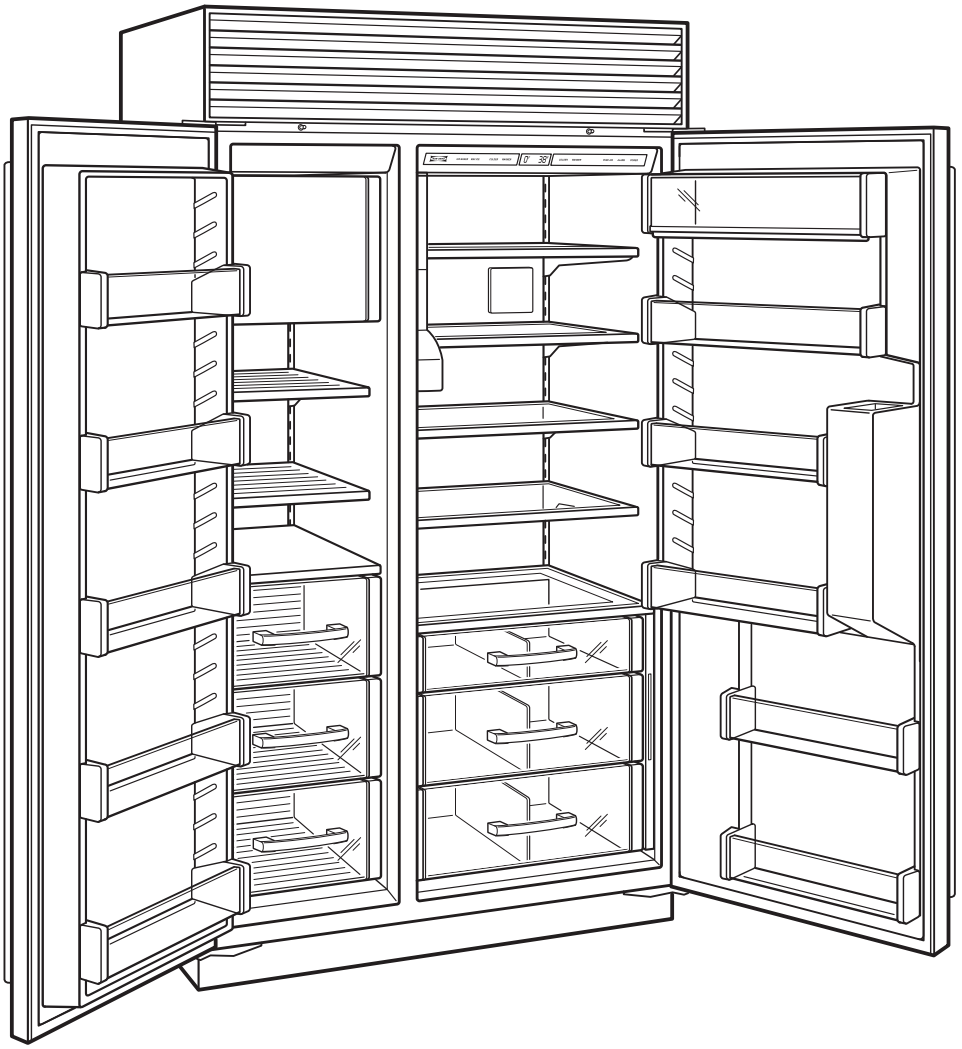
SUB-ZERO®

TECHNICAL SERVICE MANUAL

Built-In (BI) Series



JOB AID #7005333 Revision B - March, 2009

SECTION 1

GENERAL INFORMATION

INTRODUCTION

This Technical Service Manual has been compiled to provide the most recent service information for Built-In Series appliances. The information in this manual will enable the service technician to diagnose malfunctions, perform necessary repairs, and return a Built-in Series unit to proper operational condition.

The service technician should read the complete instructions contained in this manual before initiating any repairs.

IMPORTANT SAFETY INFORMATION

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

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

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

⚠ WARNING

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

⚠ CAUTION

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

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

TECHNICAL ASSISTANCE

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

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

Customer Assistance
Phone #: (800) 222 - 7820
Facsimile #: (608) 441 - 5887

Technical Assistance
(For Technicians in Customer's Homes Only)
Phone #: (800) 919 - 8324

Warranty Claims
Phone #: (800) 222 - 7820
Facsimile #: (608) 441 - 5886

Service Department e-mail Address:
customerservice@subzero.com

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

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

TABLE OF CONTENTS

WARRANTY INFORMATION

This page summarizes the *2, 5 & 12 Year Warranty* provided with every Sub-Zero appliance, as well as the two special warranties:

- ***Non-Residential Warranty*** - Applies to units installed in non-residential applications.
- ***Display/Model Home Warranty*** - Applies to distributor and dealer display units, and units in model homes, sold three years after date of manufacture.

Following the warranty summaries are details and notes about the warranties.

TWO, FIVE & TWELVE YEAR Warranty

- 2 year TOTAL PRODUCT, *parts and labor.
  NOTE: *Stainless Steel doors, panels, grilles & product frames are covered by a 60 day parts & labor warranty for cosmetic defects.*
- 5 Year SEALED SYSTEM, **parts and labor.
- 6th - 12th year LIMITED SEALED SYSTEM, **parts only.

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

- 1 Year TOTAL PRODUCT, *parts and labor.
  NOTE: *Stainless Steel doors, panels, grilles & product frames are covered by a 60 day parts & labor warranty for cosmetic defects.*
- 5 Year SEALED SYSTEM, **parts and labor.

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

- 1 Year TOTAL PRODUCT, *parts and labor.
  NOTE: *Stainless Steel doors, panels, grilles & product frames are covered by a 60 day parts & labor warranty for cosmetic defects.*
- 5 Year SEALED SYSTEM, **parts and labor.

Warranty Details:

* *Includes, but is not limited to the following:*
Electronic Control System Components, Fan & Light Switches, Fan Motors & Blades, Defrost Heaters, Defrost Terminator, Drain Pan, Drain Tubes, Wiring, Light sockets & bulbs, Icemaker, Water Valve, Door hinges, Door closers & Cams, Compressor Electricals, etc. . .
NOTE: *Stainless Steel doors, panels, grilles & product frames are covered by a 60 day parts & labor warranty for cosmetic defects.*

** *Includes the following:*
Compressors, Condenser, Evaporators, Filter-Driers, Heat-exchangers, All Tubing that Carries the Freon.
NOTE: *Condenser Fan Motors, Freon, Solder and compressor electricals are NOT considered sealed system parts.*

Warranty Notes:

- *All warranties begin at unit's initial installation date.*
- *All Warranty and Service information collected by Sub-Zero is arranged and stored under the unit serial number, and the customer's last name.*
  Sub-Zero requests that you have the model and serial numbers available whenever contacting the factory or parts distributor.
- *The serial tag on ALL-REFRIGERATOR and ALL-FREEZER models is located by the top door hinge in the refrigeration compartment.*
- *The serial tag on SIDE-BY-SIDE models is located by the top door hinge in the freezer compartment.*
- *The serial tag on OVER / UNDER models is located by the top door hinge in the refrigerator compartment.*

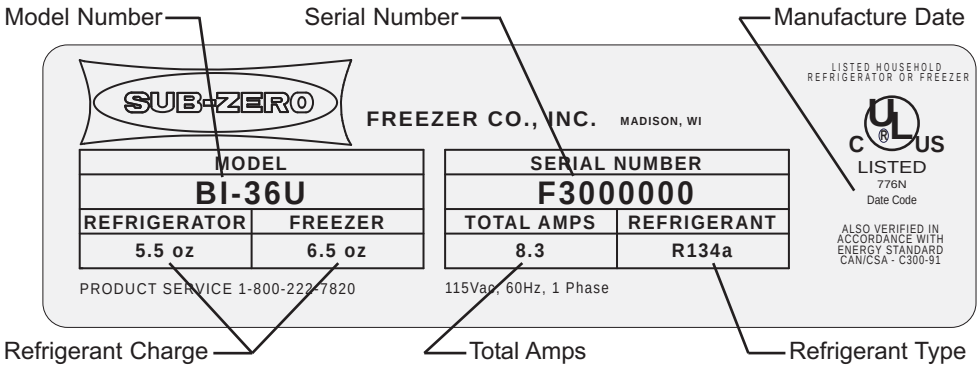


Figure 1-1. Serial Tag Layout (Layout Reference Only)

MODEL DESCRIPTIONS

The diagram below (See Figure 1-2) explains the full model number code of the Built-in Series. The tables starting on the following page list the basic model numbers, which are all the digits up to the letter after the first forward slash, and are accompanied by diagrams of the basic models.

NOTE: *Functional parts are common to each model configuration, meaning for example, models BI-36UG/S/PH-RH, BI-36UG/S/PH-LH, BI-36UG/S/TH-RH , BI-36UG/S/TH-LH, etc., will utilize common functional parts. For this reason, only the basic model numbers are used in this manual , unless otherwise specified.*

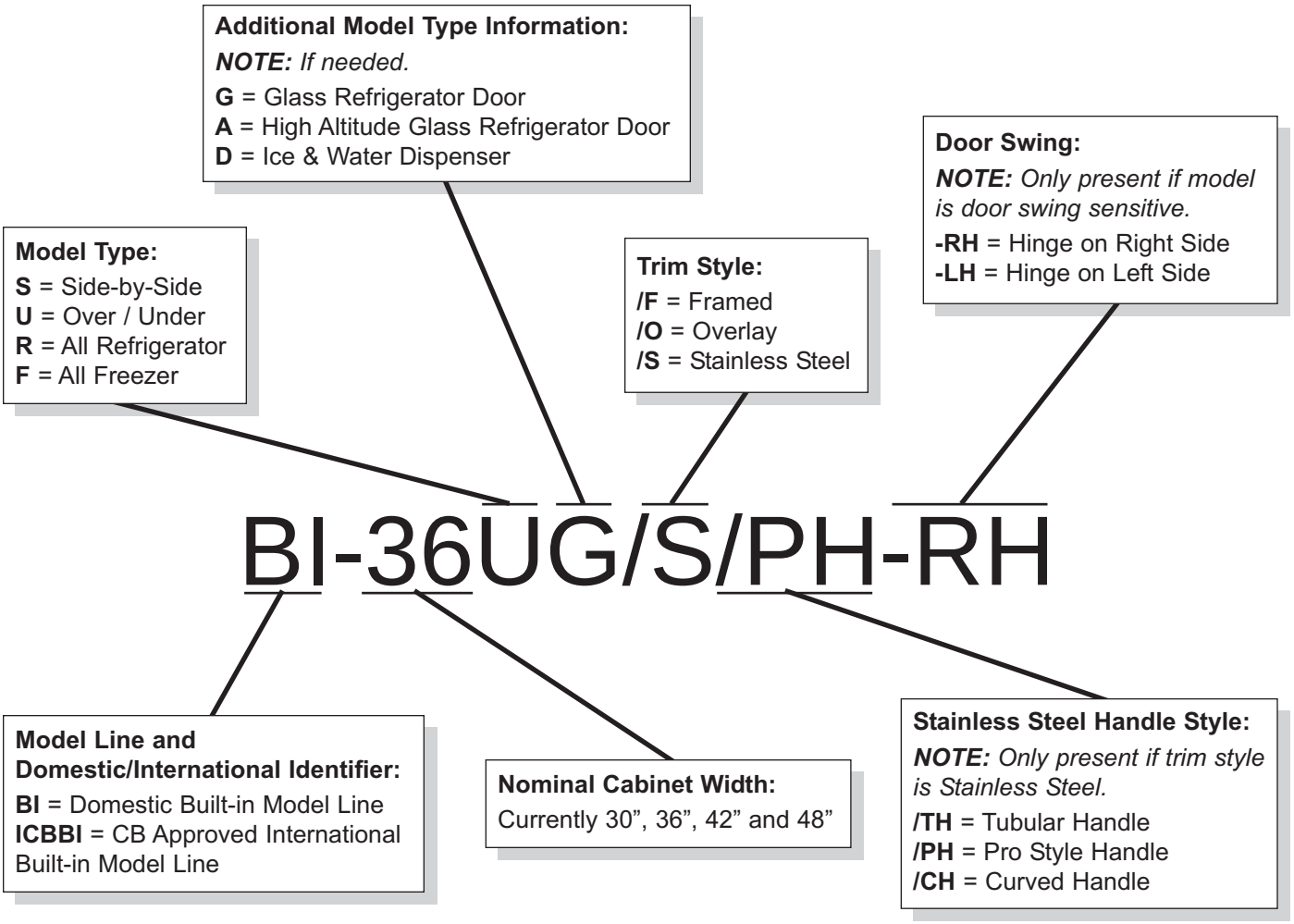
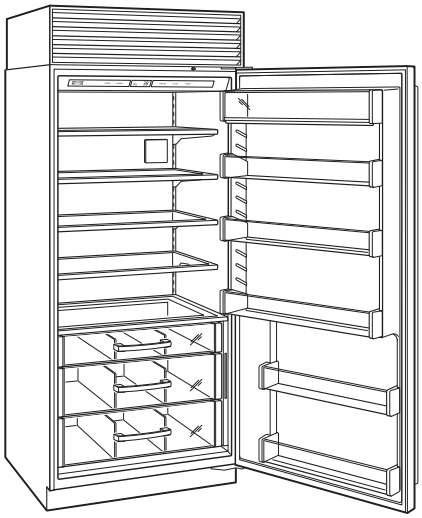


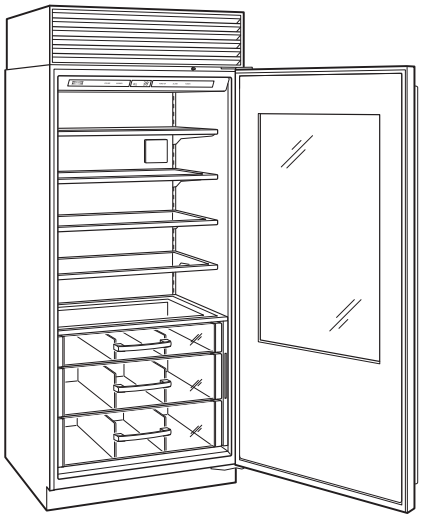
Figure 1-2. Model Number Code

MODEL	DESCRIPTION
BI-36R/F	**B**uilt-**I**n Series, **36**" Wide, All-**R**efrigerator, **F**ramed Door Trim with Handle, Louver Grille (Standard)
BI-36R/O	**B**uilt-**I**n Series, **36**" Wide, All-**R**efrigerator, **Overlay** Door Trim (No Handle), Panel Grille (Standard)
BI-36R/S	**B**uilt-**I**n Series, **36**" Wide, All-**R**efrigerator, Classic **S**tainless Steel Wrapped Door, Stainless Steel Grille (Standard)



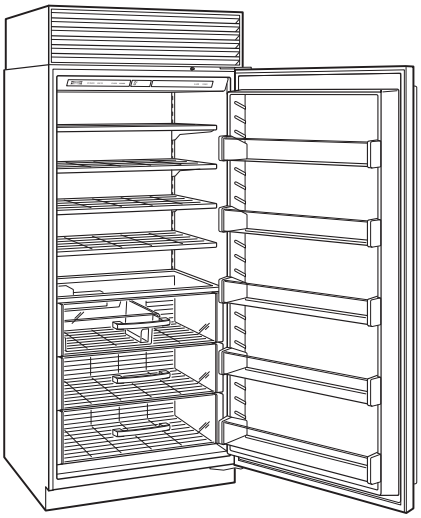
Model BI-36R

MODEL	DESCRIPTION
BI-36RG/F	**B**uilt-**I**n Series, **36**" Wide, All-**R**efrigerator, **G**lass Door, **F**ramed Door Trim with Handle, Louver Grille (Standard)
BI-36RA/F	*(Same as above with High Altitude Glass)*
BI-36RG/O	**B**uilt-**I**n Series, **36**" Wide, All-**R**efrigerator, **G**lass Door, **Overlay** Door Trim (No Handle), Panel Grille (Standard)
BI-36RA/O	*(Same as above with High Altitude Glass)*
BI-36RG/S	**B**uilt-**I**n Series, **36**" Wide, All-**R**efrigerator, **G**lass Door, Classic **S**tainless Steel Wrapped Door, Stainless Steel Grille (Standard)
BI-36RA/S	*(Same as above with High Altitude Glass)*



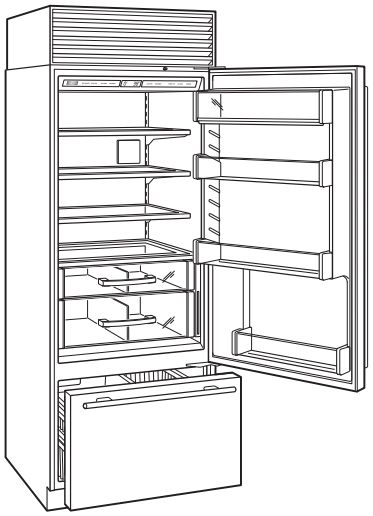
Model BI-36RG

MODEL	DESCRIPTION
BI-36F/F	**B**uilt-**I**n Series, **36**" Wide, All-Freezer, **F**ramed Door Trim with Handle, Louver Grille (Standard)
BI-36F/O	**B**uilt-**I**n Series, **36**" Wide, All-Freezer, **Overlay** Door Trim (No Handle), Panel Grille (Standard)
BI-36F/S	**B**uilt-**I**n Series, **36**" Wide, All-Freezer, Classic **S**tainless Steel Wrapped Door, Stainless Steel Grille (Standard)



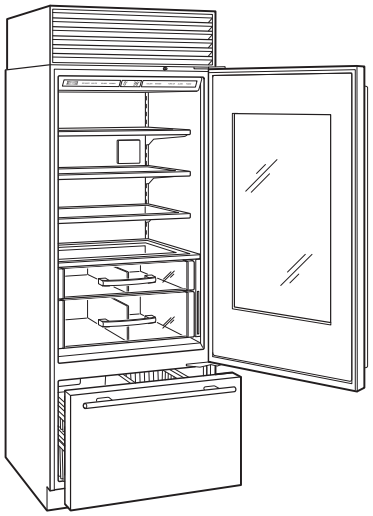
Model BI-36F

MODEL	DESCRIPTION
BI-30U/F	**B**uilt-**I**n Series, **30**" Wide, Over/**U**nder, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-30U/O	**B**uilt-**I**n Series, **30**" Wide, Over/**U**nder, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-30U/S	**B**uilt-**I**n Series, **30**" Wide, Over/**U**nder, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)



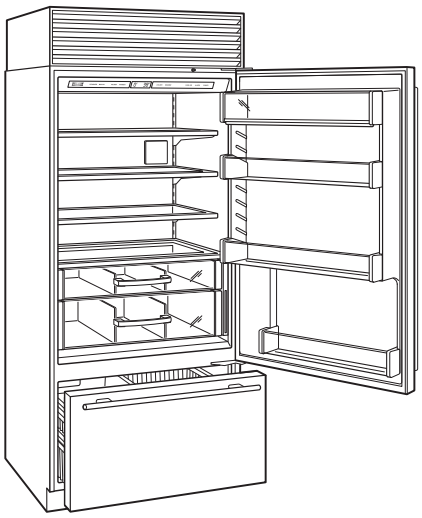
Model BI-30U

MODEL	DESCRIPTION
BI-30UG/F	**B**uilt-**I**n Series, **30**" Wide, Over/**U**nder, **G**lass Refrigerator Door, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-30UA/F	*(Same as above with High Altitude Glass)*
BI-30UG/O	**B**uilt-**I**n Series, **30**" Wide, Over/**U**nder, **G**lass Refrigerator Door, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-30UA/O	*(Same as above with High Altitude Glass)*
BI-30UG/S	**B**uilt-**I**n Series, **30**" Wide, Over/**U**nder, **G**lass Refrigerator Door, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)
BI-30UA/S	*(Same as above with High Altitude Glass)*



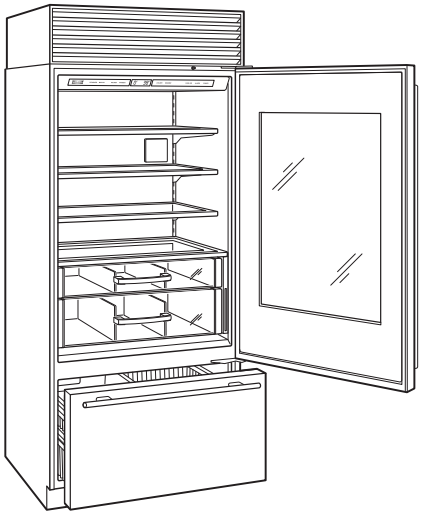
Model BI-30UG

MODEL	DESCRIPTION
BI-36U/F	**B**uilt-**I**n Series, **36**" Wide, Over/**U**nder, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-36U/O	**B**uilt-**I**n Series, **36**" Wide, Over/**U**nder, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-36U/S	**B**uilt-**I**n Series, **36**" Wide, Over/**U**nder, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)



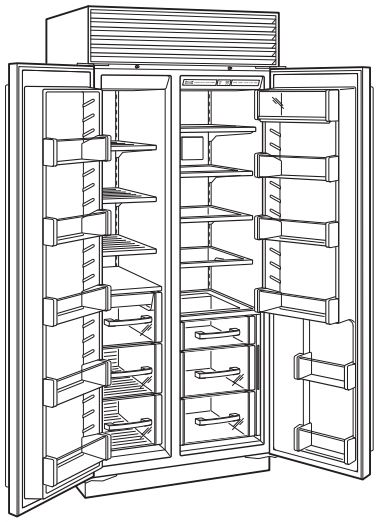
Model BI-36U

MODEL	DESCRIPTION
BI-36UG/F	**B**uilt-**I**n Series, **36**" Wide, Over/**U**nder, **G**lass Refrigerator Door, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-36UA/F	*(Same as above with High Altitude Glass)*
BI-36UG/O	**B**uilt-**I**n Series, **36**" Wide, Over/**U**nder, **G**lass Refrigerator Door, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-36UA/O	*(Same as above with High Altitude Glass)*
BI-36UG/S	**B**uilt-**I**n Series, **36**" Wide, Over/**U**nder, **G**lass Refrigerator Door, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)
BI-36UA/S	*(Same as above with High Altitude Glass)*



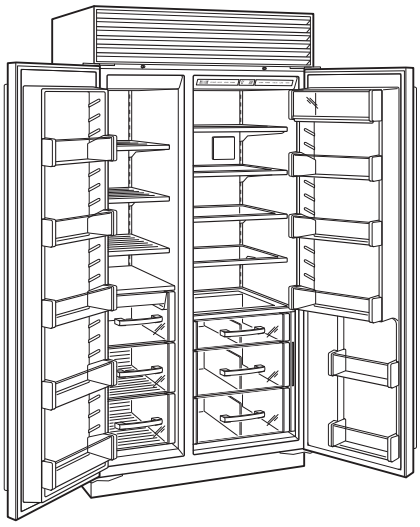
Model BI-36UG

MODEL	DESCRIPTION
BI-36S/F	**B**uilt-**I**n Series, **36**" Wide, **S**ide-by-Side, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-36S/O	**B**uilt-**I**n Series, **36**" Wide, **S**ide-by-Side, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-36S/S	**B**uilt-**I**n Series, **36**" Wide, **S**ide-by-Side, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)



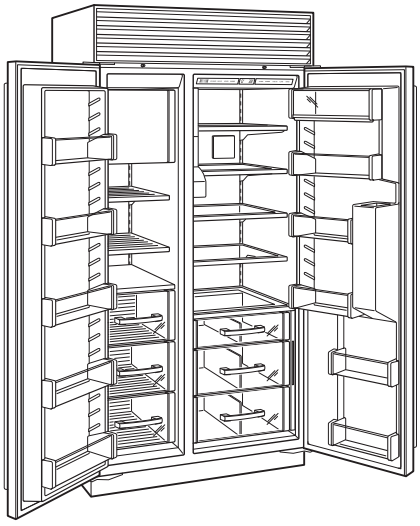
Model BI-36S

MODEL	DESCRIPTION
BI-42S/F	**B**uilt-**I**n Series, **42**" Wide, **S**ide-by-Side, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-42S/O	**B**uilt-**I**n Series, **42**" Wide, **S**ide-by-Side, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-42S/S	**B**uilt-**I**n Series, **42**" Wide, **S**ide-by-Side, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)



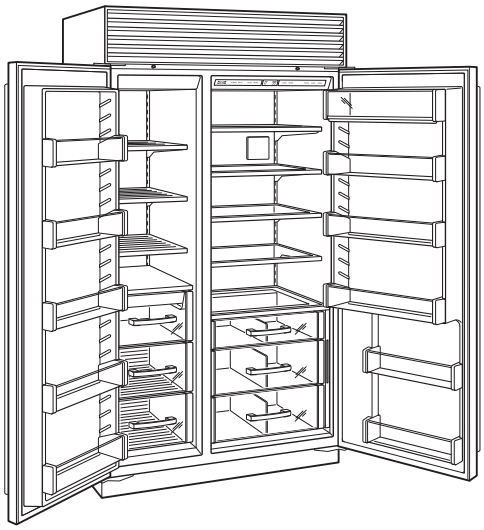
Model BI-42S

MODEL	DESCRIPTION
BI-42SD/F	**B**uilt-**I**n Series, **42**" Wide, **S**ide-by-Side, Ice/Water **D**ispenser, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-42SD/O	**B**uilt-**I**n Series, **42**" Wide, **S**ide-by-Side, Ice/Water **D**ispenser, **Overlay** Door Trim (No Handles), Louver Grille (Standard)
BI-42SD/S	**B**uilt-**I**n Series, **42**" Wide, **S**ide-by-Side, Ice/Water **D**ispenser, Classic **S**tainless Steel Wrapped Doors, Louver Grille (Standard)



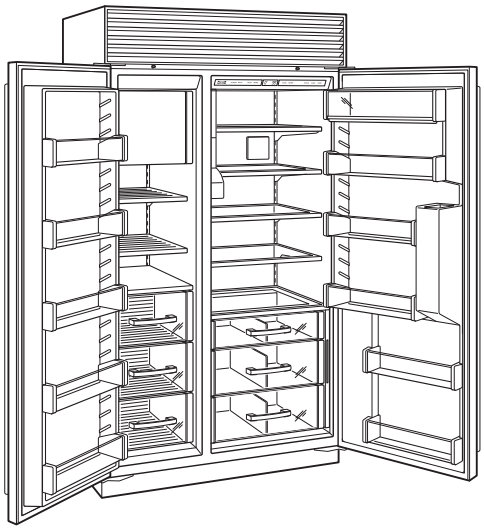
Model BI-42SD

MODEL	DESCRIPTION
BI-48S/F	**B**uilt-**I**n Series, **48**" Wide, **S**ide-by-Side, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-48S/O	**B**uilt-**I**n Series, **48**" Wide, **S**ide-by-Side, **Overlay** Door Trim (No Handles), Panel Grille (Standard)
BI-48S/S	**B**uilt-**I**n Series, **48**" Wide, **S**ide-by-Side, Classic **S**tainless Steel Wrapped Doors, Stainless Steel Grille (Standard)



Model BI-48S

MODEL	DESCRIPTION
BI-48SD/F	**B**uilt-**I**n Series, **48**" Wide, **S**ide-by-Side, Ice/Water **D**ispenser, **F**ramed Door Trim with Handles, Louver Grille (Standard)
BI-48SD/O	**B**uilt-**I**n Series, **48**" Wide, **S**ide-by-Side, Ice/Water **D**ispenser, **Overlay** Door Trim (No Handles), Louver Grille (Standard)
BI-48SD/S	**B**uilt-**I**n Series, **48**" Wide, **S**ide-by-Side, Ice/Water **D**ispenser, Classic **S**tainless Steel Wrapped Doors, Louver Grille (Standard)



Model BI-48SD

SECTION 2

INSTALLATION INFORMATION

INSTALLATION CONSIDERATIONS

This section uses some of the information in the BI Series Installation Guide to address common installation issues seen by Service Technicians. Improper installation, though not a valid service issue, has the potential to lead to a call for service. Installation related complaints could include, but are not limited to: Unit leveling, unit movement, door misalignment, improper door and drawer sealing, internal frost or condensation, exterior condensation, warm compartment temperatures, etc.

The Built-In line offers the following design alternatives - framed, overlay and stainless steel models. The overlay design has two possible installation applications - standard overlay and flush inset. Each of these design options has specific installation requirements, which means it is vital that the unit match the planning and space needs.

NOTE: *If additional installation information is needed, refer to the complete Installation Guide, or contact Sub-Zero Service Department.*

Tools and Materials Required

The following is a list of tools and materials that will assist in a proper installation.

- Phillips screwdriver set
- Slotted screwdriver set
- 6-Lobe, Torx type drive screwdriver set
- 4' (1.2 m) of 1/4" copper tubing and saddle
- valve for the water line—part #4200880
- (do not use self-piercing valves)
- Copper tubing cutter
- Level - 2' (.6 m) and 4' (1.2 m) recommended
- Appliance Dolly able to support 700 lbs (317 kg) and adequate manpower to handle the weight of the unit
- Various sized pliers
- Wrench set
- Allen wrench set
- 5/16" hex bolt nut driver
- Crescent wrenches
- Cordless drill and assorted drill bits
- Masonite, plywood, 1/8" pressed fiberboard, cardboard or other suitable material to protect finished flooring
- Appropriate materials to cover and protect the home and its furnishings during installation

Site Preparation

The finished rough opening where the Built-In unit is to be installed must be properly prepared. Refer to the Finished Rough Opening Specifications for the specific model on the following pages. The specifications for the framed, overlay and stainless steel applications are identical. The Finished Rough Opening Specifications are different for the flush inset application, whether using custom panels or Sub-Zero accessory stainless flush inset panels. Make sure that the rough opening dimensions, door swing clearance, electrical service and plumbing are correct for the model being installed.

If installing two Built-In units side by side in the framed, overlay or stainless steel application, a separating filler strip is recommended. Add the filler strip width to the finished rough opening dimension, and ALWAYS complete the installation with the Anchoring Kit components.

