1. Disconnect refrigerator from electrical supply.
2. Remove the ice maker from freezer compartment.
3. Remove front cover.
4. Remove ice stripper.
5. Remove three screws that attach mounting plate to support housing.
6. Remove three screws that attach mold to support housing.

NOTE: One of the three screws is attached to the two green/yellow ground wires and another one is holding the clamp in place. The third screw is located in the lower right corner of the support housing.

5. Unscrew wire nut holding three black leads together and separate them.

NOTE: One black lead is connected to the mold heater. Another is connected to the thermostat and the third lead goes to the hold switch.

6. Disconnect remaining mold heater lead connected to brown motor lead and black thermal cut-out lead.
7. Separate mold from support housing.

NOTE: Be careful not to destroy the thermostat gasket located between the mold and support housing.

8. Remove hex head screw holding ice maker leveling bracket to mold.

NOTE: The mold is crimped in six places, holding the mold heater firmly in the mold groove. It may be necessary to use a hammer and screwdriver to remove the heater from the mold groove.

9. Use a flat-bladed screwdriver to pry inoperative heater from mold groove.
10. Clean remaining thermal mastic sealer from mold groove.
11. Apply layer of thermal mastic sealer to mold groove.
12. Install replacement mold heater.
13. Replace parts in reverse order. Ensure that thermostat gasket is in place. Bond the thermostat to mold with thermal mastic sealer.

NOTE: For best operation, the freezer temperature should be between -2°F to +4°F.

Compressor Area Components

Water Valve Removal

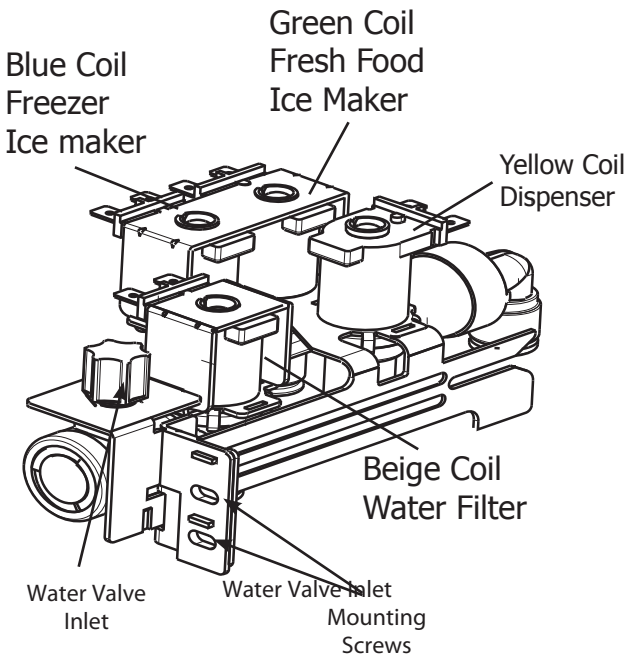
The water valve is secured to the rear of the unit with two bolts to the lower right cabinet frame.

To remove the water valve:

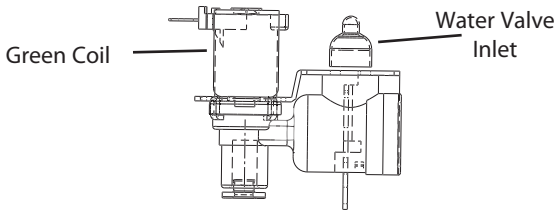
1. Turn off water supply to water valve.
2. Remove the compression nut and ferrule from the water valve inlet. (See Figure 6-100)
3. Remove water line exiting the water valve.
4. Disconnect electrical leads from water valve.

NOTE: Non-dispenser models will have a single water valve mounted in the same manner as the four coil valve. The water valve will have only one electrical connection to the unit wire harness.

5. Extract the two bolts from the cabinet frame securing the water valve in position.



Four Coil Valve Used On Dispenser Models



Single Coil Valve Used on Non-Dispenser Models

Figure 6-100.

Compressor Area Mounting Tray

To access the compressor and inverter, condenser and fan assembly, or to service the sealed system, it may require that the compressor area mounting tray be removed from the bottom of the unit. The mounting tray is secured with four #2 square bit screws to the bottom of the unit and two screws to the lower rear corners of the cabinet.

To remove the compressor area mounting tray:

1. Unplug unit from wall outlet.
2. Pull unit from its installation and block unit up high enough to access the four bottom screws. Have on hand blocks to support the mounting tray as the screws are removed. Several 6 inch pieces of 2" x 4" lumber work well. See Caution Note.
3. Extract the four bottom screws securing the mounting tray to the rear of the unit. (See Figure 6-101)
4. Extract the two screws securing the mounting tray to the rear of the unit.
5. Drop mounting tray down to provide better access to the grounding screws and sealed system components.

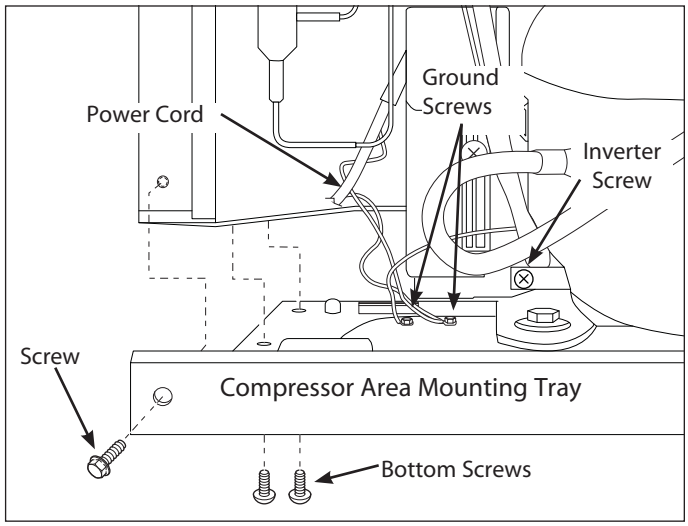


Figure 6-101.

⚠ CAUTION

When accessing the compressor area mounting tray, it is recommended to have two people to block the unit high enough to access the bottom screws.

The unit is heavy, make sure unit is secure when in the blocked position. The unit should not rock or tip when on blocks.

If the unit should tip or fall from the blocks while extracting the screws, personal injury could occur and/or damage the unit or the customers personal property.

If unsure about the safety of this operation, do not continue. Contact your Regional Service Quality Manager for assistance.

Condenser Fan Assembly Removal

The condenser fan assembly is secured to the rear of the compressor area with two bolts to the compressor mounting plate. The compressor area mounting tray does not need to be dropped to remove the fan assembly.

To remove the condenser fan assembly:

1. Pull unit from its installation position and unplug from wall outlet.
2. Extract the screws securing the compressor shield to the unit frame and remove from unit.
3. Disconnect wire leads to condenser fan motor at Molex™ connector.
4. Extract the three bolts securing the fan assembly to the condenser mounting brackets. (See Figure 6-102)
5. Pull fan motor assembly from unit, then pull fan blade from motor shaft.
6. Remove the condenser fan shroud by extracting the two 3/8" bolts securing the shroud to the mounting tray.

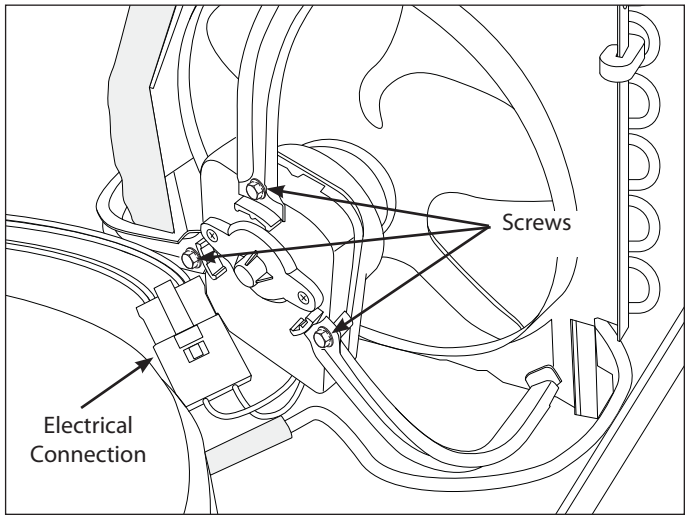


Figure 6-102.

IMPORTANT

The purpose of this section is to give the service technician an understanding of the changes in refrigerants and sealed system service. Persons attempting to use this service manual to make repairs to sealed system refrigeration systems should have electrical training as well as training in sealed system repairs. The person making the repairs must know and understand all laws (Local and International) governing handling of all refrigerants. The technician must be trained in the use of recovery and recycling equipment. Electrolux Home Products, Inc. cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

IMPORTANT

Effective July 1, 1992, the United States clean air act governs the disposal of refrigerants such as R-134a. Therefore, when discharging or purging the sealed system use an EPA approved refrigerant recovery system as outlined in the final rule on the protection of stratospheric ozone and refrigerant recycling, which was published in the Federal Register May 14, 1993.

⚠ WARNING

Instructions given here are furnished as a guide. Persons attempting to use these instructions to make repairs to the sealed refrigeration system should have a working knowledge of refrigeration and previous training on sealed system repair, and an EPA certification for servicing refrigeration systems.

IMPORTANT

Before entering the sealed system of a French Door Bottom Freezer Refrigerator, the service technician must enter the Ice Maker Service Diagnostic Test 49C and toggle the EEV (Electronic Expansion Valve) to ON prior to unplugging the unit. Failure to turn on the EEV will result in improper system evacuation of refrigerant, causing contaminants and old refrigerant to remain in the sealed system.

IMPORTANT

The French Door Bottom Freezer Refrigerator has a unique filter-drier with two oulets. No substitutions for the proper replacement part may be made.

NOTE

Electrolux does not permit the use of recovered refrigerant in the servicing of our products for in-warranty and out-of-warranty repairs or for products covered by service contracts. Therefore, only new refrigerant or refrigerant that has been reclaimed back to new specifications by a refrigerant manufacturer is to be used.

Sealed System

Safe Servicing Practices For All Appliances

Avoid personal injury and/or property damage by observing important Safe Servicing Practices.
Following are some limited examples of safe practices:

1. DO NOT attempt a product repair if you have any doubts as to your ability to complete the repair in a safe and satisfactory manner.
2. Always use the correct Replacement Parts as indicated in the parts documentation. Substitutions may defeat compliance with Safety Standards Set For Home Appliances. Do not exceed maximum recommended wattage on light bulb replacements. Doing so could blow fuses and/or damage transformers.
3. Before servicing or moving an appliance:
   - Remove power cord from the electrical outlet, trip circuit breaker to the OFF position, or remove fuse.
   - Turn off water supply if applicable.
   - Turn off gas supply if applicable.
4. Never interfere with the proper operation of any safety device.
5. Use ONLY REPLACEMENT PARTS CATALOGED FOR THIS APPLIANCE. Substitutions may defeat compliance with Safety Standards Set For Home Appliances.
6. GROUNDING: The standard color coding for safety ground wires is GREEN, or GREEN with YELLOW STRIPES. Ground leads are not to be used as current carrying conductors. It is EXTREMELY important that the service technician reestablish all safety grounds prior to completion of service. Failure to do so will create a hazard.
7. Prior to returning the product to service, ensure that:
   - All electrical connections are correct and secure.
   - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts.
   - All non-insulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels.
   - All safety grounds (both internal and external) are correctly and securely connected.
   - All panels are properly and securely reassembled.

ATTENTION

This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Electrolux Home Products, Inc. cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

Introduction

This Service manual is intended as a guide for introducing the service technician to R-134a refrigerant, and the equipment needed to service R-134a systems. The replacement of R-12 refrigerant involves changes in materials, choice of lubricant, and processing procedures, with an overall requirement of continuous high quality system performance and reliability. The following information provides a good practical foundation for service needed to maintain long product life.

Compressor

In a refrigerating system designed for R-134a refrigerant, only R-134a refrigerant is to be used. The current design of hermetic compressors lead to the situation that some oil (a small percentage) will follow with the refrigerant through the whole system. R-134a compressors require a new lubricant. At this time, only synthetic ester oil is to be used. The R-12 compressors used mineral oil. Mineral oil is not compatible with R-134a and is not to be used in R-134a systems. Ester oil must not be mixed nor replaced with any other lubricant. Compressors used with R-134a systems charged with oil, cannot have any tube fittings exposed to ambient air for more than 15 minutes. Ester oil is more hygroscopic (it will absorb water at a much faster rate) than the mineral oil used with R-12 systems.

⚠ CAUTION

Ester oil can be an irritant to eyes and skin. Refer to manufacture safety data sheets from lubricant supplier for handling specifications. As with all current refrigerants, you must have an adequately ventilated work area at all times for sealed system service and repairs.

Refrigeration Systems

The sealed refrigeration system will consist of the same basic components being utilized in the R-12 systems.

There is a 10% to 15% discharge pressure increase using R-134a, with a 5% to 10% decrease in suction pressure when compared to the same product with an R-12 system operating at 90°F (32°C) ambient temperature conditions. Lower suction pressures result from the lower density of R-134a refrigerant which effects refrigerant flow rate. R-134a systems commonly operate in a 1”-2” vacuum on the suction side.

Products using R-134a refrigerant will have a different heat exchanger than a R-12 product. The difference is in the capillary tub, it will be longer to maintain a similar flow rate. On some models, a larger condenser will be used to reduce the discharge pressures and lower start-up sound transmission. A different filter-drier will be used on refrigerating systems with R-134a. The molecules of R-134a are smaller than those of R-12, therefore, a dryer with smaller pores is necessary. Otherwise, R-134a could be trapped inside the filter-drier along with the water. On some products you will see some changes to the evaporator and suction line. Ester oil and R-134a mix satisfactorily within the compressor. Lower gas speed increases the risk of oil accumulation in the evaporator. Some changes will be required to ensure good oil returnability.

Sealed System Repair

To prevent any form of cross contamination of R-134a, and R-12 refrigerant, or a cross contamination of ester oil and mineral oil, you must have dedicated equipment. The equipment consists of one set of gauges, manifold, hoses, vacuum pump, charging cylinder, and reprocessing or transfer pump. This means you must have one complete set for CFC, (R-11, R-12) and HCFC, (R-22) systems, and one complete set for HFC, (R-134a) systems. You can not share the use of any of the same equipment on both systems.

Since the R-134a molecule is smaller than the R-12 molecule, R-134a could pass more minor leaks than R-12 and the flow through a certain leak would be larger for R-134a than for R-12. As a consequence, it is critical to maintain very good brazing processes and leak tests. You must make sure you do not mix refrigeration oil or refrigerant in your bulk storage area. Because moisture infiltration is much higher in ester oil, you must keep it stored in sealed containers and only allow exposure to room air for a very short period of time when changing or adding oil to a system. You must not mix refrigerant in your storage containers for used refrigerant removed from products for service. You must have dedicated cylinders for each refrigerant R-12, R-22, and R-134a.

Definitions

Recovery:

To remove refrigerant in any condition from a system and store it in an external container without necessarily testing or processing it in any way.

Recycling:

To clean refrigerant for reuse by oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity and particulate matter. This term usually applies to procedures implemented at the field job site or at a local service shop.

Reclaim:

To reprocess refrigerant to new product specifications by means which may include distillation, will require chemical analysis of the refrigerant to determine that appropriate product specifications are met. This term usually implies the use of processes or procedures available only at a reprocessing or manufacturing facility.

Equipment Needed for Evacuation & Recharging

1. 1 - Heated Dial-A-Charge charging cylinders.
2. 1 - Recovery/Recycling equipment.
3. 1- Tank for each type of refrigerant you use in service. (Do not mix refrigerants in the same tank)
4. 1 - External vacuum pumps.
5. Process tube adapter kit (Robinair No.12458)
6. Tubing cutter.
7. Pinch-off tool capable of making leak proof seal.
8. Leak detector.
9. Complete brazing torch set.
10. Small 3-corner file.
11. Grit cloth or Scotch-Brite.
12. 45% silver solder and flux.
13. 1 -Gauge and Manifold set. (See Figure 7-1)
14. 2 - Tube piercing valves.
15. Oil test kits.
16. Heat Gun.
17. Swag Tool. (See Figure 7-2)

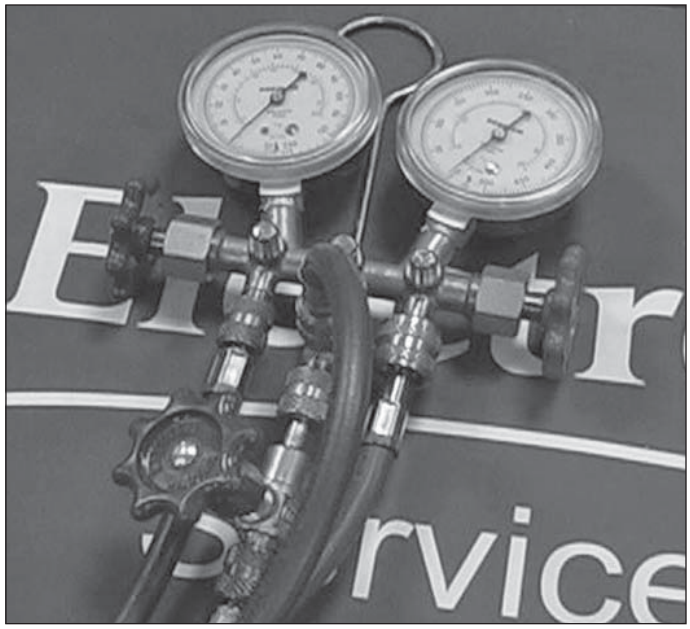


Figure 7-1.

Figure 7-2.

Charging Sealed Systems

Overcharging a refrigeration system with refrigerant can be dangerous. If the overcharge is sufficient to immerse the major parts of the motor and compressor in liquid refrigerant, a situation has been created which, when followed by a sequence of circumstances, can lead to the compressor shell seam separating.

A hydraulic block occurs preventing the compressor from starting. This condition is known as locked rotor. Electric current continues to flow through the compressor motor windings which become, in effect, electric resistance heaters. The heat produced begins to vaporize the excess refrigerant liquid, causing a rapid increase in system pressure. If the compressor protective devices fail, pressure within the system may rise to extremes far in excess of the design limits. Under these conditions, the weld seam around the compressor shell can separate with explosive force, spewing oil and refrigerant vapor, which could ignite.

To eliminate this exceedingly rare but potential hazard, never add refrigerant to a sealed system. If refrigerant is required, evacuate the existing charge and recharge with the correct measured amount of the refrigerant specified for the system.

NOTE: Attach an approved self tapping line tap valve to the process tube. Connect refrigerant recovery system to tap valve. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank.

Always make sure your equipment is in good condition and all manufacturer's instructions are followed to prevent the accidental rupture of a hose, connection fitting, or a tank, this could cause a serious injury. Run equipment until system has reached 13 inches of vacuum. Shut system down and allow to set for two minutes, if pressure remains below (0) pounds per square inch, disconnect equipment and proceed. If pressure does not stay below (0) pounds per square inch, repeat above procedure until all refrigerant is removed and system remains in a vacuum.