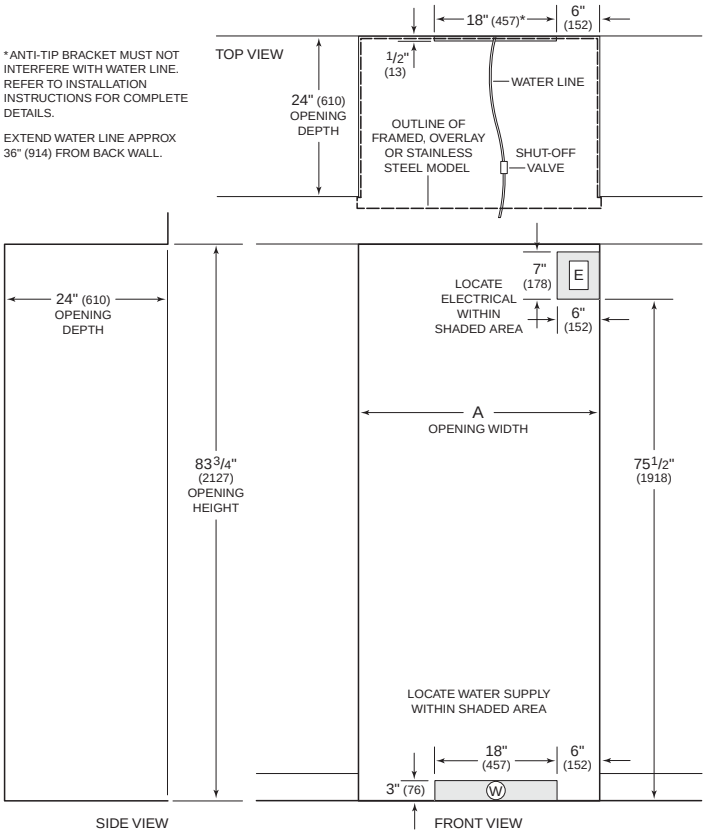
For installation of two Built-In units side by side in the flush inset application, a dual installation kit will be necessary.

IMPORTANT NOTE: *Built-in units installed side by side in the flush inset application cannot use the standard Sub-Zero accessory overlay panels, and must have opposing hinges.*

IMPORTANT NOTE: *To operate properly, the door must open a minimum of ninety (90) degrees. Use a minimum 3" (76) filler in corner installations to assure a ninety (90) degree door opening. Allow enough clearance in front of the unit for full door swing.*

IMPORTANT NOTE: *Make sure the floor under the unit is level with the surrounding finished floor.*

Finished Rough Opening Specifications (30” and 36” Over / Under Models)

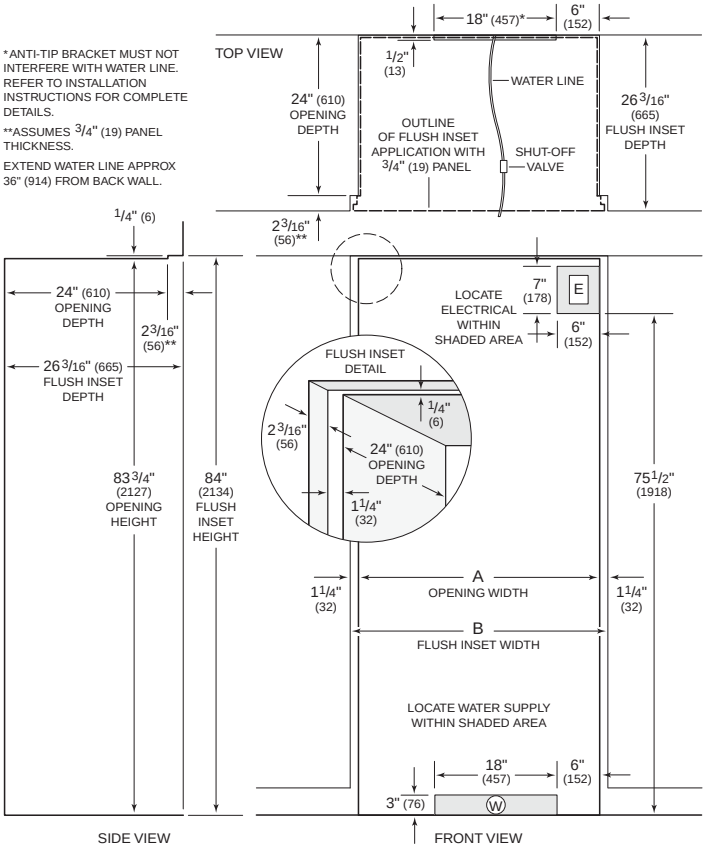


INSTALLATION SPECIFICATIONS

Over-and-Under Models Ð
Framed, Overlay (non-flush inset) and
Stainless Steel

	A
Model BI-30U	29 1/2" (749)
Model BI-30UG	29 1/2" (749)
Model BI-36U	35 1/2" (902)
Model BI-36UG	35 1/2" (902)

Dimensions are for finished rough openings.



INSTALLATION SPECIFICATIONS

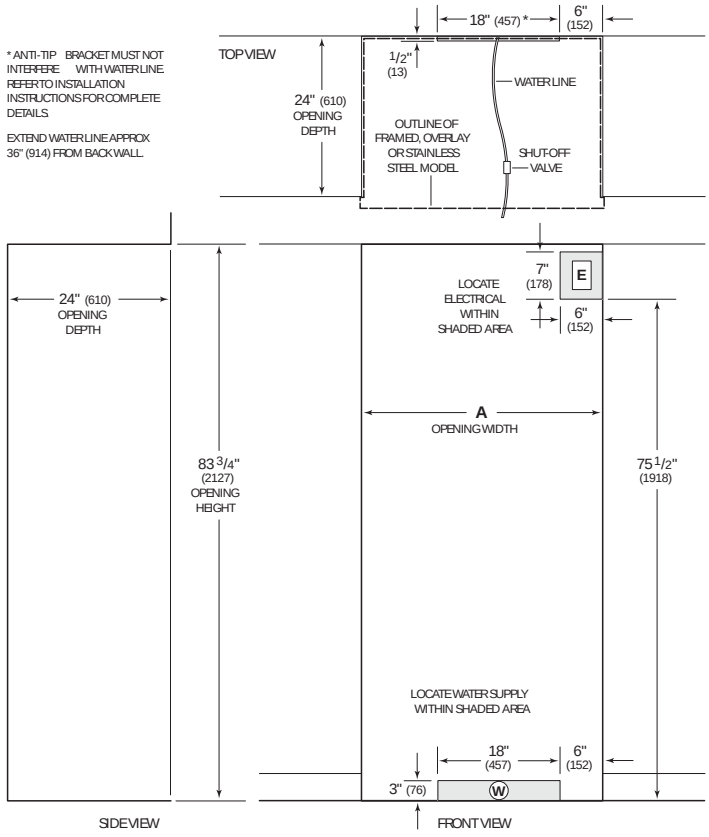
Over-and-Under Models Ð
Flush Inset Application

	A	B
Model BI-30U	29 1/2" (749)	32" (813)
Model BI-30UG	29 1/2" (749)	32" (813)
Model BI-36U	35 1/2" (902)	38" (965)
Model BI-36UG	35 1/2" (902)	38" (965)

Dimensions are for finished rough openings.

Dimensions in parentheses are in millimeters unless otherwise specified.

Finished Rough Opening Specifications (36" All Refrigerator and All Freezer Models)



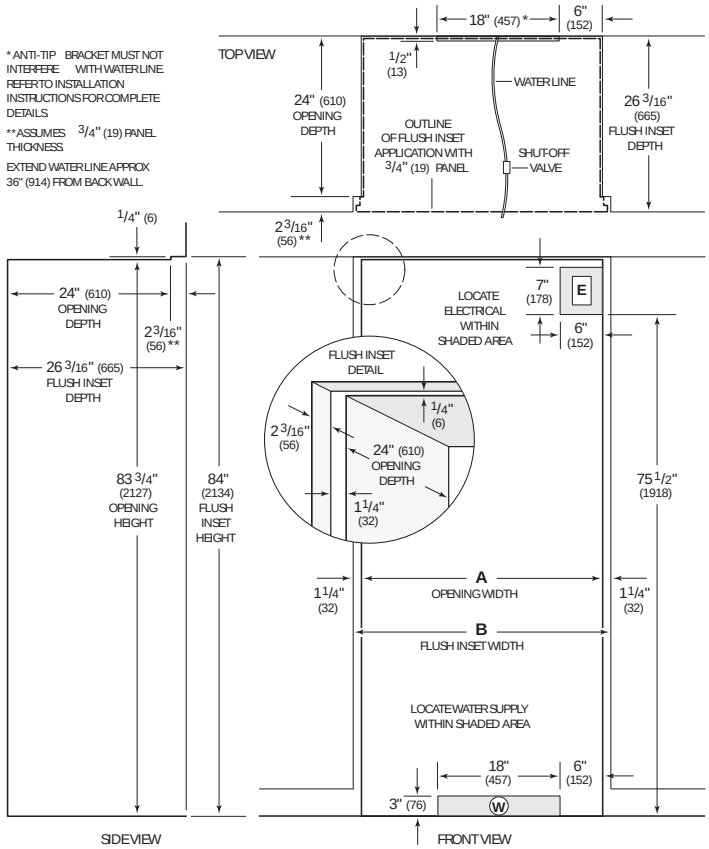
INSTALLATION SPECIFICATIONS

All Refrigerator / All Freezer Models — Framed, Overlay (non-flush inset) and Stainless Steel

	A
Model BI-36R	35 1/2" (902)
Model BI-36RG	35 1/2" (902)
Model BI-36F	35 1/2" (902)

Dimensions are for finished rough openings.

Models BI-36R and BI-36RG will not require the water line connection.



INSTALLATION SPECIFICATIONS

All Refrigerator / All Freezer Models — Flush Inset Application

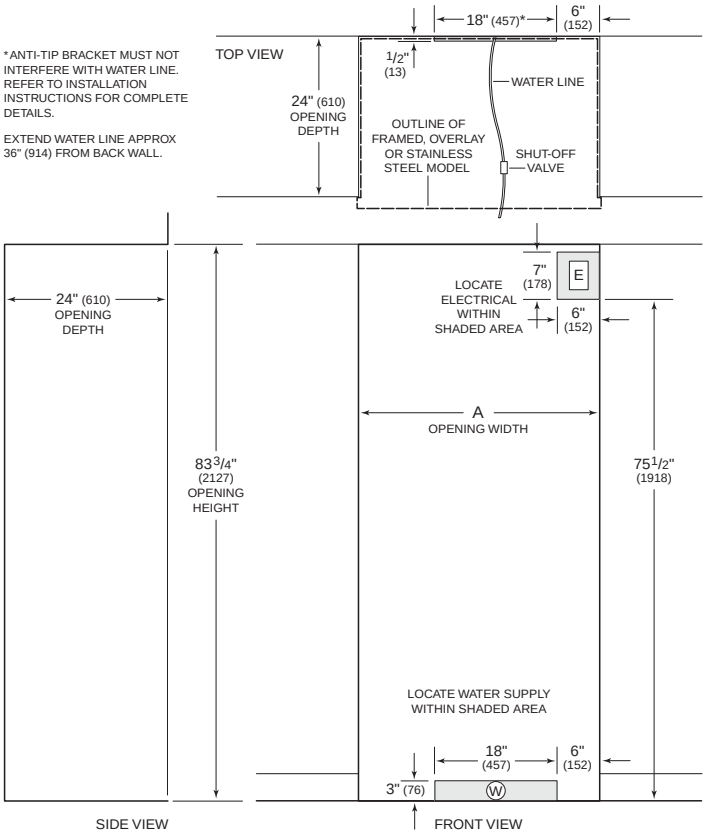
	A	B
Model BI-36R	35 1/2" (902)	38" (965)
Model BI-36RG	35 1/2" (902)	38" (965)
Model BI-36F	35 1/2" (902)	38" (965)

Dimensions are for finished rough openings.

Models BI-36R and BI-36RG will not require the water line connection.

Dimensions in parentheses are in millimeters unless otherwise specified.

Finished Rough Opening Specifications (36”, 42” and 48” Side-by-Side Models)

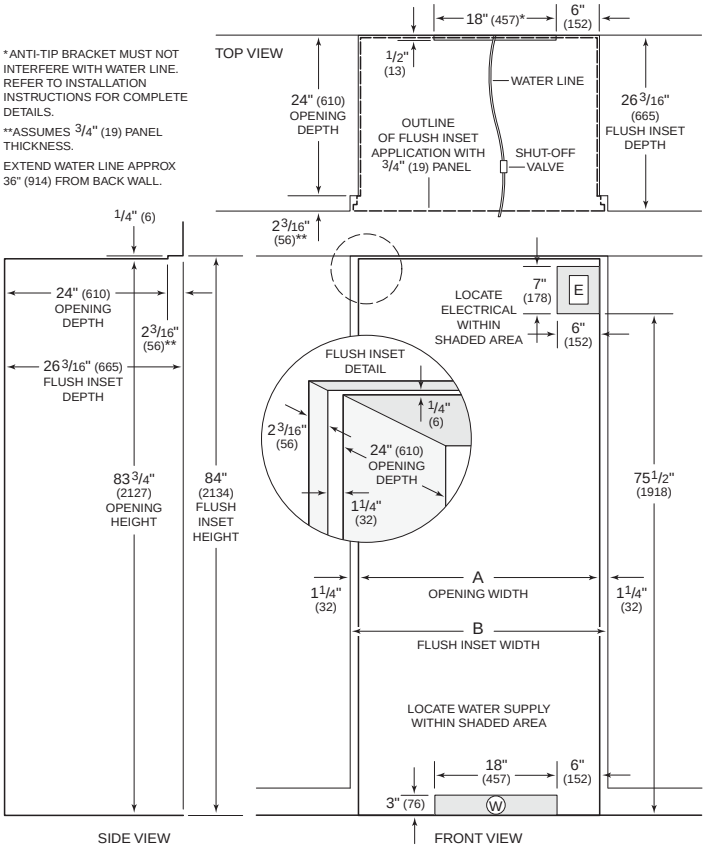


INSTALLATION SPECIFICATIONS

Side-by-Side Models Ð
Framed, Overlay (non-flush inset) and
Stainless Steel

	A
Model BI-36S	35 1/2" (902)
Model BI-42S	41 1/2" (1054)
Model BI-42SD	41 1/2" (1054)
Model BI-48S	47 1/2" (1207)
Model BI-48S	47 1/2" (1207)

Dimensions are for finished rough openings.



INSTALLATION SPECIFICATIONS

Side-by-Side Models Ð
Flush Inset Application

	A	B
Model BI-36S	35 1/2" (902)	38" (965)
Model BI-42S	41 1/2" (1054)	44" (1118)
Model BI-42SD	41 1/2" (1054)	44" (1118)
Model BI-48S	47 1/2" (1207)	50" (1270)
Model BI-48SD	47 1/2" (1207)	50" (1270)

Dimensions are for finished rough openings.

Dimensions in parentheses are in millimeters unless otherwise specified.

Anti-Tip Bracket Installation

⚠ WARNING

THE UNIT COULD TIP FORWARD UNDER CERTAIN LOAD CONDITIONS. FAILURE TO INSTALL BOTH ANTI-TIP BRACKETS AND EXTEND LEVELERS TO FLOOR ACCORDING TO INSTALLATION MANUAL COULD RESULT IN SERIOUS INJURY OR DEATH.

IMPORTANT NOTE: *Placement of the two anti-tip brackets is critical. They must be installed exactly 24" (610 mm) from the front of the rough opening to the back of the brackets and a minimum of 4" (102 mm) from the sides of the rough opening. This depth will increase to 26-3/16" (665 mm) for a flush inset installation based on 3/4" (19 mm) thick decorative panels. Failure to properly position the anti-tip brackets will prevent them from engaging the unit should it tip forward.*

Standard Installation Procedure:

The two anti-tip brackets must be located 24"(610 mm) back from front of rough opening and a minimum of 4” (102 mm) from sides of rough opening. This will ensure that anti-tip brackets properly engage anti-tip bar at back of unit.

NOTE: *Both brackets MUST be used.*

Wood Floor Applications: (See Figure 2-4)
After properly locating anti-tip brackets in rough opening, drill pilot holes 3/16" diameter maximum. Then, use the #12 X 2-1/2” PH Pan HD Zinc Screws and #12 Flat Washers to secure the brackets in place.

NOTES:
- *Make sure screws penetrate flooring material and wall stud or wall plate a minimum of 3/4" (19 mm).*
- *If #12 X 2-1/2" screws do not hit a wall stud or the wall plate in any of the brackets back holes, use the #8-18 X 1-1/4” PH Truss HD Screws and #12 Flat Washers with the Nylon Zip-It Wall Anchors.*

Concrete Floor Applications: (See Figure 2-5)
After properly locating anti-tip brackets in rough opening, drill pilot holes 3/16" diameter maximum in the wall studs and/or wall plate, then drill 3/8” diameter holes into the concrete a minimum of 1/2“ (13 mm) deep. Then, use the #12 X 2-1/2” PH Pan HD Zinc Screws and #12 Flat Washers to secure the brackets to the wall, and use the 3/8”-16 X 3-3/4” Wedge Anchors to secure the brackets to the floor.

NOTES:
- *Make sure screws penetrate wall stud or wall plate a minimum of 3/4" (19 mm).*
- *If #12 X 2-1/2" screws do not hit a wall stud or the wall plate in any of the brackets back holes, use the#8-18 X 1-1/4” PH Truss HD Screws and #12 Flat Washers with the Nylon Zip-It Wall Anchors.*

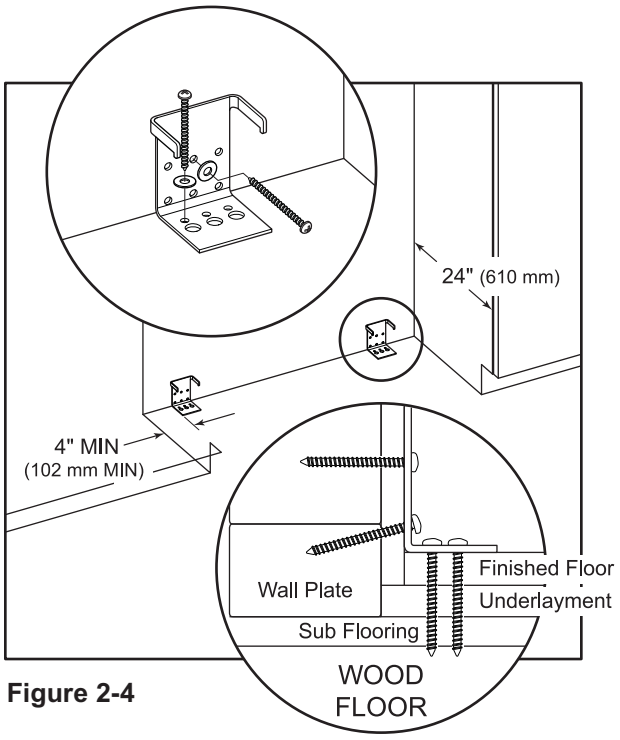


Figure 2-4

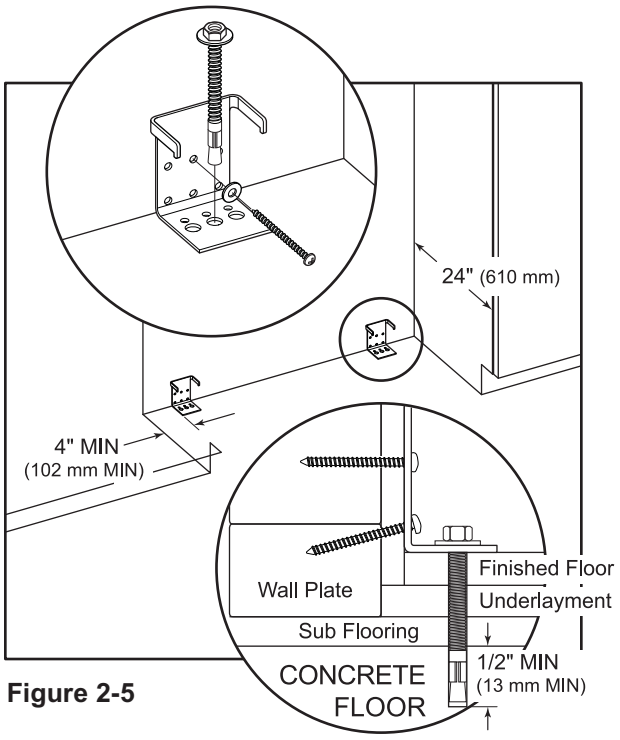


Figure 2-5

Flush Inset Installation Procedure:

The two anti-tip brackets must be located 24"(610 mm) back from front of rough opening and a minimum of 4” (102 mm) from sides of rough opening. This will ensure that ant-tip brackets properly engage anti-tip bar at back of unit.

NOTE: *Both brackets MUST be used.*

Wood Floor Applications: (See Figure 2-6)
After properly locating anti-tip brackets in rough opening, drill pilot holes 3/16" diameter maximum. Then, use the #12 X 2-1/2” PH Pan HD Zinc Screws and #12 Flat Washers to secure the brackets in place.

NOTES:
- *Make sure screws penetrate flooring material and wall stud or wall plate a minimum of 3/4" (19 mm).*
- *If #12 X 2-1/2" screws do not hit a wall stud or the wall plate in any of the brackets back holes, use the #8-18 X 1-1/4” PH Truss HD Screws and #12 Flat Washers with the Nylon Zip-It Wall Anchors.*

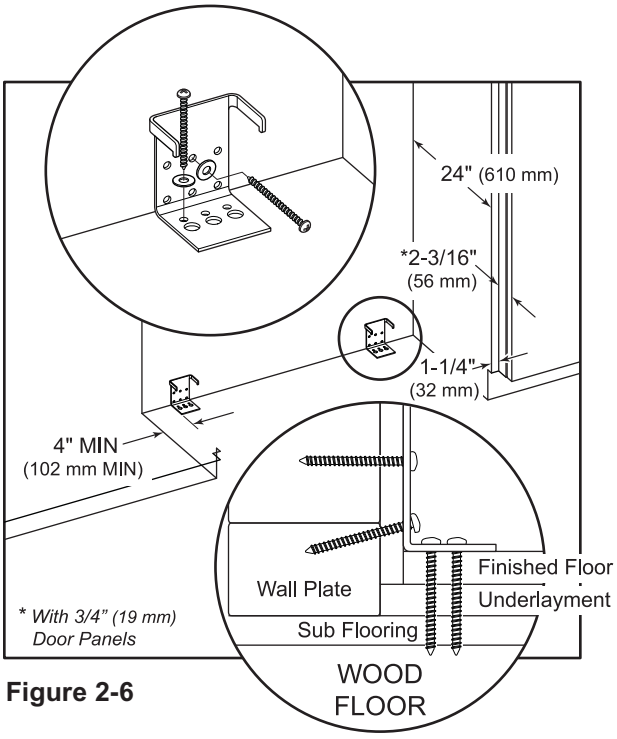


Figure 2-6

Concrete Floor Applications: (See Figure 2-7)
After properly locating anti-tip brackets in rough opening, drill pilot holes 3/16" diameter maximum in the wall studs and/or wall plate, then drill 3/8” diameter holes into the concrete a minimum of 1/2“ (13 mm) deep. Then, use the #12 X 2-1/2” PH Pan HD Zinc Screws and #12 Flat Washers to secure the brackets to the wall, and use the 3/8”-16 X 3-3/4” Wedge Anchors to secure the brackets to the floor.

NOTES:
- *Make sure screws penetrate wall stud or wall plate a minimum of 3/4" (19 mm).*
- *If #12 X 2-1/2" screws do not hit a wall stud or the wall plate in any of the brackets back holes, use the#8-18 X 1-1/4” PH Truss HD Screws and #12 Flat Washers with the Nylon Zip-It Wall Anchors.*

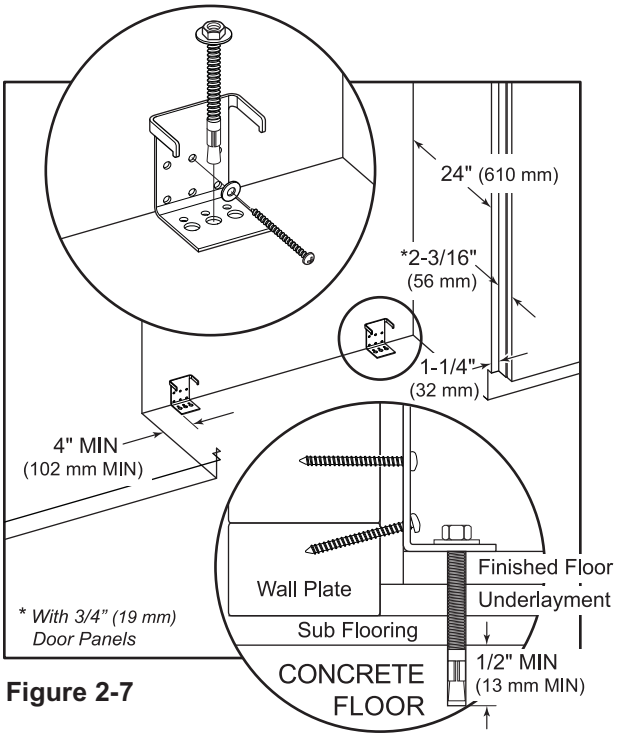


Figure 2-7

Electrical Requirements

A 115 V AC, 60 Hz, 15 amp circuit breaker and electrical supply are required. A separate circuit, servicing only this appliance, is required.

All Sub-Zero Built-In models are equipped with a power supply cord with a 3-prong grounding plug, which must be plugged into a mating 3-prong grounding-type wall receptacle. Follow the National Electrical Code and local codes and ordinances when installing the receptacle. For location of the electrical supply, refer to the Finished Rough Opening Specifications illustration for your specific model.

IMPORTANT NOTE: *A ground fault circuit interrupter (GFCI) is not recommended and may cause interruption of operation.*

⚠ WARNING

DO NOT USE AN EXTENSION CORD OR TWO PRONG ADAPTER. ELECTRICAL GROUND IS REQUIRED ON THESE APPLIANCES. DO NOT REMOVE POWER SUPPLY CORD GROUND PRONG!

⚠ CAUTION

The outlet must be checked by a qualified electrician to be sure that it is wired with the correct polarity. If the power and neutral polarity are reversed at the outlet, the appliance will not operate. Verify that the outlet provides 115 V AC and is properly grounded.

Plumbing Requirements

All Built-In models with an automatic ice maker are also equipped with a factory installed, microbiological water filtration system. This system operates on water pressure between 30 psi (2.1 bar) to 100 psi (6.9 bar).

IMPORTANT NOTE: *A reverse osmosis system can be used, provided there is constant water pressure of 30 psi (2.1 bar) to 100 psi (6.9 bar) supplied to the unit at all times. If a reverse osmosis system is used, it is recommended that the water filter be bypassed. Refer to Water Filter Bypass Plug Installation instructions on the following page.*

Rough in the cold water supply line using 1/4" OD copper line. The water line should be routed up through the floor within 1/2" (13) from the back wall and no higher than 3" (76) off the floor. If the water line comes through the wall, make sure it is no more than 3" (76) from the floor.

Regardless of the routing, allow 3' (.9 m) of excess copper tubing to remain outside the wall or floor for easy connection to the unit. The water supply line should be locate within the shaded area indicated in the Finished Rough Opening Specifications illustration for the specific model.

An easily accessible shut-off valve should be used between the water supply and the unit. Do not use self-piercing valves. A saddle valve kit (part #4200880) is available from a Sub-Zero dealer or parts distributor.

It is not recommended that the ice maker be connected to a softened water supply. Water softener chemicals, such as salt from a malfunctioning softener, can damage the ice maker and lead to poor ice quality. If a softened water supply cannot be avoided, be sure that the water softener is well maintained and operating properly.

IMPORTANT NOTE: *All installations must meet local plumbing code requirements.*

Water Line Connections

Approximately 3' (.9 m) of 1/4" plastic tubing is connected to the unit with a preassembled 1/4" compression connection at the end. This tubing is located under the unit.

The water line fitting connection kit, provided with the unit, contains a 1/4" compression union fitting for connection to the household water supply line. The compression nut and sleeve should be placed on the water line and fastened to the connection at the end of the tubing under the unit. Do not over tighten. Check all water line fittings for leaks. Make sure that the drain pan can be installed and/or removed without any water line interference.

IMPORTANT NOTE: *The water line should be purged prior to final connection to the unit. This will remove any debris that may be present in the tubing from installing the new water line.*

IMPORTANT NOTE: *If a reverse osmosis system used, it is recommended that the water filter be bypassed as mentioned earlier is this section.*

IMPORTANT NOTE: *The customer should be made aware that the ice maker will not produce ice immediately, and that the first few batches of ice produced should be discarded, allowing twenty-four (24) hours for proper ice production.*

IMPORTANT NOTE: *Caution must be taken to not expose the water lines leading to the refrigerator to freezing temperatures. Failure to do so could cause damage to the product and home.*

Water Filter Bypass Plug

A water filter bypass plug (part #7005018) to bypass the water filtration system is available from a Sub-Zero dealer or parts distributor.

Bypass Plug Installation Procedure:

1. Remove the water filter cartridge by first pushing it in toward the manifold to disengage it from the manifold spring catch (See Figure 2-8), then pull the filter cartridge straight out (See Figure 2-9).
2. Install bypass plug by aligning it with the filter manifold, then push it in to engage the spring catch (See Figure 2-10).

NOTE: *Whenever the water filter or the filter bypass plug is removed from the unit, the water supply will be interrupted.*

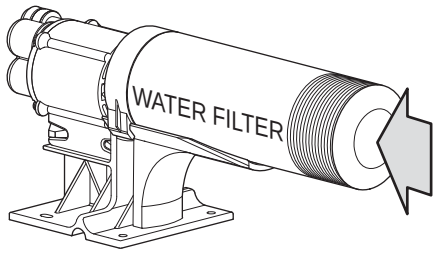


Figure 2-8. Water Filter Removal, Push In

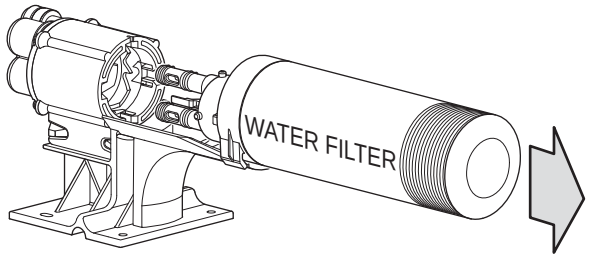


Figure 2-9. Water Filter Removal, Pull Out

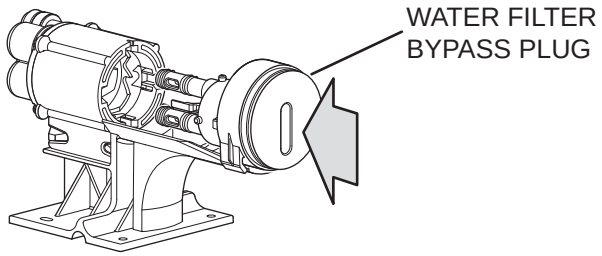


Figure 2-10. Water Filter Bypass Plug Installation

Leveling the Unit

Once the unit is in position, the front leveling legs must be extended down to the floor by turning them clockwise. The front leveling legs are also used to make front height adjustments, turn the leveling legs clockwise to raise the unit and counterclockwise to lower it. The rear height adjustment can be performed at the front of the base using a 5/16" socket to turn the adjusting bolt that reaches to rear leveler/roller assembly. Turn the 5/16" hex bolt clockwise to raise the rear of the unit or counterclockwise to lower it.

When the unit is leveled properly, door and/or drawer adjustments are less likely to be necessary. Refer to the illustration below for location of the rear roller base adjustment.

IMPORTANT NOTE: *Be sure to reference "level" of the unit to the floor, not "squareness" of the unit to the surrounding cabinetry. This could affect the operation of the unit, such as door closing.*

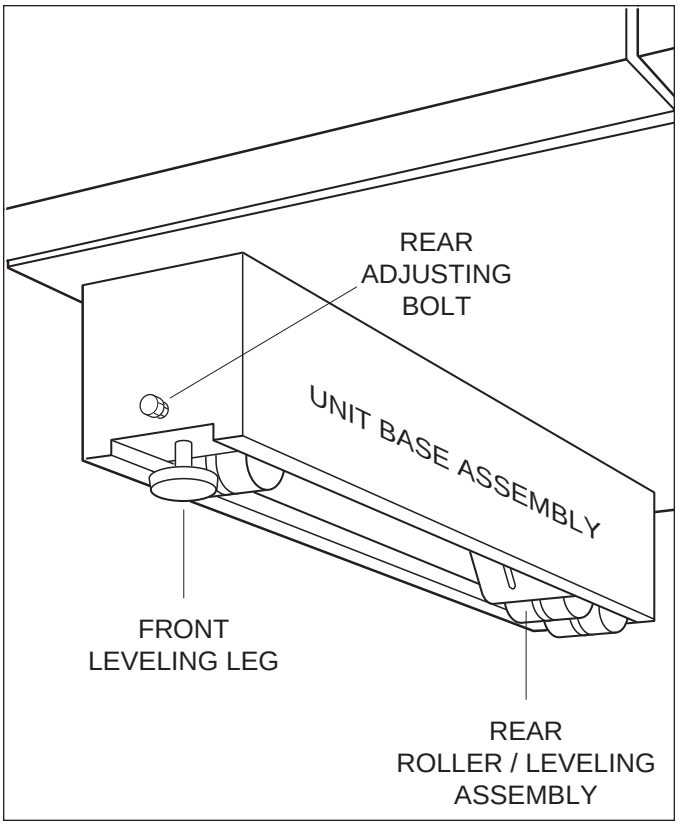


Figure 2-11. Unit Leveling

Door Adjustments

The doors on the Built-In Series side-by-side and single door models can be adjusted in three ways: up and down, side to side, and in and out. The doors on over / under models can be adjusted in two ways: side to side, and in and out.

IMPORTANT NOTE: *Door adjustments should only be performed after the unit is installed and properly leveled.*

Door Height Adjustment Procedure:

Using a 1/4" allen wrench, turn the bottom hinge adjuster bolt clockwise to raise the door and counterclockwise to lower the door. (See Figure 2-12)

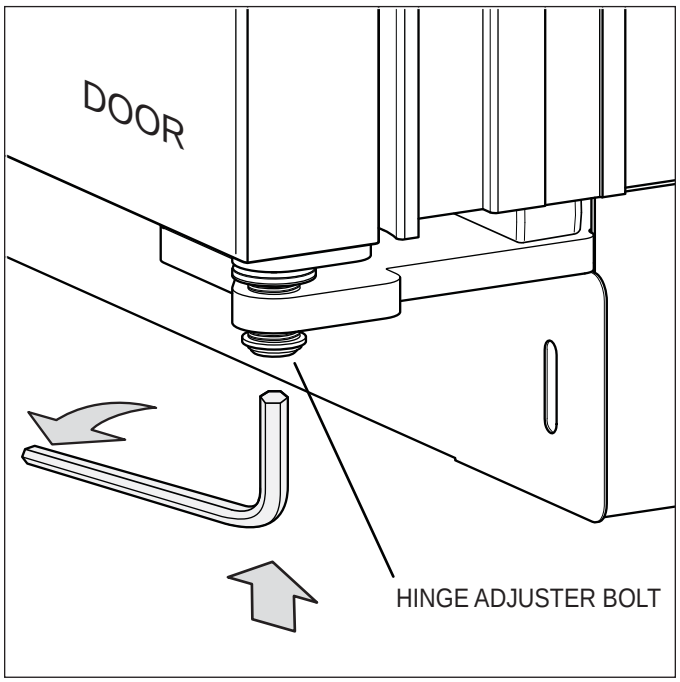


Figure 2-12. Door Height Adjustment

Side to Side and In and Out Adjustment Procedure:

IMPORTANT NOTE: *Side to side and in and out adjustments only affect the top of the door. The bottom hinge is stationary, except for up and down adjustments.*

1. Slightly loosen the two upper cabinet hinge mounting bolts using a 1/2" wrench (See Figure 2-13).
2. For side to side adjustments, use a 3/8" open-end wrench to turn the bolt mounted left to right in the top hinge assembly in the appropriate direction (See Figure 2-13).
3. For in and out adjustments, use a 5/32" allen wrench to turn the bolt mounted front to back in the top hinge assembly in the appropriate direction (See Figure 2-13).

90-Degree Door Stop

The doors on all Built-in Series units open to 110-degrees. An optional 90-degree door stop kit is supplied with the unit, and is also available through a Sub-Zero dealer or distributor.

The 90-degree door stop will be installed in the top hinge of the door.

Door Stop Installation Procedure:

1. Open door to approximately 90 degrees.
2. At top of door, insert door stop cam down between door hinge and door closer arm as shown in Figure 2-14.
3. Insert screw through door stop and into door as shown in Figure 2-14.

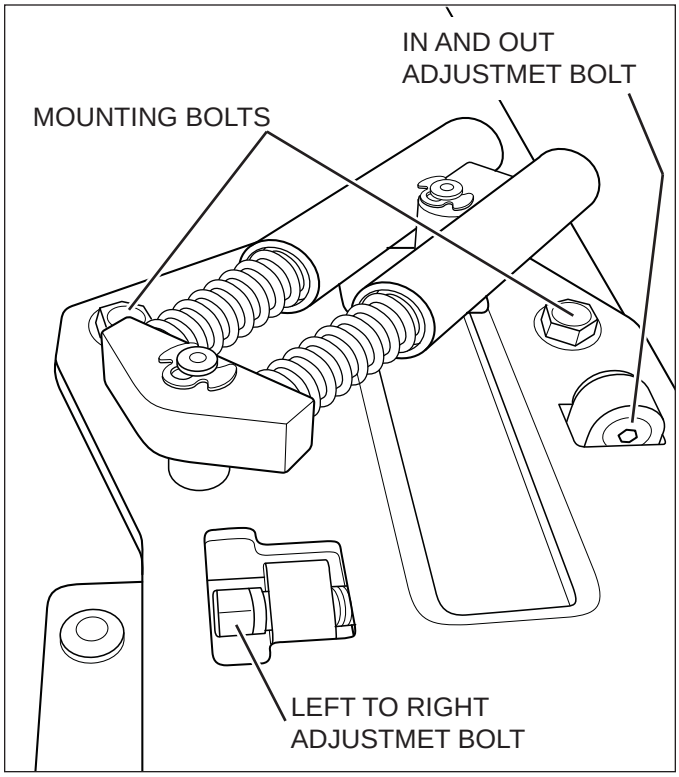


Figure 2-13. Door Adjustment, Left to Right and In and Out

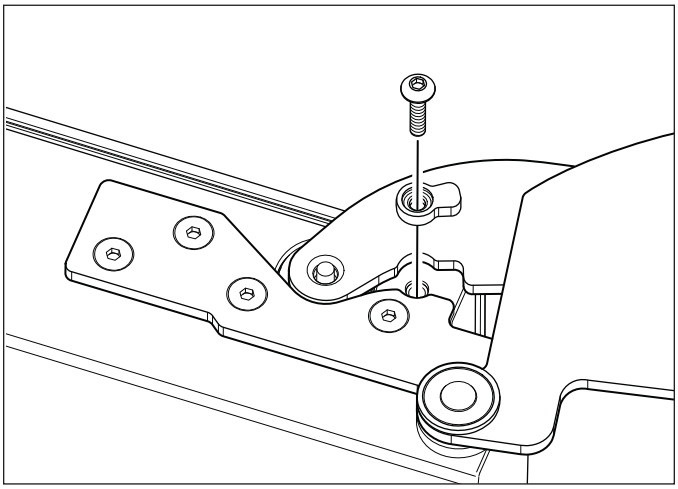


Figure 2-14. 90 Degree Door Stop

Door and Drawer Panels

Regardless of the installation application, it may be necessary to remove and/or install a door or drawer panel. To do this, the handle or handle-side trim will need to be removed first. The handle or handle-side trim is attached to the door or drawer with screws, and these screws are concealed by a screw cover. Follow the procedures below to access the mounting screws and remove a handle or handle-side trim in order to remove and/or install a door or drawer panel.

IMPORTANT NOTE: *The weight of a door or drawer panel cannot exceed 50 lbs (23 kg).*

IMPORTANT NOTE: *Depending on the thickness of a wood panel used on a framed application, it may be necessary to router a recessed area into the panel for proper finger clearance under the door handle. Optional extended handles are also available that offer an additional 3/4" (19 mm) of clearance under the handle.*

Door Handle / Handle-Side Trim Removal Procedure:

1. At the top of the door, insert a flat blade screwdriver into the channel of the screw cover and push the cover away form the handle or handle-side trim, disengaging the screw cover from the clips (See Figures 2-15A and 2-15B).
2. With a T-20, 6-lobe Torx type bit, extract the handle or handle-side trim mounting screws and pull the handle or trim from the door (See Figures 2-16A and 2-16B).

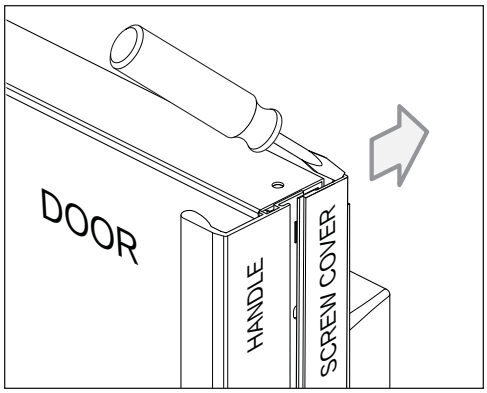


Figure 2-15A. Screw Cover Removal with Handle

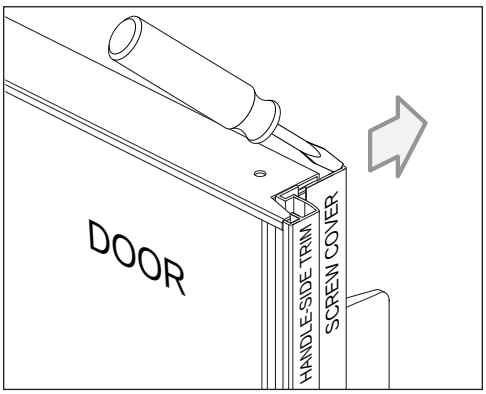


Figure 2-15B. Screw Cover Removal with Handle-Side Trim

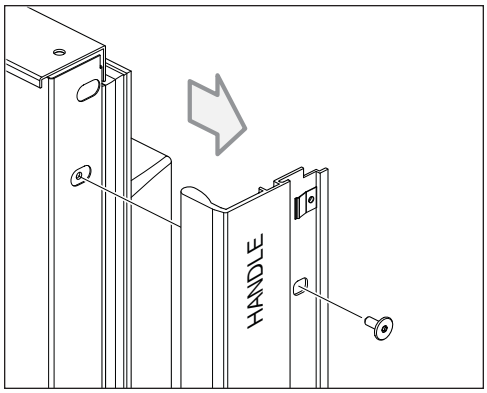


Figure 2-16A. Handle Removal

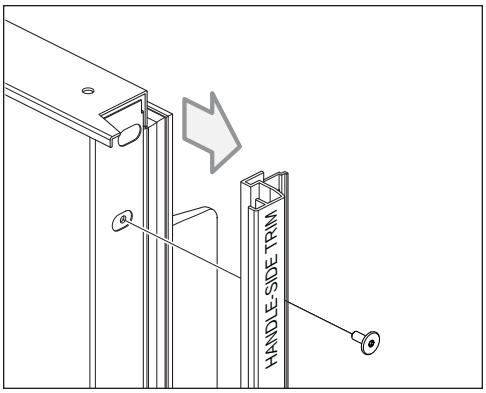


Figure 2-16B. Handle-Side Trim Removal

Drawer Handle / Handle-Side Trim Removal Procedure:

1. At the back right-hand side of the drawer handle or handle-side trim, insert a flat blade screwdriver into the notch in the screw cover and pry the cover away form the handle or handle-side trim, disengaging the screw cover from the clips (See Figures 2-17A and 2-17B).
2. With a T-20, 6-lobe Torx type bit, extract the handle or handle-side trim mounting screws and pull the handle or trim from the drawer (See Figures 2-18A and 2-18B).

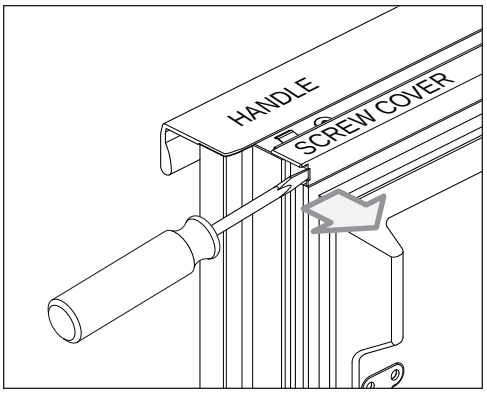


Figure 2-17A. Screw Cover Removal with Handle

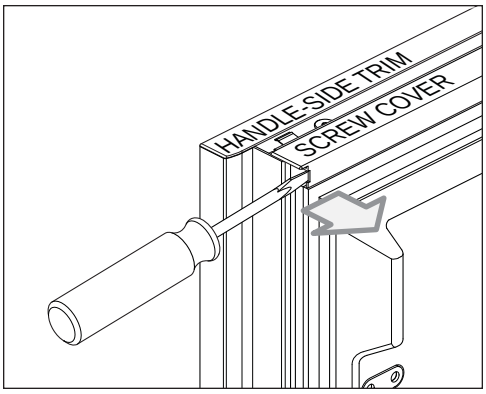


Figure 2-17B. Screw Cover Removal with Handle-Side Trim

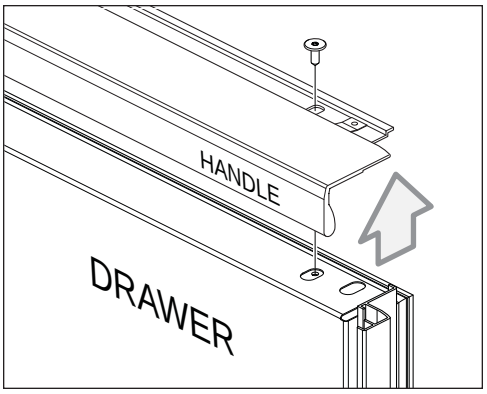


Figure 2-18A. Handle Removal

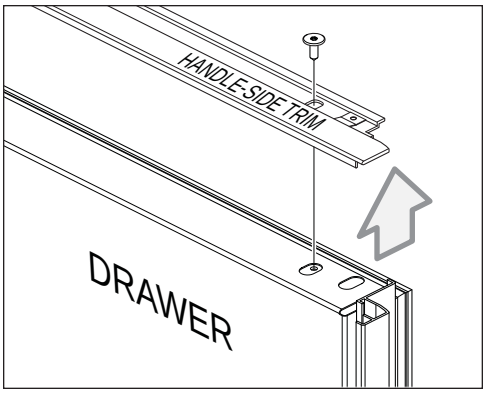


Figure 2-18B. Handle-Side Trim Removal

Glasswell - Dispenser Assembly

If attempting to remove and/or install a door panel on the refrigerator door of a dispenser model, note that the procedure is the same as that listed on the previous pages. However, the dispenser control panel and glasswell bezel will also need to be removed.

Dispenser Control Panel Removal Procedure:

1. Extract the center post of the plastic rivets using a fingernail, putty knife, or similar device (See Figure 2-19), then pull the rivets out.
2. Pull the dispenser control panel down and disconnect the ribbon cable (See Figure 2-20).

   NOTE: *When reassembling:*

   a. Make sure blue side of ribbon cable is up when connecting to dispenser control panel.

   b. Take care not to pinch or kink ribbon cable when reassembling.

Glasswell Bezel Removal Procedure:

1. Remove the dispenser control panel first, then lift out the glasswell grille to access the bottom screws.
2. Extracting the bezel mounting screws from each corner, then pull the bezel forward (See Figure 2-21).

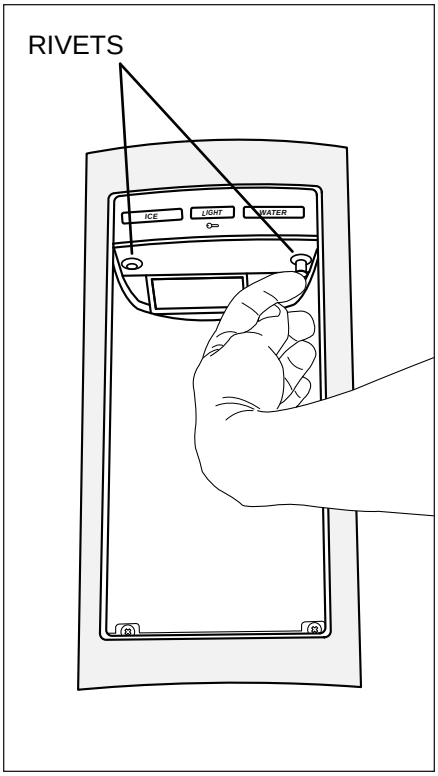


Figure 2-19. Dispenser Control Panel Removal, Extract rivets

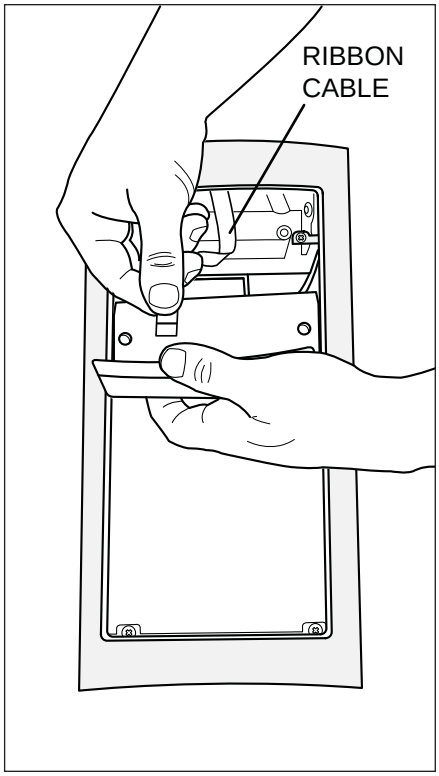


Figure 2-20. Dispenser Control Panel Removal, Disconnect Ribbon Cable

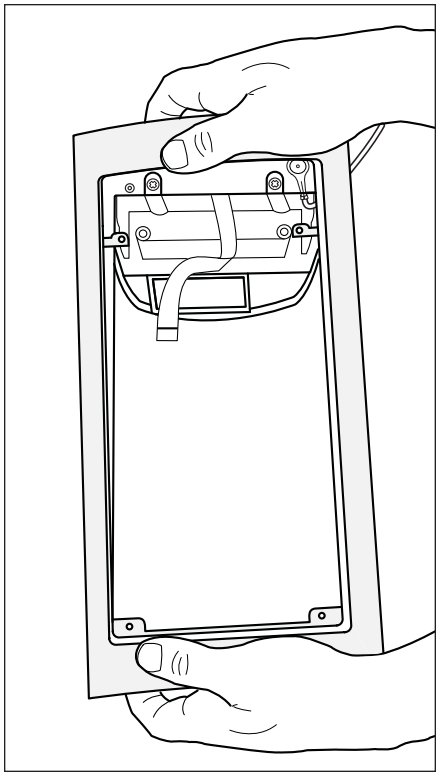


Figure 2-21. Glasswell Bezel Removal

Anchoring the Unit

After the unit has been installed and leveled, it is recommended that it be anchored to the surrounding cabinetry. This will assure a secure installation.

IMPORTANT NOTE: *Be sure the unit is level before anchoring it to the surrounding cabinetry.*

Anchoring Procedure:

1. Open the grille, then install anchor screws through the grille frame clearance holes and the grill frame support brackets into the cabinetry (See Figure 2-22). There are several hole locations provided.
2. At the unit roller base assemblies, locate the anchoring holes, one in each assembly. Install anchor screws, keeping in mind that they will need to be driven in at an angle (See Figure 2-23).

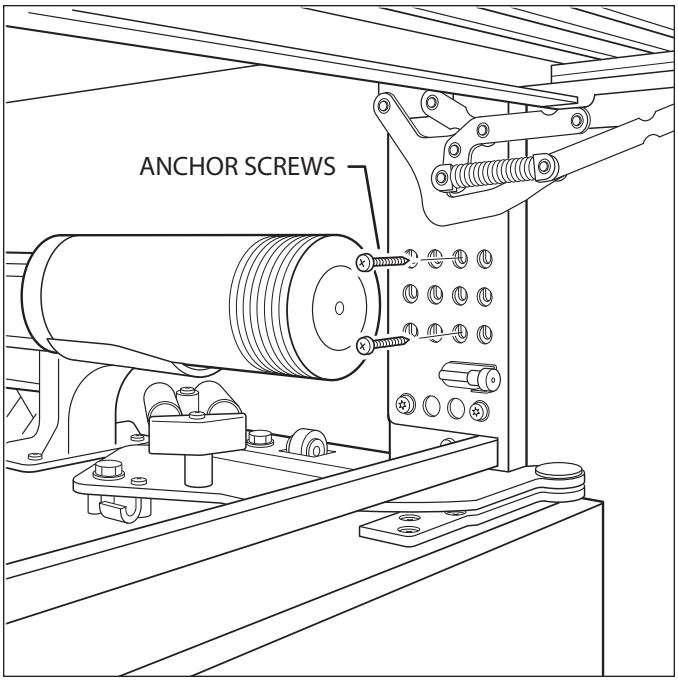


Figure 2-22. Anchoring at Top of Unit

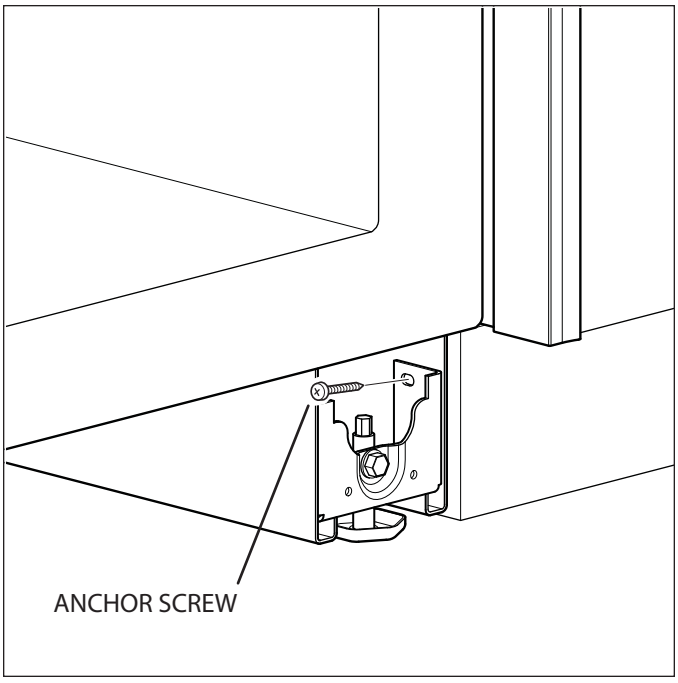


Figure 2-23. Anchoring at Bottom of Unit

SECTION 3

ELECTRONIC CONTROL SYSTEM INFORMATION

ELECTRONIC CONTROL TERMINOLOGY & COMPONENT DESCRIPTIONS

The Built-In Series utilizes an electronic control system which monitors, regulates, controls and displays a variety of functions and operations in the appliance.

The table below defines some of the basic electronic control system terminology.

Term/Component	Definition / Description
Main Control Board	(Also referred to as the Main "Controller" Board), is the printed-circuit board (PC Board) which contains a microprocessor, relays, trials and electrical connections that monitor and control all functions of the appliance.
Microprocessor	An electrical component on the control board which receives electrical signals from other components, processes the information, then sends electrical signals to relays and trials on the board to open or close, switching components in the appliance ON or OFF.
Relay	An electrical component on the control board which switches other components in the appliance ON or OFF when instructed to do so by the microprocessor.
Triac	Similar in function to a relay, the triac is a three terminal semiconductor for controlling current in either direction.
Control Panel Assembly	(Also referred to as the User Interface Module, or User Interface), is that part of the electronic control system where all manual input operations are performed.
Function Keys	The keys or buttons on the control panel assembly used for manual input operations. The words on the function keys are: "LIGHTS", "ICE MAKER", "MAX ICE", "PURE AIR", "COLDER", "WARMER", "ALARM" and "POWER".
Capacitance Touch Sensitive	The ability of the keys on the control panel to detect the natural capacitance of the human body when in close proximity causing a change in electrons state or quantity which signals the electronic control to perform a function.
LCD (Liquid Crystal Display)	A semi-liquid substance sandwiched between glass in the control panel assembly. The molecules of this semi-liquid substance have no specific orientation. However, when electricity is applied to them, they react predictably, aligning and straightening in such a way as to control light passage. In doing so, they can be manipulated and arranged to form the indicators that appear in the LCD.
Indicators	The words, numbers and icons that appear at the LCD.
Fault Codes (Error Codes)	The code number indicators that may appear in the LCD when accessing Fault Code History during Fault and Sensor Recall Mode. This coded data represents current and/or historical problematic events that specific electronic components may have experienced.
Temperature Units of Measure	Temperature readings observed at the LCD may be in Fahrenheit units of measure (°F) or Celsius units of measure (°C). A series of key strokes allows the temperature units of measure to be switched to display as either °F or °C.
Set-Point	The desired zone temperature, established by pressing the COLDER or WARMER keys.
High Offset (Cut-in)	As the zone air temperature cycles up and down, the high offset is the maximum zone temperature that the electronic control system will allow before calling for cooling.
Low Offset (Cut-out)	As the zone air temperature cycles up and down, the low offset is the minimum zone air temperature that the electronic control system will allow before interrupting cooling.
Thermistor	(Also Referred to as a Temperature Sensor), is a resistor with which resistance changes as the temperature around it changes. For electronic control system purposes, the microprocessor detects, monitors and processes this resistance value in order to control the appliance's cooling functions as well as displays it as a temperature reading in the LCD.
Variable Speed Compressor	A compressor designed to run at varying speeds depending on the temperature detected in the corresponding zone of the appliance.
Variable Speed Fan Motor	A fan motor that is deigned to runs at varying speeds depending on the temperature detected in the corresponding zone, or the temperature of a specific component.

ELECTRONIC CONTROL SYSTEM OVERVIEW

Figure 3-1 is the wiring schematic for the model BI-36UG showing the components of the electronic control system.

- Manual input operations are performed at the Control Panel Assembly (Keypad).
- Monitoring, regulating and controlling functions take place at the Main Control Board.
- Temperatures, icons and function/diagnostic codes are displayed in the LCD (part of Keypad).

The entire electronic control system is described in greater detail on the following pages.

NOTE: *For more detailed electrical diagrams refer to the wiring diagram and schematic supplied with the appliance.*

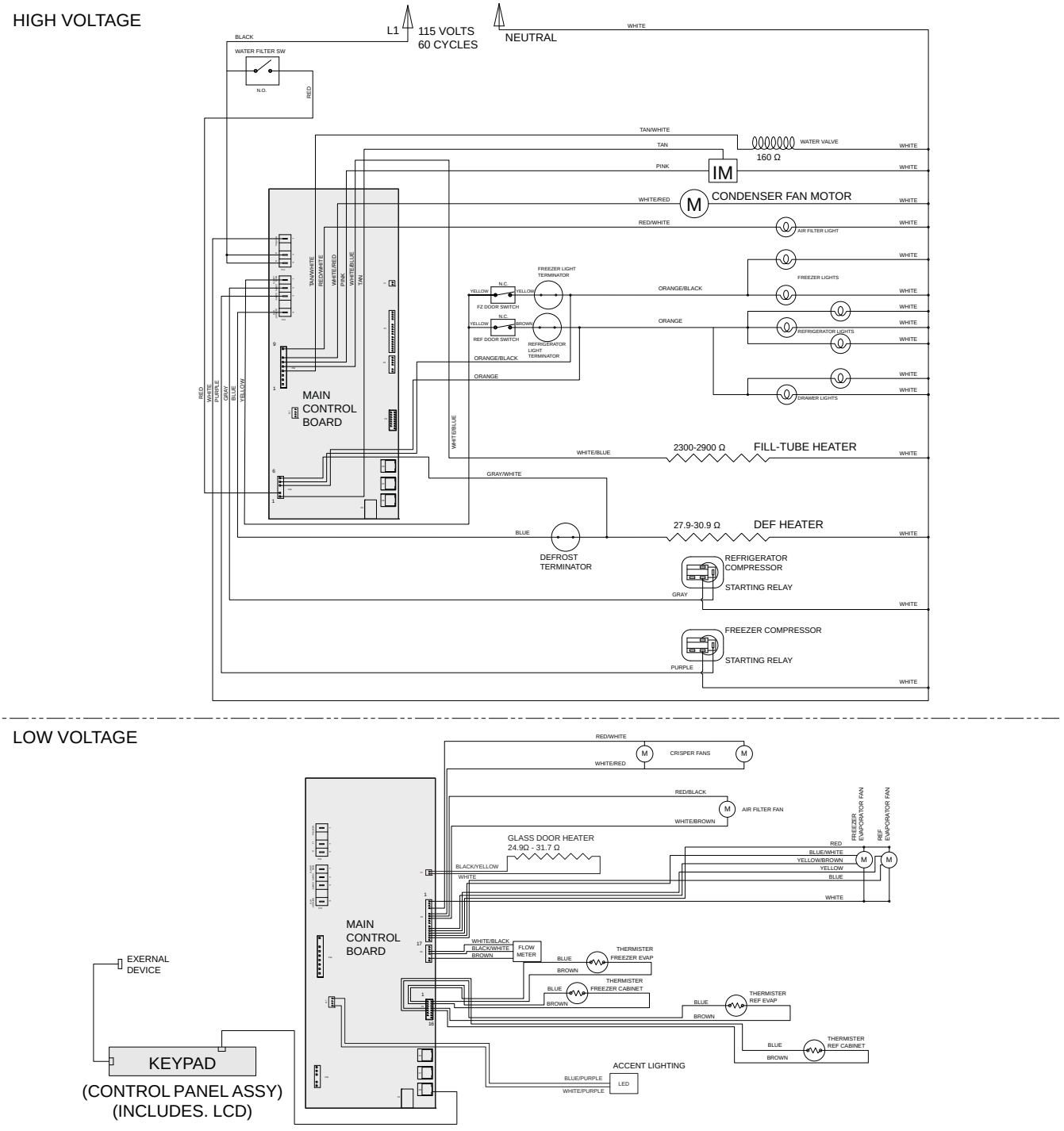


Figure 3-1. Electronic Control System Overview (BI-36UG Wiring Schematic)

CONTROL BOARD LAYOUT AND SUMMARY TABLE

The electrical connection points on the main control board are labeled alphanumerically (See Figure 3-2). These labels correspond with the alphanumeric control board summary table, located on wiring diagrams (See Figure 3-3). By referencing the summary table, it is possible to identify which components are connected at which connection points on the main control board.