⚠ WARNING

WEAR APPROVED SAFETY GLASSES WHEN WORKING WITH OR ON ANY PRESSURIZED SYSTEM OR EQUIPMENT. HAVE AN APPROVED DRY TYPE FIRE EXTINGUISHER HANDY WHEN USING ANY TYPE OF GAS OPERATED TORCH.

Soldering

1. All joints to be soldered must have a proper fit. Clearance between tubes to be soldered should be from .001" to .006". It is not practical to actually measure this; however, you do not want a dry fit or loose fit. Tubing joints should overlap about the distance of their diameter except for restrictor tubes, which should be inserted 1.25".
2. Clean all joint areas with fine steel wool or preferably an abrasive cloth, such as grit cloth No. 23 or Scotch-Brite.
3. Apply a thin film of liquid flux recommended for silver soldering to surfaces to be joined, and to surfaces immediately adjacent to joint.

⚠ CAUTION

During application of heat, use wet cloths to prevent heat from conducting to areas other than the soldered joint. Use a sheet of metal or torch guard pad as a heat deflector to keep flame away from inflammable materials and painted surfaces.

4. Align tubing so no stress is on joint. Do not move tubing while solder is solidifying or leaks will result.
5. Use a torch of adequate capacity so joint can be quickly heated with a minimum of heat travel to other points. Use a good grade of silver solder.
6. Solder connections. If tubing is properly cleaned and fluxed, solder will flow readily. Use only enough solder to make a good bond.
7. Allow joint to cool, then wash exterior with water to remove flux.

Sealed System

Basic Components

The basic components of a refrigerator are a compressor, condenser, evaporator, heat exchanger (capillary tube and suction line), drier and perimeter hot tube.

Perimeter Hot Tube

To reduce the possibility of condensation forming on the exterior of the cabinet in high humidity areas, a perimeter hot tube (refrigerant tube) has been installed in the unit. The perimeter tube extends up the left side, across the top of the freezer and down the right side into the filter drier. When the compressor operates, warm refrigerant flows through the primary condenser, then into the primary hot tube, warming the cabinet front exterior.

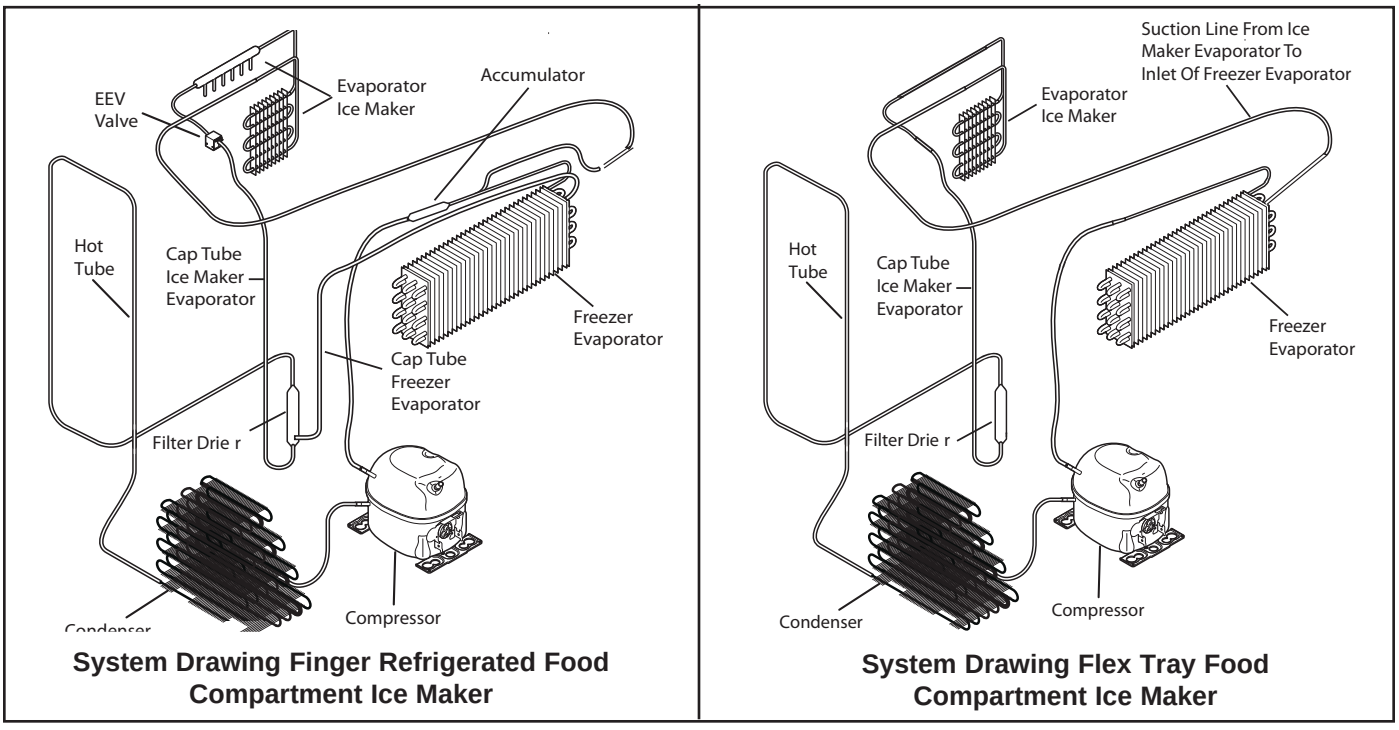
The perimeter hot tube is not replaceable. In the unlikely event of a leak in the hot tube, a kit is available to bypass the hot tube in the sealed system. An electrical heater wire must be installed within the tubing. The electrical connection for the electrical heater wire for a solid state PTC relay compressor is be connected into the condenser fan circuit. For a variable speed compressor, the electrical connection must be made to the 115V inverter board. Refer to the appropriate parts list of the model being serviced for the correct kit part number.

Refrigerant Cycle

The refrigerant cycle is a continuous cycle that occurs whenever the compressor is in operation. Liquid refrigerant is evaporated in the evaporator by the heat that enters the cabinet through the insulated walls, and by the heat from product load and door openings. The refrigerant vapor is then drawn from the evaporator, through the suction line, to the compressor.

Compression raises the pressure and temperature of the vapor in the compressor and the vapor is then forced through the discharge valve into the discharge line and into the condenser. Air passing over the condenser surface removes heat from the high pressure vapor which then condenses to a liquid. The liquid refrigerant then flows from the condenser to the evaporator through the small diameter liquid line (capillary tube).

Before it enters the evaporator, the liquid refrigerant is sub-cooled in the heat exchanger by the low temperature suction vapor in the suction line. When refrigerant is added, the frost pattern will improve, the suction and discharge pressures will rise, the condenser will become hot and the wattage will increase.



System Drawing Finger Refrigerated Food Compartment Ice Maker

System Drawing Flex Tray Food Compartment Ice Maker

Figure 7-3 . Automatic Defrost Models

Recovering Refrigerant

Recovering refrigerant is the first step in preventive maintenance or repair of equipment. Simply put, recovery means transferring the system's refrigerant into a refillable refrigerant cylinder.

The first step is to have on hand, clean, safe, refillable cylinders evacuated to 25 microns, and labeled for each different type of refrigerant you will be working with. Example; for repairing Electrolux Home Products Inc. built products you will need one cylinder for R-12, one for R-22, one for R-134a, and one for R-500 if you work on dehumidifiers.

Second step is you must have dedicated equipment for HFC (R-134a) refrigerant. Because of the difference in the oil and the refrigerant, you can not use the same equipment on HFC based refrigerants as you use on CFC based refrigerants.

⚠ CAUTION

Always make sure equipment is in good condition and all manufacture instructions are followed to prevent accidental rupture of a hose, connection fitting, or a tank, that could cause a serious injury. Always sit tank on a scale when transferring refrigerant into the tank. Always check the weight to see when tank is full, do not over fill the tank.

To recover the refrigerant:

➔ IMPORTANT

Before entering the sealed system of a French Door Bottom Freezer Refrigerator, the service technician must enter the Ice Maker Service Diagnostic Test 49C and toggle the EEV (Electronic Expansion Valve) to ON prior to unplugging the unit. Failure to turn on the EEV will result in improper system evacuation of refrigerant, causing contaminants and old refrigerant to remain in the sealed system.

1. Disconnect unit from source of power.
2. Attach an approved self tapping line tap valve to the process tube. Connect refrigerant recovery system to tap valve. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank. (See Figure 7-4)
3. Allow the recovery pump to run until the system has reached 13 inches of vacuum.
4. Shut system down and allow to set for two minutes. If pressure is below (0) pounds per square inch, disconnect equipment and proceed with repair.
5. If pressure does not stay bellow (0) pounds per square inch, repeat steps 3 and 4 until ail refrigerant is removed and system remains in a vacuum.

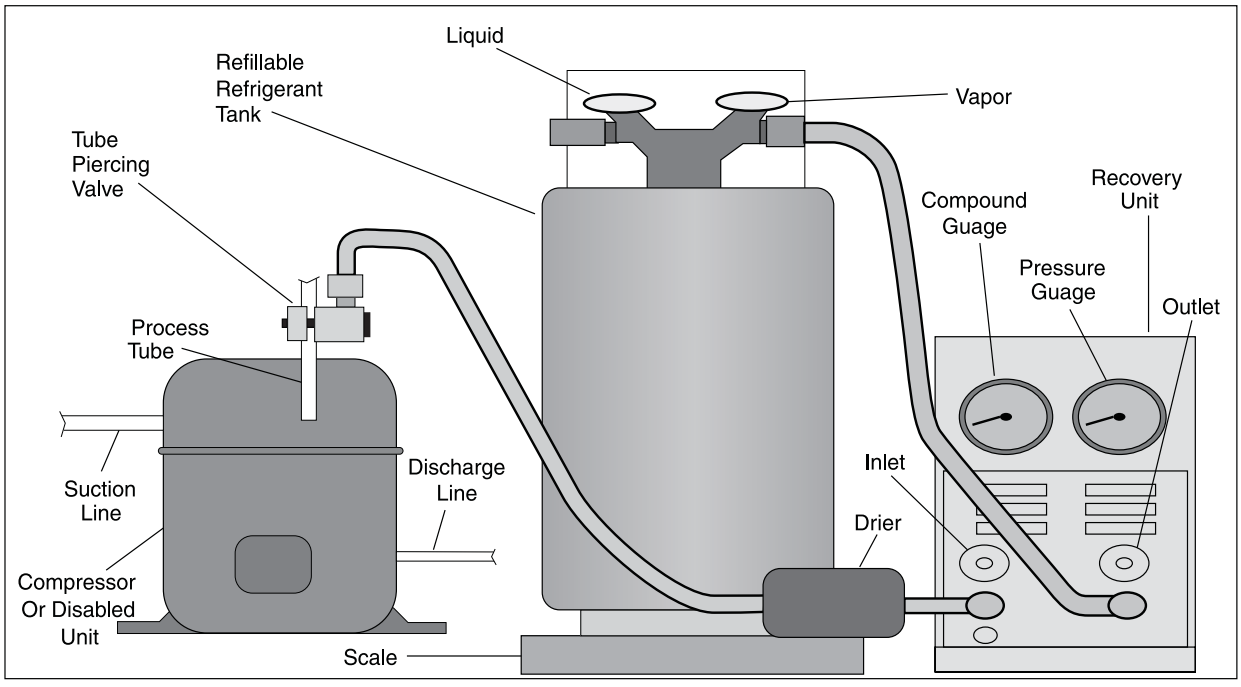


Figure 7-4. Installation of Recovery Equipment

Low/High Side Leak or Undercharge

A loss of refrigerant can result in any of the following:

1. Excessive or continuous compressor operation.
2. Above normal freezer compartment temperature.
3. A partially frosted evaporator (depending on amount of refrigerant loss).
4. Below normal freezer compartment temperature.
5. Low suction pressure (vacuum).
6. Low wattage.

The condenser will be "warm to cool", depending on the amount of refrigerant lost.

In the case of a low side refrigerant leak resulting in complete loss of refrigerant, the compressor will run but will not refrigerate. Suction pressure will drop below atmospheric pressure and air and moisture will be drawn into the system, saturating the filter drier. A system with R-134a refrigerant and ester oil will become saturated with moisture much faster than a system with R-12 and mineral oil. Therefore, you must obtain a sample of the oil and check with an oil test kit to determine the amount of contamination. You will find that the oil in an R-134a system will have to be replaced after most low side leaks.

If there is reason to believe the system has operated for a considerable length of time with no refrigerant and the leak occurred in the low side of the system, excessive amounts of moisture may have entered the system. In such cases, the two stage service Dryer Filter part number 5303918288 and vacuum procedure listed under Refrigerant Leaks, need to be followed to prevent repetitive service. Use caution to connect cap tubes properly as described in the filter-drier replacement section on page 7-16, otherwise the icemaker will not work correctly.

If a slight undercharge of refrigerant is indicated and no leak can be found after a thorough leak test, the charge can be corrected without changing the compressor.

If a high side leak is located and some refrigerant remains in the system it is not necessary to change the compressor.

Testing for Refrigerant Leaks

NOTE

The line piercing valve (clamp-on type) should be used for test purposes only. It must be removed from system after it has served its purpose.

If the system is diagnosed as short of refrigerant and the system has not been recently opened, there is probably a leak in the system. Adding refrigerant without first locating and repairing the leak or replacing the component will not permanently correct the difficulty.

The leak must be found!

Sufficient refrigerant may have escaped to make it impossible to leak test effectively. In such cases, add a ¼" line piercing valve to the compressor process tube. Add sufficient refrigerant vapor to increase the pressure to 75 lbs. per sq. in. Through this procedure, leaks are more easily detected before discharging the system into reprocess/recapture equipment. Check the low side for leaks. Run the compressor 2 or 3 minutes and check the high side for leaks. Recover refrigerant using an EPA approved recovery system.

Checking For Internal Leaks

Before checking for internal leaks, check all accessible system components and joints for leaks.

If an internal leak is suspected, it must be confirmed. Use the following procedure:

1. Discharge the system by using refrigerant recovery equipment.
2. Disconnect the condenser and the drier from the hot tube on refrigerators. On food freezers, separate the high and low pressure sides of the system. Pinch off and solder closed one end of the part of the system to be tested.
3. Solder a 1/4" charging hose fitting to the open end of the part of the system to be tested.
4. Connect a pressure gauge and access valve to the open end of the part of the system to be tested. Pressurize to 250 lbs. using dry nitrogen or carbon dioxide.
5. Leave the pressure on the hot tube for 24 hours. Any drop in pressure is an indication of a leak.

⚠ WARNING

NEVER PRESSURIZE WITH OXYGEN. NEVER OPEN A HIGH PRESSURE TANK UNLESS IT IS EQUIPPED WITH A PRESSURE REGULATOR. NEVER PUT HIGH PRESSURE ON THE DOME OF THE COMPRESSOR - IT MIGHT EXPLODE. MAKE SURE GAUGE FITTINGS ARE IN GOOD CONDITION AND DO NOT LEAK.

Compressor Replacement

Before installing new compressor, check for possible system contamination by obtaining an oil sample from the old compressor. On R-134a systems use an oil test kit to check for contamination. If oil has a burned odor or shows contamination (dark color), the system should be flushed to remove as much of the contamination as possible before installing a new compressor and filter-drier. If this contamination is allowed to remain in the system it will mix with the new oil causing it to become contaminated and damage the new compressor, or cause a restriction in the filter-drier or cap tube.

Flushing The System With Nitrogen

It is recommended that system be flushed with dry Nitrogen. However, if refrigerant is used to flush the system you must look at the serial plate to see what type of refrigerant is used in the system. This is the only refrigerant that can be used to flush the system and it must be recovered.

If dry nitrogen or carbon dioxide is not available. Follow instructions 1 through 3, then use 4 and 5 listed below as an alternative method.

4. Connect gauges to charging hose fittings. Pull a vacuum on each side of the system.
5. Leave the vacuum on each side of the system for 24 hours. Any loss of vacuum is an indication of a leak.

⚠ CAUTION

Use extreme care when using Dry Nitrogen to flush systems. Pressure in nitrogen cylinder could be as high as 2000 psi. Nitrogen cylinder must be equipped with approved pressure regulator and pressure relief valve. Ensure that your hoses have adequate ratings for pressure involved and that all of your equipment is in good condition.

When flushing with nitrogen there MUST Be a pressure regulator on the tank with the maximum pressure on the lowside of the sealed system (evaporator) at 150 PSI and at the High side, 300 PSI.

The end of the flushing hose on this tank regulator must be equipped with a hand shut-off valve (Robinair No. 40380). Close hand shut-off valve and adjust nitrogen regulator to correct pressure before proceeding with flushing procedure.

1. Remove compressor and filter-drier. Connect process coupling to outlet tube of condenser.
2. Fasten cloth over other end of coil to prevent old oil from spraying over room.
3. Connect hand shut-off valve on flushing hose to process coupling.
4. Slowly open hand shut-off valve and allow nitrogen to flow through condenser until discharge is clear.

⚠ CAUTION

DO NOT exceed 300 Psi.

5. Disconnect cap tube from evaporator. Flush evaporator in same manner as condenser.

⚠ CAUTION

DO NOT exceed 150 Psi.

6. Flush cap tube. This is only possible if you have a proper service valve adapter.

⚠ CAUTION

DO NOT exceed 300 Psi.

7. Reassemble system.

Installing a New Compressor

NOTE

Entirely new compressors have been developed for use with R-134a and Ester oil refrigeration systems. Both compressor and electric motor have been modified. Old compressors intended for R-12 refrigerant must not be used for new systems charged with R-134a.

Replacement of compressor and installation of filter-drier must be done in a continuous sequence so the system is exposed to atmosphere no longer than necessary.

All replacement compressors are shipped with rubber plugs in the suction, discharge and process tubes, and contain the correct oil charge and a holding charge of inert gas. Compressors have a low-side process tube attached to the compressor shell. A high-side process tube is attached to the filter-drier.

Replacement compressors for refrigerators may have an oil cooler even if the original compressor did not. If the product is not equipped for an oil cooler, leave the plastic caps in place and install the compressor, connecting only to the suction and discharge lines of the new compressor.

Before installing the replacement compressor, remove the discharge plug and check for the pop sound of the inert gas leaving the compressor.

⚠ CAUTION

DO NOT use compressor if you do not hear this sound.

If the compressor checks OK, reinstall the plug. Do not remove any of the plugs again until the compressor is in position and you are ready to braze the lines.

A new compressor which is cold (e.g. after having been kept in a cold service van) should be left to warm to the surrounding temperature before the plugs on the compressor connections are removed. This will help prevent condensation from forming in the oil and the compressor. Also, avoid opening the system when any of the components or lines are cold.

A process tube is connected onto the high-side process tube of the filter drier. This tube is located at the top of the filter-drier.

⚠ WARNING

DO NOT OPERATE RECIPROCATING COMPRESSORS WHEN CHARGING LIQUID REFRIGERANT INTO SYSTEM THROUGH ITS PROCESS TUBE.