NOTE: *All components on control board are non-replaceable. If problems with control board are identified, the complete control board must be replaced.*

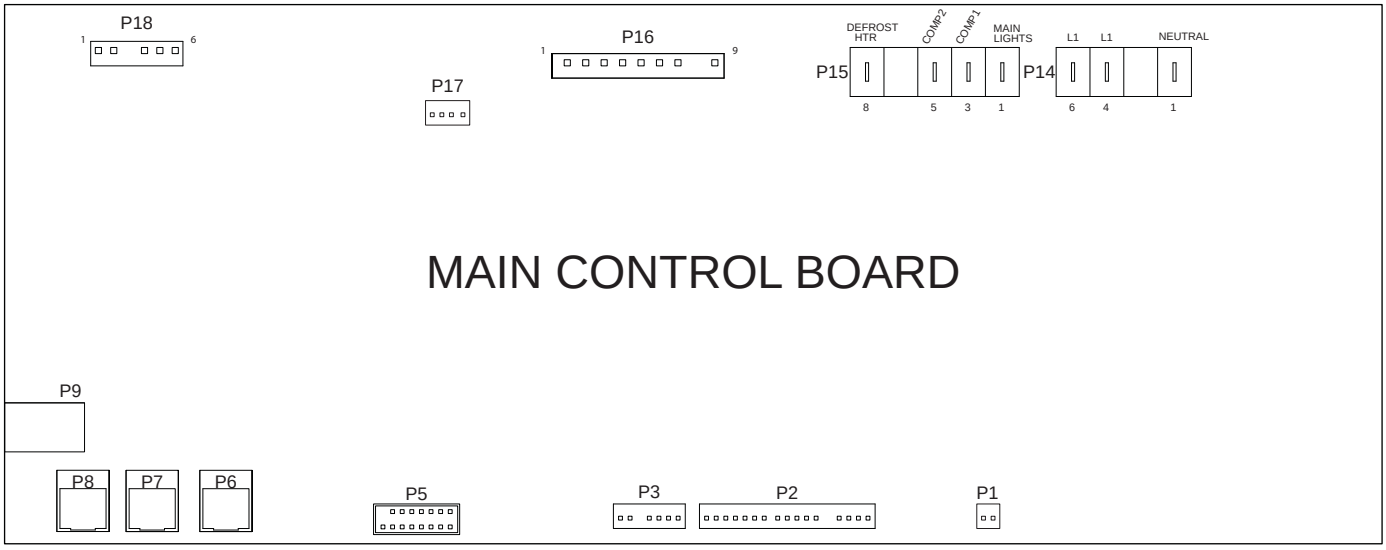


Figure 3-2. Control Board Layout

O/U G CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
P14-1	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P14-2	UNUSED	UNUSED	-
P14-3	UNUSED	UNUSED	-
P14-4	POWER IN (L1)	POWER INTO BOARD	BLACK
P14-5	UNUSED	UNUSED	-
P14-6	POWER IN (L1)	POWER INTO BOARD	BLACK
P15-1	MAIN LIGHTS	POWERS MAIN LIGHTS	YELLOW
P15-2	UNUSED	UNUSED	-
P15-3	COMPRESSOR #1	POWERS COMPRESSOR	PURPLE
P15-4	UNUSED	UNUSED	-
P15-5	COMPRESSOR #2	POWERS REF COMPRESSOR	GRAY
P15-6	UNUSED	UNUSED	-
P15-7	UNUSED	UNUSED	-
P15-8	DEFROST HEATER	POWERS OFF HEATER	BLUE
P16-1	UNUSED	---	---
P16-2	UNUSED	---	--
P16-3	WATER VALVE	POWERS WATER VALVE	-
P16-4	ICE MAKER WATER VALVE	POWERS IM WATER VALVE	TAN/WHITE
P16-5	ICE MAKER ACCESSORIES	POWERS FILL TUBE AND ACCESSORIES	WHITE/BLUE
P16-6	ICE MAKER	POWERS ICE MAKER	PINK
P16-7	CONDENSER FAN	CONDENSER FAN	WHITE/RED
P16-8	UNUSED	UNUSED	-
P16-9	AIR FILTER LIGHT	AIR FILTER LIGHT	ORANGE/RED
P18-1	WATER VALVE INPUT	SENSES WATER VALVE ACTIVATION	TAN
P18-2	WATER FILTER RESET SWITCH	SENSES WATER FILTER	RED
P18-3	UNUSED	UNUSED	-
P18-4	FREEZER DOOR INPUT	SENSES IF FREEZER DOOR IS OPEN	ORANGE/BLACK
P18-5	REFRIGERATOR DOOR INPUT	SENSES IF REF DOOR IS OPEN	ORANGE
P18-6	REF BI-METAL	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	LOW VOLTAGE CIRCUITS		
P1-1	GLASS DOOR HEATER 12 VDC POWER	GLASS DOOR HEATER POWER	BLACK/YELLOW
P1-2	GLASS DOOR HEATER GROUND RETURN	GLASS DOOR HEATER RETURN	WHITE/YELLOW
P2-1	EVAPORATOR FAN GROUND RETURN	EVAPORATOR FAN RETURN	WHITE
P2-2	CRISPER LIGHT 12 VDC POWER	CRISPER LIGHT POWER	-
P2-3	CRISPER LIGHT GROUND RETURN	CRISPER LIGHT RETURN	-
P2-4	DRAWER FAN	PWM DRIVE OUTPUT	RED/WHITE
P2-5	UNUSED	UNUSED	-
P2-6	DRAWER FAN	PWM DRIVE RETURN	WHITE/BLACK
P2-7	AIR FILTER FAN	AIR FILTER FAN OUTPUT	RED/BLACK
P2-8	AIR FILTER FAN	AIR FILTER FAN RETURN	WHITE/BROWN
P2-9	AIR FILTER LIGHT	AIR FILTER LIGHT OUTPUT	-
P2-10	AIR FILTER LIGHT	AIR FILTER LIGHT RETURN	-
P2-11	UNUSED	UNUSED	-
P2-12	FREEZER EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW/BROWN
P2-13	REF EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW
P2-14	EVAPORATOR FAN 12 VDC POWER	EVAPORATOR FAN POWER	RED
P2-15	FREEZER EVAPORATOR FAN	TACHOMETER INPUT	BLUE/WHITE
P2-16	REF EVAPORATOR FAN	TACHOMETER INPUT	BLUE
P2-17	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
P3-1	UNUSED	---	---
P3-2	UNUSED	---	---
P3-3	FLOW METER	FLOW METER RETURN	WHITE/BLACK
P3-4	FLOW METER 12V DC POWER	FLOW METER POWER	BLACK/WHITE
P3-5	UNUSED	UNUSED	-
P3-6	FLOW METER	WATER FLOW SENSOR INPUT	BROWN
P3-7	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	THERMISTER CIRCUITS		
P5-1	FREEZER EVAPORATOR	SENSES TEMPERATURE	BLUE/BLACK
P5-2	FREEZER EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-3	FREEZER CABINET	SENSES TEMPERATURE	BLUE
P5-4	FREEZER CABINET	SENSES TEMPERATURE	BROWN
P5-5	UNUSED	UNUSED	---
P5-6	UNUSED	UNUSED	---
P5-7	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BLUE/YELLOW
P5-8	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-9	REF CABINET	SENSES TEMPERATURE	BLUE/ORANGE
P5-10	REF CABINET	SENSES TEMPERATURE	BROWN
P5-11	UNUSED	UNUSED	---
P5-12	UNUSED	UNUSED	---
P5-13	UNUSED	UNUSED	---
P5-14	UNUSED	UNUSED	----
P5-15	UNUSED	UNUSED	----
P5-16	UNUSED	UNUSED	----
P17-1	LED GROUND REYURN	LED RETURN	WHITE/PURPLE
P17-2	UNUSED	UNUSED	----
P17-3	UNUSED	UNUSED	----
P17-4	LED 12 VDC POWER	LED POWER	BLUE/PURPLE

Figure 3-3. Control Board Summary Table

CONTROL PANEL LAYOUT (AKA USER INTERFACE MODULE)

Figure 3-4 below shows the layout of the control panel assembly.

NOTES:

- *Not all keys are present on all models:*
  - *If the unit does not have a glass refrigerator door, the control panel will not have the accent LIGHTS on/off key.*
  - *The control panel in an all-refrigerator model does not have the freezer zone COLDER and WARMER keys, nor the ICE MAKER and MAX ICE keys.*
  - *The control panel in an all-freezer model does not have the refrigerator zone COLDER and WARMER keys, nor the PURE AIR key.*
- *The control panel keys are "capacitance touch sensitive", so even though the words "press" is used throughout this section to indicate what to do to the keys, they actually only need to be "touched" to operate.*
- *Whenever a key is touched the electronic control will emit a beep.*

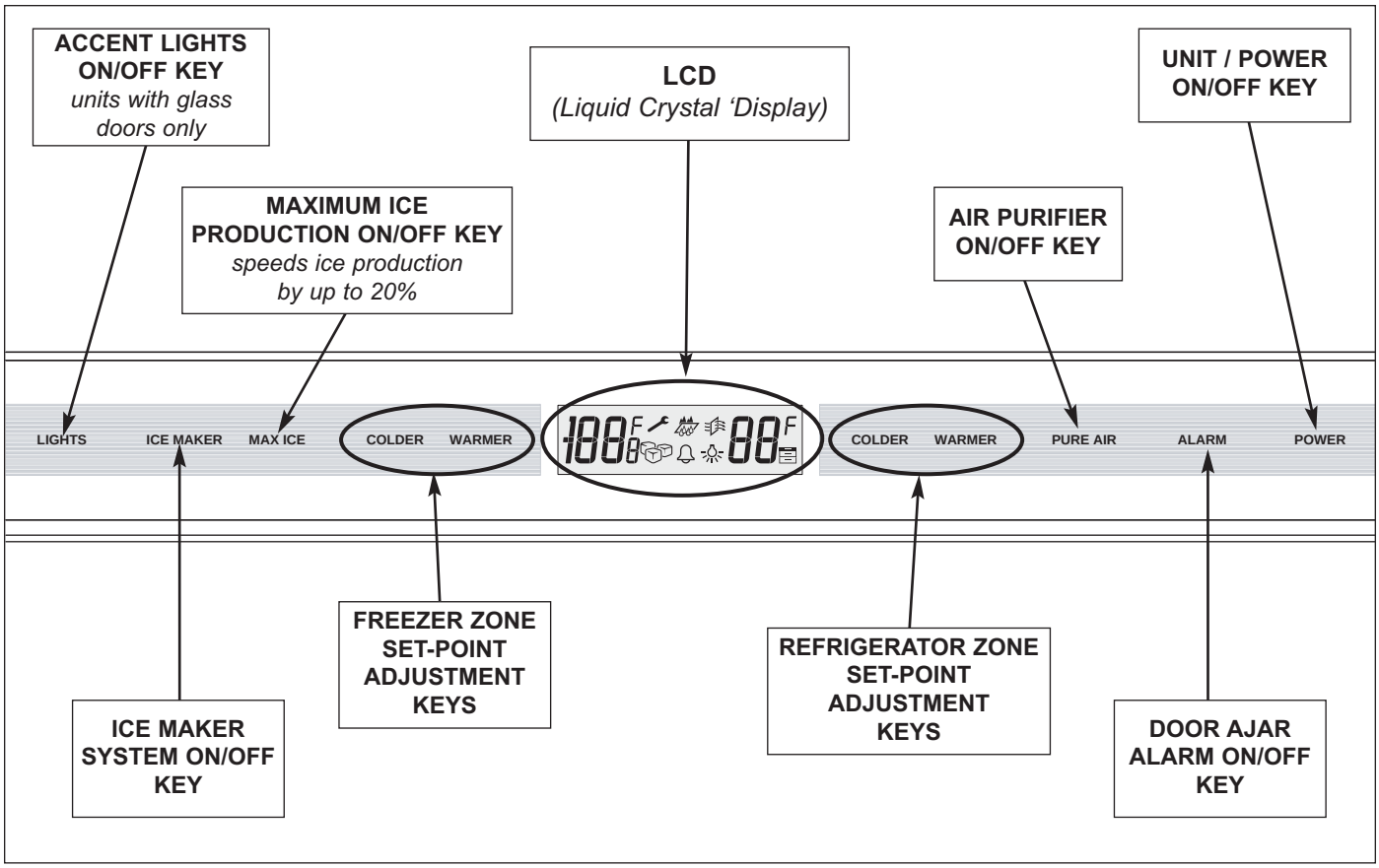


Figure 3-4. Control Panel Layout

BASIC ELECTRONIC CONTROL INPUT OPERATIONS

The following pages describe the basic input operations performed at the control panel (switching unit ON and OFF; adjusting set-point (temperature adjustment); switching ice maker system ON and OFF; activate and deactivate maximize ice production feature; enabling and disabling door ajar alarm feature; activate and deactivate air purification feature; and in models with glass doors only, switching accent lighting system ON and OFF). Please note that though possible to display temperatures in Fahrenheit or Celsius, in most cases Fahrenheit readings are shown in this manual.

Unit ON/OFF

All units are shipped in OFF Mode. When electricity is supplied to the appliance, a short power up diagnostics test is initiated where the lights are energized, "- -" (double-dashes) appear in the LCD, followed by the model code, then all components are switched OFF and the word "OFF" appears in the LCD (See Figure 3-5). By pressing the POWER key for one (1) second, electricity is allowed past the control board to the rest of the unit (See Figure 3-6), indicated by two audible beeps, the lights energizing and temperature readings appearing in the LCD.

NOTES:

- *Whenever the unit is switched OFF using the POWER key, the word "OFF" will be visible in the LCD as long as there is electricity supplied to the appliance.*
- *Whenever the unit is switched ON using the POWER key, the model code will appear in the LCD for approximately two (2) seconds, then temperature readings will appear.*
- *If the unit experiences any problems during the power up diagnostic test, then the appropriate Fault Codes will be logged.*

⚠ WARNING

WHEN IN "OFF" MODE, AC LINE VOLTAGE IS STILL PRESENT AT CONTROL BOARD!

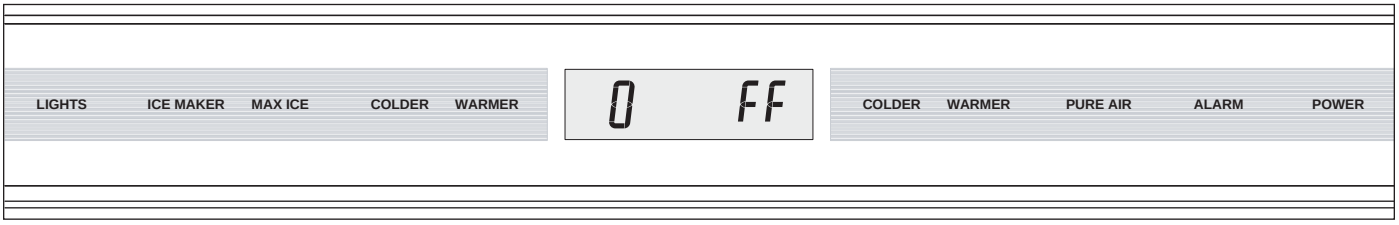


Figure 3-5. Power Supplied to Unit, but Unit in OFF Mode

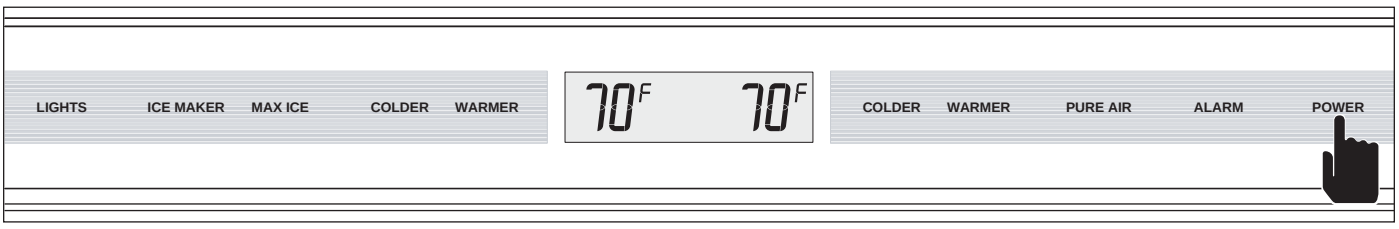


Figure 3-6. Switching Unit ON (or OFF) - Press POWER Key, Actual Temperatures will be Displayed

Adjusting Set-Point (Temperature Adjustment)

To adjust set-points, press the appropriate WARMER or COLDER key on control panel in multiple key strokes until the desired set-point is achieved (See Figure 3-7). Each key stroke equals a one degree change and is accompanied by an audible beep. When the desired set-point is reached and the keys are no longer being pressed, the set-point will flash ON and OFF at two (2) second intervals for ten (10) seconds, then the current zone temperature will be displayed.

NOTES:

- *During initial pull-down the real-time compartment temperatures will be displayed, then once set-point temperatures are achieved, the temperature shown in the LCD can change by no more than one (1) degree per minute.*
- *The temperature range in a freezer zone is -5°F (-20°C) to +5°F (-15°C).*
- *The temperature range in a refrigerator zone is +34°F (+1°C) to +45°F (+7°C).*
- *Initial factory set-points are 0°F (-18°C) in a freezer zone and 38°F (3°C) in a refrigerator zone.*
- *The initial stroke of the WARMER or COLDER key will change the previous set-point by one degree.*

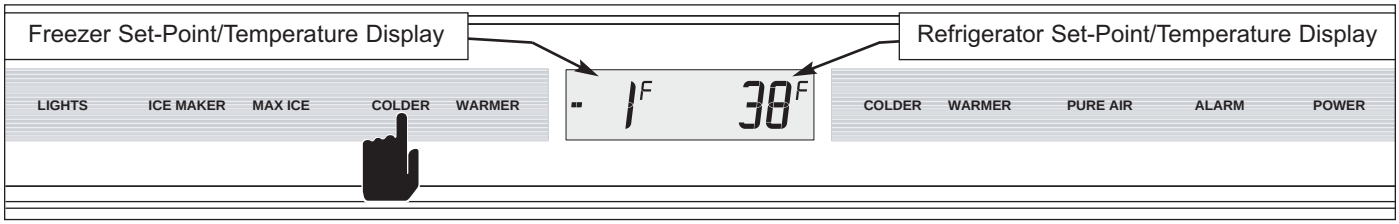


Figure 3-7. Adjusting Set-Point - Press Desired WARMER or COLDER Key In Multiple Key Strokes

Ice Maker System ON/OFF

All units are shipped with the ice maker system switched OFF. By pressing the ICE MAKER key on the control panel, power is allowed to the ice maker system and the single ice cube icon appears in the LCD (See Figure 3-8). To switch the ice maker system OFF, press the ICE MAKER key again and the single ice cube icon disappears.

NOTES:

- *Power to the freezer lights is monitored to help control icemaker operation. If the freezer door is open, power to the ice maker system is interrupted, unless the icemaker is filling with water at that time. After the door is closed, power is not allowed to the ice maker system for an additional three (3) minutes, unless the Maximum Ice Production feature has been initiated.*
- *The ice maker system will continue to produce ice if the ice bucket is not in the correct position. However, to help prevent the ice* maker *system from filling the freezer with ice, the electronic control will not allow twenty (20) consecutive ice harvests between any two door openings.*
- *To allow ice to freeze fully and reduce effects of low water pressure, power to the ice maker system is interrupted for forty-five (45) minutes after each ice harvest. This can be bypassed for service purposes by switching the icemaker system OFF, then back ON with the ICE MAKER key.*
- *The fill tube heater is energized 100% of the time whenever the ice maker system is ON.*
- *When in Sabbath Mode, the icemaker system is disabled. Sabbath Mode will be explained later.*
- *The ice maker system is disabled whenever the water filter or water filter plug is removed.*

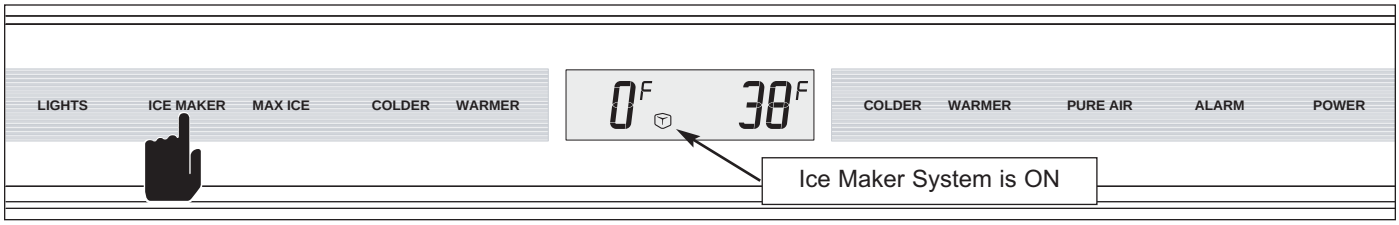


Figure 3-8. Switch Ice Maker System ON or OFF - Press ICE MAKER Key, Single Ice Cube Appears when ON

Maximize Ice Production Feature

These appliances are equipped with a feature that can boost ice production up to 40% above normal. By pressing the MAX ICE key on the control panel, the ice maker system is switched ON (if OFF); multiple ice cube icons appear in the LCD (See Figure 3-9); the freezer set-point is automatically set to -5°F (-21°C) for twenty-four (24) hours, and the freezer evaporator fan is switched to 100% run for twenty-four (24) hours, switching off only when the door is opened.

After twenty-four (24) hours, the freezer set-point reverts to the last manually input set-point, the freezer evaporator fan resumes its normal operation (cycling with the compressor); and two of the three ice cube icons disappear from the LCD, indicating normal ice production has resumed.

NOTES:

- *When the maximize ice production feature is active, power to the icemaker system is NOT interrupted after ice harvest, so the icemaker will initiate a harvest as soon as the thermostat reaches 10°F (-12°C).*
- *Switching the unit OFF, then back ON with the POWER key, or pressing the MAX ICE key during the twenty-four (24) hour production period will switch the maximize ice production feature OFF.*
- *When in Sabbath Mode, the icemaker system is disabled. Sabbath Mode will be explained later.*
- *The ice maker system is disabled whenever the water filter or water filter plug is removed.*

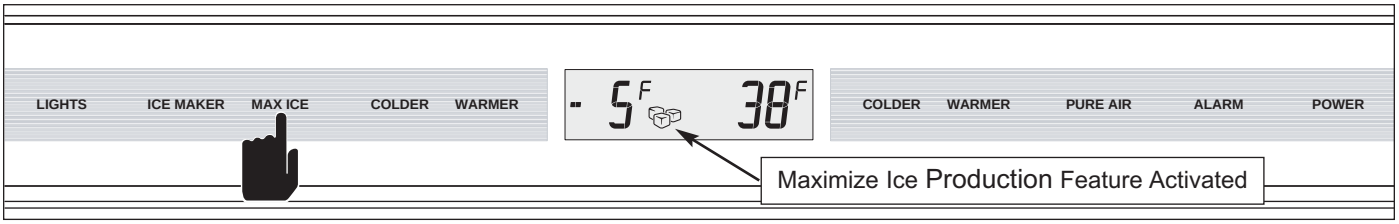


Figure 3-9. Maximize Ice Production Feature ON or OFF - Press MAX ICE Key, Multiple Ice Cubes Appear when Activated

Door Ajar Alarm Feature ON/OFF

All BI Series units are equipped with a door ajar alarm feature. To enable the door ajar alarm, press the ALARM key on the control panel and the bell icon will appear in the LCD indicating the alarm is enabled (See Figure 3-10). With the alarm enabled, the bell icon will flash and an audible alarm will chime at two (2) second intervals whenever a door is left open for more then thirty (30) seconds. To disable the door ajar alarm, press the ALARM key again and the bell icon disappears from the LCD.

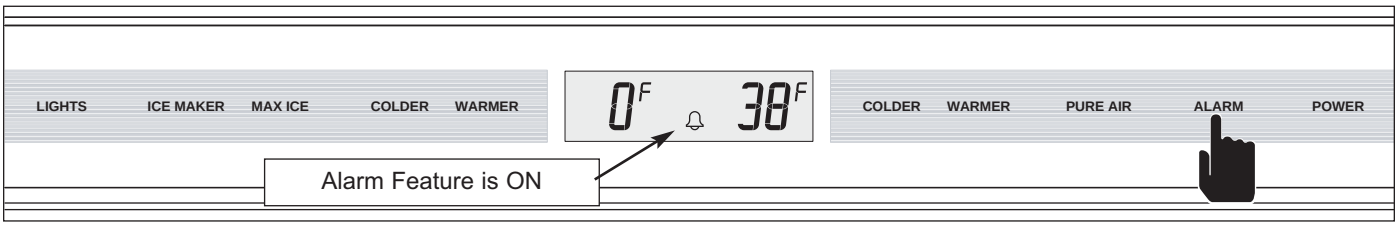


Figure 3-10. Switching Door Ajar Alarm ON or OFF - Press ALARM Key, Bell Appears when Activated

Air Purification Feature ON/OFF

An air purification feature has been incorporated into these appliances to remove bacteria and ethylene gas (by-products of ripening fruits and vegetables). The two main parts of this air purifier are a replaceable cartridge consisting of a small light and a filter medium, and a small low DC Voltage fan below the cartridge. The fan drives the refrigerator compartment air through the cartridge, over the light induced chemical filtering system which converts these harmful airborne food storage by-products into water vapor and carbon dioxide. Please note that this is not intended to be an “air deodorizer”, but rather a devise that helps to preserve foods for longer storage life by removing these food storage by-products.

To activate the air purification feature, press the PURE AIR key, and the Pure Air Icon appears in the LCD indicating the air purification feature has been activated (See Figure 3-11). When activated, the UV light in the filter cartridge and the fan motor under the cartridge are energized 100% of the time, unless the refrigerator door is opened or the unit is in Showroom Mode.

After approximately eight-thousand (8000) hours of use, the Pure Air Icon will flash, indicating it is time to change the air purifier cartridge. To stop the Pure Air Icon from flashing and reset the timer after the cartridge is replaced, the PURE AIR key must be pressed and held for five (5) seconds.

NOTES:

- *If the unit is in Sabbath Mode, the air purifier fan will not switch OFF when the refrigerator door is opened.*
- *If in Showroom Mode, the air purifier will operate for thirty (30) seconds whenever the door is open or the PURE AIR key is pressed. Pressing the PURE AIR key again will force the air purifier ON for another thirty (30) seconds.*
- *If the light bulb in the cartridge should fail, the Pure Air Icon will flash and the appropriate fault code will be logged.*

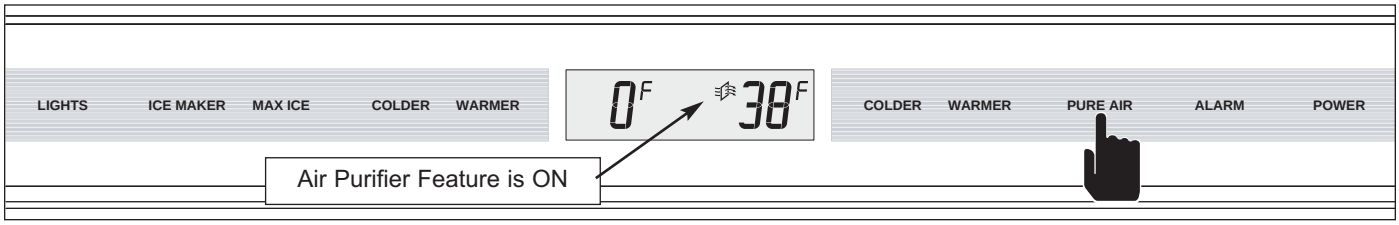


Figure 3-11. Air Purification ON or OFF - Press PURE AIR Key, Pure Air Icon Appears when ON

Accent Lighting System ON/OFF (Models Produced with Glass Doors Only)

Models produced with glass refrigerator doors are equipped with an accent lighting system in the refrigerator compartment. To energize the accent lighting system, press the LIGHTS key, and the bulb icon will appear in the LCD indicating the accent lights are enabled (See Figure 3-12). With the accent lighting system energized, the accent LED strip will be energized and stay illuminated when the door is closed. To disable the accent lights, press the LIGHTS key again.

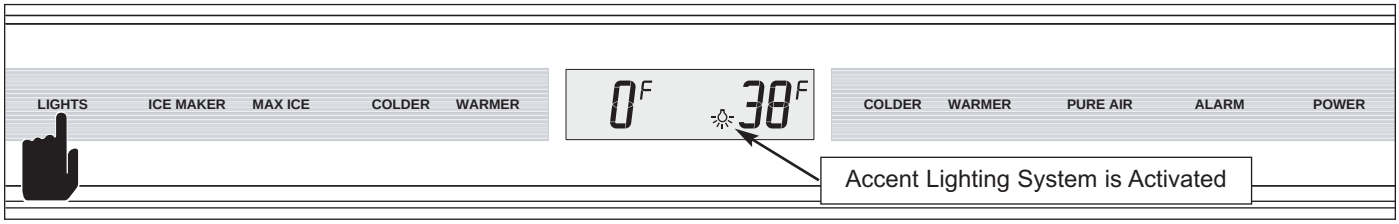


Figure 3-12. Accent Lighting System ON or OFF - Press the LIGHT Key, Bulb Appears when Activated

UNIQUE ELECTRONIC CONTROL INPUT OPERATIONS

The following pages illustrate unique customer input operations performed at the control panel. The input operations described are: Temperature Unit Selection Mode, Contrast Adjust Mode, Tone Adjust Mode, Showroom Mode, Sabbath Mode, Manual Zone Disable and Manual Freezer Evaporator Defrost.

Temperature Units Selection Mode *(Selecting Degrees Fahrenheit or Degrees Celsius Display)*

The appliance is initially set to display temperatures in Fahrenheit temperature units of measure, indicated by the "F" at the upper right of the temperature readings in the LCD. This can be changed so Celsius units of measure are displayed by initiating Temperature Units Selection Mode.

NOTE: *Temperature Units Selection Mode must be initiated within the first (1) minute after switching the unit ON.*

To convert Fahrenheit (°F) temperature units of measure to Celsius (°C) within the first minute after switching the unit ON, press and hold the ALARM key and the POWER key simultaneously for five (5) seconds, then release the keys (See Figure 3-13); a "c" will appear at the upper right of the temperature readings in the LCD, indicating that temperatures will now be displayed in Celsius units of measure. Please note that changing from Celsius temperature units of measure to Fahrenheit is the same procedure (See Figure 3-14).

NOTES:

- *Do not press and hold the POWER key first, that will simply switch the unit OFF.*
- *Temperature Units Selection Mode will end ten (10) seconds after the last key stroke, or the ALARM key can be pressed to exit this mode before the ten (10) seconds has elapsed.*

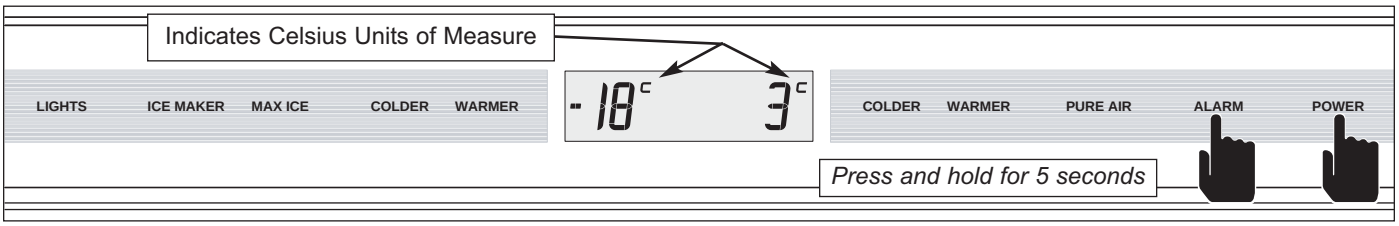


Figure 3-13. Converting Temperature Units of Measure to °C *(within first minute after switching unit ON)* - Press and Hold ALARM Key and POWER Key for 5 Seconds

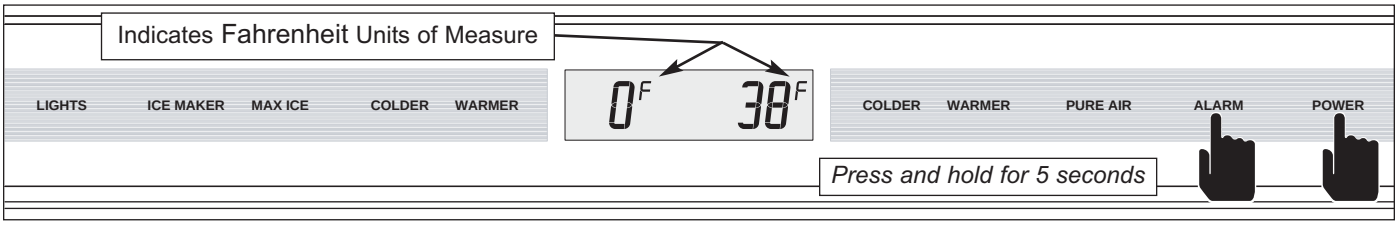


Figure 3-14. Converting Temperature Units of Measure to °F *(within first minute after switching unit ON)* - Press and Hold ALARM Key and POWER Key for 5 Seconds

Contrast Adjust Mode *(Adjusting the LCD Contrast Level)*

The contrast level of the LCD can be manually adjusted to one of five levels through Contrast Adjust mode.

NOTE: *Contrast Adjust Mode can be initiated anytime after the first (1) minute of switching the unit ON.*

To adjust the LCD contrast level anytime after the first minute of switching the unit ON, press and hold either set of COLDER and WARMER keys and the POWER key simultaneously for five (5) seconds, then release the keys (See Figure 3-15). The letter "C" will appear at the small digit location in the LCD indicating the control is now in Contrast Adjust Mode and a number 1, 2, 3, 4, or 5 will appear at the right side of the LCD, indicating the last contrast level setting. Pressing a COLDER key at this time will decrease the number; pressing a WARMER key will increase the number (See Figure 3-16).

Please note that what is actually happening here is the segments and icons in the LCD are slanting at slightly different angles for each level adjustment. This means that the lower numbers will not always indicate less contrast and the higher numbers will not always indicate more contrast, as it depends on the line of sight of the user. In fact a tall person and a short person standing side-by-side during the adjustment may see the contrast level move in totally opposite directions; one seeing it increase, the other seeing it decrease.

NOTES:
- *Do not press and hold the POWER key first, that will simply switch the unit OFF.*
- *Contrast Adjust Mode will end ten (10) seconds after the last key stroke, or press ALARM key to exit.*

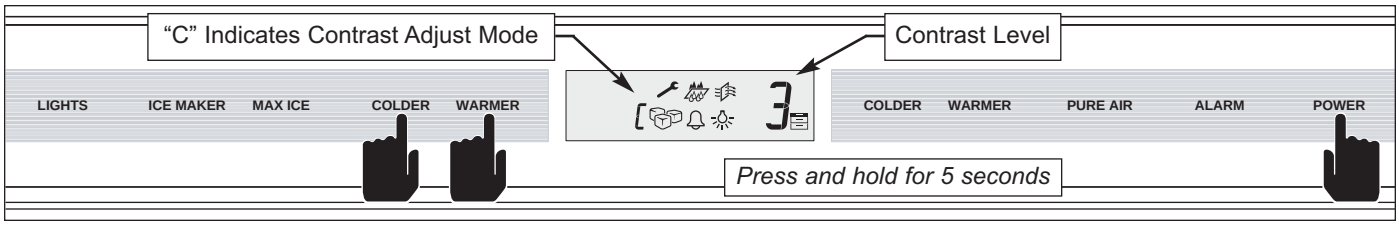


Figure 3-15. Adjusting LCD Contrast Level *(any time after first minute of switching unit ON)* - Press and Hold COLDER, WARMER and POWER Keys for 5 Seconds

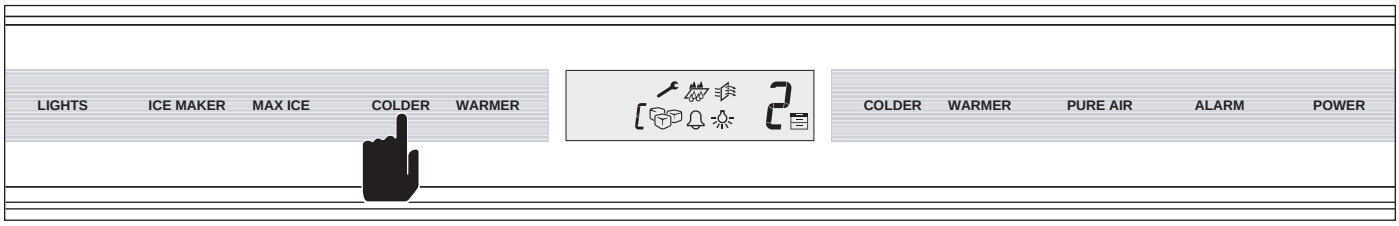


Figure 3-16. Press COLDER or WARMER Key to Change Contrast Level (Pressing COLDER Shown - Decrease Number)

Tone Adjust Mode *(Adjusting the Audible Chime Tone)*

The tone of the electronic control audible chime is preset at the factory. This preset level is referred to as the "normal" tone, but it can be manually adjusted down to low, or up to high, for a total of three possible settings. This is possible through Tone Adjust Mode.

NOTE: *Tone Adjust Mode can be initiated anytime after the first (1) minute of switching the unit ON.*

To adjust the chime tone, first initiate Contrast Adjust Mode by pressing and holding either set of COLDER and WARMER keys and the POWER key simultaneously for five (5) seconds, then release the keys (See Figure 3-17). While in Contrast Adjust Mode, press the POWER key, and the letter "S" (for "**S**ound") will appear at the small digit location in the LCD indicating the control is now in Tone Adjust Mode. At the right side of the LCD will be the letters "Hi" (for High), or "nO" (for Normal), or "Lo" (for Low), indicating the last tone setting (See Figure 3-18). Pressing a COLDER key at this time will decrease the tone setting and the chime will sound in the lower/softer tone; while pressing a WARMER key will increase the tone setting and the chime will sound in the higher/louder tone (See Figures 3-19 and 3-20).

NOTES:
- *Do not press and hold the POWER key first, that will simply switch the unit OFF.*
- *Tone Adjust Mode will end ten (10) seconds after the last key stroke, or press ALARM key to exit.*

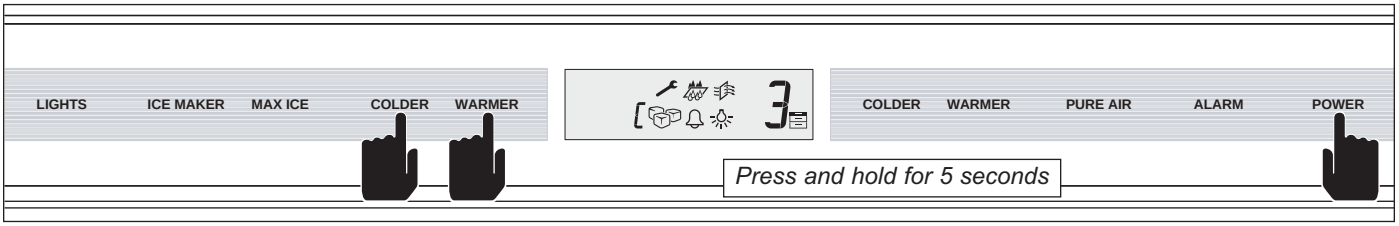


Figure 3-17. Adjusting Chime Tone *(any time after first minute of switching unit ON)* - Initiate Contrast Adjust Mode First; Press and Hold COLDER, WARMER and POWER Keys for 5 Seconds

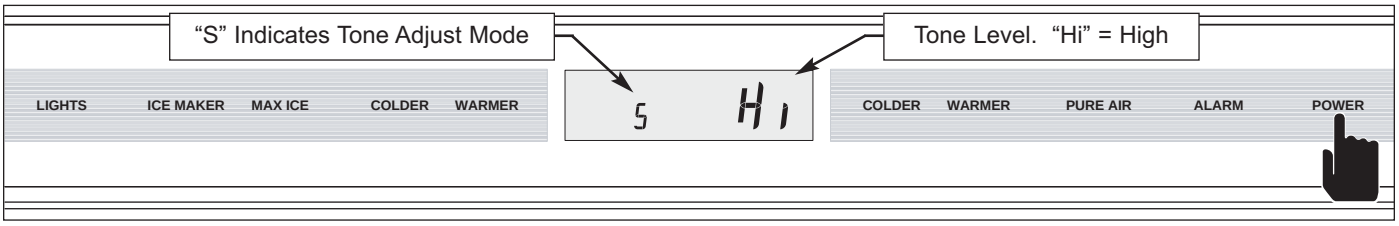


Figure 3-18. While in Contrast Adjust Mode, Press POWER Key to Initiate Tone Adjust Mode

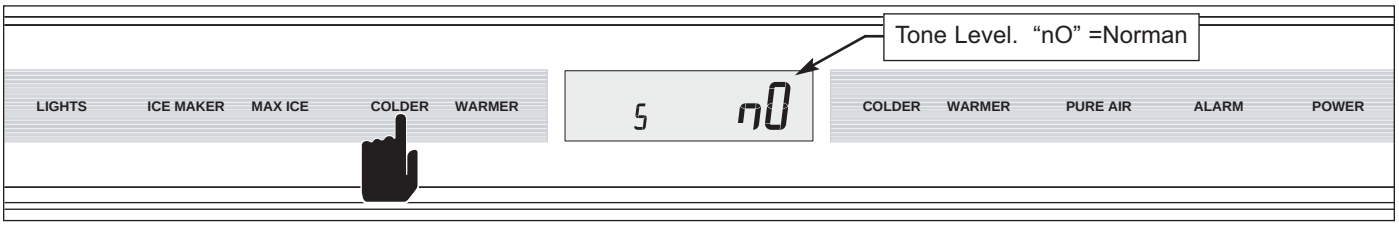


Figure 3-19. Press COLDER Key to Decrease Tone; Press WARMER Key to Increase Tone

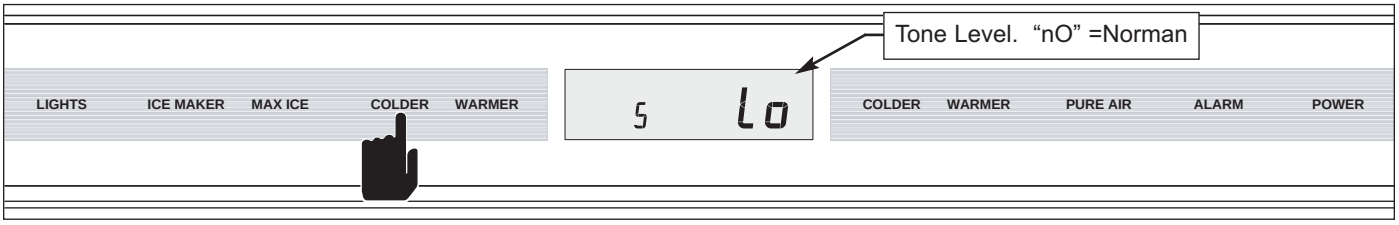


Figure 3-20. Press COLDER Key to Decrease Tone; Press WARMER Key to Increase Tone

Showroom Mode

Showroom Mode was incorporated into the electronic control system so that these appliances could be displayed in a showroom setting. When in Showroom Mode all cooling, defrosting, ice making and dispensing (if applicable) functions are disabled, but the lighting system and door ajar alarm system remain operational, and the LCD will show the set-points.

To initiate Showroom Mode, the unit must first be switched OFF using the POWER key (See Figure 3-21). Then, press and hold either pair of WARMER and COLDER keys, then the POWER key, at which point three (3) beeps will be emitted and “Sh” and “r” will appear in the LCD for five (5) seconds indicating the appliance is now is showroom mode (See Figure 3-22). After the initial five seconds, set-points will appear in the LCD (See Figure 3-23).

To return the unit to normal operation, repeat the steps above.

NOTES:

- *The air purifier will be energized for thirty (30) seconds any time the door is opened or the PURE AIR key is pressed.*
- *The lighting system will be disabled for twenty (20) minutes if the lights stay ON more than 90% of the time in any given fifteen (15) minutes, or if a compartment thermistor reports a temperature greater than ambient plus thirty (30) degrees, or if an evaporator thermistor reports a temperature greater than ambient plus twenty (20) degrees.*
- *For demonstration purposes, the water filter icon can be forced ON during Showroom Mode by pressing the ICE MAKER key for five (5) seconds. To switch it OFF, press the filter reset button behind the unit grille for five (5) seconds.*
- *Units with glass refrigerator doors contain a glass door heater, which is disabled while in Showroom mode.*
- *Always check set-points after returning unit to normal operation.*

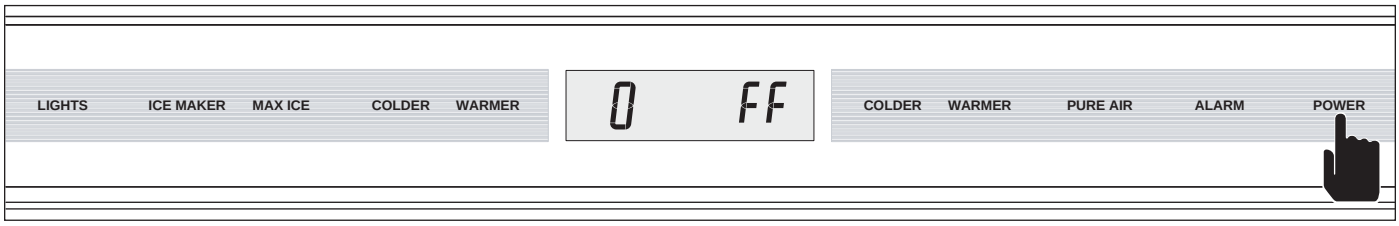


Figure 3-21. To Enter (or Exit) Showroom Mode, Switch Unit OFF First

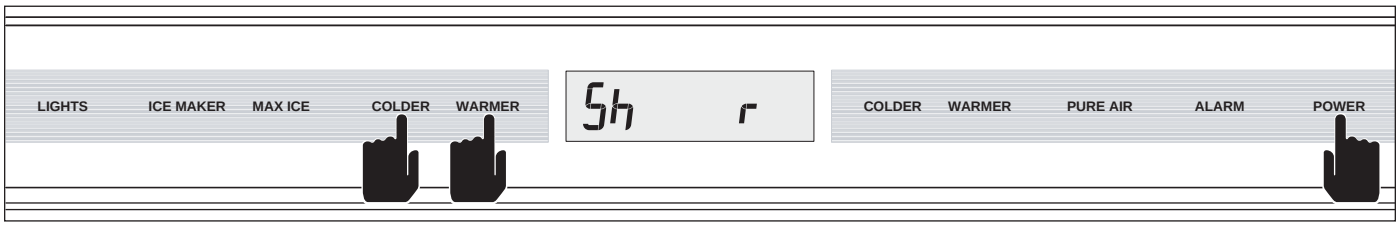


Figure 3-22. Then Press and Hold Either Pair of WARMER and COLDER Keys, Then the POWER Key - “Sh” and “r” appear for 5 Seconds

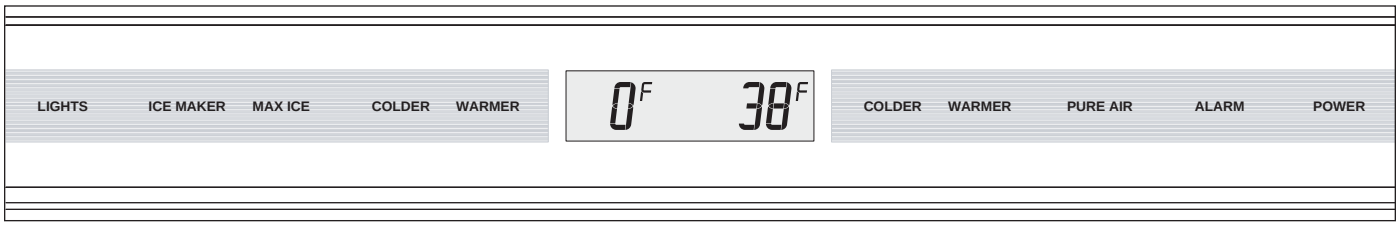


Figure 3-23. Set-points Appear in LCD 5 seconds after Showroom Mode is Initiated

Sabbath Mode

Sabbath Mode was incorporated into the electronic control system for the observance of certain religious days. When Sabbath Mode is initiated the lighting systems, ice making system, dispensing system (if applicable), alarm system and the air purification feature are disabled, plus the letters “SA” and “b” will appear in the LCD.

To initiate Sabbath Mode, the unit must first be switched OFF using the POWER key (See Figure 3-24). Then, press and hold the POWER key for ten (10) seconds, at which time the alarm will chime, and “SA” and “b” will appear in the LCD (See Figure 3-25).

To return to normal operation, press the POWER key, the lights will be energized accompanied by two beeps and current zone temperature will appear in the LCD.

NOTES:

- *Set-points cannot be changed and manual defrost cannot be initiated.*
- *The following holds true in accordance with Star-K requirements:*
  - *Freezer defrosting functions will convert to a fixed time base sequence instead of adaptive defrosting, which is usage based.*
  - *The compartment/zone thermistors will still detect high off-set, which is the determining factor to start the cooling process, but there will be a random fifteen (15) to twenty-five (25) second delay before cooling begins.*
  - *The “SA” and “b” in the LCD remain energized when the door is closed.*
- *When Sabbath Mode is exited, the accent lights, door alarm, icemaker and air purification system will return to the ON or OFF state they were in prior to initiating Sabbath Mode.*

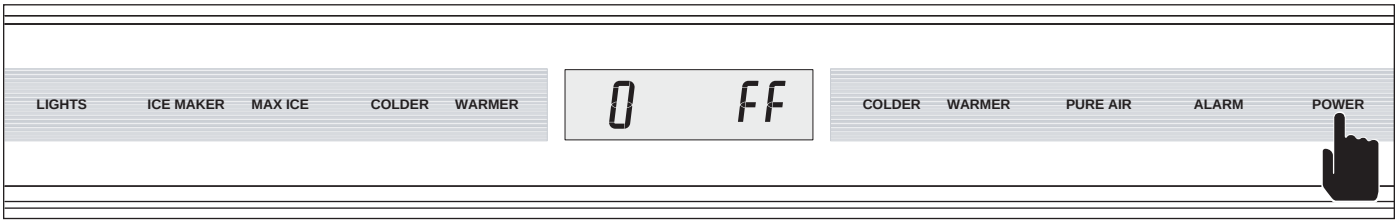


Figure 3-24. To Enter Sabbath Mode, Switch Unit OFF First

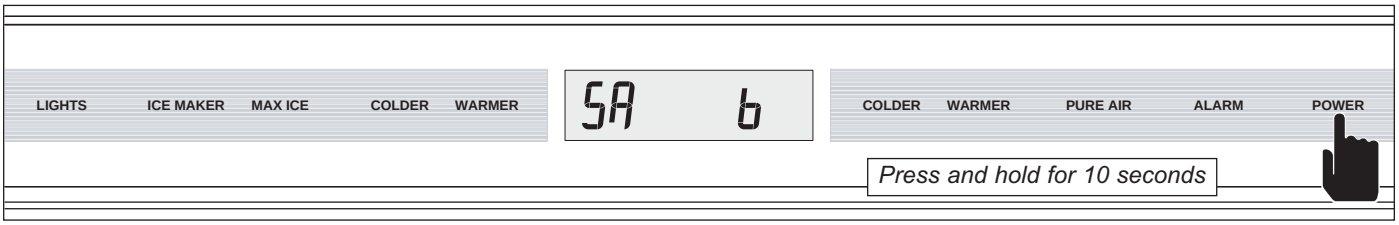


Figure 3-25. Then Press and Hold POWER Key for 10 seconds

Manual Zone Disable Mode

Manual Zone Disable Mode allows a customer or Service Technician to switch one zone, or “compartment” OFF for defrosting, interior cleaning, or diagnostic purposes, while allowing the other zones to continue cooling.

To initiate Manual Zone Disable Mode, the unit must first be switched OFF using the POWER key (See Figure 3-26). Now, press and hold the WARMER key for the zone being disabled, then the POWER key, then release both keys, at which time “- -” (double-dashes) will appear in place of temperature readings for the chosen zone (See Figure 3-27).

To return the disabled zone to operational state, repeat the steps above.

NOTE:

- *If switched OFF then back ON, the electronic control stores this mode-set in non-volatile memory, so the disabled zone will remain disabled until the proper key sequence is performed to reenable the zone.*
- *The alarm system for the disabled zone is inactive during this mode.*
- *Always check set-points after returning unit to normal operation.*

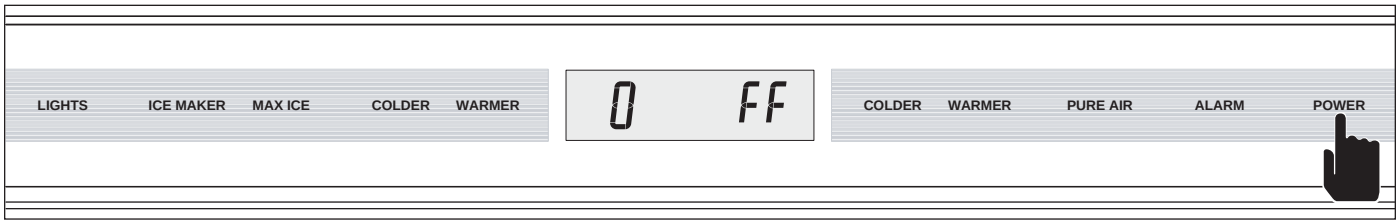


Figure 3-26. To Disable a Zone, Switch Unit OFF First by Pressing the POWER Key

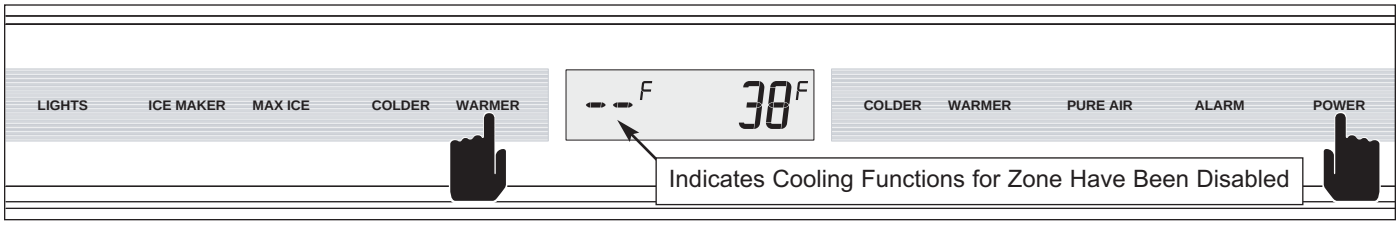


Figure 3-27. Then Press and Desired Zone WARMER Key along with the POWER Key

Manual Freezer Evaporator Defrost

Manual Freezer Evaporator Defrost was incorporated into the electronic control to assist a customer that may inadvertently leave the freezer door ajar, causing a heavily frosted evaporator, and may also be utilized by a Service Technician for servicing and diagnostics.

To initiate manual freezer evaporator defrost the unit must be ON, then press and hold the ICE MAKER key for five (5) seconds, at this time the freezer evaporator temperature will be displayed at left in the LCD with the refrigerator evaporator temperature displayed at right for five (5) seconds (See Figure 3-28), then compartment temperatures will be displayed (See Figure 3-29).

NOTES:

- *Though the refrigerator evaporator temperature is also shown when manual defrost is initiated, only the freezer evaporator is affected.*
- *Manual Freezer Evaporator Defrost will not operate if unit is in Sabbath Mode.*
- *The defrost terminator will not allow power to the defrost heater if the evaporator is above 30°F (1°C).*

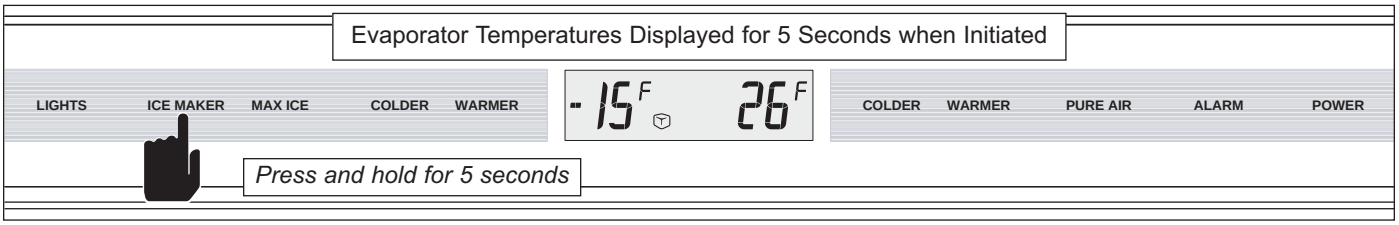


Figure 3-28. Initiate Manual Freezer Evaporator Defrost - Press and Hold ICE MAKER Key for 5 Seconds

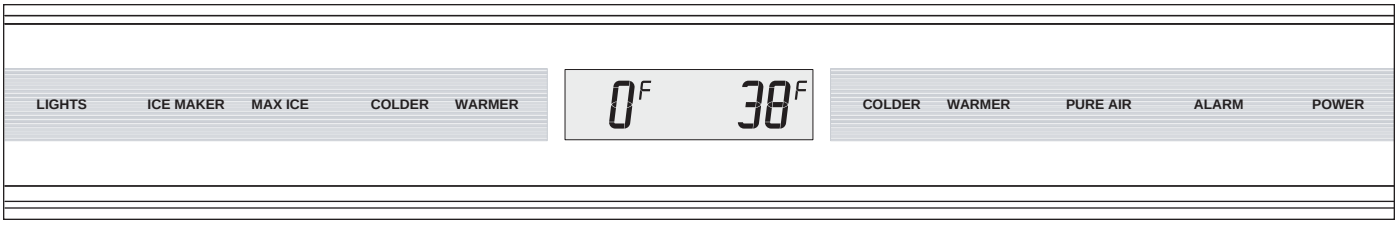


Figure 3-29. Compartment Temperatures Displayed 5 Seconds after Manual Defrost is Initiated

DOOR DISPENSER CONTROL INPUT OPERATIONS (MODELS BI42SD AND BI48SD ONLY)

Models equipped with an ice and water dispenser through the refrigerator door utilize a capacitance touch control panel similar to the main control panel. Below are the input operations a customer or Service Technician may perform at the door dispenser control panel.

⚠ CAUTION

The dispenser assembly operates on low DC voltage. Never apply AC line voltage to the dispenser components, doing so will damage the appliance.

Changing the Dispenser Lighting States

There are three possible lighting states at the dispenser assembly:

- All Lights ON (blue keys and white glasswell)
- Key Lights ON only
- All Lights OFF

Press the LIGHT key in multiple key strokes until the desired lighting state is achieved (See Figure 3-30).

NOTE: *During water or ice dispensing, all lights will illuminate until dispensing is complete, then lights will return to their previous state.*

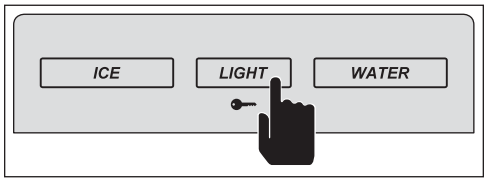


Figure 3-30. Choose Light State - Press LIGHT Key in Multiple Strokes

Dispensing Water

To operate the water dispenser, set a glass on the grille of the glasswell, then press and hold the WATER key until the desired amount of water is received (See Figure 3-31).

NOTE: *Before the water dispenser is used for the first time, or after servicing the water dispensing system, the water reservoir tank, water lines and plumbing connection must be purged of air by pressing the WATER key for approximately three (3) minutes. This will clear any air from the system, along with any foreign materials that may be present in the plumbing connection.*

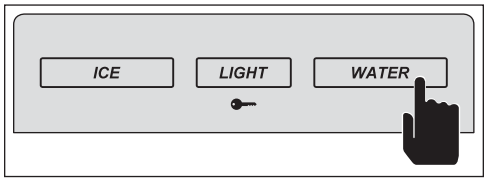


Figure 3-31. Dispense Water - Press and Hold WATER Key

Dispensing Ice

The ice dispenser in these models uses a delay, or metering feature to limit the amount of ice dispensed each time the ICE key is pressed in approximately two (2) second intervals.

To dispense ice, set a glass on the grille of the glasswell, then press and hold the ICE key for approximately two (2) seconds, and the dispenser will meter out the ice, collect it in the cylinder valve directly above the glass, then turn the cylinder valve to drop the ice into the glass (See Figure 3-32).