To replace the compressor:

1. Pull unit from its installation position and unplug from wall outlet.
2. Extract the screws securing the compressor shield to the unit frame and remove from unit.
3. Attach an approved self tapping line tap valve to the process tube. Connect refrigerant recovery system to tap valve. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank.
4. Using a 7/16" socket, remove the (3) bolts, one in each corner, holding the compressor to the base. (See Figure 7-5)
5. Disconnect electrical leads from inverter to unit wire harness.

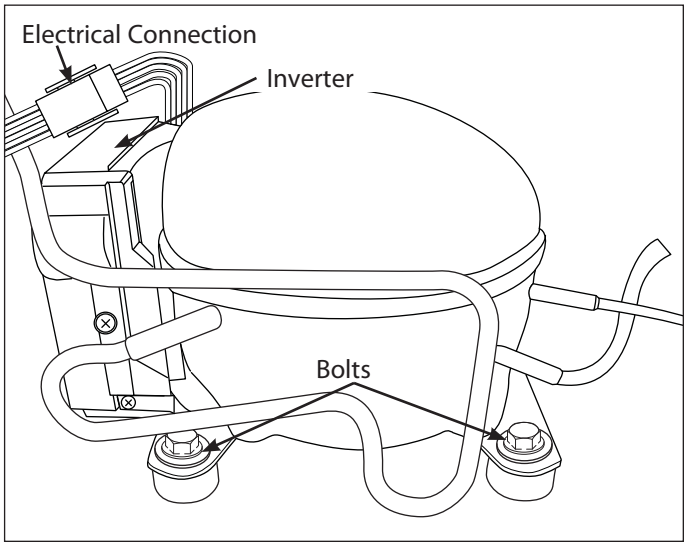


Figure 7-5.

6. After refrigerant is completely recovered, cut suction and discharge lines as close to compressor as possible. Leave only enough tubing to pinch off and seal defective compressor. Plug or tape any open system tubing to avoid entrance of moisture and air into system. Remove inoperable compressor and transfer mounting parts to new compressor.

7. Release holding charge (release slowly to avoid oil discharge) on new compressor to ensure there is no leak in seam or tubing. Reinstall rubber plug.
8. Install new compressor in exact same manner as original compressor.
9. Reform both suction and discharge lines to align with new compressor. If they are too short, use additional lengths of tubing. Joints should overlap 0.5" to provide sufficient area for good solder joints. Clean and mark area where tubing should be cut. Cut tubing with tubing cutter. Work quickly to avoid letting moisture and air into system.
10. Solder all connections according to soldering procedure.
11. Remove original filter-drier.
12. Install new filter-drier at condenser outlet.
13. Evacuate and charge system using recommended procedure described under Evacuating and Recharging.
14. Reconnect compressor terminal leads in accordance with unit wiring diagram.
15. Reassemble unit.

⚠ CAUTION

If low-side process tube is too short, silver solder four inch piece of tubing onto process tube at this time.

⚠ CAUTION

On R-134a systems, compressor must NOT be left open to atmosphere for more than 10 minutes to prevent moisture contamination of oil.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

Freezer Evaporator and Suction Line Replacement

⚠ CAUTION

Always use the TORCH GUARD heat shield part number 5304418872, behind the evaporator before attempting to solder. The excessive heat from soldering will warp the plastic liner.

The Freezer evaporator is located behind the back wall of the freezer and is secured to the liner by screws through the end plate on each side. Foam seals are located on each end plate to ensure proper air flow through the evaporator.

NOTE: Models with a refrigerated finger type ice maker in the food compartment have two heat exchangers, one for the Ice Maker and one for the freezer evaporator.

Models that have a Flex Tray Ice Maker in the food compartment have one heat exchanger. It is a split heat exchanger. The suction line for the heat exchanger runs from the Discharge of the freezer evaporator to the inlet of the compressor. The cap tube part of the heat exchanger runs from the outlet of the filter drier to the inlet of the Ice maker compartment evaporator. There is a jumper tube that runs from the outlet of the ice maker compartment evaporator to the inlet of the freezer evaporator.

The heat exchanger or suction line on this style of refrigerator is in the insulation between the food liner and the cabinet back. You will not be able to remove the heat exchanger or suction line with the evaporator. Because of this, all line welds will be made inside the freezer. The evaporator kit contains a heat shield to protect the liner from damage when brazing.

Evaporator Kit Contains:

1- Evaporator
1- Heat Shield
1- Drier-Filter
1- Instruction Sheet

1. Disconnect refrigerator from electrical supply.
2. Remove the freezer door and remove all freezer section shelves and baskets.
3. Remove evaporator cover.
4. Disconnect wiring harness at liner plug. Remove the evaporator fan motor and housing. Remove the defrost limiter and disconnect defrost heater.
5. Cut suction line in front of weld at evaporator. On modles with the finger ice maker using a file, score and break the cap tube just in front of the weld. (See Figure 7-6)
6. Cut the suction line coming from the ice maker evaporator at the weld coming out of the Liner. (See Figure 7-7)
7. Remove evaporator from inside the freezer.
8. Clean end of suction line as well as the cape tube Straighten line and slightly bend toward front of cabinet to aid in installing shield.

9. Cut a small "X" in heat shield, then slide cap tube and suction line through hole. Pack heat shield in back corner of liner. (See Figure 7-8)

NOTE: You may need to use a small pair of vise-grips on the suction line to help hold the heat shield in place.

10. Transfer defrost heater from old evaporator to new evaporator.
11. Slide evaporator in place with heat shield located behind the evaporator. This will help hold shield in place.
12. Place cap tube in new evaporator on Finger Ice Maker models and weld in place. Place the jumper tube from Flex tray ice maker evaporator into the inlet of the freezer evaporator and weld in place.

⚠ CAUTION

Always use the TORCH GUARD heat shield part number 5304418872, behind evaporator before attempting to solder. The excessive heat from soldering will warp the plastic liner.

13. Place suction line for freezer evaporator in new evaporator and weld in place.
14. Slide a heat shield over the line coming out of liner on left side (See Figure 7-7) On models with a Finger Evaporator in the ice maker place the line in the tube on the freezer evaporator running to the accumulator and weld in place. On models with a Flex Tray ice maker place the line in the inlet of the freezer evaporator and weld in place.
15. With a sharp knife, cut along a seam on the heat shields from center hole to edge of shield. Remove the shields from the freezer.
16. Push evaporator back in place.
17. Slide fan and bracket assembly in place and connect defrost heater. Mount limit switch on evaporator. Plug wiring harness into connector on liner.
18. Replace filter-drier. Pump down and recharge system.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

19. Allow product to run and make sure refrigerant is circulating. Reinstall evaporator cover and machine compartment cover.

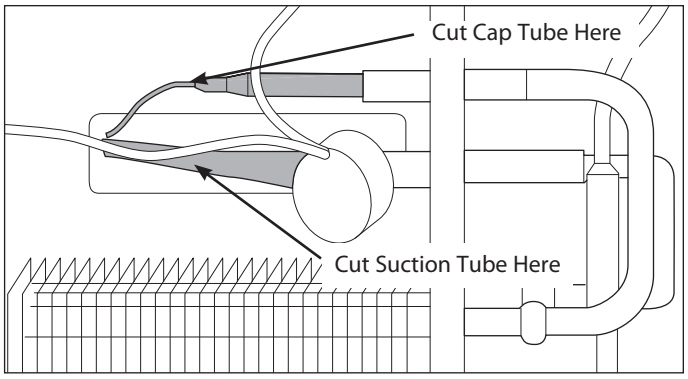
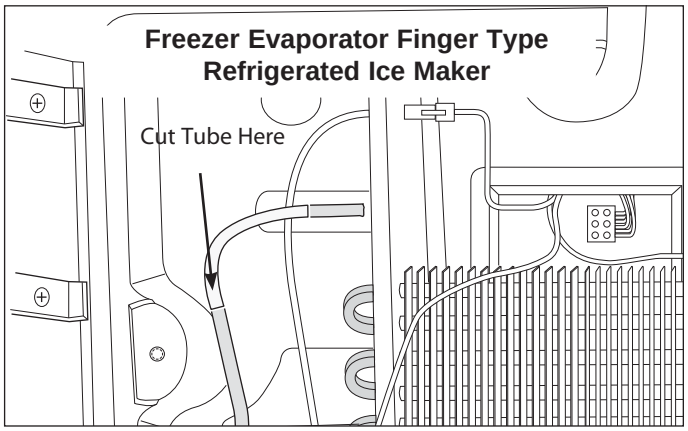


Figure 7-6.



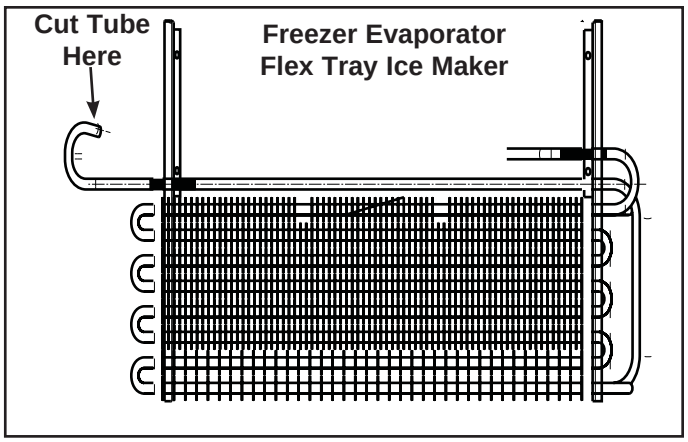


Figure 7-7.

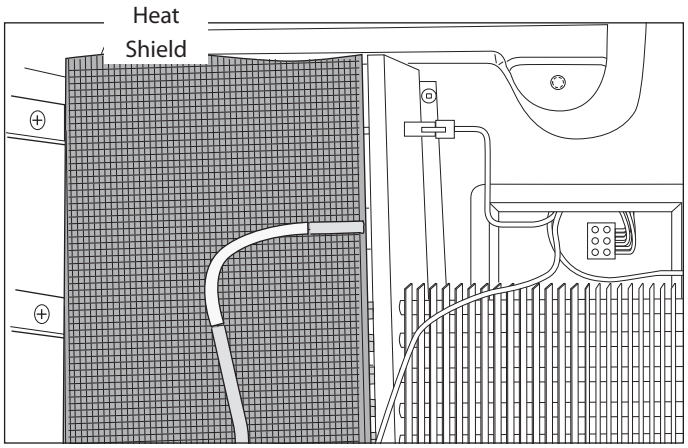


Figure 7-8.

Freezer Heat Exchanger Replacement Finger Evaporator Ice Maker Models.

1. Recover refrigerant from sealed system.
2. Disconnect wiring harness at liner plug.
3. Remove defrost limiter and disconnect defrost heater.
4. Remove fan motor and wiring.
5. Cut heat exchanger off flush with liner. (See Figure 7-9)
6. Remove evaporator and drain trough.

NOTE: You do not need to remove rivet or defrost heater.

7. Using a 1/4" drill bit, drill hole through cabinet 1 inch below old heat exchanger.
8. Using a 1/2" drill bit, open hole drilled in Step 7 to 1/2" from back of product.
9. Remove stubs of old heat exchanger from evaporator and install new heat exchanger into evaporator.
10. Push heat exchanger through hole in cabinet and set evaporator back in place.
11. Slide Armor-Flex over heat exchanger until cover is against hole at back of cabinet. The excess cap tube can be wound around the suction line.
12. Seal the hole on the inside and outside of cabinet using permagum.
13. The one piece cover can now be installed over heat exchanger. Place open end of cover at top of compressor compartment opening. Attach cover to back of cabinet using screws provided. There is no need to predrill holes as the screws are self cutting.
14. Seal hole and end of old heat exchanger with permagum.
15. Replace filter-drier.
16. Evacuate and recharge system.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

17. Bend remaining tubing to fit into machine compartment opening, being careful not to set up any excess noise from line vibration.
18. Run product to make sure refrigerant is circulating.
19. Reinstall evaporator and machine compartment cover.

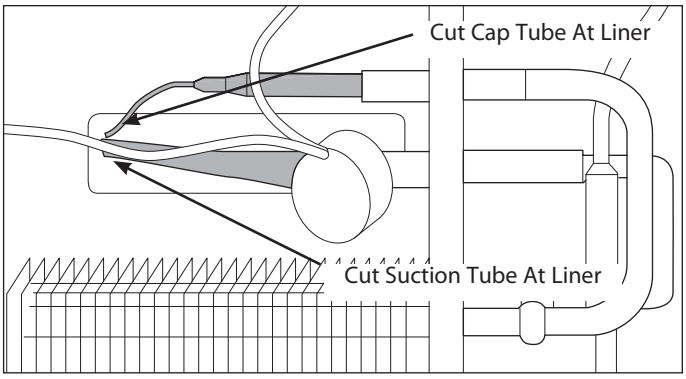


Figure 7-9.

Ice Maker Evaporator Assembly Replacement

⚠ CAUTION

Always use the TORCH GUARD heat shield part number 5304418872, behind evaporator before attempting to solder. The excessive heat from soldering will warp the plastic liner.

The ice maker evaporator assembly is located inside the ice maker compartment in the top left section of the food compartment.

All ice maker mechanical components must be removed to access the ice maker finger evaporator in the top section above the ice mold as well as the fin and tube evaporator coil located behind the ice bucket. Refer to pages 6-20 through 6-25 for removal of the ice maker components needed to access the ice maker sealed system components. The EEV is also part of the ice maker evaporator assembly that will be part of the repair kit.

The heat exchanger can not be removed with the evaporator. Because of this, all line welds will be made inside the freezer. The evaporator kit contains a heat shield to protect the liner from damage when brazing.

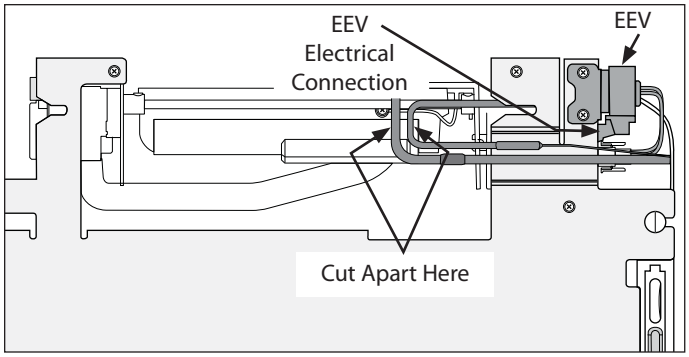


Figure 7-10.

To remove the icemaker evaporator assembly:

1. Disconnect refrigerator from electrical supply.
2. Remove all food section shelves.
3. Refer to pages 6-20 through 6-25 for removal of the ice maker components needed to access the ice maker sealed system components.
4. Disconnect wiring harness from EEV.
5. Cut suction line and cap tube at locations shown in Figure 7-10.

⚠ CAUTION

DO NOT cut the cap tube. Cut the line from the cap tube to the EEV one inch in front of the cap tube weld.

6. Remove evaporator components from compartment.
7. Replace with new evaporator kit components.
8. Secure finger evaporator to ceiling of compartment.
9. Clean ends of suction line and cap tube that were cut in step 5 with swag tool.
10. Cut a seam in heat shield 1/2 way through, then slide cap tube and suction tube through the opening. (See Figure 7-8) Pack heat shield against ice maker frame and liner.
11. Use the 1/4" and 5/16" copper tubing sleeves included in the kit, and install over inlet and outlet lines of the new evaporator. Insert the tubing into the other end of the sleeve and weld in place.
12. Remove the heat shield.
13. Reinstall the ice maker components.
14. Replace filter-drier. Pump down and recharge system.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

15. Allow product to run and make sure refrigerant is circulating. Reinstall evaporator cover and machine compartment cover.

Ice Maker Heat Exchanger Replacement Finger Evaporator Ice Maker Models

⚠ CAUTION

Always use the TORCH GUARD heat shield part number 5304418872, behind evaporator before attempting to solder. The excessive heat from soldering will warp the plastic liner.

This unit has two heat exchangers (Suction Line & Cap Tube Assembly) enclosed in the insulation between the liner and the cabinet back. One heat exchanger is for the freezer evaporator, the other heat exchanger is for the ice maker evaporator located in the top left corner of the food compartment. Because of this, the original parts can not be removed. There is a service kit to bypass the internal heat exchanger. It will be necessary to run a new heat exchanger down the back of the product and bypass the internal heat exchanger if the heat exchanger has a leak or the cap tube is restricted.

Heat Exchanger Kit Contains:

1- Heat Exchanger	6- Screws
1- Filter-Drier	1- Cover
1- Armor Flex	1- Package Permagum
2- Tape	1- Instruction Sheet

To replace the ice maker heat exchanger:

1. Disconnect refrigerator from electrical supply.
2. Remove all freezer section shelves.
3. Remove evaporator cover.
4. Disconnect wiring harness at liner plug.
5. Cut suction line in front of weld at evaporator. Using a file, score and break the cap tube just in front of the weld. (See Figure 7-8)
6. Remove ice maker from unit.
7. Connect new heat exchanger to ice maker.
8. Using a 1/4" drill bit, drill hole through cabinet from inside just above the original heat exchanger.

9. Using a 1/2" drill bit, open hole drilled in Step 8 to 1/2" from back of product.
10. Remove stubs of old heat exchanger from evaporator and install new heat exchanger into evaporator.
11. Push heat exchanger through hole in cabinet and set evaporator back in place.
12. Slide Armor-Flex over heat exchanger until cover is against hole at back of cabinet. The excess cap tube can be wound around the suction line.
13. Seal the hole on the inside and outside using permagum.
14. Remove freezer door, baskets and evaporator cover.
15. Disconnect suction line from pressure regulator.
16. Cut off suction line at freezer liner.
17. Drill a 1/2 inch hole through cabinet next to old suction line.
18. With the heat shield in place remove the regulator and place the jumper tube Part# 242036701 over the line coming from the accumulator.
19. Insert new suction line through liner and connect to other end of jumper tube and weld in place.

NOTE: You must place the shield behind the jumper tube when welding.

20. Seal both the top and bottom holes with permagum.
21. The one piece cover can now be installed over heat exchanger. Place open end of cover with top of compressor compartment opening. Attach cover to back of cabinet using screws provided. There is no need to predrill holes as the screws are self cutting.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

22. Replace filter-drier using caution to connect cap tubes properly as described in the filter-drier replacement section.
23. Evacuate and recharge system.
24. Bend remaining tubing to fit into machine compartment opening, being careful not to set up any excess noise from line vibration.
25. Run product to make sure refrigerant is circulating.
26. Reinstall evaporator and machine compartment cover.

Freezer Heat Exchanger Replacement Flex Tray Ice Maker Models.

Note: Models with the flex tray ice maker in the food compartment only have a suction line going to the copressor from the freezer evaporator. The cap tube runs from the filter drier to the food compartment ice maker evaporator inlet. A jumper tube running from the food compartment Ice maker evaporator to the inlet of the freezer evaporator.

1. Recover refrigerant from sealed system.
2. Disconnect wiring harness at liner plug.
3. Remove defrost limiter and disconnect defrost heater.
4. Remove fan motor and wiring.
5. Cut suction line off flush with liner (See Figure 7-11

Note: Models with a flex tray ice maker you do not need to remove the freezer evaporator since you would only be replacing the suction line.