If less ice is desired, hold the ICE key for less than two (2) seconds; if more ice is desired, hold the ICE key until the dispensing cycle repeats.

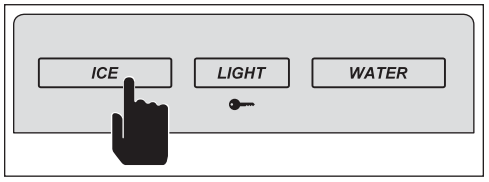


Figure 3-32. Water Dispense - Press and Hold ICE Key

NOTE: *The ice dispenser can be reprogrammed to deactivate the delayed dispense feature, which would allow the dispenser cylinder valve and ice auger motor to remain energized continuous whenever the ICE key is pressed and held. This is referred to as Delayed Dispense Reset, and is covered on the next page.*

Locking the Dispenser

The dispenser assembly is equipped with a Lock feature which deactivates all keys on the dispenser control panel to prevent unintended ice and water dispensing while cleaning and/or to prevent small children from using the dispenser.

To activate the lock feature, press and hold the LIGHT key for approximately five (5) seconds (See Figure 3-33), until the dispenser lights flash once and the key ( ) icon illuminates red. The dispenser lights will remain in the state they were in before the lock feature was activated.

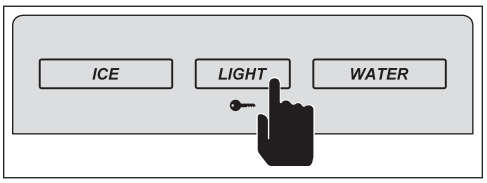


Figure 3-33. Lock Dispenser - Press & Hold LIGHT Key for 5 Seconds

To deactivate the lock feature, press and hold the LIGHT key again for approximately five (5) seconds, until the dispenser lights flash once and the red key icon is no longer illuminated. The lights will remain in the state they were in before the lock feature was deactivated.

Delayed Dispense Reset Mode *(Deactivating/Reactivating Delayed Dispense Feature)*

The ice dispenser is initially set with the delayed dispense feature active. Delayed Dispense Reset Mode allows the Service Technician to deactivate (or reactivate) the ice delayed dispense feature. If deactivated, the ice dispenser cylinder valve and ice auger motor will remain energized continuous whenever the ICE key is pressed and held.

NOTE: *Delayed Dispense Reset Mode must be initiated within the first (1) minute after switching the unit ON. If the unit has been running more than one (1) minute, use the POWER key on the main control panel to switch the unit OFF then back ON.*

To deactivate or reactivate this feature within the first minute after switching the unit ON:

1. Press the LIGHT key on the dispenser control panel for approximately five (5) seconds, until the dispenser lights flash once and the key ( ) icon illuminates red. (See Figure 3-34).
2. Press and hold ICE key on dispenser control panel (See Figure 3-35).
3. While holding ICE key, press and release the LIGHT key five consecutive times in rapid succession (See Figure 3-36). The key icon will flash five times, then switch off indicating successful feature manipulation. This can be double-checked by pressing and holding the ICE key.

To switch back, repeat the steps above, starting with switching the unit OFF first.

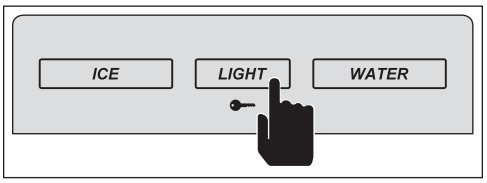


Figure 3-34. Press & Hold LIGHT Key for 5 Seconds

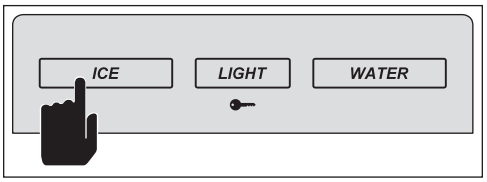


Figure 3-35. Press & Hold ICE Key

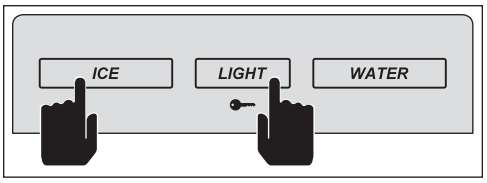


Figure 3-36. Press LIGHT Key 5 Times While Holding ICE Key

ADDITIONAL DISPENSER NOTES:

- *For dispensing large quantities of ice into an ice container, open the refrigerator door, place the container under the dispenser chute, then press the BULK ICE key pad located above the dispenser chute.*
- *If any part of the dispenser system should fail, the appropriate fault code will be logged.*
- *Because of the capacitance touch functionality of the dispenser keys, they must be kept clean and dry to insure proper operation.*
- *When in Sabbath Mode, the dispenser is disabled.*
- *The ice maker system and water dispensing system are disabled whenever the water filter or water filter plug is removed.*

FUNCTIONS OF THE ELECTRONIC CONTROL SYSTEM

The following pages explain monitoring, regulating and controlling functions of the electronic control system. In most cases signal traces on a model BI36U wiring schematic are used to show current flow for functions being explained.

Supply Power to the Lighting System

Power is supplied to the lighting system through the control board when the unit is switched ON by pressing the POWER key. When a door is open, the corresponding normally closed light switch allows power to the lights in the compartment (See Figure 3-37).

NOTES:

- *Power to the light is monitored by the microprocessor to control the door ajar alarm feature.*
- *Power to the refrigerator lights is also monitored to help control the refrigerator evaporator fan, crisper drawer fan and air purifier fan operation. When the refrigerator door is open, power to all fans in the refrigerator is interrupted.*
- *Power to the freezer lights is also monitored to help control the freezer evaporator fan and icemaker operation. If the freezer door (or drawer) is open, power to the freezer evaporator fan and the icemaker is interrupted.*
- *If in Sabbath Mode, the lighting system is disabled.*

1. Power supplied to lighting system unless unit is switched OFF, or in Sabbath Mode.

2. Power to the light is monitored to help control alarm, evaporator fans, drawer fans, air purifier fan and icemaker operation.

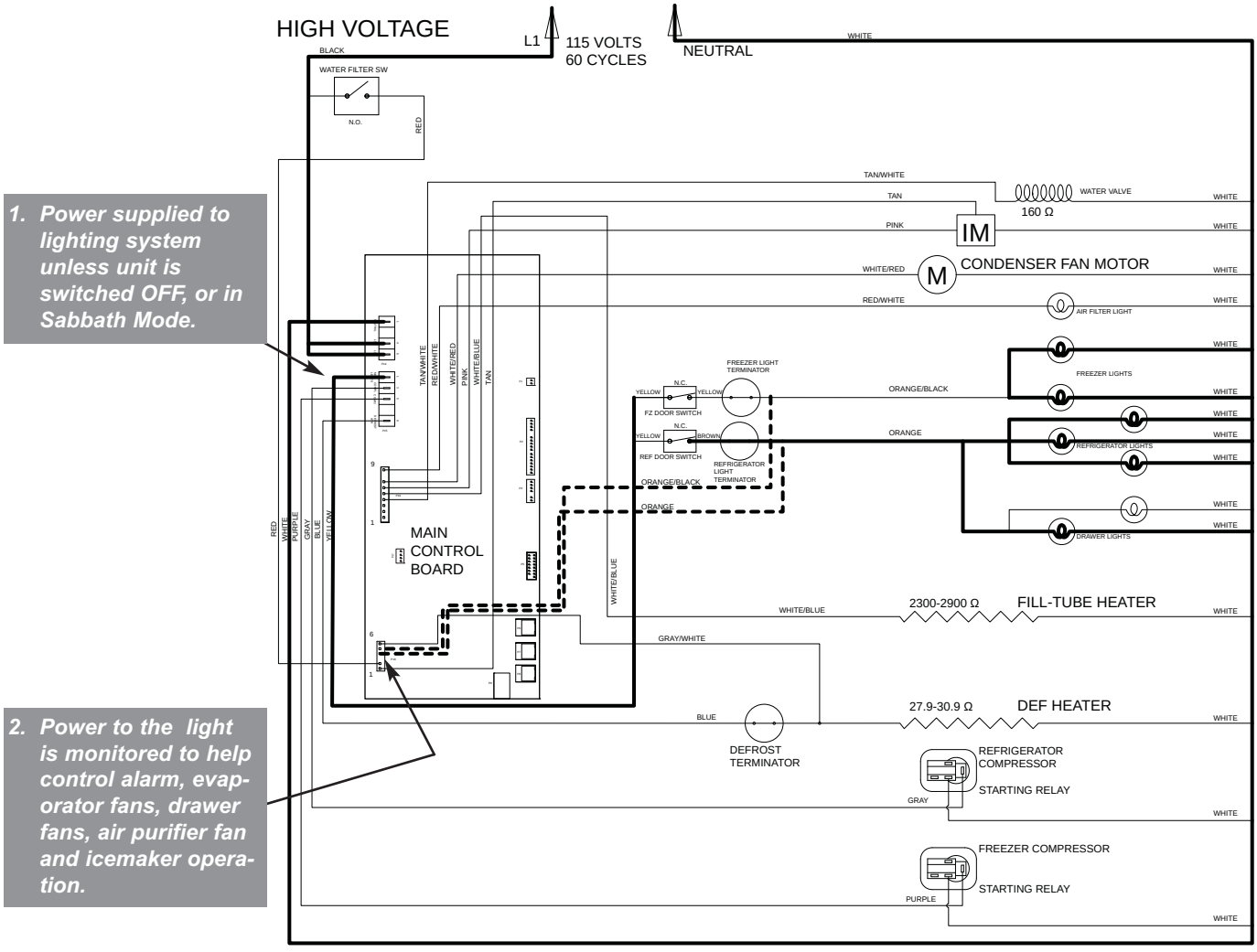


Figure 3-37. Signal Trace Schematic: Lighting System

Control Condenser Fan Operation

The microprocessor observes the power output to both compressors; if power is being supplied to either compressor, a signal is sent to the condenser fan relay on the control board to close, supplying power to the condenser fan motor (See Figure 3-38). If both compressors are OFF, the condenser fan will be OFF.

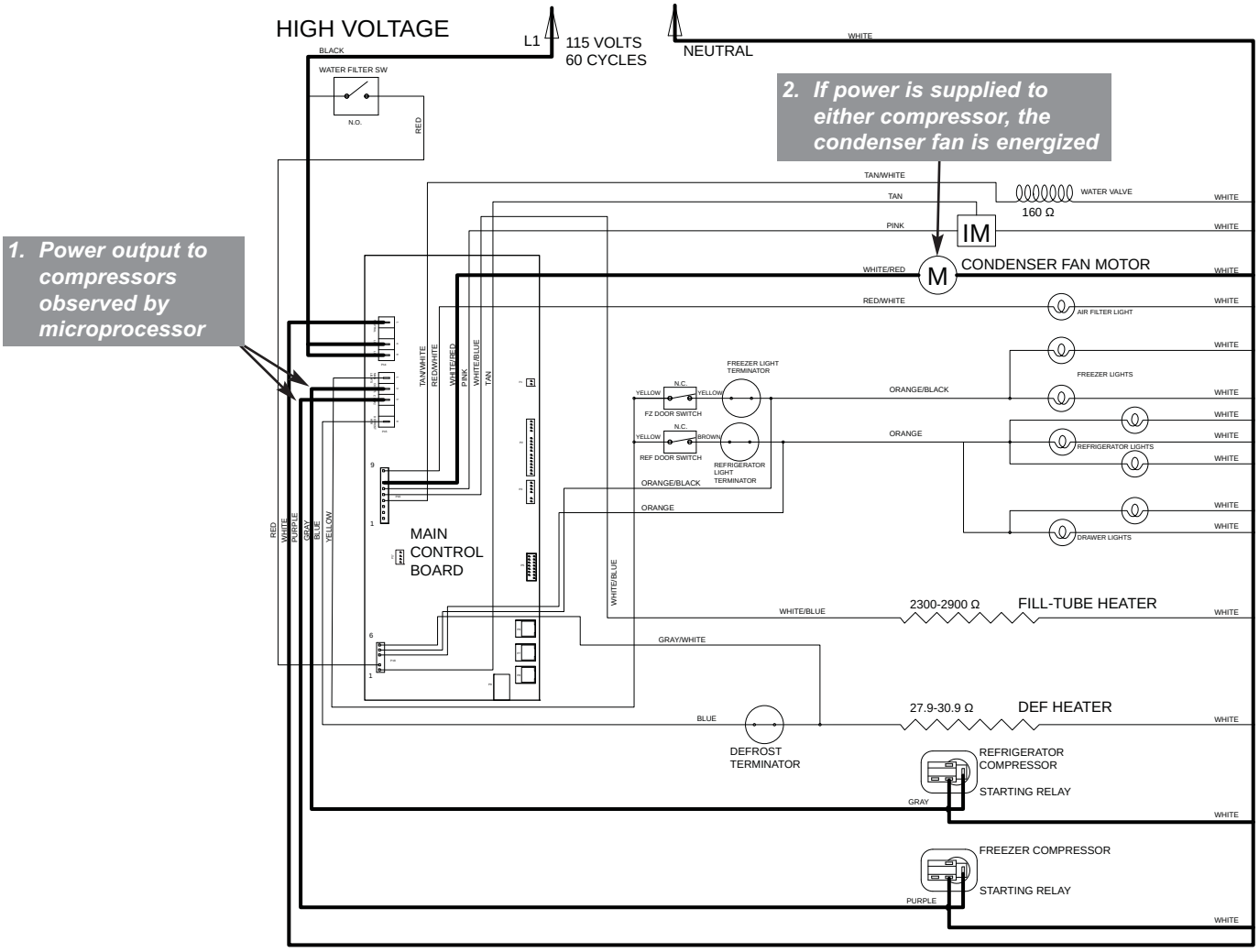


Figure 3-38. Signal Trace Schematic: Condenser Fan Operation

Monitor, Regulate and Display Refrigerator Compartment Temperatures

The temperature signal from the refrigerator compartment thermistor is monitored by the microprocessor. When high offset temperature is detected, calling for cooling, a high-speed run command is sent to the refrigerator evaporator fan, switching it ON, and when the evaporator temperature climbs to 38°F (3°C) the compressor and drawer fans are also energized, beginning the cooling cycle. When the compartment reaches low offset temperature, the compressor and fans are switched OFF. Though compartment air temperature fluctuates from OFF and ON cycles, it is the refrigerator compartment's "average" temperature that is displayed at the right side of the LCD. (See Figure 3-39)

NOTES:

- *Refrigerator zone temperature range is +34°F (+1°C) to +45°F (+7°C).*
- *If average compartment temperature changes, the display will change by one degree per minute.*
- *If the refrigerator compartment thermistor is faulty, the refrigerator compressor defaults to 20 minutes ON, 40 minutes OFF cycling, EE appears at right in LCD, the service icon flashes and the appropriate fault code is logged.*
- *If the refrigerator evaporator thermistor is faulty, the refrigerator compressor will not energize until compartment air temperature exceeds high offset by 5°F (3°C); the service icon flashes and the appropriate fault code is logged.*
- *If in Sabbath Mode, the compartment thermistor still controls compressor operation, except that when high offset is reached, there is a random 15 to 25 second delay before the cooling cycle is started.*
- *The condenser fan is energized whenever a compressor is energized.*

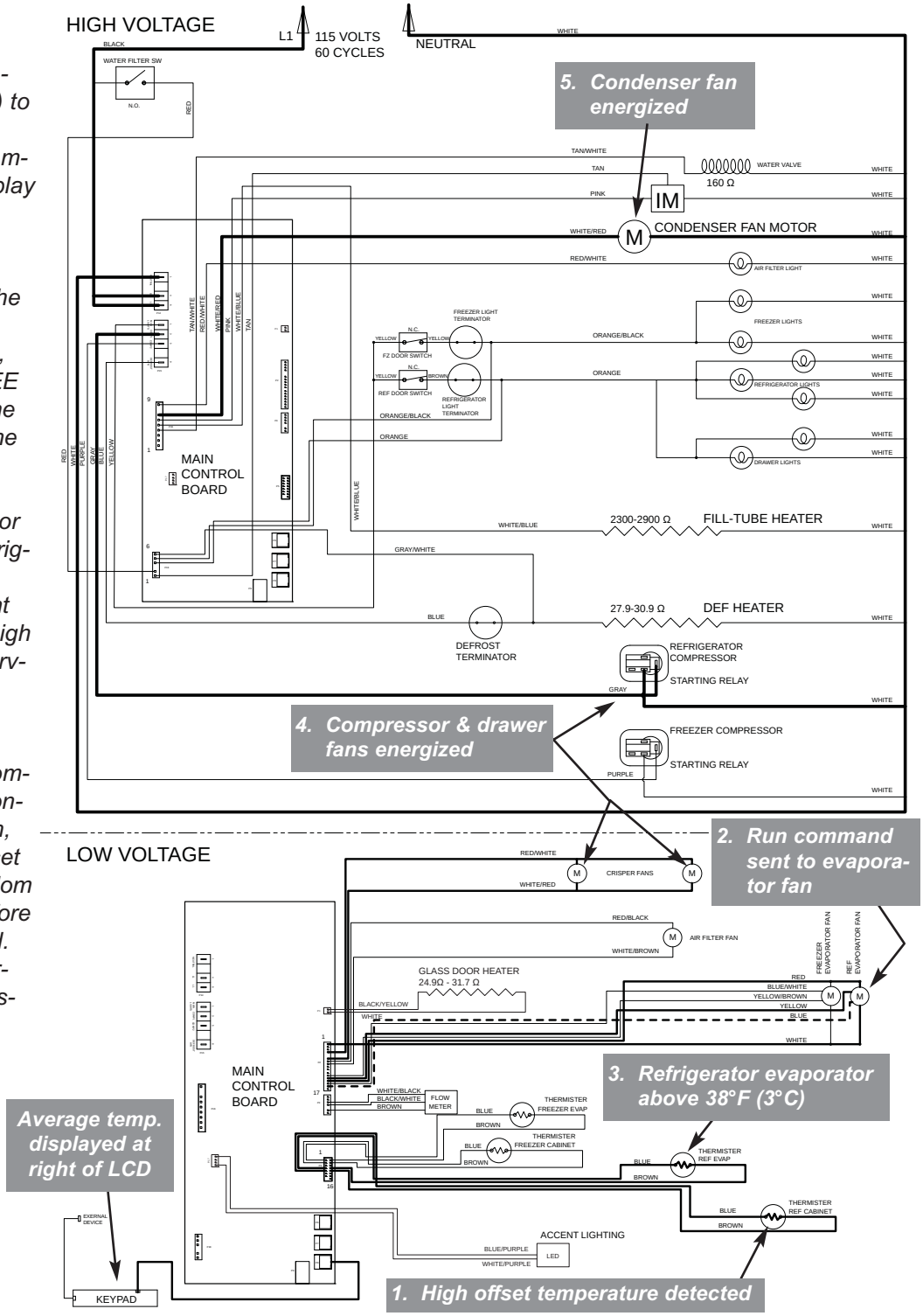


Figure 3-39. Signal Trace Schematic: Regulating Refrigerator Temperature

Additional Regulating of Refrigerator Compartment Temperatures:
Details of Controlling the Refrigerator Variable Speed Evaporator Fan Motor

The evaporator fan in the refrigerator zone uses a low DC voltage variable speed motor. During normal operation and when the door is closed, the motor is supplied with 12V DC at all times from P2-14 off of the control board, with the neutral or ground return to P2-1. When high offset temperature is detected a command is sent to the evaporator fan motor from P2-13 to run at high-speed, and the RPM is monitored via P2-16. On some models, the refrigerator evaporator fan will always run at high speed when energized, while on others a command will be sent to the fan after approximately thirty (30) seconds of high-speed operation to ramp down to low-speed. This will vary by model. If the compartment thermistor in those models where the fan speed is normally ramped down after thirty (30) seconds detects temperatures above high offset, the fan will remain at high-speed until the temperature falls below high offset, then ramp down to low-speed. And, in all models, if the refrigerator door is opened while the evaporator fan is operating, the microprocessor will detect the power signal to the lights and interrupts the 12V DC power to the fan. (See Figure 3-40)

NOTE:

- *During Sabbath Mode the lighting system is disabled and the 12V DC supplied to the evaporator fan cannot be interrupted, thus the evaporator fan may be observed running when the door is open.*
- *If improper RPM signals are detected from the evaporator fan, the appropriate fault code will be logged.*

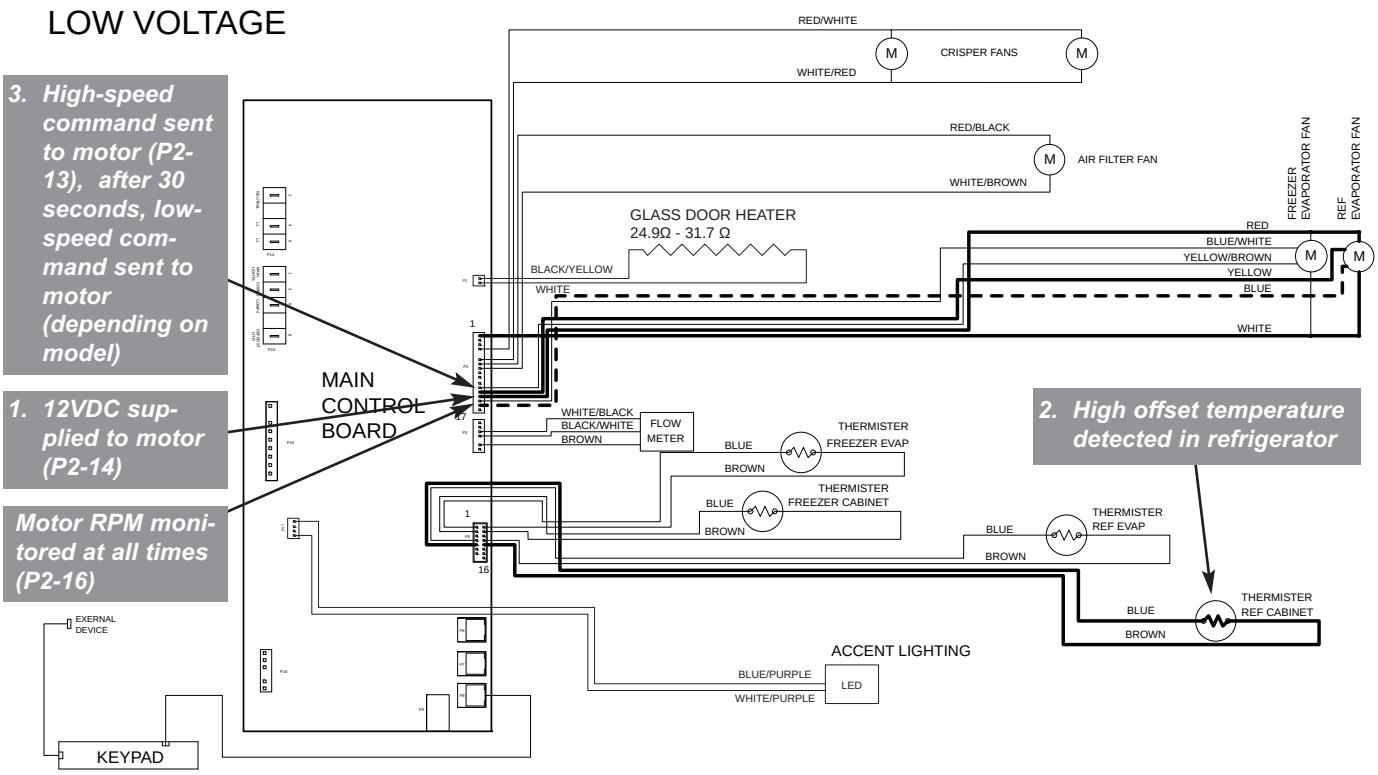


Figure 3-40. Signal Trace Schematic: Low DC Voltage Variable Speed Refrigerator Fan Operation

Additional Regulating of Refrigerator Compartment Temperatures:
Details of Controlling the Refrigerator Drawer Fan Motors

The refrigerator zone contains an auxiliary low DC voltage fan system (consisting of two fans in most models) behind the storage drawers. This fan system is designed to keep the drawers approximately 2°F (1°C) colder than the rest of the compartment by pulling the coldest air directly off of the evaporator coil whenever the refrigerator compressor is energized, and circulating this air around the drawers. (See Figure 3-33) However, if the compartment thermistor detects temperatures above 54°F (12°C) or below 35°F (2°C), no power will be supplied to the drawer fans. And, if the refrigerator door is opened while the drawer fans are operating, the microprocessor will detect the power signal to the lights and interrupt the power to the fans. (See Figure 3-41)

NOTE:

- *If the refrigerator set-point is 34°F (1°C) the drawer fan motors will never switch ON.*
- *During Sabbath Mode the lighting system is disabled and 12V DC will be supplied to the drawer fans whenever the compressor is energized regardless of light switch orientation, so the drawer fans may be observed running when the door is open.*

Drawer fans are energized whenever compressor is energized, unless door is open, or temperatures are > 54°F (12°C) or <35°F (2°C)

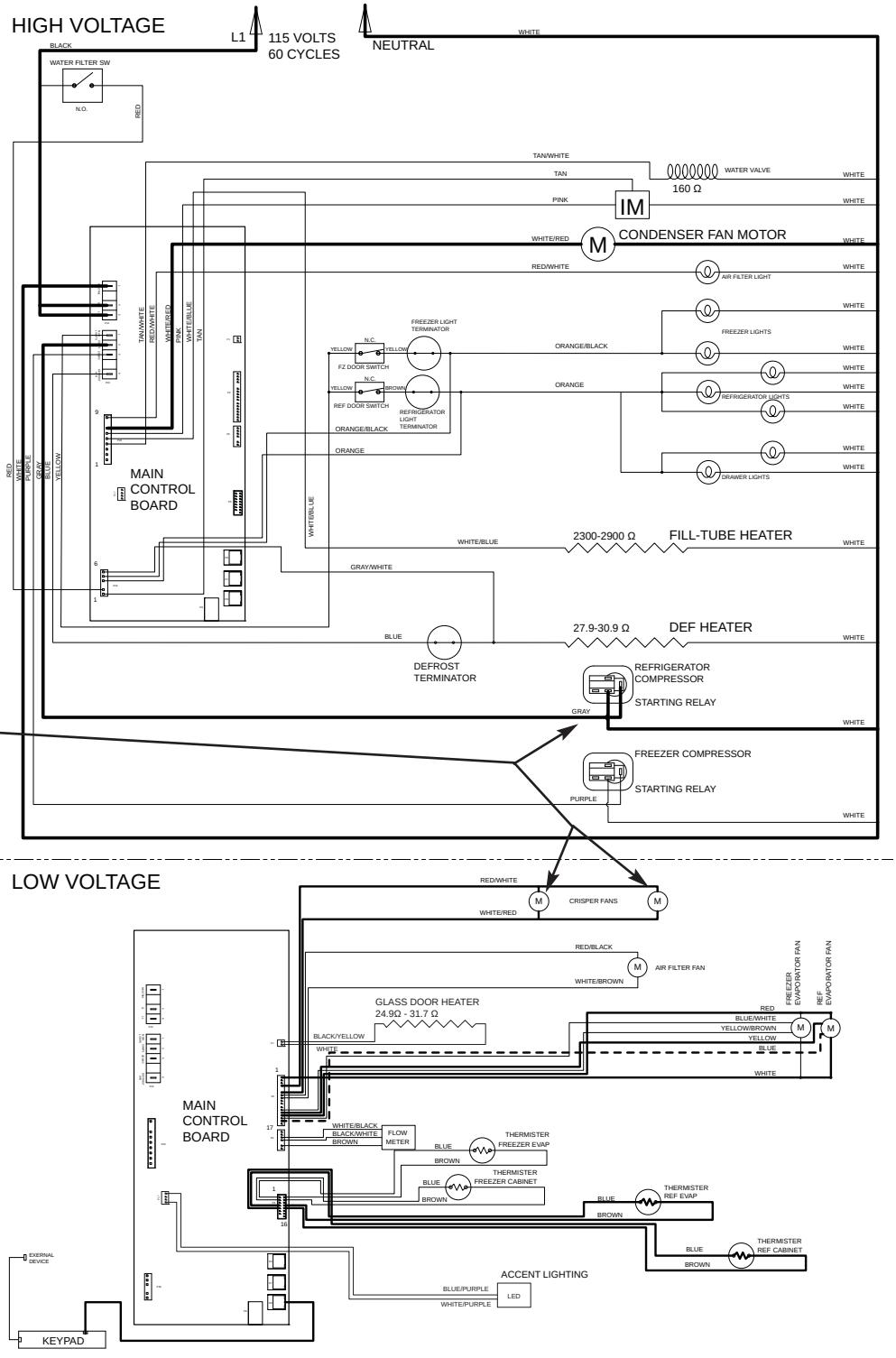


Figure 3-41. Signal Trace Schematic: Low DC Voltage Drawer Fan Operation

Monitor and Control Refrigerator Fan-Assisted, Off-Cycle Defrost

Temperature signals from the refrigerator compartment and evaporator thermistor's are observed by the microprocessor. During the off cycle defrost, if the refrigerator compartment temperature reaches high offset (calling for cooling) before the evaporator temperature rises to 38°F (3°C), no power will be supplied to the compressor, but the evaporator fan will be switched ON. Only after the evaporator temperature reaches 38°F (3°C) will the compressor be energized. (See Figure 3-42).