6. Using a 1/4" drill bit, drill hole through cabinet 1 inch below old suction tube.
7. Using a 1/2" drill bit, open hole drilled in Step 7 to 1/2" from back of product.
8. Place a heat shield behind evaporator.
9. Remove stub of the old suction line from evaporator.
10. Push suction line of heat exchanger through hole in cabinet and connect to evaporator. Weld line in place.
11. Slide Armor-Flex over heat exchanger until cover is against hole at back of cabinet. The cap tube coming out of the armer flex needs to run to the food compartment ice maker evaporator.

NOTE: For instructions on how to get to the food compartment evaporator go to pages 6-26 and 6-28 compnent tear down section.

12. After gaining excess to the ice maker compartment evaporator (See Figure 7-12) cut the cap tube off even with the food liner.
13. Using a 1/4" drill bit, drill hole through cabinet 1 inch above old cap tube and jumper tube..
14. Place a heat shield behind the evaporator and remove the stub of the old cap tube.
15. Push the new cap tube through the 1/4 inch hole and place it in the evaporator inlet then weld in place.

16. Seal both the hole on the suction line and the cap tube on the inside and outside of cabinet using permagum.
17. Roll the excess heat exchanger up in the machine compartment behind the compressor. Connect the suction line to the compressor inlet.
14. The one piece cover can now be installed over heat exchanger. Place open end of cover at top of compressor compartment opening. Attach cover to back of cabinet using screws provided. There is no need to predrill holes as the screws are self cutting.

Note: The cover will not cover the cap tube running across the back of the cabinet from the left to the right before it goes into the top of the cabinet.

15. Seal hole in the end of old suction line with permagum.
15. Replace filter-drier.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

16. Evacuate and recharge system.
17. Bend remaining tubing to fit into machine compartment opening, being careful not to set up any excess noise from line vibration.
18. Run product to make sure refrigerant is circulating
19. Reinstall cover on evaporator and compressor compartment.

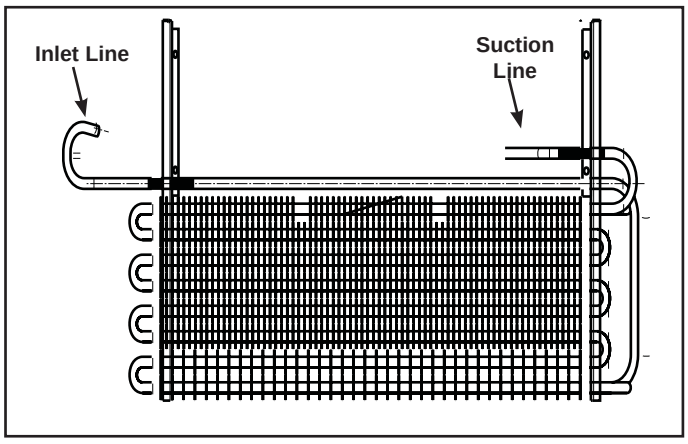


Figure 7-11

Ice Maker Evaporator Assembly Replacement

Flex Tray Ice Maker Models

The ice maker evaporator assembly is located inside the ice maker compartment in the top left section of the food compartment.

The cap tube and jumper tube can not be removed with the evaporator. Because of this, all line welds will be made inside the freezer. The evaporator kit contains a heat shield to protect the liner from damage when brazing.

Flex Tray Ice Maker compartment Evaporator

Figure 7-12

To remove the ice maker evaporator assembly:

1. Disconnect refrigerator from electrical supply.
2. Remove all food section shelves.
3. Refer to pages 6-26 through 6-28 for removal of the ice maker components needed to access the ice maker Evaporator.
4. Cut suction line and cap tube at locations shown in Figure 7-10.
5. Remove evaporator from compartment.
6. Transfer the defrost heater and thermostat from the old evaporator to the new evaporator.
7. Clean ends of suction line and cap tube that were cut in step 4.
8. Cut a seam in heat shield 1/2 way through, then slide cap tube and suction tube through the opening. (See Figure 7-8) Pack heat shield against food liner.
9. Insert the tubing into new evaporator and weld in place.
10. Remove the heat shield.
11. Reinstall the ice maker components.
12. Replace filter-drier. Pump down and recharge system.

Ice Maker Jumper Tube Replacement Flex Tray Ice Maker Models

⚠ CAUTION

Always use the TORCH GUARD heat shield part number 5304418872, behind evaporator before attempting to solder. The excessive heat from soldering will warp the plastic liner.

This unit has one heat exchanger (Suction Line & Cap Tube Assembly) enclosed in the insulation between the liner and the cabinet back. It has a Jumper tube running from the out let of the ice maker compartment evaporator to the inlet of main evaporator in the freezer compartment. Because of this, the original part can not be removed. There is a service kit to bypass the internal jumper tube. It will be necessary to run a new jumper tube down the back of the product and bypass the internal jumper tube if the jumper tuber has a leak or is restricted.

Jumper tube Kit Contains:

1- Jumper Tube 6- Screws
1- Filter-Drier 1- Cover
1- Armor Flex 1- Package Permagum
2- Tape 1- Instruction Sheet
1. Heat Shield

To replace the ice maker Jumper tube:

1. Disconnect refrigerator from electrical supply.
2. Remove all freezer section shelves.
3. Remove evaporator cover.
4. Disconnect wiring harness at liner plug.
5. Follow tho instructions on pages 6-26 and 6-27 to gain excess to the ice maker evaporator.
6. Cut the ice maker discharge line in front of the weld and cut the line off even with the food liner.
7. Using a 1/4" drill bit, drill hole through cabinet from inside just above the original heat exchanger.
8. Using a 1/2" drill bit, open hole drilled in Step 7 to 1/2" from back of product.
9. Place a heat shield between the food liner and the ice maker evaporator.
10. Remove stubs of old Jumper tube from evaporator and install new heat exchanger into evaporator.
11. Push jumper tube through hole in cabinet. and connect jumper tube to ice maker evaporator.
12. Slide Armor-Flex over jumper tube until cover is against hole at back of cabinet.
13. Seal the hole on the inside and outside using permagum.
14. Remove freezer door, baskets and evaporator cover.
15. Disconnect jumper tube in front of the inlet line weld of the freezer evaporator.
16. Cut off jumper tube at freezer liner.
17. Drill a 1/2 inch hole through cabinet next to old jumper tube.
18. With the heat shield in place remove stub from the inlet line of the freezer evaporator
19. Insert new jumper tube through liner, connect to inlet of the freezer evaporator and weld in place.
20. Seal bottom holes with permagum.
21. The one piece cover can now be installed over heat exchanger. Place open end of cover with top of compressor compartment opening. Attach cover to back of cabinet using screws provided. There is no need to predrill holes as the screws are self cutting.
22. Replace filter-drier using caution to connect cap tubes properly as described in the filter-drier replacement section.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

23. Evacuate and recharge system.
24. Bend remaining tubing to fit into machine compartment opening, being careful not to set up any excess noise from line vibration.
25. Run product to make sure refrigerant is circulating.
26. Reinstall evaporator and machine compartment cover.

Condenser Replacement

To replace the compressor:

1. Pull unit from its installation position and unplug from wall outlet.
2. Extract the screws securing the compressor shield to the unit frame and remove from unit. Drop compressor area mounting tray if needed.
3. Attach an approved self tapping line tap valve to the process tube. Connect refrigerant recovery system to tap valve. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank.
4. Disconnect inlet and outlet lines from condenser. (See Figure 7-13)
5. Pull condenser tubes out of the retainers mounted to the compressor area mounting tray. Remove condenser from unit.
6. Install replacement condenser.
7. Replace filter-drier using caution to connect cap tubes properly as described in the filter-drier replacement section.
8. Evacuate and charge system using recommended procedure described under Evacuating and Recharging.
9. Reassemble unit.

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

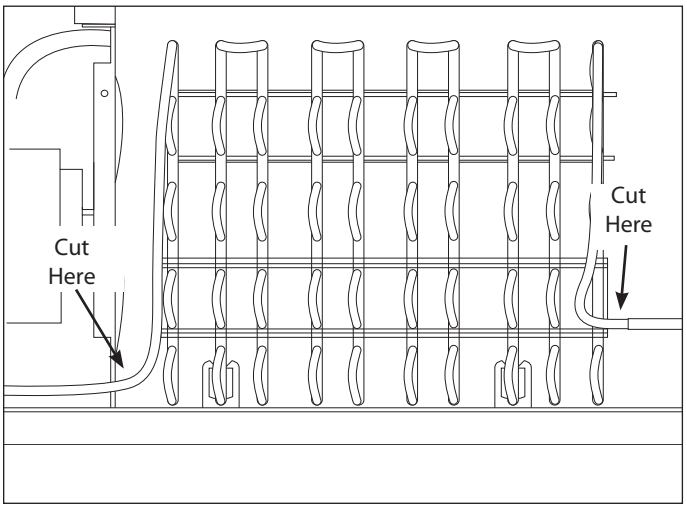


Figure 7-13.

Filter-Drier Replacement

The filter-drier is located in the compressor area on the left side of the compressor. (See Figure 7-14)

When the sealed system is opened and the refrigerant charge is removed, the liquid line filter-drier must be replaced and the system thoroughly evacuated before recharging. The service technician must enter the Ice Maker Service Diagnostic Test 49C and toggle the EEV (Electronic Expansion Valve) to ON prior to flushing or evacuating the sealed system.

Models with the finger type refrigerated ice maker in the food compartment of a French Door Bottom Freezer Refrigerator requires a second cap tube that must be installed in the filter-drier. This required a kit to be set up containing a Tee to connect the second cap tube. There are two replacement kits available. The part number for the Dye Drier Kit is 5304473019 (See Figure 7-15). The part number for the
Two Stage Drier Kit is 5304473020 (See Figure 7-16).

The non-dispenser models as well as dispenser models that have a Flex tray ice maker for a food compartment ice maker use a simple design filter drier with the process tube coming off the bottom and the cap tube soldered into a hole in the process tube.
(See figure 7-17)

⚠ CAUTION

On R-134a systems, the system must NOT be left open to the atmosphere for more than 10 minutes to prevent moisture contamination of compressor oil.

To remove the filter-drier:

1. Pull unit from its installation position and unplug from wall outlet.
2. Extract the screws securing the compressor shield to the unit frame and remove from unit. Drop compressor area mounting tray if needed.
3. Attach an approved self tapping line tap valve to the process tube. Connect refrigerant recovery system to tap valve. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank. The service technician must enter the Ice Maker Service Diagnostic Test 49C and toggle the EEV (Electronic Expansion Valve) to ON prior to flushing or evacuating the sealed system on models with a finger type ice maker in the food compartment.

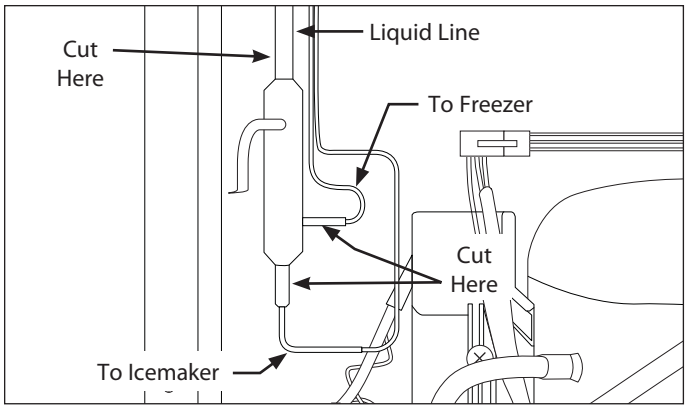


Figure 7-14.

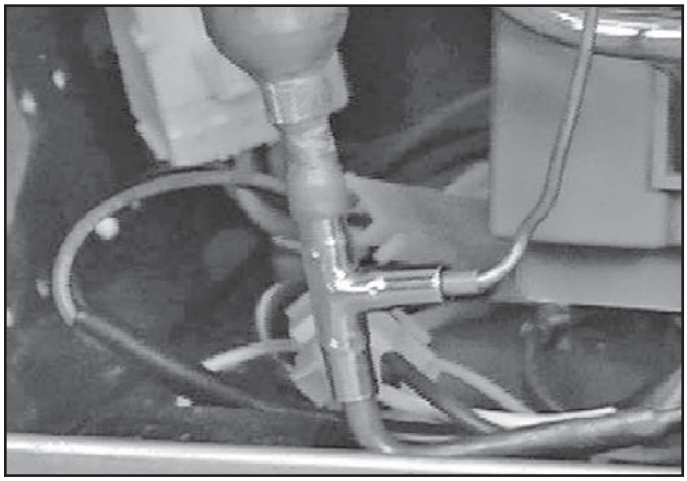


Figure 7-15. Dye Drier Kit

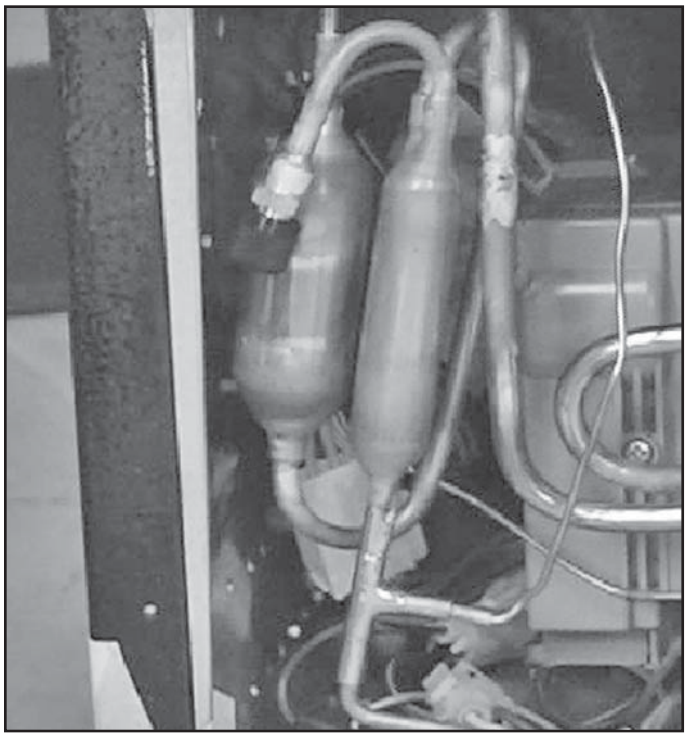


Figure 7-16. Two Stage Drier Kit

⚠ CAUTION

DO NOT unbraze old filter-drier from system. This will vaporize and drive moisture from desiccant back into system. The old filter-drier should be cut out of system.

4. Using a 3 cornered file, score a groove around capillary tubes as close to old filter-drier as possible. Break capillary tubes along score mark from filter-drier.
5. Cut condenser outlet tube at filter-drier. Discard filter-drier.
6. Thoroughly clean condenser outlet tube and capillary tube.
7. Place inlet connection of filter-drier over condenser tube approximately ¼" and solder.
8. Insert capillary tubes input end into filter-drier outlets. (See Figure 7-12,13 and 14) Do not allow tube to bottom against screen. Solder carefully so that solder does not plug capillary tube.
9. Install process tube adapter to filter-drier.
10. Evacuate and charge system using recommended procedure described under Evacuating and Recharging.
11. Reassemble unit.

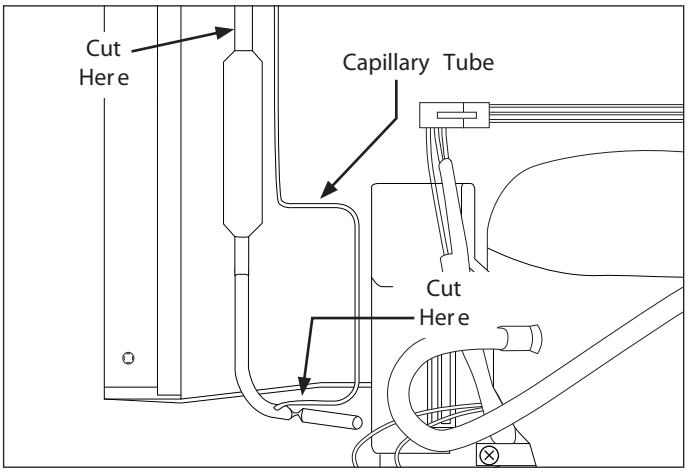


Figure 7-17

Perimeter Hot Tube Repair Kit

Effective July 1, 1992, Section 608 of the Clean Air Act prohibits individuals from knowingly venting ozone depleting compounds used as refrigerants into the atmosphere while maintaining, servicing, repairing, or disposing of refrigerant equipment.

A hot tube repair kit is used to bypass a leaking Perimeter Hot Tube (Yoder-Loop). The Perimeter Hot Tube must be bypassed in the sealed refrigeration system and a low wattage heater wire installed inside the tube. This heater will prevent condensation from forming on the exterior front edge of the cabinet.

Hot Tube Heater Kit Contains:

1 Copper Bypass Tube	1 Plastic Sleeve
1 Filter-Drier	1 Heater Wire
3 Clamps	1 Harness Adapter
3 Screws	2 Wire Connectors

Step 1 - Bypassing Perimeter Hot Tube

1. Disconnect service cord from power supply.
2. Recover refrigerant from system.
3. Remove filter-drier.
4. Using a tubing cutter, cut and de-burr tubing from perimeter hot tube at filter-drier inlet and between condenser and hot tube.
5. Install copper bypass tube and replacement filter-drier. Use 45% silver solder for all connections.
6. Drill or pierce three holes in cabinet to hold clamps. Secure by-pass tube just below cabinet edge with three clamps and screws provided.

⚠ CAUTION

When clamped in place the by-pass tube should NOT touch any plastic lines, such as water lines for ice makers and/or filters as well as drain lines.

7. Evacuate and recharge refrigeration system. Refer to serial plate for correct charge.

Step 2 - Installing the Heater Wire

1. Attach Vacuum Pump and Gauge Set to one end of perimeter hot tube with the adapter and plastic sleeve. (See Figure 7-18)
2. Cutoff waxed end of fiberglass braid that is extended past end of heater wire, and make knot in end just a little smaller than inside diameter of hot tube.

NOTE

Take the time to remove all the bends from the heater (caused from being rolled up) by pulling the heater and braid through a shop rag with a small amount of silicone on the rag and laying it in a roll at the open end of the Hot Tube. It will make heater installation go faster. Using of a good two stage, 5 CFM Vacuum Pump will also make heater installation go faster.

3. Insert knot on end of braid into open end of perimeter hot tube.
4. With braid inserted, start vacuum pump and place your thumb over end of tube. When good vacuum is obtained, release your thumb and begin to feed braid into hot tube. Continue this process until string reaches plastic sleeve.
5. Disconnect plastic sleeve.
6. Pull braid out while pushing equal amount of braided heater wire into tube at other end until heater wire appears inside braid.

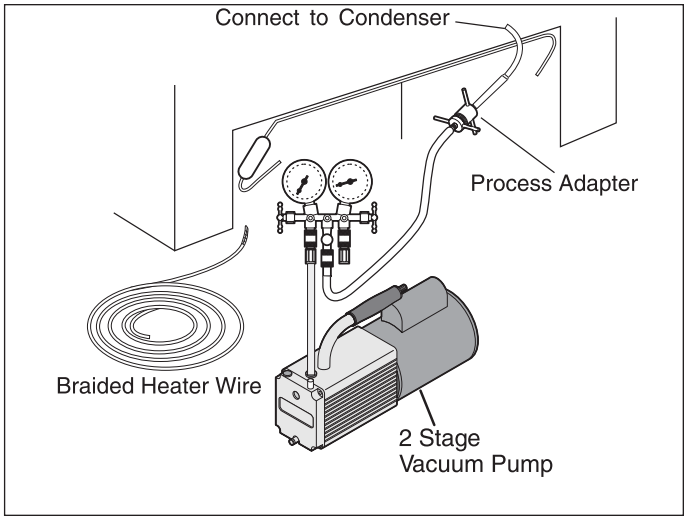


Figure 7-18.

Step 3 - Heater Wire Electrical Connection

For PTC or Solid State Compressors:

1. Remove wires (with terminals) from compressor starter/overload. On some models you will need to depress locking tabs located in relay housing.
2. Install harness adapter into refrigerator circuit as shown in Figure 7-19.
3. Cut off braid at start of heater. Strip insulation back about 5/16 of an inch. Be careful not to damage heater resistance wire. Splice heater wire ends to loose leads of adapter harness with furnished wire connectors.
4. Dress wires away from condenser fan blade and any sharp edges.
5. Secure wires with electrical tape as necessary.
6. Reinstall back panel for proper air flow over condenser and compressor.

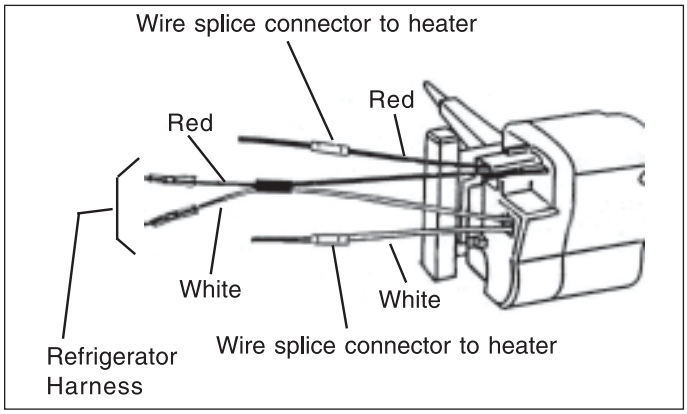


Figure 7-19.

For Variable Capacity Compressor:

1. Install harness adapter into refrigerator circuit as shown in Figure 7-20.

⚠ CAUTION

The Red and Black wires are low voltage DC connections to the control board. Make sure unit is disconnected from power supply before starting this procedure.

2. Cut off braid at start of heater. Strip insulation back about 5/16 of an inch. Be careful not to damage heater resistance wire. Splice heater wire ends to loose leads of adapter harness with furnished wire connectors.
3. Dress wires away from condenser fan blade and any sharp edges.
4. Secure wires with electrical tape as necessary.
5. Reinstall back panel for proper air flow over condenser and compressor.

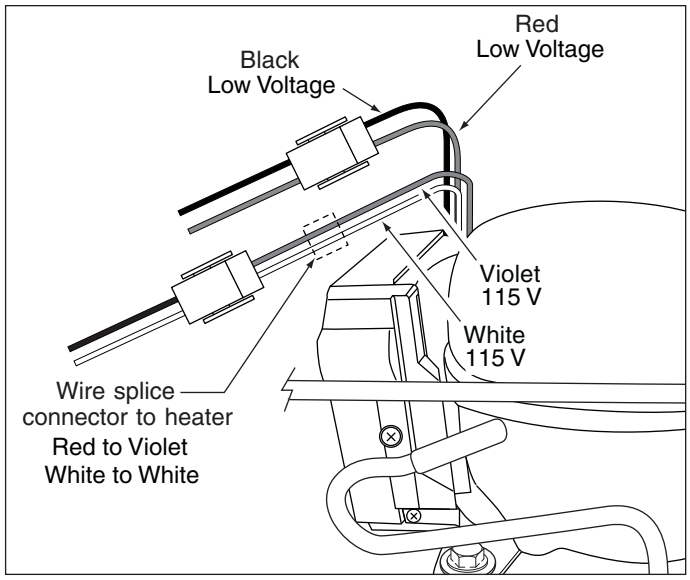


Figure 7-20.

Installing Evacuation and Recharging Equipment

1. Disconnect electrical supply to unit.
2. Attach an approved self tapping line tap valve to the process tube. Connect refrigerant recovery system to tap valve. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank.
3. If compressor was replaced, install correct sized process tube adapter on process tube.
   If compressor was not replaced, cut process tube with tubing cutter, leaving as much tube as possible, but removing the line tap valve installed to remove the refrigerant. Install the correct sized process tube adapter.
4. Attach refrigeration service gauge manifold to system in following order:
   a. Low-side (compound gauge) hose to suction side process tube adapter.
   b. High-side (pressure gauge) hose to high-side process tube adapter.
   c. Center port manifold hose before hand shut-off valve to charging cylinder.
   d. Center port manifold hose after hand shut-off valve to vacuum pump.

Evacuating the System

To achieve the required levels of evacuation, a properly maintained two stage vacuum pump in good condition is required. It is absolutely essential to maintain your vacuum pump according to the manufacturer's instructions, including required oil changes at the recommended intervals. Vacuum pump oil should always be changed after evacuating a contaminated system. Vacuum pump performance should be checked periodically with a micron gauge.

1. Ensuring that the valve on the charging cylinder is closed, start the vacuum pump. Slowly open both manifold valves, counterclockwise, for two full turns.

⚠ CAUTION

If high vacuum equipment is used, just crack both manifold valves for a few minutes and then open slowly for the two full turns counterclockwise. This will prevent the compressor oil from foaming and being drawn into the vacuum pump.

2. Operate vacuum pump for 30 minutes to a minimum of 29.5 inches of vacuum or until a vacuum of 600 microns is obtained.
3. Close the manifold valve connected to the vacuum pump. Watch the compound gauge for several minutes. If the reading rises, there is a leak in the system, go to step 4. If no leak is indicated, stop the vacuum pump. The system is now ready for charging.
4. If a leak is indicated, stop the vacuum pump and introduce a small charge of refrigerant into the system by cracking the valve on the bottom of the charging cylinder until the system is pressurized to 40 or 50 lbs. P.S.I.
5. Leak test the low side. Run the compressor for a few minutes and leak test the high side. When leak is found, connect refrigerant recovery system. Turn on recovery system, open the line tap valve, and allow refrigerant to flow into an approved tank. Repair and go back to step 1.
6. See page 7-25 Refrigerant Leaks for instructions on heating the compressor crankcase on products that have ran with a low side leak.

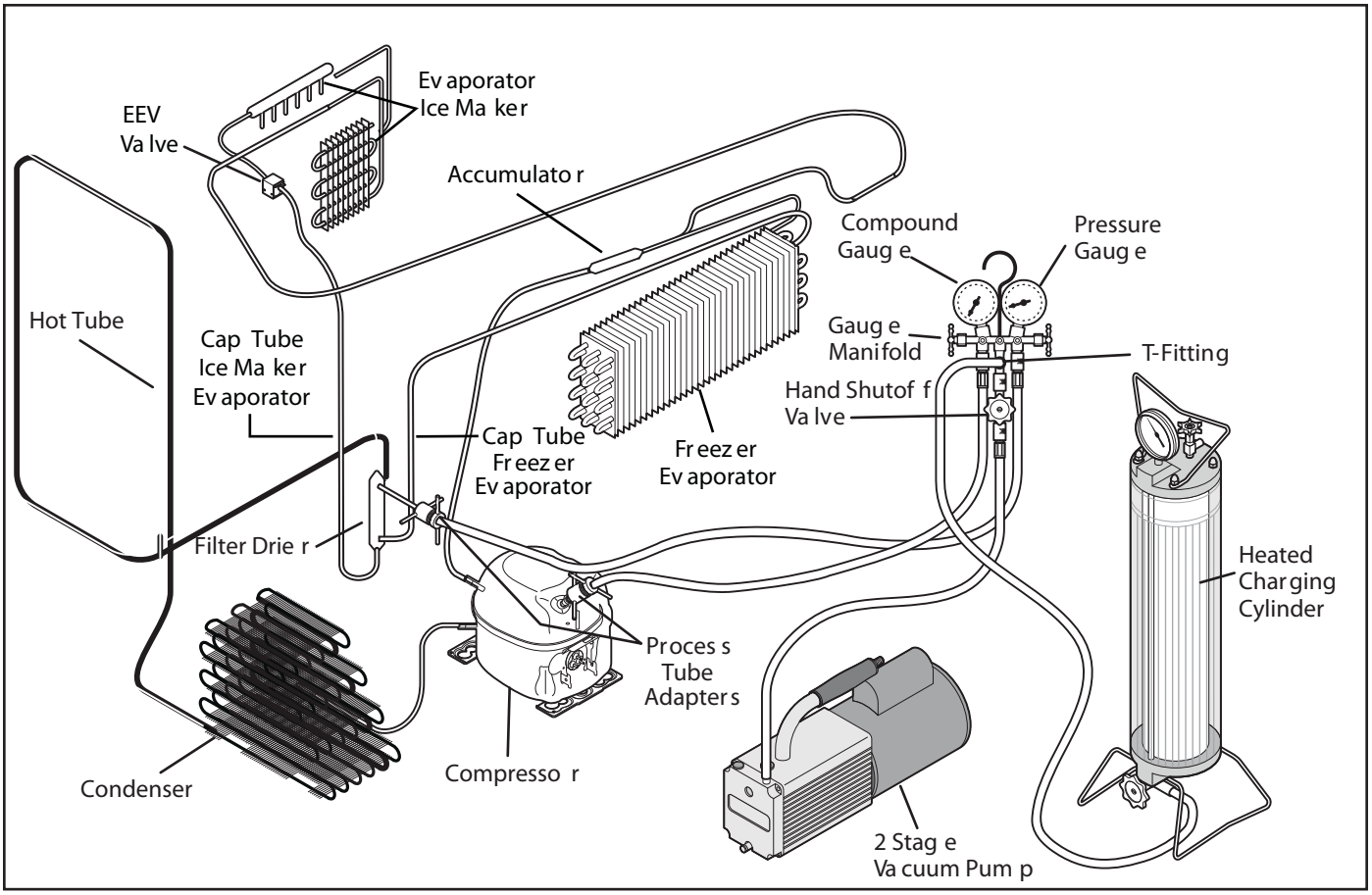


Figure 7-21. Installation of Recovery Equipment Dispenser with Refrigerated Finger Ice Maker

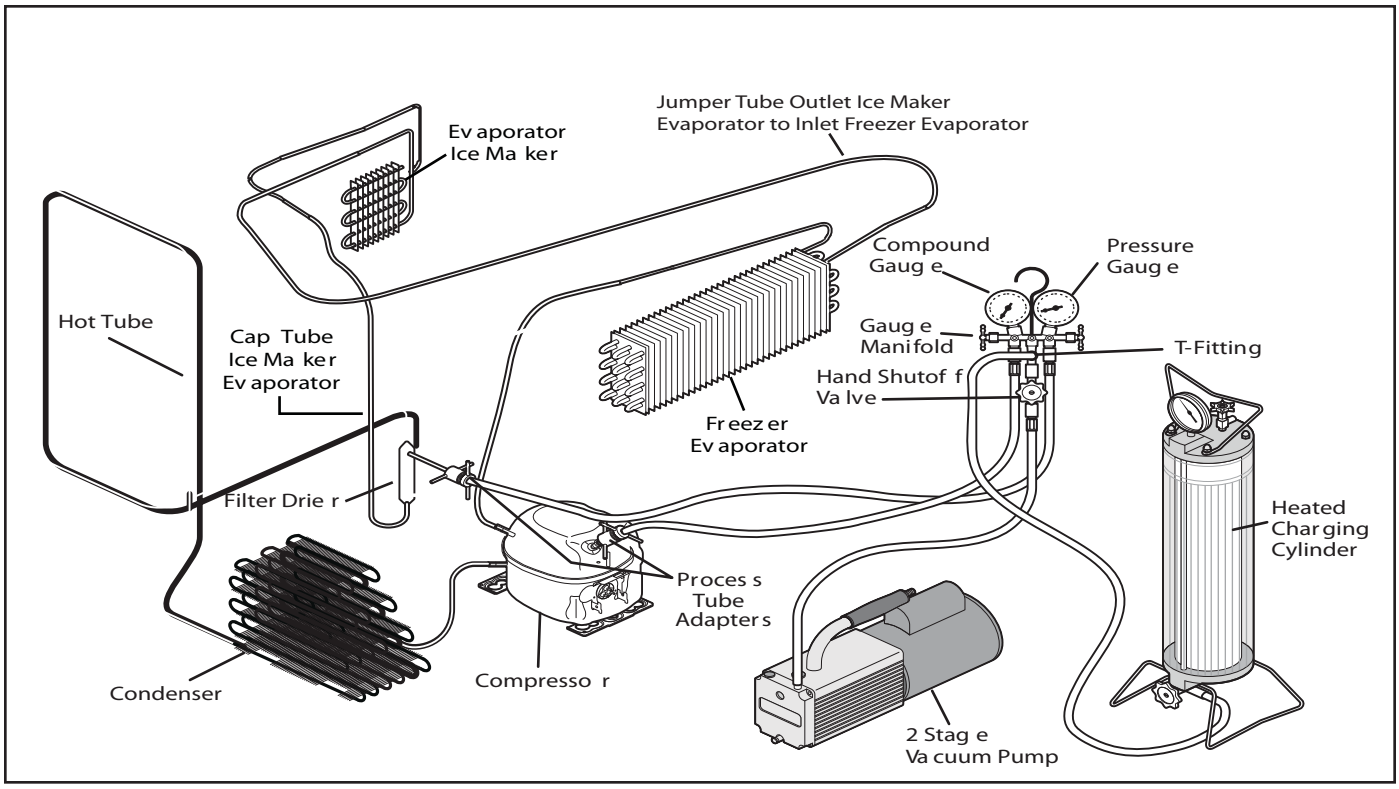


Figure 7-22. Installation of Recovery Equipment Dispenser with Flex Tray Ice Maker

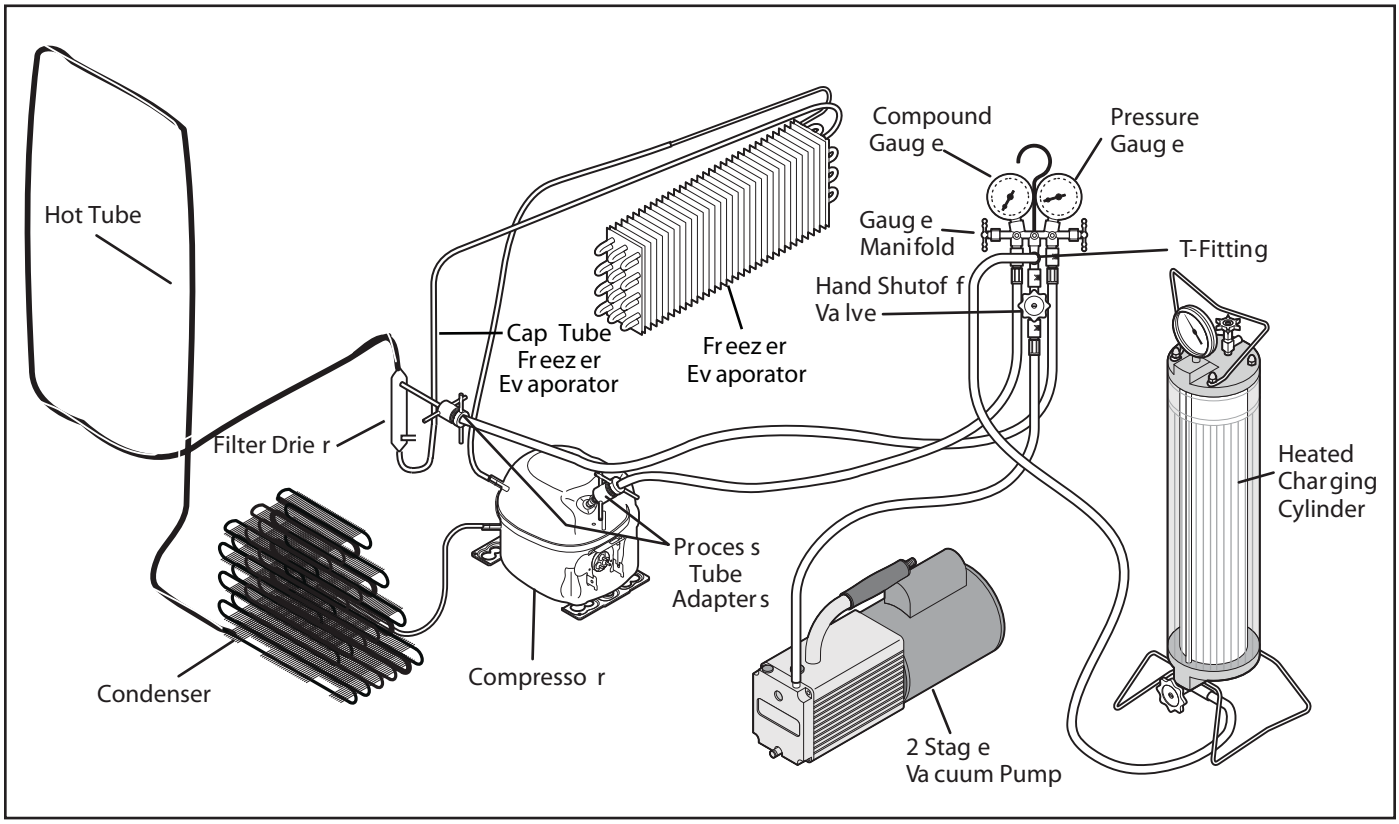


Figure 7-23. Installation of Recovery Equipment Non-Dispenser

Charging The System

⚠ CAUTION

Check the serial plate for the correct refrigerant type. It is extremely important to verify the type of refrigerant in the system before starting any sealed system repairs. After charging the system with liquid, be certain to wait at least 5 minutes before starting the compressor to give the refrigerant a chance to disperse throughout the system. Otherwise the compressor could be damaged by attempting to pump excessive quantities of liquid.

Preparing The Charging Cylinder:

1. Charging cylinder must have at least eight (8) ounces more refrigerant than required charge.
2. Plug in cylinder heater and bring pressure up 30 pounds above gauge pressure at ambient temperature.

⚠ WARNING

DO NOT USE EXTERNAL HEAT SOURCE ON CYLINDER OR EXCEED MAXIMUM GAUGE PRESSURE ON CHARGING CYLINDER.

To charge the system:

1. Make certain that hand shut-off valve to vacuum pump is closed.
2. Close high-side manifold gauge valve.
3. Set charging cylinder scale to pressure indicated on cylinder pressure gauge.
4. Observe refrigerant level in sight glass. Subtract amount to be charged into system and note shut off point.
5. Open charging cylinder valve slowly and allow proper charge to enter system.
6. As soon as refrigerant in sight glass has gone down to predetermined level, close charging cylinder valve.