NOTES:

- *If the refrigerator compartment thermistor is faulty, the refrigerator compressor defaults to 20 minutes ON, 40 minutes OFF cycling, EE appears at right in LCD, the service icon flashes and the appropriate fault code is logged.*
- *If the refrigerator evaporator thermistor is faulty, the refrigerator compressor will not energize until compartment air temperature exceeds high offset by 5°F (3°C); the service icon flashes and the appropriate fault code is logged.*
- *If in Sabbath Mode, the compartment thermistor still controls compressor operation, except that when high offset is reached, there is a random 15 to 25 second delay before the cooling cycle is started.*

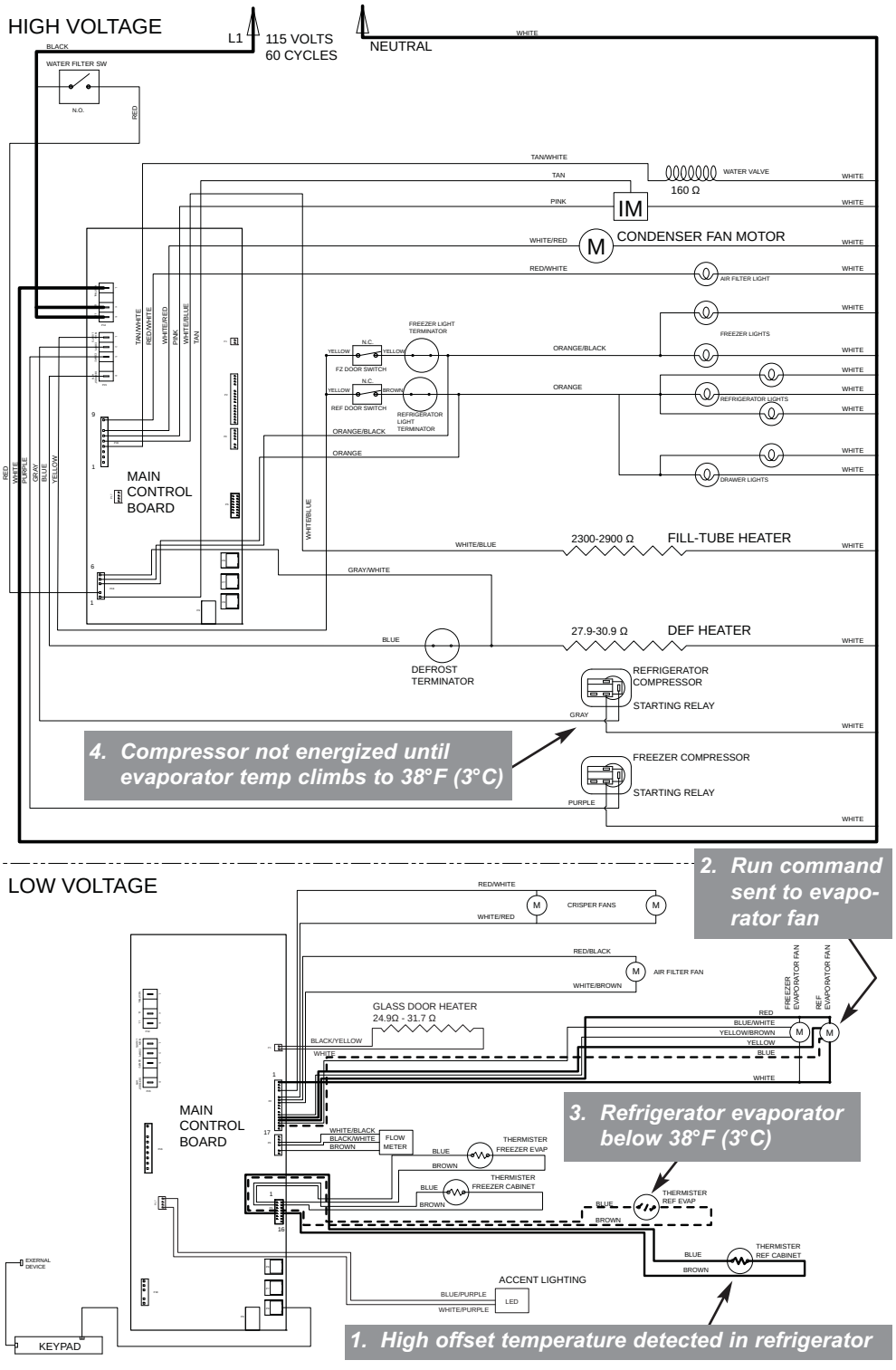


Figure 3-42. Signal Trace Schematic: Refrigerator Off-Cycle Defrost

Minimize Condensation on Refrigerator Door Glass (Models Produced with Glass Doors Only)

On models with glass refrigerator doors a low DC voltage, five (5) watt braided wire heater is foamed into the door around the glass perimeter. This heater helps to minimize the formation of condensation on the glass and/or door frame by energizing in ten (10) to forty (40) second ON/OFF cycles, depending on the compartment temperatures; colder temperatures equal longer cycles. (See Figure 3-43).

To help minimize condensation further, the microprocessor detects when the refrigerator door is opened, via the light switch, and when the door closes the evaporator fan is energized for five (5) minutes, regardless of the refrigerator compressor operational state, drawing any warmer moist air away from the door glass. (See Figure 3-43)

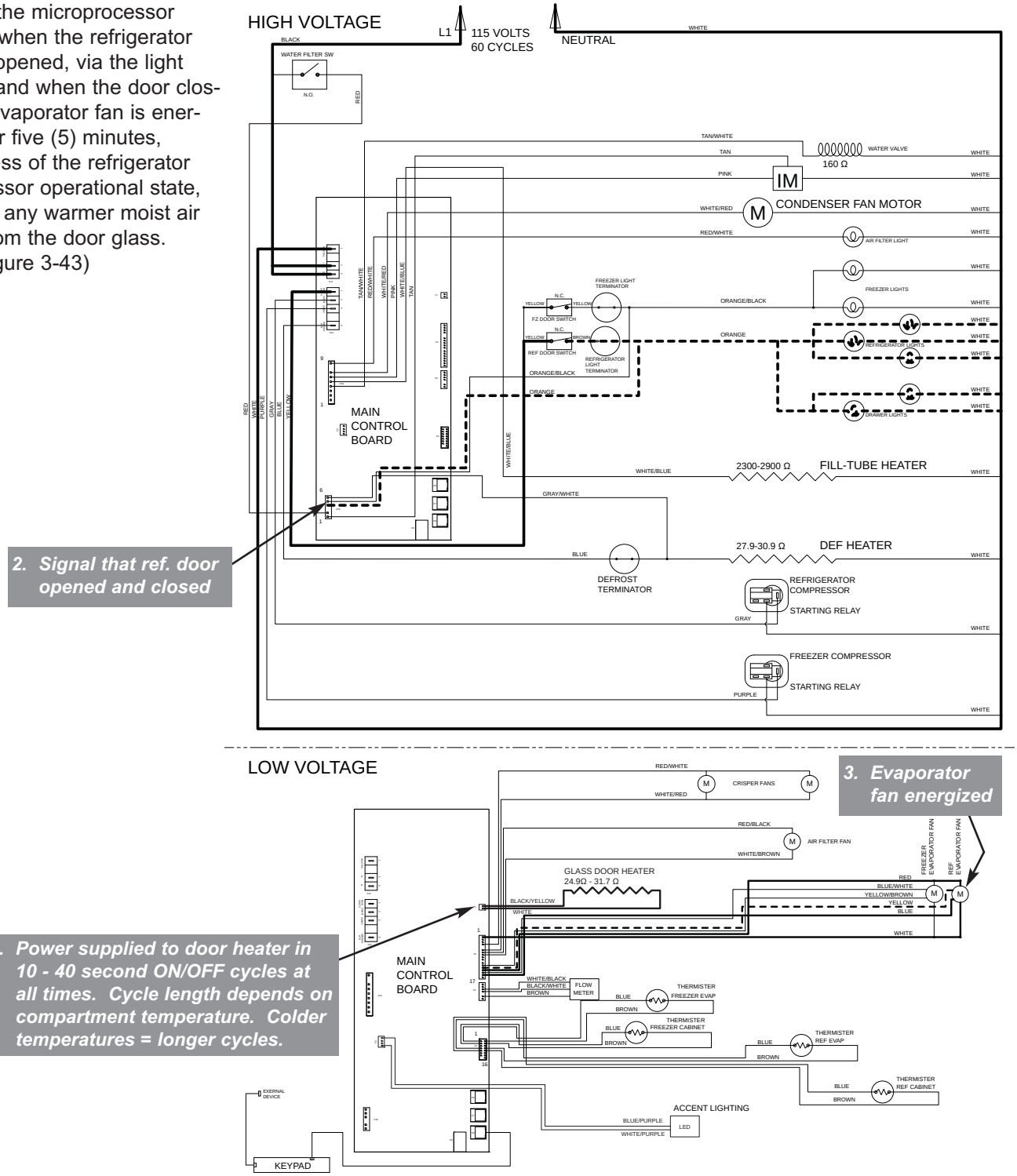


Figure 3-43. Signal Trace Schematic: Glass Door Unit Door Heater & Evaporator Fan Operation

Monitor, Regulate and Display Freezer Compartment Temperatures

Temperature signals from the freezer compartment thermistor are monitored by the microprocessor. When the freezer compartment thermistor detects high offset temperature, calling for cooling, the freezer compressor is cycled ON and in most cases the evaporator fan motor receives a high-speed run command, switching it ON. However, if the freezer is calling for cooling following a defrost, the evaporator fan will not be switched ON until the freezer evaporator falls to 35°F (2°C). When the compartment reaches low offset temperature, the compressor and evaporator fan are switched OFF. Though compartment air temperature fluctuates from OFF and ON cycles, it is the freezer compartment's "average" temperature that is displayed at the left side of the LCD. (See Figure 3-44)

NOTES:

- *Freezer zone temperature range is -5°F (-21°C) to +5°F (-15°C)*
- *If average compartment temperature changes, the display will change by one degree per minute.*
- *When high offset is detected after a defrost, the freezer compressor will not be energized until after the five (5) minute time delay/dwell that follows all freezer defrosts.*
- *If a freezer compartment thermistor is faulty, the freezer compressor defaults to 20 minutes ON, 20 minutes OFF cycling, EE appears at left in LCD, the service icon flashes and the appropriate fault code is logged.*
- *If a freezer evaporator thermistor is faulty, the freezer compressor will be energized immediately after the five (5) minute dwell and the evaporator fan motor will be energized three (3) minutes later, the service icon flashes and the appropriate fault code is logged.*
- *If in Sabbath Mode, the compartment thermistor still controls compressor operation, except that when high offset is reached, there is a random 15 to 25 second delay before the compressor is energized.*
- *The condenser fan is energized whenever a compressor is energized.*

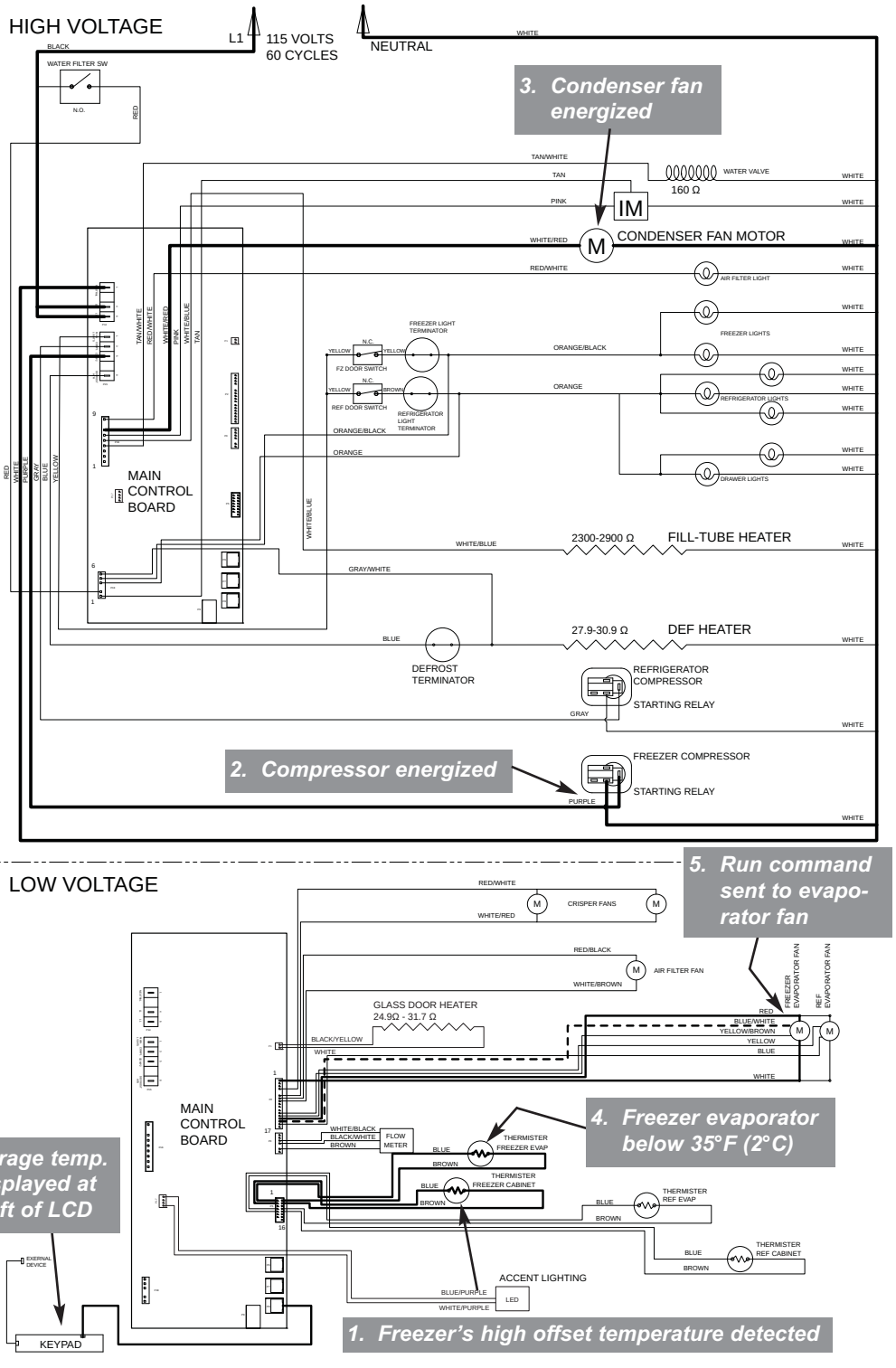


Figure 3-44. Signal Trace Schematic: Regulating Freezer Temperature

Additional Regulating of Freezer Compartment Temperatures:
Details of Controlling the Freezer Variable Speed Evaporator Fan Motor

During normal operation and when the door is closed, the variable speed evaporator fan motor in the freezer zone is supplied with 12V DC at all times from P2-14 off of the control board, with the ground or neutral return to P2-1, and to ensure proper speed commands the fan's RPM is monitored at all times via P2-15. The fan will receive a high-speed run command from P2-12, and stay running at high-speed whenever the freezer compressor is energized, unless the call for cooling follows a defrost, in which case the evaporator fan will not be switched ON until the freezer evaporator is 35°F (2°C) or colder. If the freezer door is opened while the evaporator fan is operating, the microprocessor will detect the power signal to the lights and interrupt the 12V DC power to the fan. And, if the maximum ice production feature is activated, which forces the freezer evaporator fan ON 100% for twenty-four (24) hours, the fan speed will then be ramped down to low-speed during the compressor off cycles. (See Figure 3-45)

NOTE:
- *During Sabbath Mode the lighting system is disabled and the 12V DC supplied to the evaporator fan cannot be interrupted, so the evaporator fan may be observed running when the door is open.*
- *If improper RPM signals are detected from the evaporator fan, the appropriate fault code will be logged.*

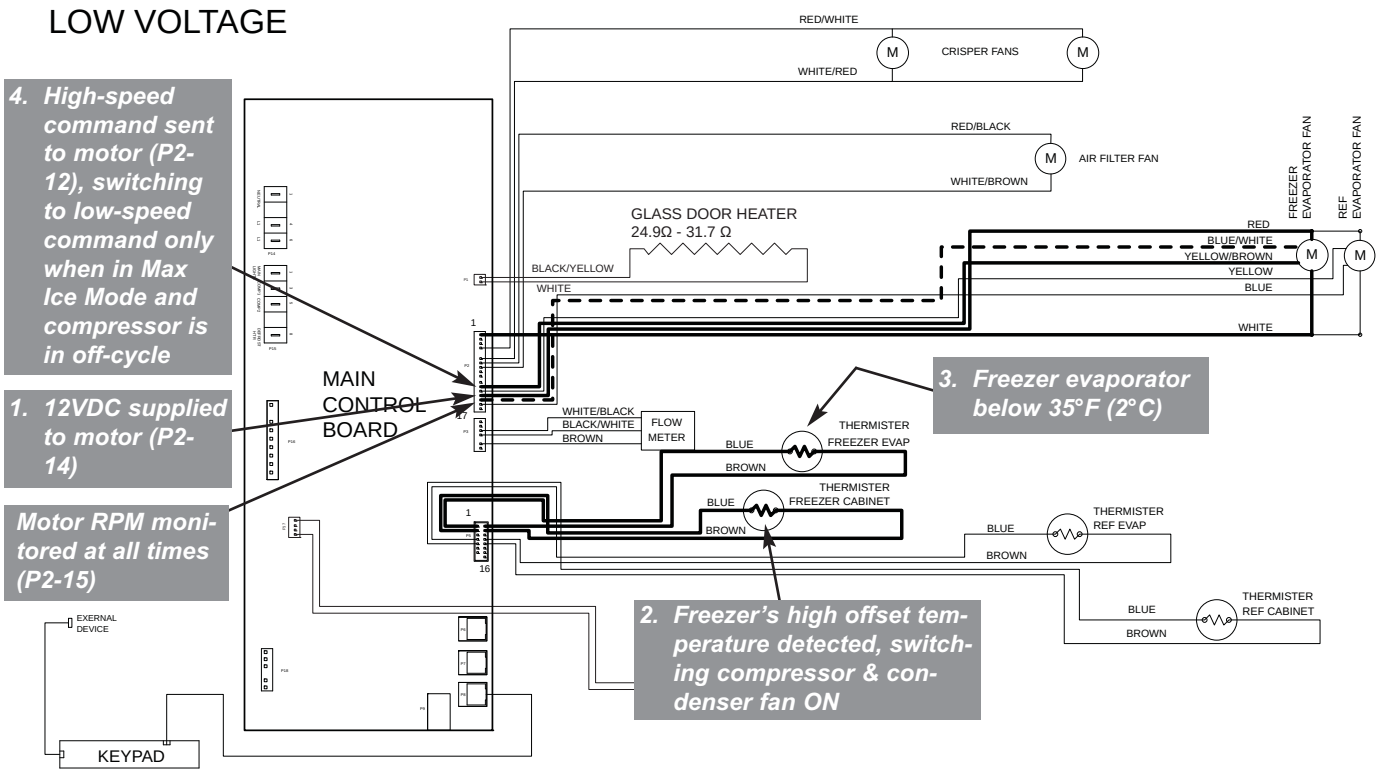


Figure 3-45. Signal Trace Schematic: Low DC Voltage Variable Speed Freezer Fan Operation

Monitor and Control "Adaptive Defrost" of Freezer Evaporator

Initially, the freezer compressor cycle-runs for six (6) hours, then the compressor and evaporator fan are switched OFF and the control board defrost relay is closed, supplying power to the defrost heater.

With "Adaptive Defrost", the length of time the defrost heater stays on to open the defrost terminator bimetal is observed by the microprocessor via the grey w/white stripe wire to P18-6. This length of time is used to calculate the number of hours before the next defrost (defrost interval). If the heater is energized for a shorter time period then the microprocessor estimated based on predetermined algorithms, the microprocessor increases the next defrost interval. If the heater stays on for a longer time period, the microprocessor decreases the next defrost interval. (See Figure 3-46) This is an ongoing process whereby the defrost heater ON-time and the defrost interval will vary by unit use.

NOTES:

- *A five (5) minute time delay/dwell follows all defrosts, before the compressor is energized.*
- *Minimum defrost interval = 6 hours of compressor run time; Maximum defrost interval = 80 hours of compressor run time; Maximum defrost duration = 30 minutes, plus 5 minute dwell.*
- *If the defrost sensing line to P18-6 is open, defrost operation defaults to 25 minute defrost heater ON-time / 6 hour build-time, and the appropriate fault code is logged.*
- *During defrost, the displayed freezer temperature is locked.*

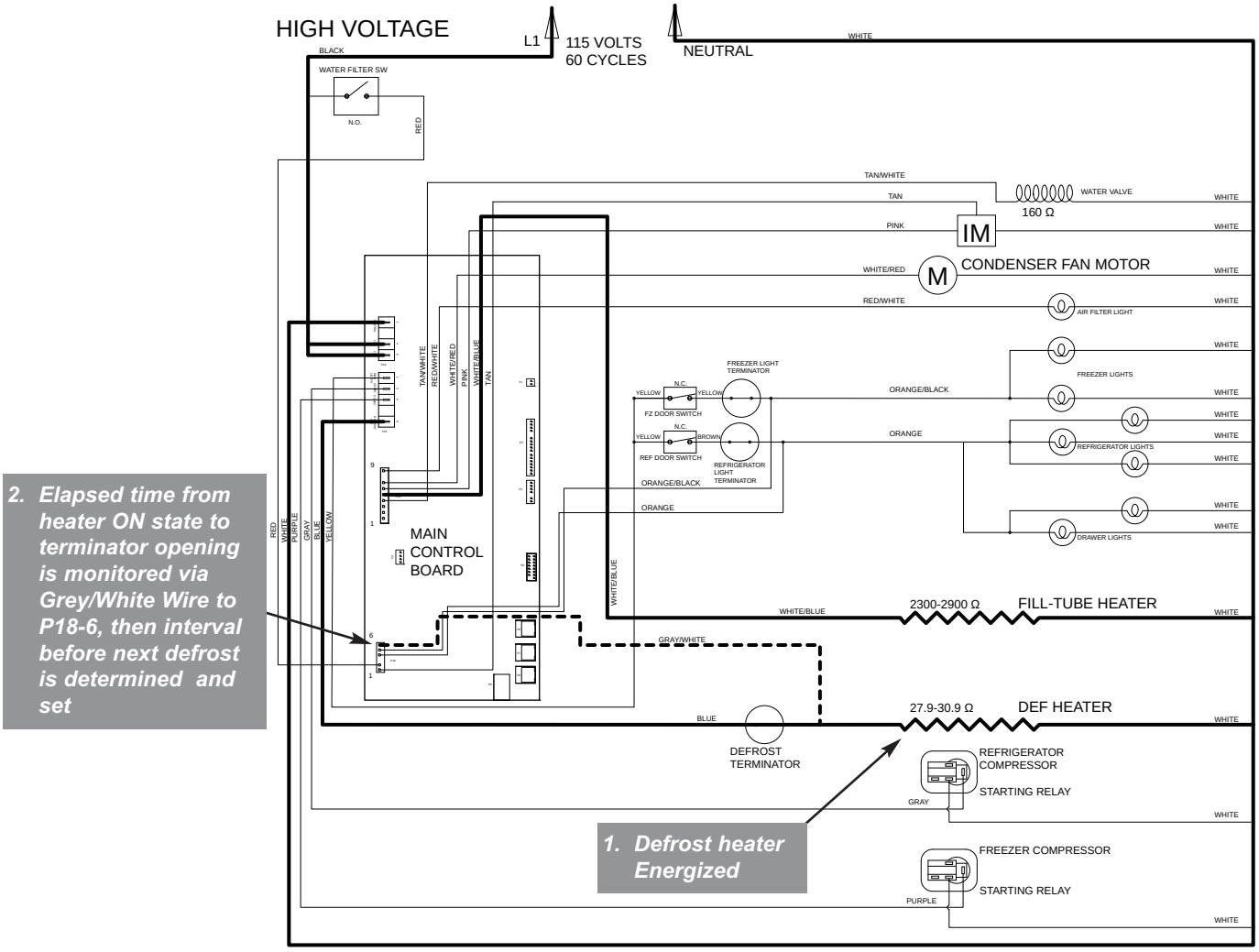


Figure 3-46. Signal Trace Schematic: Freezer Adaptive Defrost

Monitor Water Valve Flow Meter, Regulate Water Fill Volume and Display when New Water Filter is Needed

The microprocessor observes the volumetric flow through the water valves via a low DC voltage signal from the flow meter, with every one revolution of the turbine inside the flow meter equaling 0.02 oz (0.5 ml) (See Figure 3-47).

- For an icemaker fill, the electronic control instructs the valve to remain open long enough to deliver approximately 3.5 oz (105 ml) of water. This timeframe will vary depending on the inlet water pressure and how long the filter has been in use.
- For those units with a water dispenser, the electronic control supplies power to the water valve whenever the WATER key is pressed.

In both cases, the electronic control keeps track of the amount of water delivered to the filter via the flow meter. When it has calculated that two-hundred and thirty-five (235) gallons of water have passed through the filter, or if eight-thousand seven-hundred and sixty (8760) hours have elapsed since the last time the filter reset button was pressed, then the water filter icon in the LCD will illuminate (See Figure 3-47A), indicating it is time to change the filter.

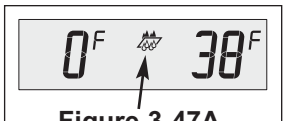


Figure 3-47A. Water Filter Icon Appears = Time to Replace Water Filter

After the water filter is replaced, the filter reset button behind the unit grille must be pressed for five (5) seconds to clear the filter icon from the LCD and reset the counters to zero (See Figure 3-47).

NOTES:

- *If a filter bypass plug is installed, the counters must be disabled by pressing the reset button five (5) times in seven (7) seconds.*
- *No water will flow to the ice maker and water dispensing systems if the water filter or bypass plug are removed.*

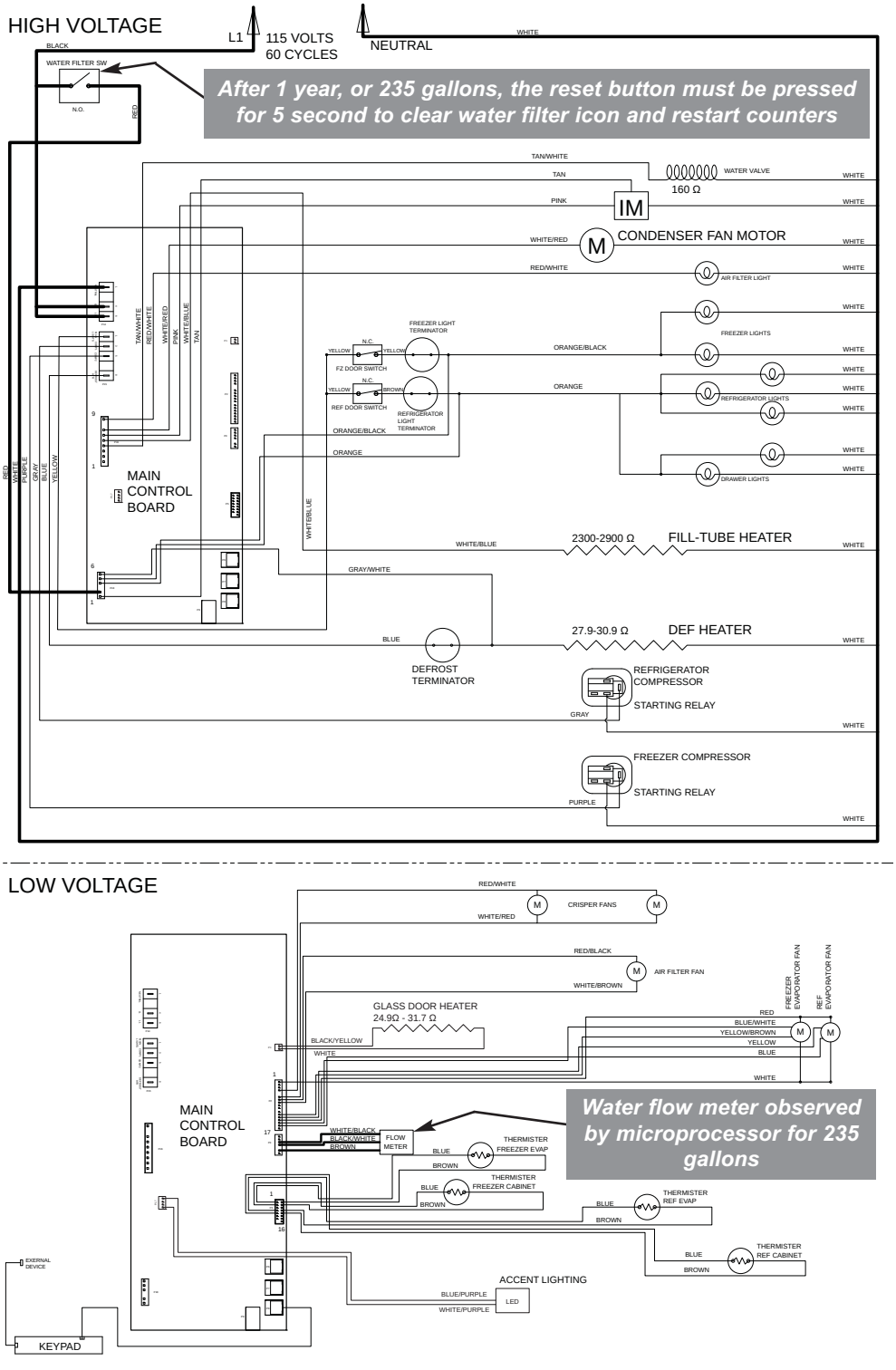


Figure 3-47. Signal Trace Schematic: Flow Meter Monitored; Filter Reset

Monitor Icemaker System and Display If Service is Needed

During an ice production cycle, the microprocessor observes the power supplied to the water valve solenoid. If the solenoid is energized for more than thirty-five (35) seconds, power to the icemaker system is disabled for twenty-four (24) hours (See Figure 3-48), and the appropriate fault code is logged. If this happens five consecutive times, the ICE icon and service icon in the LCD will flash (See Figure 3-49), and the icemaker system will remain disabled, to include the ICE MAKER key, until the problem is corrected and the fault indicator and fault code is cleared.