⚠ CAUTION

Disconnect charging cylinder heater at this time to prevent cylinder pressure from exceeding its maximum limits.

7. Allow system to sit for five minutes.
8. Turn on refrigerator compressor. Run compressor for a few minutes and monitor system pressures.
6. When satisfied unit is operating correctly, clamp the process tube with pinch-off tool with the unit still running. Using a tubing cutter, cut the process tube about 2 inches from the pinch-off tool. Use Sil-fos solder and solder process tube closed.
7. Turn off the product and allow the unit to set for a few minutes. Check the process tube for refrigerant leaks.

Final Leak Test

1. With the refrigerator turned OFF leak test all low-side system components.
2. Turn the unit ON and run until the condenser is warm. Leak test the high-side system components.

Dedicated Equipment

R-134a must not be mixed with other types of refrigerants. R-134a must be recovered in dedicated and properly identified recovery bags and tanks.

It will be necessary to check with the manufacturer of your recovery equipment to determine R-134a compatibility. Some recovery equipment manufacturers have changeover instructions for switching between refrigerant types. Protect yourself and your equipment by following all manufacturer guidelines.

Also, ensure that your refrigeration hoses are specified for use with R-134a refrigerant. Research has shown that compounds in standard refrigeration hoses may enter sealed systems and ultimately restrict the cap tube in an R-134a system.

For example, hoses that were used for a refrigeration system operating on R-12 may contain small quantities of mineral oil which can block the capillary tube in a system operating on R-134a. As little as one milligram may be sufficient to cause a blockage. In addition, sealed system components that have been used with CFC systems must not be used with R-134a systems. These components may contain residual amounts of refrigerant and oil which could damage an R-134a system.

At the earliest stage of development work on R-134a, tests were carried out on a different type of synthetic oil known as Poly-Alkaline Glycol (PAG). This oil is also used in certain air conditioning systems for cars. PAG and Ester oil DO NOT mix with one another. Service equipment used for R-134a / Ester oil must not come into contact with PAG.

Vacuum Pump Maintenance

It is absolutely essential to maintain your vacuum pump according to the manufacturer's instructions, including required oil changes at the recommended intervals. Vacuum pump oil should always be changed after evacuating a contaminated system. Vacuum pump performance should be checked periodically with a micron gauge.

Vacuum pump suppliers may or may not recommend changing the vacuum pump oil to the same type that's in the system being evacuated. Some manufacturers may recommend a vacuum pump that's dedicated to R-134a systems.

Robinair has stated that their current and discontinued vacuum pump models, using mineral oil currently specified for use in their vacuum pumps, can be used to evacuate R-134a/Ester oil systems. Robinair also states that it is acceptable to alternate between evacuating R-12/mineral oil and R-134a/Ester oil systems without adversely effecting the vacuum pump's performance.

For other brands of vacuum pumps, check with the manufacturer for restrictions and guidelines when using with R-134a.

⚠ CAUTION

If you use a vacuum pump with mineral oil to evacuate an R-134a system, it is ABSOLUTELY ESSENTIAL to have a shut-off valve between pump and your manifold gauge set. The hand valve must be closed during all times when vacuum pump is not operating. This will prevent migration of mineral oil vapor into R-134a/Ester oil systems. If the vacuum pump should stop during evacuation for any reason, the hand pump shut-off valve must be closed immediately.

VACUUM CHART		
Vacuum Inches Hg.	Microns	Boiling Point of Water °F
28.940	25000	77.9
29.530	10000	52.0
29.832	4600	32.0
29.882	1000	1.0
29.901	500	-11.2
29.915	150	-32.8
29.917	100	-38.2
29.919	50	-49.0

To achieve the required 29.9 inch (500 micron) vacuum, a properly maintained two-stage vacuum pump in good condition is required. A two stage pump can reach a deeper vacuum than a single stage because the exhaust from the first pumping stage is discharged into the second pumping stage. This means the second stage begins pumping at a lower pressure so a lower ultimate vacuum can be achieved.

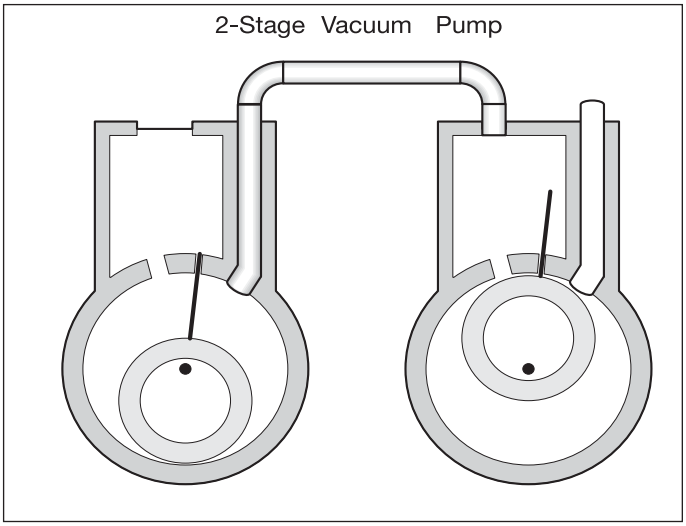


Figure 7-24 Two Stage Vacuum Pump

Service Diagnostic Tips

A prime requisite on the initial contact is: Always allow the customer to explain the problem. Many times the trouble can be diagnosed more quickly, based on the customer's explanation. Most of all, do not jump to conclusions until you have heard the full story and have evaluated the information obtained from the customer. Then proceed with your diagnosis.

Before starting a test procedure, connect the product service cord to the power source, through a wattmeter, combined with a voltmeter. Then make a visual inspection and operational check of the refrigerator to determine the following:

1. Is the product properly leveled?
2. Is the product located for proper dissipation of heat from the condenser? Check recommended spacing from walls.
3. Feel condenser. With compressor in operation, condenser should be hot, with gradual reduction in temperature from entry to exit of condenser.
4. Are door gaskets sealing properly? (Refrigerators and freezers)
5. Does the door actuate the light switch? (Refrigerators and freezers)
6. Is evaporator fan properly located on motor shaft?
7. Is the thermostat sensing element properly positioned?
8. Observe frost pattern on evaporator.
9. Check thermostat knob setting.
10. Inscribe bracket opposite slotted shaft of defrost timer to determine if timer advances (Refrigerators and freezers - auto defrost models only).

The service technician should inquire as to the number of people in the family to determine the service load and daily door openings. In addition, he should know the room temperature for refrigerator and freezers. For air-conditioners, check room size, temperature, amount of people, windows, and other factors that increase the load on the product.

After this phase of diagnosis is completed, a thorough operational check should be made of the refrigeration system.

Refrigerator and Freezer Air Temperatures

Temperatures are affected by improper door seal, frost accumulation on the evaporator, service load, ambient temperature, percent of relative humidity, thermostat calibration (cut-in and cut-out), location of evaporator fan blade on motor shaft, and by compressor efficiency.

Line Voltage

It is essential to know the line voltage at the product. A voltage reading should be taken at the instant the compressor starts, and also while the compressor is running. Line voltage fluctuation should not exceed 10% plus or minus, from nominal rating. Low voltage will cause overheating of the compressor motor windings, resulting in compressor cycling on thermal overload, or the compressor may fail to start. Inadequate line wire size, and overloaded lines, are common reasons for low voltage at the product.

IMPORTANT

Your Country may have regulations or restrictions governing the discharging of chlorofluorocarbons (CFC's) such as R-12 and R-22 to the atmosphere. Therefore, when discharging or purging the sealed system, use an approved refrigerant recovery system.

HFC 134a COMPARISON WITH CFC 12

HFC 134a (1,1,1,2-tetrafluoroethane) is being studied as part of the PAFT I programme sector, which began in December 1987. It is a prime candidate for the replacement of CFC 12 (dichlorodifluoromethane) in refrigeration and air conditioning systems, medical aerosols, and in certain foam blowing applications. HFC 134a is similar to CFC 12 in that it has a low chemical reactivity and a high degree of stability. Both chemicals are gases.

Inhalation Toxicity

(Short-term exposures to high concentrations, such as accidental leakages)

Both HFC 134a and CFC 12, are very low in toxicity by the inhalation route. The 4-hour LC_{50} for HFC 134a is greater than 500,000 ppm, and for CFC 12 it is 760,000 ppm. As with other halogenated hydrocarbons, CFC 12 and HFC 134a can, at high dose levels, sensitize the heart to adrenaline. For CFC 12, the threshold level for cardiac sensitization is 50,000 ppm, while for HFC 134a it is 75,000 ppm.

HFC-134a poses no acute or chronic hazard when it is handled in accordance with DuPont recommendations and when exposures are maintained at or below the DuPont Acceptable Exposure Limit (AEL) of 1,000 ppm (8 and 12 hour Time-Weighted Average or TWA).

An AEL is an airborne exposure limit established by DuPont scientists that specifies time-weighted average (TWA) airborne concentrations to which nearly all workers may be repeatedly exposed without adverse effects. The AEL for HFC-134a has the same value as the Threshold Limit Values (TLVs) established for CFC-12 and HCFC-22. TLVs are established by the American Conference of Governmental and Industrial Hygienists (ACGIH).

However, inhaling high concentrations of HFC-134a vapor may cause temporary central nervous system depression with narcosis, lethargy and anesthetic effects. Other effects that may occur include dizziness, a feeling of intoxication and a loss of coordination. Continued breathing of high concentrations of HFC-134a vapors may produce cardiac irregularities (cardiac sensitization), unconsciousness, and with gross overexposure, death. Intentional misuse or deliberate inhalation of HFC-134a may cause death without warning. This practice is extremely dangerous.

If you experience any of the initial symptoms, move to fresh air and seek medical attention.

Cardiac Sensitization

If vapors are inhaled at a concentration of 75,000 ppm, which is well above the AEL, the heart may become sensitized to adrenaline, leading to cardiac irregularities and, possibly, to cardiac arrest. The likelihood of these cardiac problems increases if you are under physical or emotional stress.

Medical attention must be given immediately if exposed to high concentrations of HFC-134a. DO NOT treat with adrenaline (epinephrine) or similar drugs. These drugs may increase the risk of cardiac arrhythmia and cardiac arrest. If the person is having difficulty breathing, administer oxygen. If breathing has stopped, give artificial respiration.

Skin and Eye Contact

At room temperature, HFC-134a vapors have little or no effect on the skin or eyes. However, in liquid form, HFC-134a can freeze skin or eyes on contact, causing frostbite. Following contact, soak the exposed area in lukewarm water, not cold or hot. If medical treatment cannot begin immediately, apply a light coat of a nonmedicated ointment, such as petroleum jelly. If the exposed area is in a location where the presence of the ointment would be awkward, such as on the eye, apply a light bandage. In all cases of frostbite, seek medical attention as soon as possible. Always wear protective clothing when there is a risk of exposure to liquid HFC-134a. Where splashing is possible, always wear eye protection and a face shield.

Refrigerant Leaks

A system with R-134a and Ester oil will become saturated with moisture much faster than a system with R-12 and mineral oil. If your leak was in the low side of the refrigeration system when the compressor is running the pressure in the low side will go into a vacuum. As additional refrigerant leaks out, the system will go deeper into a vacuum. The system running in this vacuum will allow air and moisture to be pulled into the sealed system. The moisture pulled in can then be mixed in to the Ester oil in the compressor.

If the product has had a low side leak you will need to install the two stage service dryer filter part number 5303918288. You must heat the crankcase area of the compressor using a heat gun on the high heat setting throughout the 30 minutes you are running your vacuum pump to pull a vacuum on the system. Every 4 to 5 minutes while you are running your vacuum pump and heating the crankcase area, shake the compressor. By heating the crankcase you are heating the oil in the compressor. This will drive the moisture out of the oil. By shaking the compressor this will allow the moisture to come to the top of the oil faster so the vacuum pump can remove the moisture from the system.

Electrolux Home Products Inc. does not approve the use of the Sweep Charge for sealed system repair. This method of servicing sealed systems is often used to repair products in the field. The Sweep Charge does not adequately remove moisture from the oil in the compressor. In a R-134a system you will need to replace the compressor if the product has had a low side leak and you are servicing with the Sweep Charge procedure.

R-134a refrigerant molecules are smaller than R-12 molecules. This means that R-134a will pass more minor leaks and the rate of flow will be greater than for R-12. Therefore, it is now more important than ever to follow good brazing practices. Use a good grade of silver solder. A 45% silver solder is recommended.

Spills or Leaks

If a large release of vapor occurs, such as from a large spill or leak, the vapors may concentrate near the floor or low spots and displace the oxygen available for breathing, causing suffocation.

Evacuate everyone until the area has been ventilated. Use blowers or fans to circulate the air at floor level. DO NOT re-enter the affected area unless you are equipped with a self-contained breathing apparatus or unless an area monitor indicates that the concentration of HFC-134a vapors in the area is below the AEL.

Always use self-contained breathing apparatus or an air-line mask when entering tanks or other areas where vapors might exist. Use the buddy system and a life-line. Refer to the Material Safety Data Sheet (MSDS) for HFC-134a information.

HFC-134a vapors have a slightly sweet odor that can be difficult to detect. Therefore, frequent leak checks and the installation of permanent area monitors may be necessary in enclosed spaces. Refer to ASHRAE Standards 15 and 34 for refrigeration machinery rooms.

To ensure safety when working with HFC-134a in enclosed areas:

1. Route relief and purge vent piping (if present) outdoors, away from air intakes.
2. Make certain area is well ventilated, using auxiliary ventilation if needed to move vapors.
3. Make sure area is clear of vapors prior to beginning work.
4. Install air monitoring equipment to detect leaks.

Combustibility of HFC-134a

HFC-134a is nonflammable at ambient temperatures and atmospheric pressure. However, tests have shown HFC-134a to be combustible at pressures as low as 5.5 psi (139.3 kPa absolute) at 177°C (350°F) when mixed with air at concentrations generally greater than 60% volume air. At lower temperatures, higher pressures are required for combustibility. (HCFC-22 is also combustible at pressures above atmospheric in the presence of high air concentrations). Test results and calculations have shown:

- At ambient temperature, all concentrations of HFC-134a in air are nonflammable at pressures below 15 psi (205 kPa absolute).
- Combustible mixtures of air and HFC-134a will not form when liquid HFC-134a is pumped into closed vessel if initial air pressure in vessel is limited to one atmosphere absolute and final pressure is limited to 300 psi (2,170 kPa absolute). If initial air pressure is greater than one atmosphere, combustible mixtures may form as tank is filled.

Based on above information, the following operating practices are recommended:

Leak Testing

- Equipment should NEVER be leak tested with a pressurized mixture of HFC-134a and air. HFC-134a may be safely pressured with dry nitrogen.

Bulk Delivery and Storage

- Tanks should normally be evacuated at start of filling, and should never be filled while under positive air pressure.
- Tank pressure should never be allowed to exceed 300 psi (2,170 kPa) when filling with HFC-134a. Relief devices on either tanks or HFC-134a supply system usually prevent this.
- Tank pressures should be monitored routinely.
- Air lines should never be connected to storage tanks.

Filling and Charging Operations

- Before evacuating cylinders or refrigeration equipment, any remaining refrigerant should be removed by recovery system.
- Vacuum pump discharge lines should be free of restrictions that could increase discharge pressures above 15 psi (205 kPa) and result in formation of combustible mixtures.
- Cylinders or refrigeration equipment should normally be evacuated at start of filling, and should never be filled while under positive air pressure.
- Final pressures should not exceed 300 psi (2,170 kPa).
- Filled cylinders should periodically be analyzed for air (nonabsorbable gas or NAG).

Refrigerant Recovery Systems

Efficient recovery of refrigerant from equipment or containers requires evacuation at the end of the recovery cycle. Suction lines to a recovery compressor should be periodically checked for leaks to prevent compressing air into the recovery cylinder during evacuation. In addition, the recovery cylinder pressure should be monitored, and evacuation stopped in the event of a rapid pressure rise indicating the presence of noncondensable air. The recovery cylinder contents should then be analyzed for NAG, and the recovery system leak checked if air is present. DO NOT continue to evacuate a refrigeration system that has a major leak.

Thermal Decomposition

HFC-134a vapors will decompose when exposed to high temperatures from flames or electric resistance heaters. Decomposition may produce toxic and irritating compounds, such as hydrogen fluoride. The pungent odors released will irritate the nose and throat and generally force people to evacuate the area. Therefore, it is important to prevent decomposition by avoiding exposure to high temperatures.

R-134a Physical Properties:

R-134a - Tetrafluoroethane
Refrigerant of choice in automotive industry. Genetron134a replaces CFC12 for air conditioning and refrigeration systems in commercial residential and industrial applications.

R-12 - Dichlorodifluoromethane
A versatile and widely used refrigerant. Common in reciprocating and rotary type equipment. For all types of applications, household to industrial. Also employed in some centrifugal designs and in several special applications.

Chemical formula	CF_3CH_2F
Molecular weight	102.03
Boiling point at 1 atm.	-15.1°F (-26.2°C)
Critical temperature	214.0°F (101.1°C)
Critical pressure, psia.	589.9
Critical density. lb./cu. tt.	31.97
Liquid density at 80°F (26.7°C). lb./cu. ft.	75.0
Heat of vaporization at boiling point, Btu/lb.°F	92.4
Specific heat of liquid at 80°F (26.7°C). Btu/lb.°F	0.341
Specific heat of vapor at constant pressure (1 atm.) and 80°F (26.7°C), (Btu/lb.°F)	0.204
*Flammable range, %volume in air.	None
Ozone depletion potential	0
Greenhouse warming potential (estimate)	0.285

* Flame limits measured using ASTM E681 with electrically activated kitchen match ignition source per ASHRAE Standard 34.

Comparative Cycle Performance:
Evaporator temperature = 20°F
Condenser temperature = 110°F
Suction superheat = 30°F
sub-cooling = 10°F
Compressor isentropic efficiency = 65%

	Refrigerant		
	12	22	134a
Evaporator pressure, psi	21.0	43.0	18.5
Condenser pressure, psi	136.4	226.3	146.4
Compression ratio	4.23	4.17	4.86
Compressor discharge temperature, °F	188.1	227.0	178.3
Coefficient of performance	2.90	2.79	2.83
Refrigerant circulation per ton, lb./min.	3.80	2.78	3.00
Compressor displacement per ton, cfm.	4.51	2.82	4.55
Liquid flow per ton, cu. in. /min	83.2	67.4	71.7
Latent heat at evaporator temp., Btu/lb	66.5	90.6	86.9
Net refrigeration effect. Btu/lb	52.7	72.0	66.7

HFC-134a, CFC-12 Pressure Temperature Chart

˚F	˚C	HF C- 134a	CF C- 12		˚F	˚C	HF C- 134a	CF C- 12
-60	-51.1	21.8*	19.0*		55	12.8	51.1	52.0
-55	-48.3	20.4*	17.3*		60	15.6	57.3	57.7
-50	-45.6	18.7*	15.4*		65	18.3	63.9	63.8
-45	-42.8	16.9*	13.3*		70	21.1	70.9	70.2
-40	-40.0	14.8*	11.0*		75	23.9	78.4	77.0
-35	-37.2	12.5*	8.4*		80	26.7	86.4	84.2
-30	-34.4	9.8*	5.5*		85	29.4	94.9	91.8
-25	-31.7	6.9*	2.3*		90	32.2	103.9	99.8
-20	-28.9	3.7*	0.6		95	35.0	113.5	108.3
-15	-26.1	0.0	2.4		100	37.8	123.6	117.2
-10	-23.3	1.9	4.5		105	40.6	134.3	126.6
-5	-20.6	4.1	6.7		110	43.3	145.6	136.4
0	-17.8	6.5	9.2		115	46.1	157.6	146.8
5	-15.0	9.1	11.8		120	48.9	170.3	157.7
10	-12.2	12.0	14.6		125	51.7	183.6	169.1
15	-9.4	15.0	17.7		130	54.4	197.6	181.0
20	-6.7	18.4	21.0		135	57.2	212.4	193.5
25	-3.9	22.1	24.6		140	60.0	227.9	206.6
30	-1.1	26.1	28.5		145	62.8	244.3	220.3
35	1.7	30.4	32.6		150	65.6	261.4	234.6
40	4.4	35.0	37.0		155	68.3	279.5	249.5
45	7.2	40.0	41.7		160	71.1	298.4	265.1
50	10.0	45.3	46.7		165	73.9	318.3	281.4

CFCs

Chlorofluorocarbons (CFCs) are compounds consisting of chlorine, fluorine, and carbon atoms which are very stable in the troposphere. They are degraded only in the stratosphere by the sun's radiation where released chlorine may contribute to ozone depletion. They can persist in the troposphere for a hundred years or longer.

Fluorocarbons

These chemical compounds include CFCs, hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs). For many years, CFCs have served vital functions in society. They are used in a variety of applications including refrigeration, air conditioning, energy efficient insulation, medical products, and cleaning of electronic and precision engineering components. HCFCs and HFCs retain many of the desirable properties of CFCs but because they exist for a shorter time in the atmosphere, ozone depletion and global warming concerns are significantly reduced.

Global Warming

Global warming, which is an increase in the natural greenhouse effect, refers to the physical phenomenon that may lead to heating of the earth. Most of the sun's energy reaches the earth as visible light. After passing through the atmosphere, part of this energy is absorbed by the earth's surface and in the process is converted into heat energy. The earth, now warmed by the sun, radiates heat energy back into the atmosphere toward space.

Naturally occurring gases, such as carbon dioxide, water vapor, and ozone, absorb and thus retain some of the outgoing heat energy. This process slows the heat loss, making the earth's surface warmer than it would be if this heat energy had passed unobstructed through the atmosphere into space. The warmer earth's surface, in turn, radiates more heat until a balance is established between incoming and outgoing energy. This warming process, caused by the atmosphere's absorption of the heat energy radiated from the earth's surface, is called the greenhouse effect.

Increasing concentrations of gases from man-made sources (e.g., carbon dioxide, methane, and CFCs) that absorb the heat radiation could lead to a slow warming of the earth. This phenomenon is commonly referred to as global warming.

Global Warming Potential (GYP)

An index developed to provide a simplified means of describing the relative ability of each greenhouse gas emission to affect radiative forcing and thereby the global climate. GYPs are defined on amass basis, relative to either CFC-11 (the Halocarbon GYP or HGWP) or carbon dioxide. Because CFC-11 has a finite lifetime in the atmosphere, the HGWP can be calculated explicitly and is a single number. Because carbon dioxide does not have a finite lifetime in the atmosphere, GYPs relative to it have to be calculated up to a particular time horizon, for example, 20, 100, or 500 years.

Greenhouse Gases

Gases present in relatively small quantities in the atmosphere that strongly absorb infrared radiation or "heat" emitted by the earth. The primary greenhouse gases are water vapor, carbon dioxide, methane, nitrous oxide, ozone, and some of the chlorofluorocarbons. Concentrations of several greenhouse gases are increasing, primarily as a result of human activities.

HCFCs

Hydrochlorofluorocarbons (HCFCs) are compounds comprised of hydrogen, chlorine, fluorine, and carbon atoms. These compounds have many of the useful properties of CFCs, but are destroyed naturally in the lower atmosphere and do not persist to the same extent as CFCs. Only a fraction of HCFCs emitted can be transported to the ozone layer in the stratosphere where their chlorine could deplete ozone. HCFCs typically have an ozone depletion potential 2 to 10 percent that of CFCs.

HFCs

Hydrofluorocarbons (HFCs) are compounds consisting of hydrogen, fluorine, and carbon atoms which, like the HCFCs, are destroyed naturally in the lower atmosphere. They have many of the useful properties of the CFCs. Because they do not contain chlorine, they are not involved in ozone depletion.

NOT-IN-KIND (NIK) Technologies

Technologies that do not rely on the use of fluorocarbons.

Ozone

Ozone, formed in the stratosphere by the action of sunlight on oxygen, is also an airborne pollutant near ground level. Low altitude (tropospheric) ozone is formed by reactions between hydrocarbons and oxides of nitrogen in sunlight.

Ozone Depletion

Ozone is continually being formed and destroyed by chemical reactions occurring in the stratosphere. There are large natural changes in ozone concentration in the stratosphere; for example, between summer and winter there is a change of about 25 percent at mid-latitudes. Ozone depletion occurs if the rate of ozone destruction is increased due to human activities.

Principles Of Automatic Defrost Operation

Automatic defrost refrigerators operate on the principle that moisture or frost transfers or migrates to the coldest surfaces (evaporator) in the freezer compartment. For example, a small amount of water spilled in the freezer compartment will freeze immediately. However, this ice in time will evaporate and transfer to the colder surfaces of the freezer such as the evaporator coil.

Air Circulation Patterns

Automatic defrost models have a single evaporator in the freezer compartment, and have forced air cooling in the freezer and refrigerator compartments. The "fin and tube" aluminum type evaporator is located behind the back wall of the freezer compartment. A circulating fan (suction type) pulls air from the freezer compartment through the grill in the bottom of the freezer and from the refrigerator compartment through a grill located in each bottom rear corner of the food compartment cabinet interior. The air is than drawn up through the fin and tubes of the evaporator surface. The cold air is forced into a fan cover and discharged into the top of the freezer. (See Figure 8-1).

NOTE: Non-dispenser models with the ice maker in the freezer compartment have an air duct added to the evaporator cover. This air duct directs air across the ice maker assembly. The air flows in the same general pattern as shown in Figure 8-1.

The air circulating fan operates any time the thermistors sense the temperature of the food compartment or the freezer compartment are above the upper control limit and send the information to the lower control board. If the food compartment is calling for cooling the automatic damper in the back air channel behind the crisper drawer of the food compartment will open and allow cold air to enter the food compartment. The air is then carried up the air channel to the top and discharges into the top of the food compartment. If the food compartment calls for cooling but the fan is not running, the fan will start as soon as the damper is open, and will continue to run as long as the food compartment and/or the freezer compartment calls for cooling. The freezer thermistor will stop the compressor if the freezer compartment goes below the lower control limit and restart the compressor on low speed as soon as the temperature in the freezer goes back into the normal operating range.

The air circulating fan is a 12 V DC fan motor that operates any time the food compartment or the freezer compartment calls for cooling. During the defrost period, the compressor and circulating fan do not operate. The power board, located under the freezer behind the grill, opens the electrical circuit to the fan motor and compressor for the defrost cycle. The lower control board also closes the damper door that is controlled by a 12 V DC stepper motor, and keeps the damper door closed during the complete defrost cycle.

If the product is equipped with a perfect temperature drawer, it will pull air from the freezer through a small opening in the right side of the bottom of the liner, just in front of the air return opening. A fan controlled by the electronic drawer control will pull the air up from the freezer through the drawer and the air will return to the freezer by way of the right air return opening in the liner.

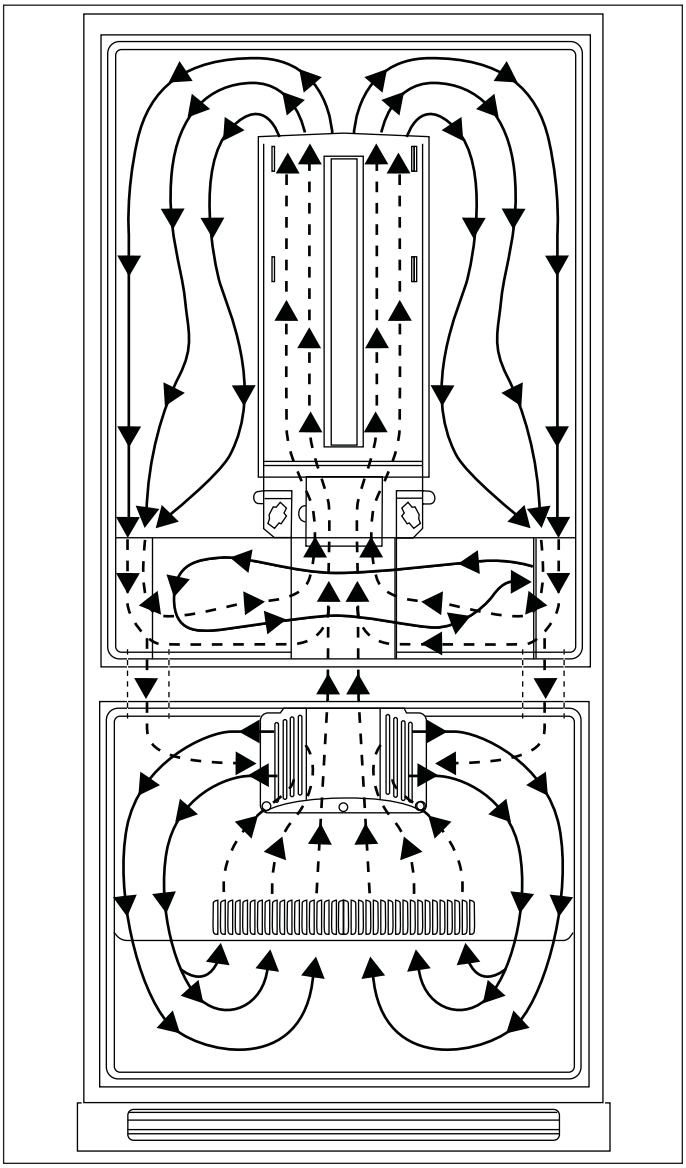
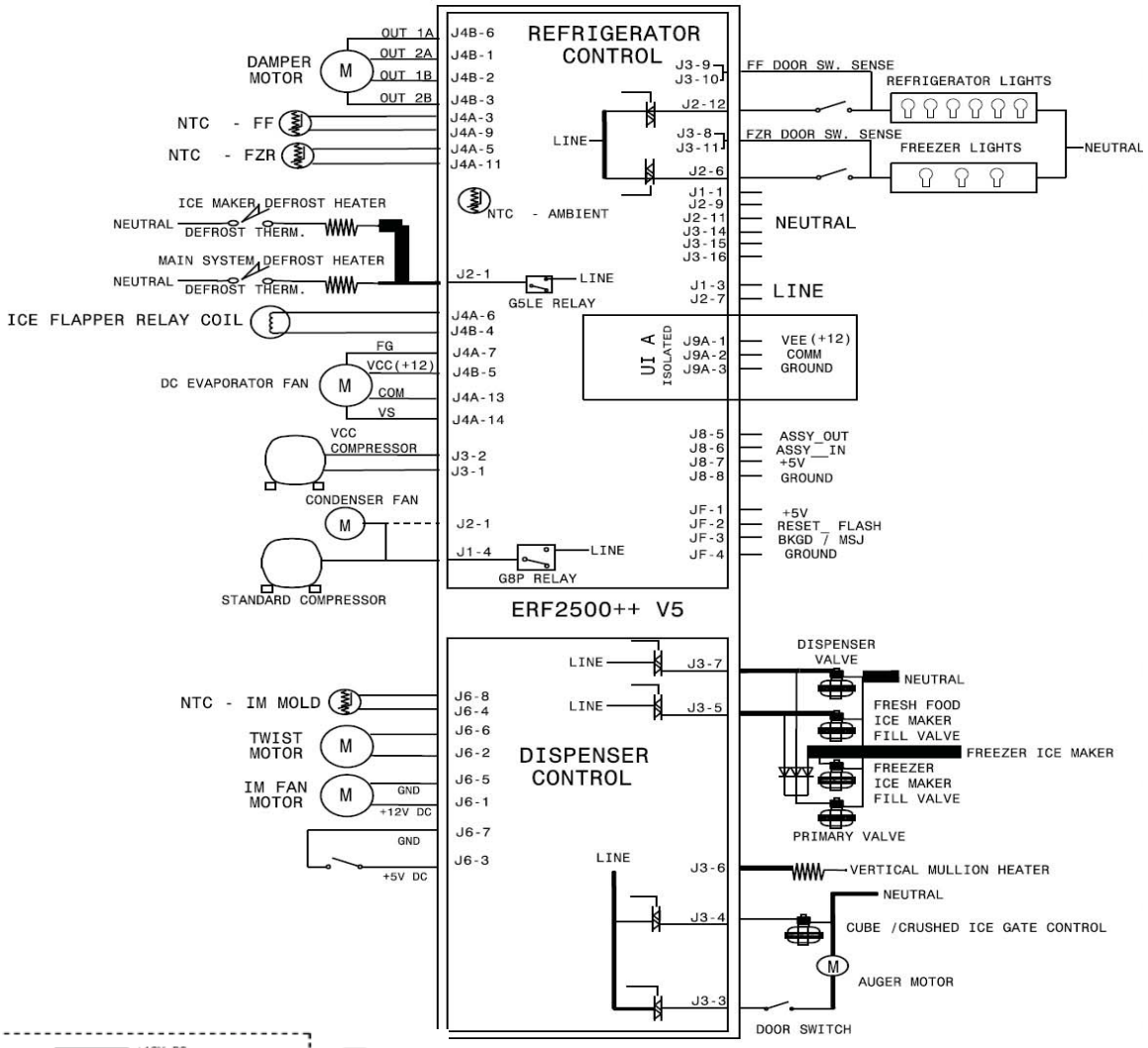
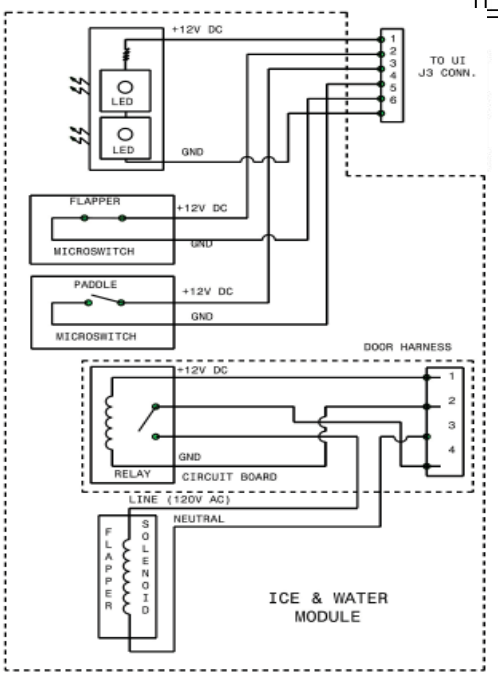


Figure 8-1. Cabinet Air Flow

Dispenser Models with Flex Tray Fresh Food Ice Maker



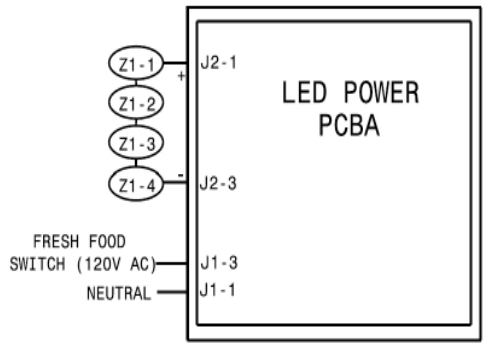


ERF2500++ ERROR CODES:

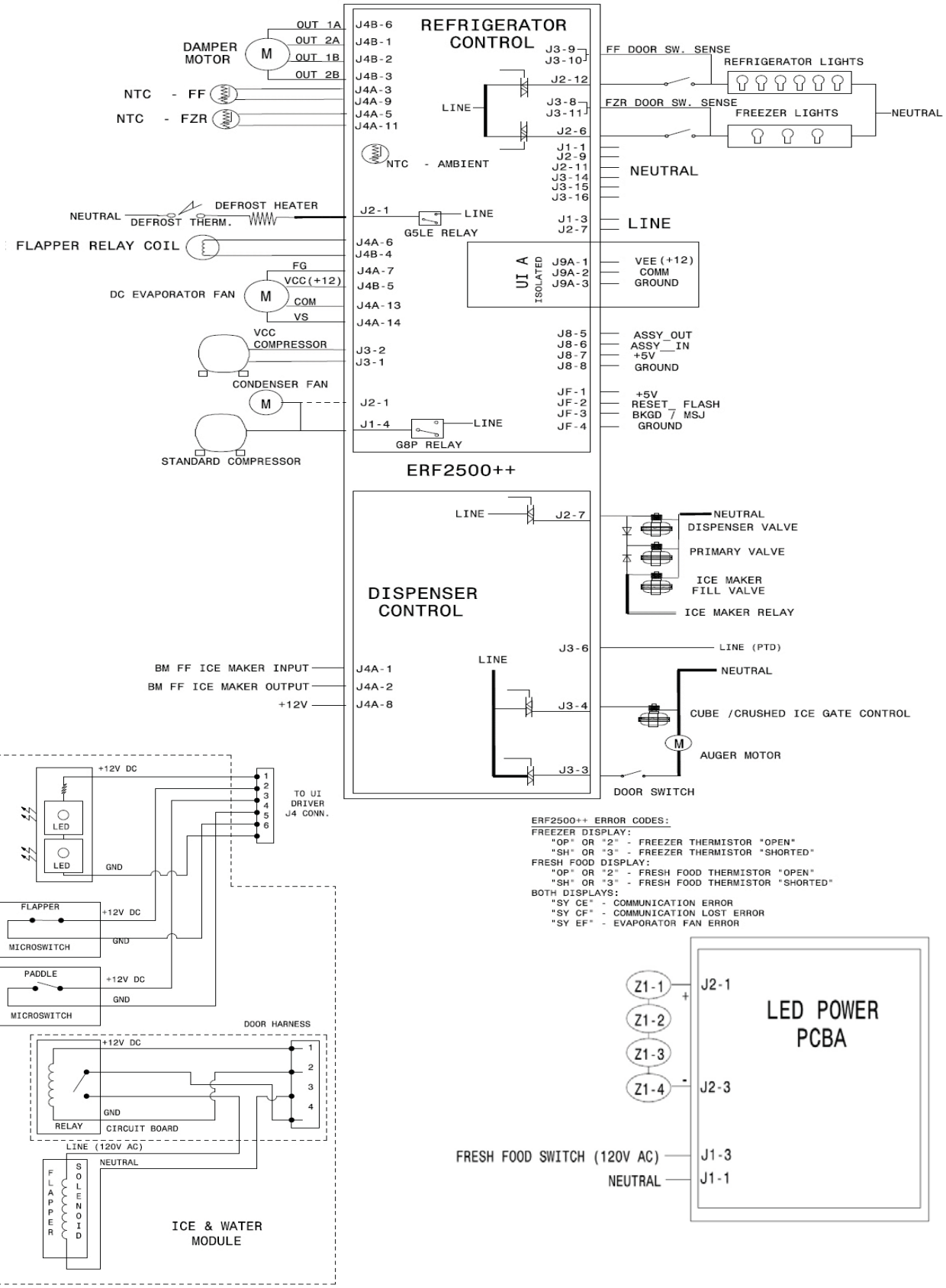
FREEZER DISPLAY:
- "OP" OR "2" - FREEZER THERMISTOR "OPEN"
- "SH" OR "3" - FREEZER THERMISTOR "SHORTED"

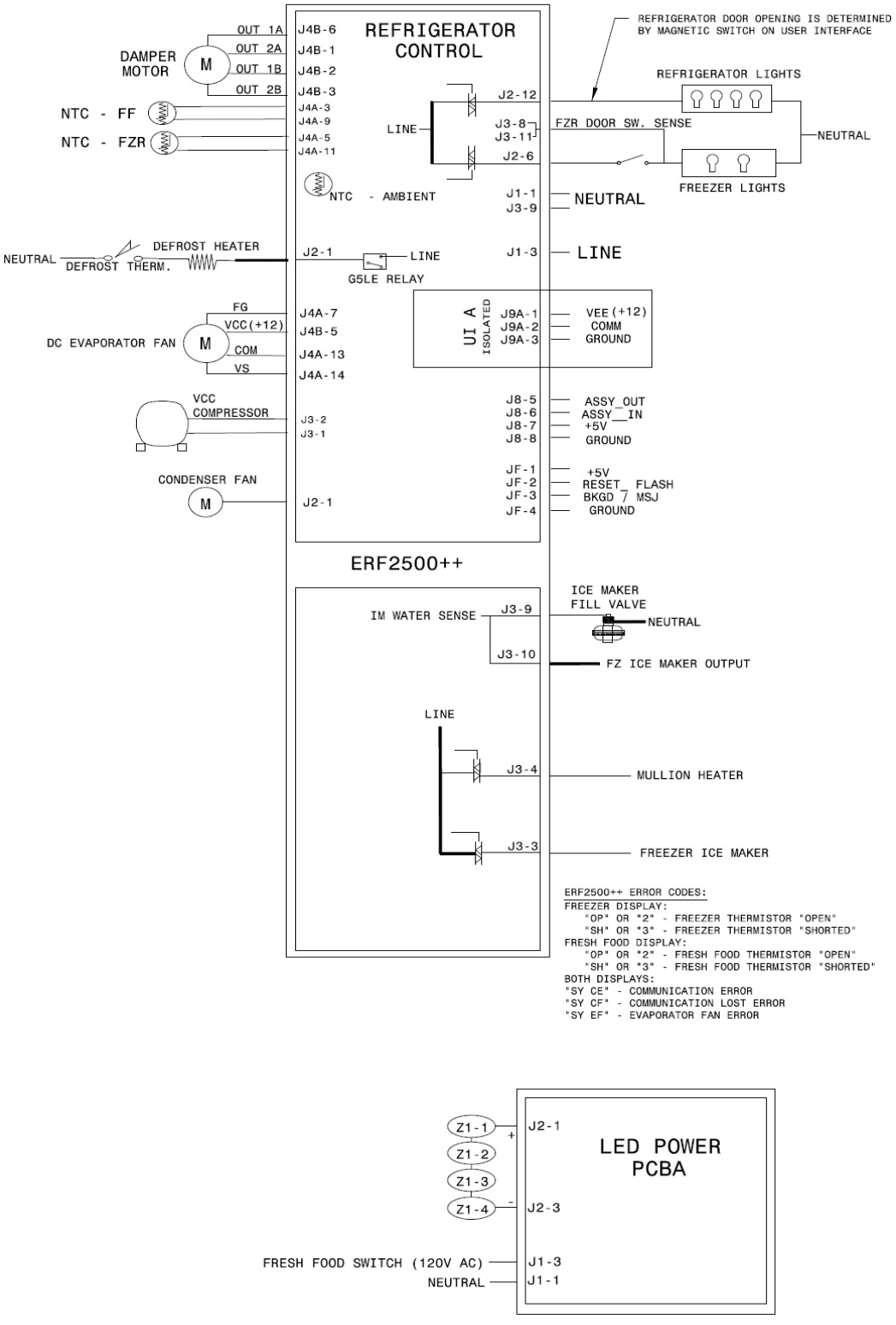
FRESH FOOD DISPLAY:
- "OP" OR "2" - FRESH FOOD THERMISTOR "OPEN"
- "SH" OR "3" - FRESH FOOD THERMISTOR "SHORTED"

BOTH DISPLAYS:
- "SY CE" - COMMUNICATION ERROR
- "SY CF" - COMMUNICATION LOST ERROR

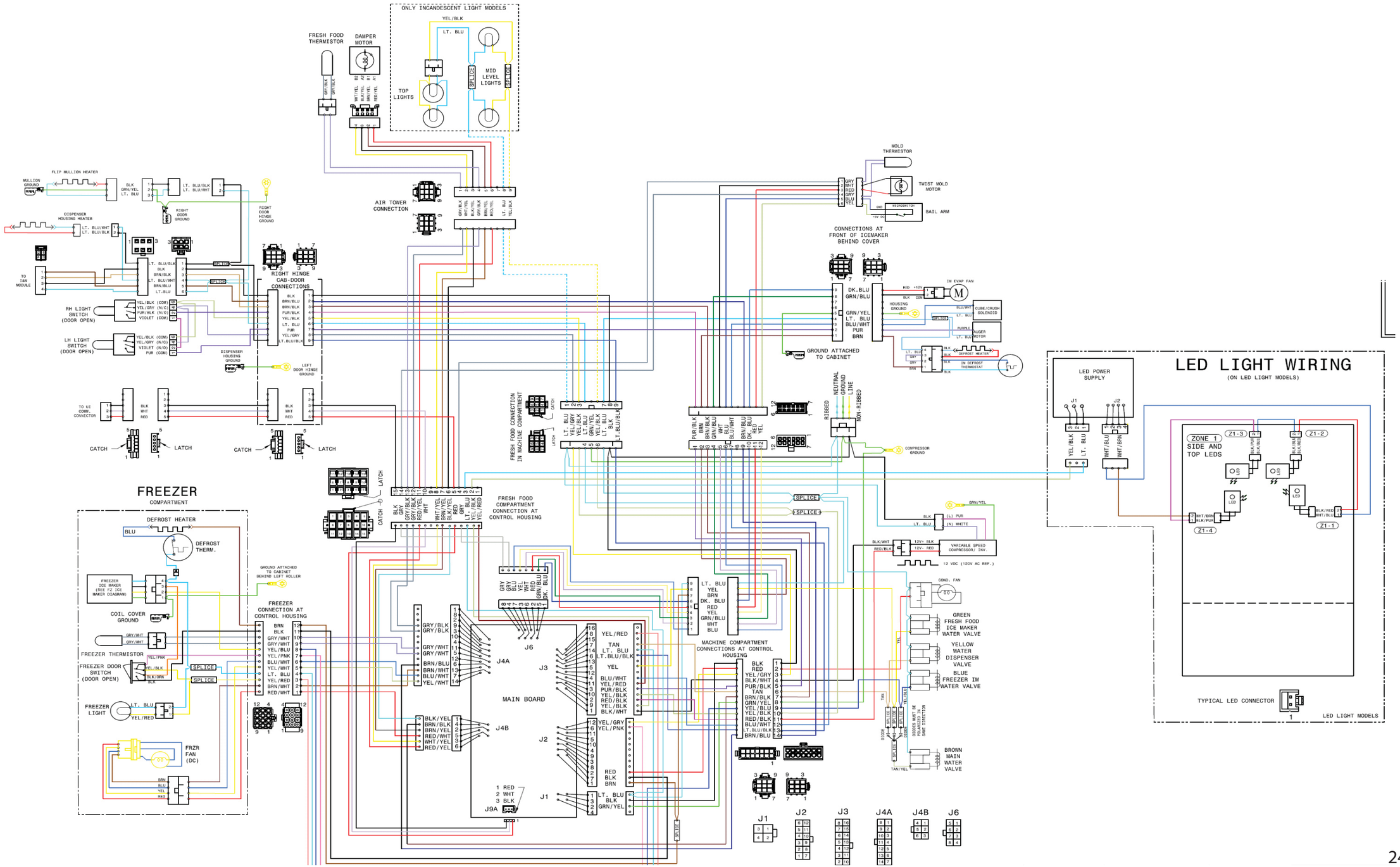


Dispenser Models with Finger Evaporator Fresh Food Ice Maker




REFRIGERATOR DOOR OPENING IS DETERMINED BY MAGNETIC SWITCH ON USER INTERFACE
REFRIGERATOR CONTROL
DAMPER MOTOR
OUT 1A
OUT 2A
OUT 1B
OUT 2B
J4B-6
J4B-1
J4B-2
J4B-3
NTC - FF
NTC - FZR
J4A-3
J4A-9
J4A-5
J4A-11
NTC - AMBIENT
REFRIGERATOR LIGHTS
J2-12
LINE
J3-8
J3-11
J2-6
FZR DOOR SW. SENSE
NEUTRAL
FREEZER LIGHTS
J1-1
J3-9
NEUTRAL
NEUTRAL
DEFROST HEATER
DEFROST THERM.
J2-1
LINE
G5LE RELAY
J1-3
LINE
FG
VCC(+12)
COM
VS
DC EVAPORATOR FAN
J4A-7
J4B-5
J4A-13
J4A-14
UI A
ISOLATED
J9A-1
J9A-2
J9A-3
VEE(+12)
COMM
GROUND
VCC
COMPRESSOR
J3-2
J3-1
J8-5
J8-6
J8-7
J8-8
ASSY_OUT
ASSY_IN
+5V
GROUND
CONDENSER FAN
J2-1
JF-1
JF-2
JF-3
JF-4
+5V
RESET_ FLASH
BKGD / MSJ
GROUND
ERF2500++
ICE MAKER FILL VALVE
IM WATER SENSE
J3-9
J3-10
NEUTRAL
FZ ICE MAKER OUTPUT
LINE
J3-4
MULLION HEATER
J3-3
FREEZER ICE MAKER
ERF2500++ ERROR CODES:
FREEZER DISPLAY:
"OP" OR "2" - FREEZER THERMISTOR "OPEN"
"SH" OR "3" - FREEZER THERMISTOR "SHORTED"
FRESH FOOD DISPLAY:
"OP" OR "2" - FRESH FOOD THERMISTOR "OPEN"
"SH" OR "3" - FRESH FOOD THERMISTOR "SHORTED"
BOTH DISPLAYS:
"SY CE" - COMMUNICATION ERROR
"SY CF" - COMMUNICATION LOST ERROR
"SY EF" - EVAPORATOR FAN ERROR
Z1-1
Z1-2
Z1-3
Z1-4
+
-
J2-1
J2-3
LED POWER PCBA
FRESH FOOD SWITCH (120V AC)
NEUTRAL
J1-3
J1-1

Dispenser Model with Flex Tray Fresh Food Compartment Ice Maker



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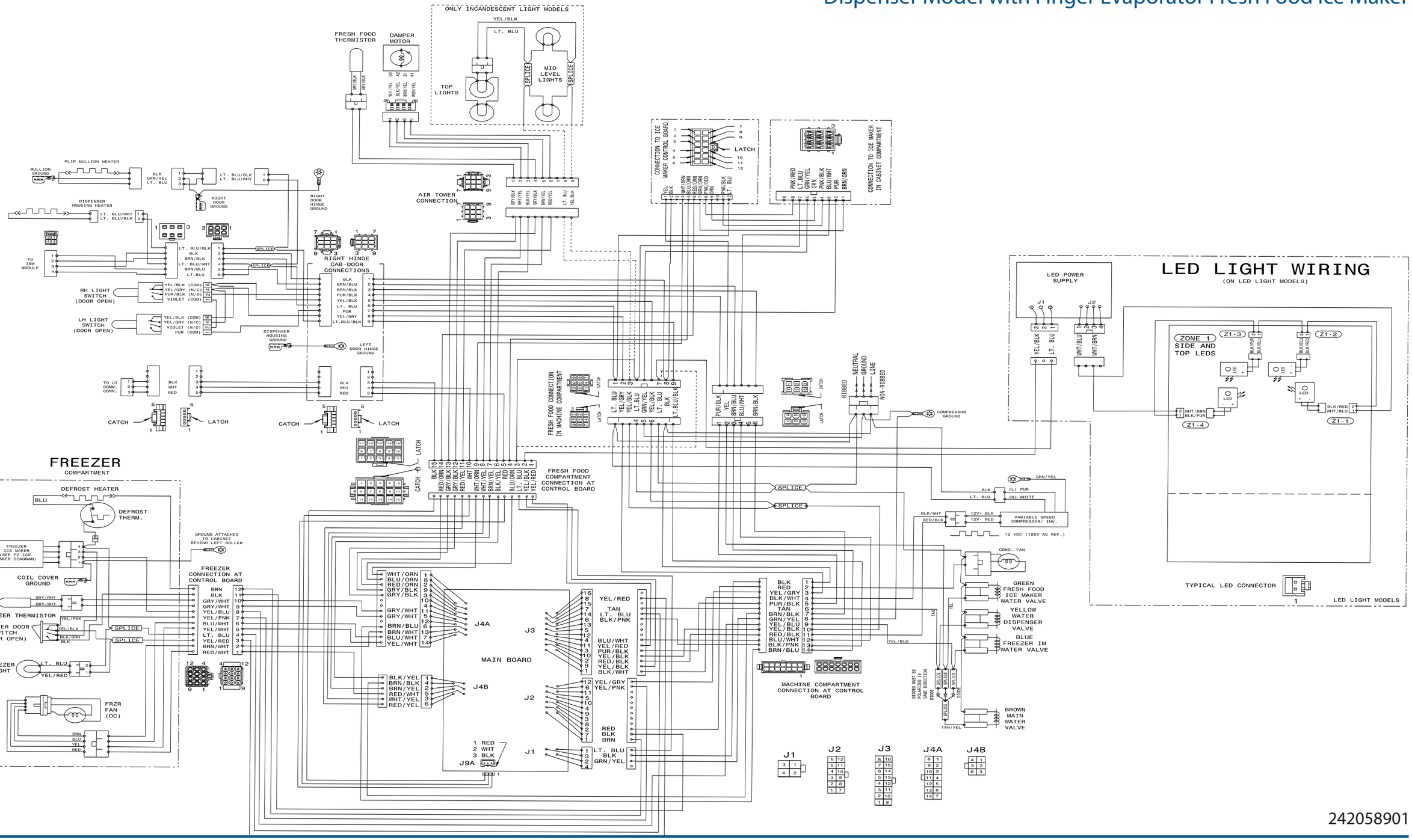
Dispenser Model with Finger Evaporator Fresh Food Ice Maker



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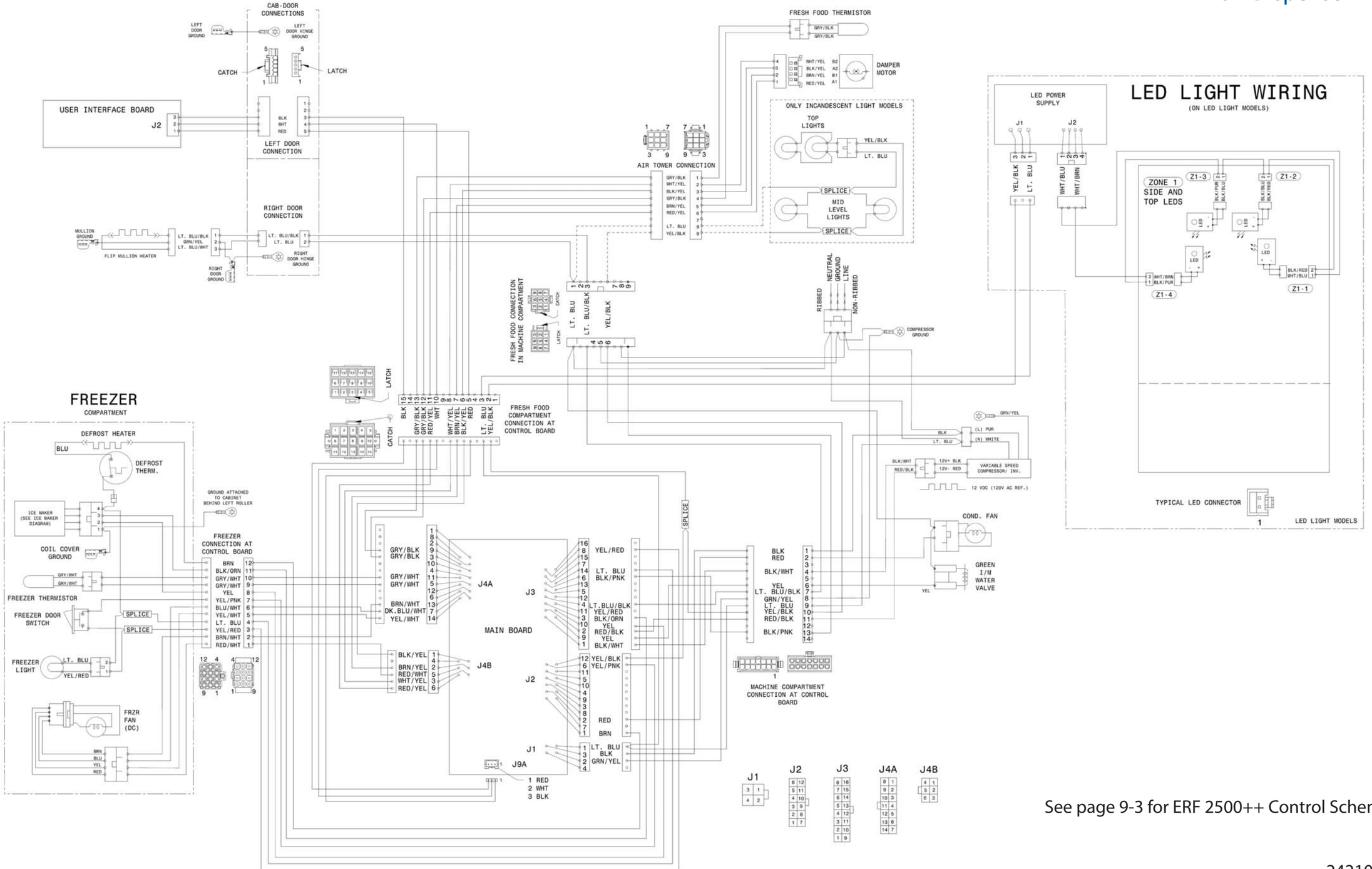

See page 9-3 for ERF 2500++ Control Schematic