NOTES:

- *To clear the icemaker fault indicator and reactivate the icemaker system, the problem must be corrected, then the ALARM key must be pressed for fifteen (15) seconds to clear the fault code.*
- *To allow ice to freeze fully and reduce effects of low water pressure, power to the ice maker system is interrupted for forty-five (45) minutes after each ice harvest. This can be bypassed for service purposes by switching the ice-maker system OFF, then back ON with the ICE MAKER key.*
- *Power to the freezer lights is monitored to help control icemaker operation. If the freezer door is open, power to the ice maker system is interrupted, unless the icemaker is filling with water at that time. After the door is closed, power is not allowed to the ice maker system for an additional three (3) minutes, unless the Maximum Ice Production feature has been initiated.*
- *When in Sabbath Mode, the ice maker system is disabled.*
- *The ice maker system is disabled whenever the water filter or water filter plug is removed.*

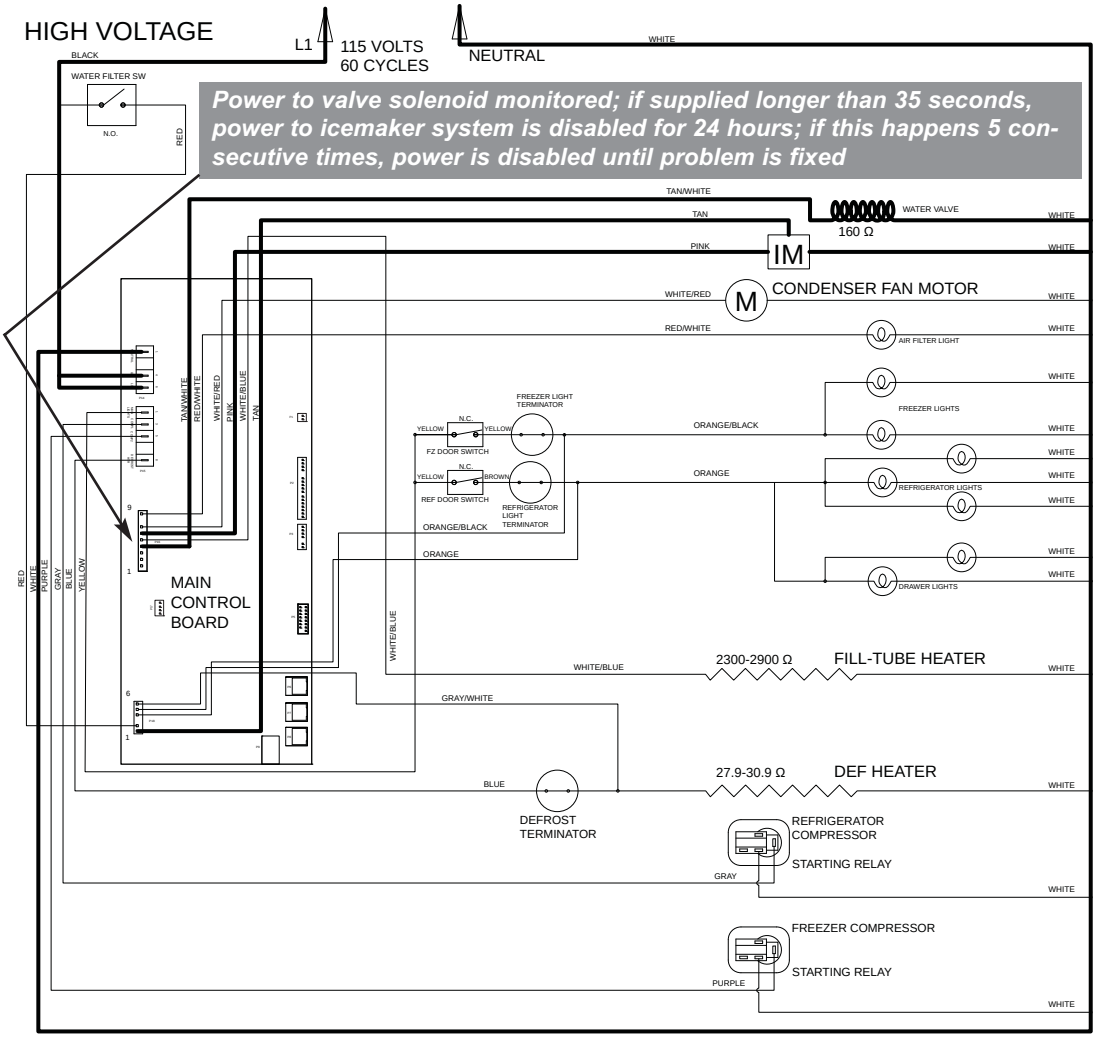


Figure 3-48. Signal Trace Schematic: Icemaker Electrical System

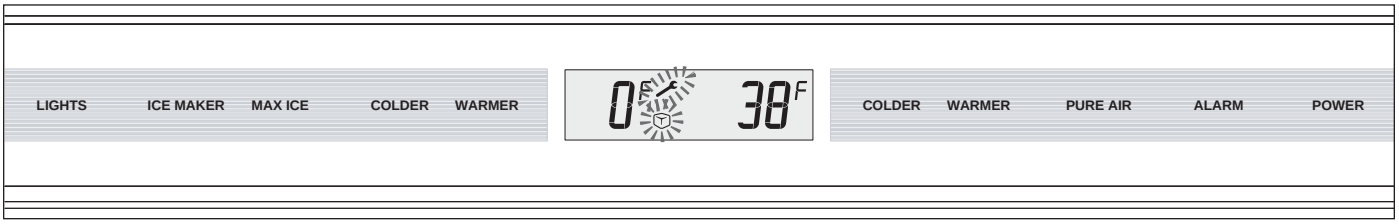


Figure 3-49. Service Icon and Ice Cube Icon Flashing = Service Needed on Ice Maker System

Monitor Compressor Run Duration, Displays If Service is Needed

The microprocessor observes the changing state of the compressor relays on the control board to determine the length of compressor run time (See Figure 3-50). Other than during initial pull down, if a compressor runs 100% (Freezer = 6 hours / Refrigerator = 4 hours), five consecutive times, a fault code is logged, defrost is initiated, and the service icon will flash. If approximately twenty-four (24) hours worth of 100% run periods occur, and the compartment temperature does not fall to at least the average of the set point and low off-set temperature (and the door is not opened during the last run period), then the service icon will flash and the alarm will chime (See Figure 3-51).

NOTES:

- *If the unit is ever switched OFF then back ON, compressors will not energize for at least three (3) minutes. This minimum OFF time is used to protect the compressor and its electricals.*
- *To clear fault indicators and Fault Codes the problem must be corrected, then press the ALARM key for fifteen (15) seconds. Failure to clear Fault Codes will result in the highest priority fault indicator reappearing in the LCD when the unit is switched back ON.*

Power to compressors monitored; fault code logged if 100% run observed and service icon appears; if several 100% runs occur, service icon flashes and alarm chimes

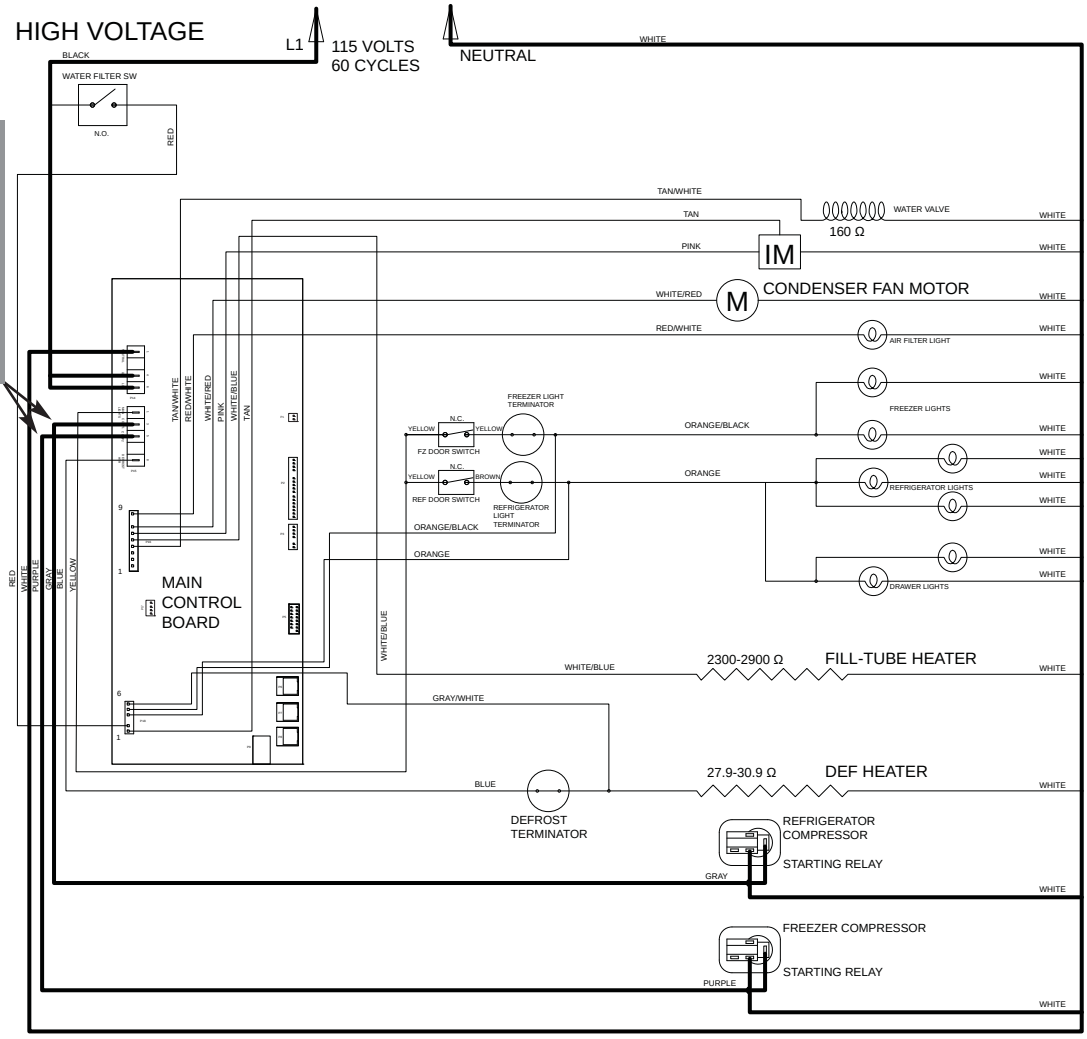


Figure 3-50. Signal Trace Schematic: Monitoring Compressor Run Times

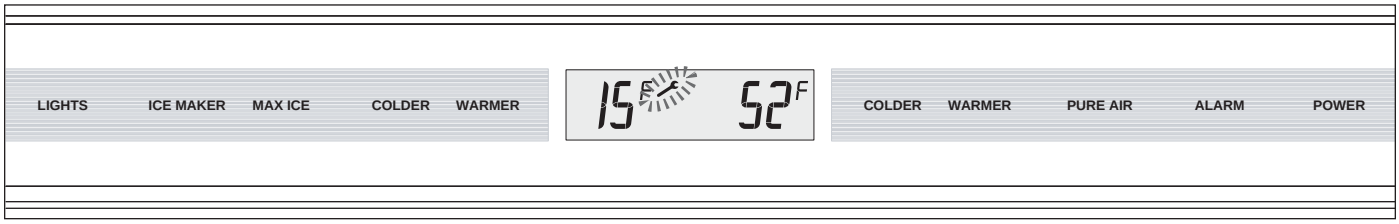


Figure 3-51. the Service Icon Flashing & Alarm Chiming = Service Needed Immediately

POSSIBLE INSTRUCTION AND ERROR/FAULT INDICATORS

The diagrams on these pages illustrate what a customer may see in the LCD if the appliance needs attention.

NOTES:

- *To clear instruction indicators (See Figures 3-52 & 3-53) and restart the appropriate timer, the instructions must be followed, then press the appropriate key or reset button as described.*
- *For thermistor faults described below (See Figures 3-54 & 3-55): Thermistors can be tested by submersing them in a glass of ice water (~32°F / 0°C) for approximately five (5) minutes, then checking for 30,000 to 33,000 ohms.*
- *To clear fault indicators and Fault Codes (See Figures 3-54 to 3-59) the problem must be corrected, then press the ALARM key for fifteen (15) seconds (See Figure 3-60). Failure to clear Fault Codes will result in the highest priority fault indicator reappearing in the LCD when the unit is switched back ON.*
- *If a customer needs to suspend a Major Fault Code for twenty-four (24) hours, while waiting for a Service Technician, they could press and hold ALARM then POWER keys simultaneously for less than 5 seconds. Doing this, as apposed to clearing the Fault Cold as described above, would maintain all Fault Code history data for the Service Technician.*

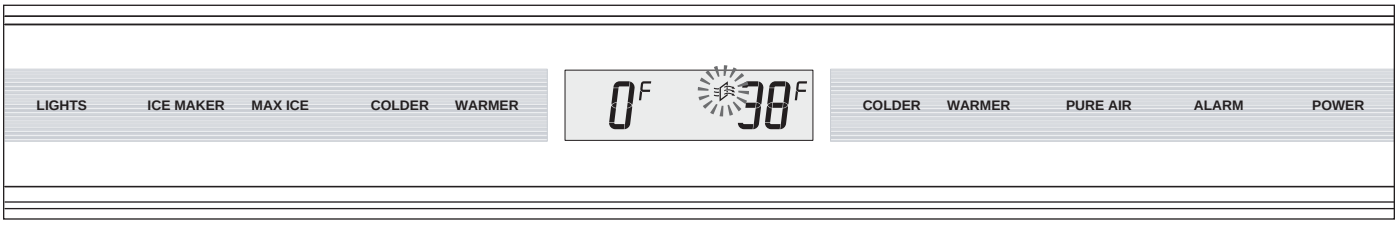


Figure 3-52. Pure Air Icon Flashing = Air Purifier Components need to be Replaced. After Replacing Filter Cartridge, Press PURE AIR Key for 5 Seconds to Reset Timer

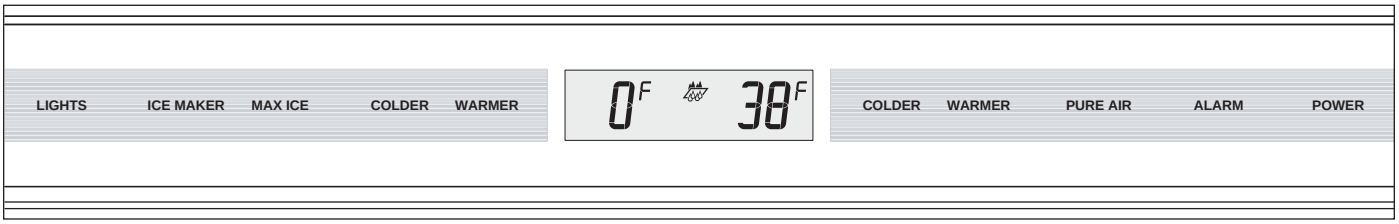


Figure 3-53. Water Filter Icon Appears = Water Filter need to be Replaced. After Replacing Filter, Press Filter Reset Button behind the Unit Grille for 5 Seconds to Reset Counters

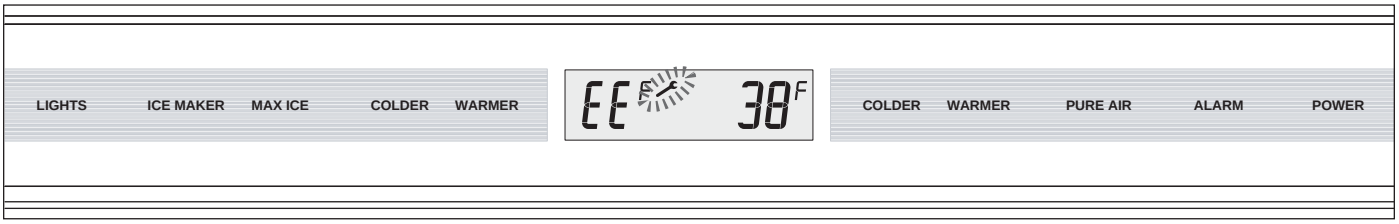


Figure 3-54. "EE" at Left with Service Icon Flashing = Freezer Compartment Thermistor (or its Wiring) Fault

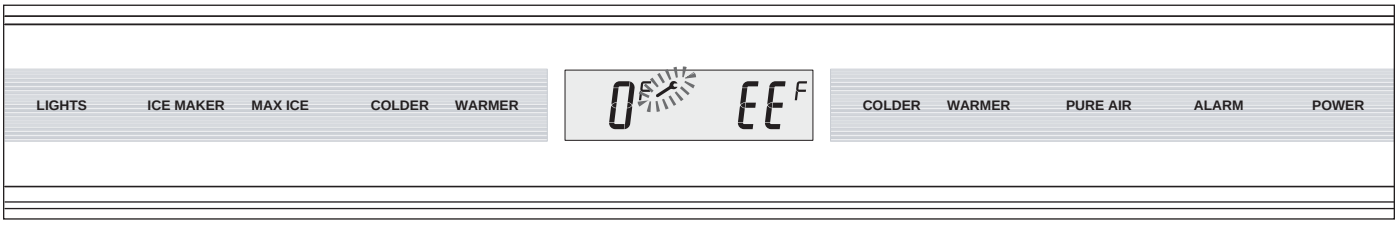


Figure 3-55. Service Icon Flashing and "EE" at Right = Refrig. Compartment Thermistor (or its wiring) Fault

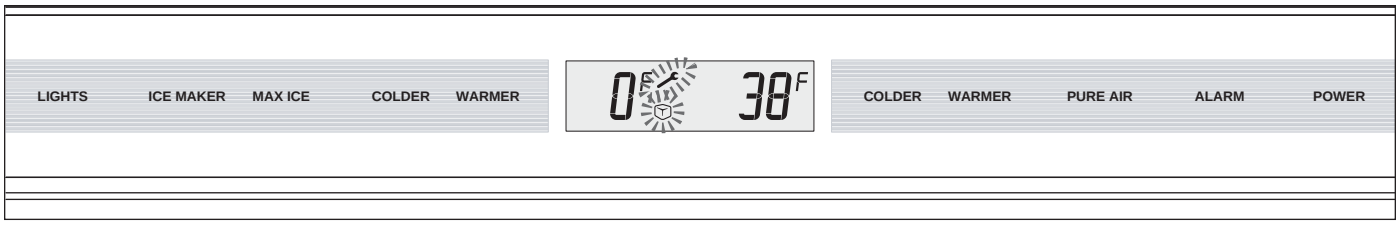


Figure 3-56. Service Icon and Ice Cube Icon Flashing = Solenoid Energized 35 Seconds and Ice Maker System was Disabled for 24 Hours, 5 Consecutive Times; now Ice Maker System Disabled until Repaired

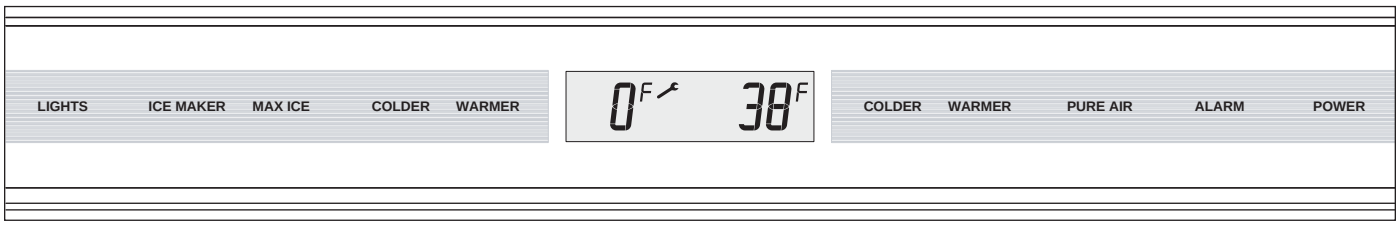


Figure 3-57. Service Icon Steady (Not Flashing) with Normal Temperatures Displayed = Minor Fault Code Logged (Not Threatening Temperature Problems), and/or Fault Codes not Cleared after Viewing

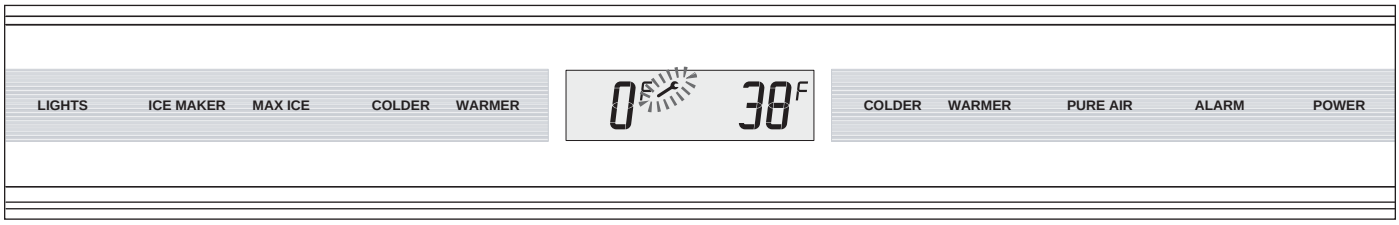


Figure 3-58. Service Icon Flashing, but Alarm Not Chiming (Usually with Normal Temperatures Displayed) = Major Fault Code Logged (Threatening Temp. Problems), and/or Fault Codes not Cleared after Viewing

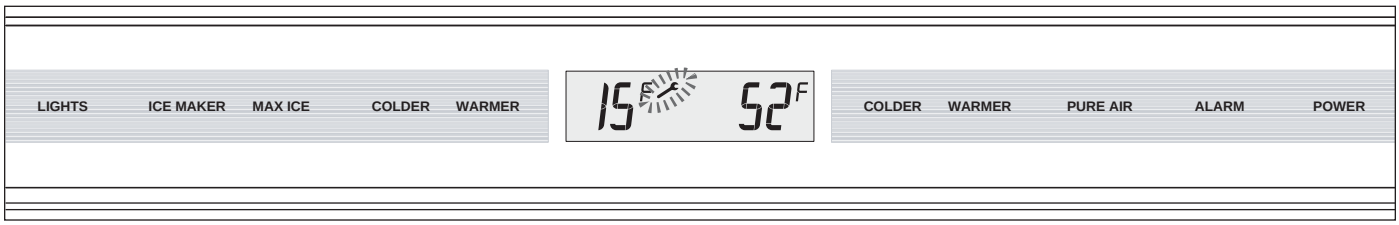


Figure 3-59. Service Icon Flashing with Alarm Chiming = Major Fault Code Logged (Immediate Action Required; Temperature Problems and/or Possible Appliance Damage &/or Flood Warning - Water through Flow Meter but No Call for Water)

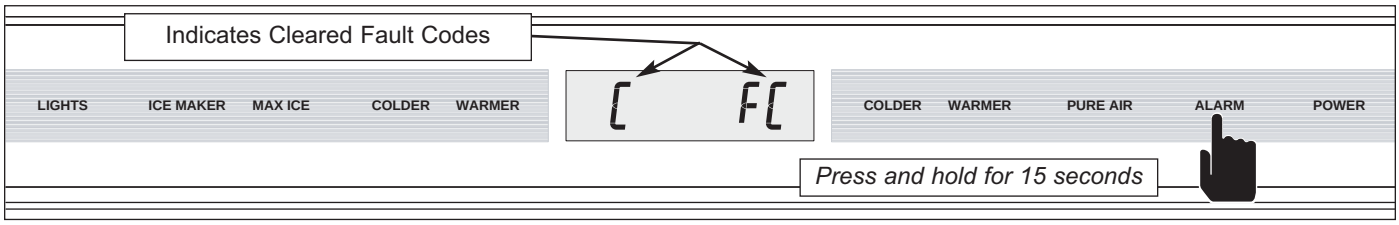


Figure 3-60. To Clear Fault Codes After Correcting the Problem, Press ALARM Key for 15 Seconds - "C" and "FC" appear for 5 Seconds indicating Fault Codes have been Cleared

SERVICE INPUT OPERATIONS

The following few pages explain service input operations that can be performed at the control panel: Diagnostic Mode, Fault Code Recall Mode, Temperature Log Recall Mode, Model Configuration Mode, Manual Zone Component Activation Mode and Self-Test Mode.

Diagnostic Mode

Diagnostic Mode allows the Service Technician to observe current, real-time temperature readings from all thermistors without weighted averaging or offsets. Diagnostic Mode is also used as an interim step to get into other modes.

NOTE: *The key strokes to initiate Diagnostic Mode and Fault Code Recall Mode are the same. If the electronic control has recorded Fault Codes, then the key strokes listed below will initiate Fault Code Recall Mode, which will be explained later. If Fault Codes are observed but the desire is to view current temperature readings from the thermistors, then press the ALARM key; this will shift the electronic control system into Diagnostic Mode.*

To initiate Diagnostic Mode, the unit must be ON, then press and hold either COLDER key, and press the POWER key, then release both keys. If there are no Fault Codes logged, then at left in the LCD will be current, real-time temperature readings of a thermistor; at right will be the thermistor location code, and all icons in the LCD will illuminate (See Figure 3-61). Pressing a COLDER or WARMER key while in Diagnostic Mode will toggle to the next or previous thermistor location, respectively (See Figure 3-62 below and Thermistor Location Code Table with Additional Diagnostic Mode Notes on following page)

NOTES:

- *Do <u>not</u> press and hold the COLDER and POWER keys for more than ten (10) seconds, as this will initiate Manual Zone Component Activation Mode, which is covered later in the section.*
- *Diagnostic Mode will end twenty (20) seconds after the last key stroke, or press the ALARM key to exit this mode.*

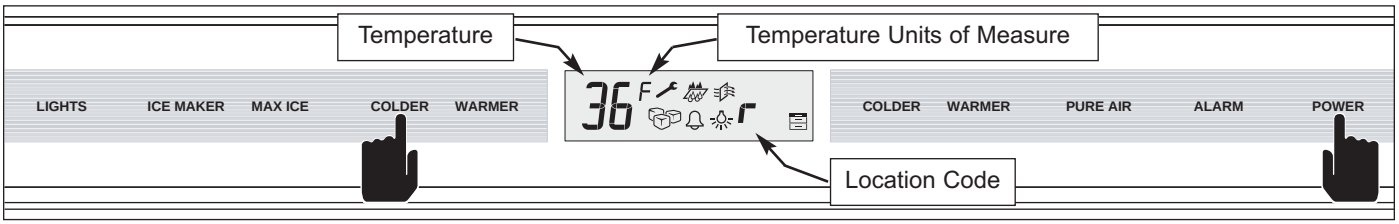


Figure 3-61. Initiate Diagnostic Mode - Press and Hold Either COLDER Key, Then the POWER Key - ("r" = Refrigerator Compartment)

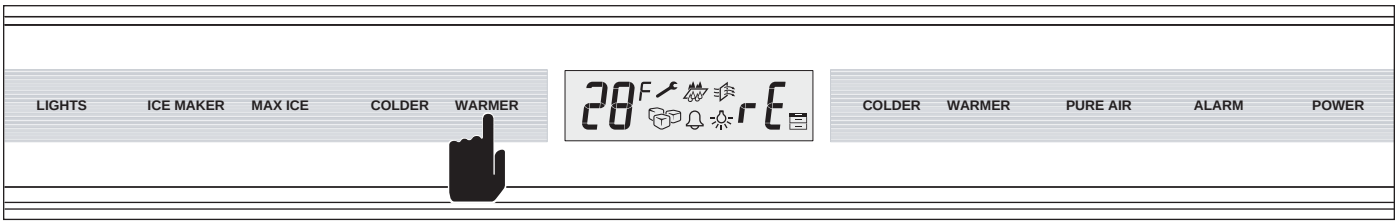


Figure 3-62. Press WARMER (or COLDER) Key to Toggle Through the Temperatures - ("rE" = Refrigerator Evaporator)

THERMISTOR LOCATION CODE TABLE	
CODE	LOCATION
r	Refrigerator Compartment
rE	Refrigerator Evaporator
F	Freezer Compartment
FE	Freezer Evaporator
dr	Refrigerator Drawers (Not Active)
Cn	Condenser (Not Active)
A	Ambient

ADDITIONAL DIAGNOSTIC MODE NOTES:

- *If "Sh" and "r" appear in the LCD when initiating Diagnostic Mode (See Figure 3-63), the unit is in Showroom Mode which was covered earlier in this section.*
- *If "EE" is observed in the left display area during Diagnostic Mode, the thermistor in that location is open, shorted, unstable, or not present (See Figure 3-64).*
- *There is currently no thermistor in the drawers, so "EE" will appear at left of the "dr" (See Figure 3-65).*
- *There is currently no thermistors on the condenser, so "EE" will appear at left of the "Cn" (See Figure 3-66).*
- *The ambient thermistor is part of the control board. It is not a separate component.*

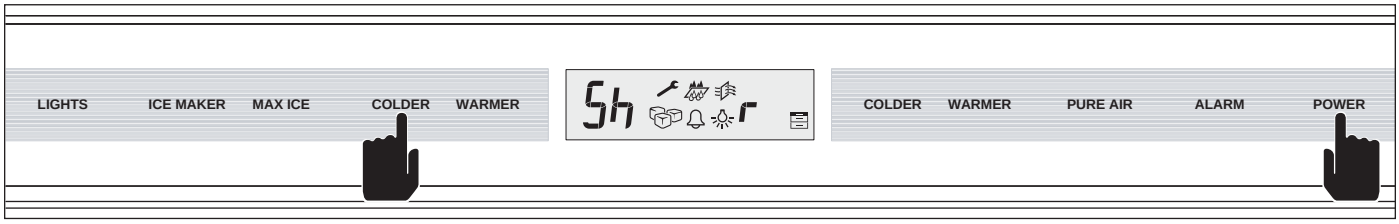


Figure 3-63. If Initiating Diagnostic Mode and "SH" and "r" appears in LCD, unit is in Show Room Mode

Figure 3-64. If "EE" appears at Left in LCD During Diagnostic Mode, That Thermistor or its wiring is faulty

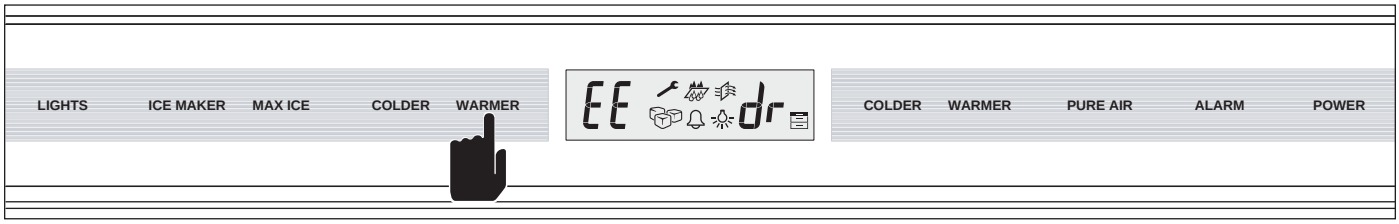


Figure 3-65. Currently no Thermistor in Drawer Area, so "EE" will Appear to the Left of the "dr"

Figure 3-66. Currently no Thermistor on Condenser, so "EE" will Appear to the Left of the "Cn"

Fault Code Recall Mode

Fault Code Recall Mode allows a Service Technician to view historical data that the electronic control system may have stored if specific components experienced or detected problems. This data can be displayed in a code format in the LCD in this mode, with the data storage device capable of storing up to fifty (50) fault codes. If more then fifty (50) fault codes are detected, each new fault code will bump the oldest fault code.

NOTE: *As mentioned on the preceding page, The key strokes to initiate Fault Code Recall Mode and Diagnostic Mode are the same. If the electronic control has not recorded any Fault Codes, then the key strokes listed below will initiate Diagnostic Mode, which was explained on a preceding page.*

To initiate Fault Code Recall Mode, the unit must be ON, then press and hold either COLDER key, and press the POWER key, then release both keys (See Figure 3-67). If any Fault Codes were logged they will be displayed in the LCD at this time. To see if multiple Fault Codes are stored, press a WARMER or COLDER key to toggle through the codes (See Figure Figure 3-68 and the Fault Code Table with LCD Correlation Diagram on following pages).

NOTE:

- *Do <u>not</u> press and hold the COLDER and POWER keys for more than ten (10) seconds, as this will initiate Manual Zone Component Activation Mode, which is covered later in the section.*
- *Fault Code Recall Mode will end ten (10) seconds after the last key stroke.*
- *To clear fault codes the problem must be corrected, then press the ALARM key for fifteen (15) seconds. Failure to do this will cause the Service icon to display steady.*
- *If Fault Codes are present but the desire is to view current temperature readings from the thermistors (Diagnostic Mode), then press the ALARM key; this will shift the electronic control system into Diagnostic Mode.*

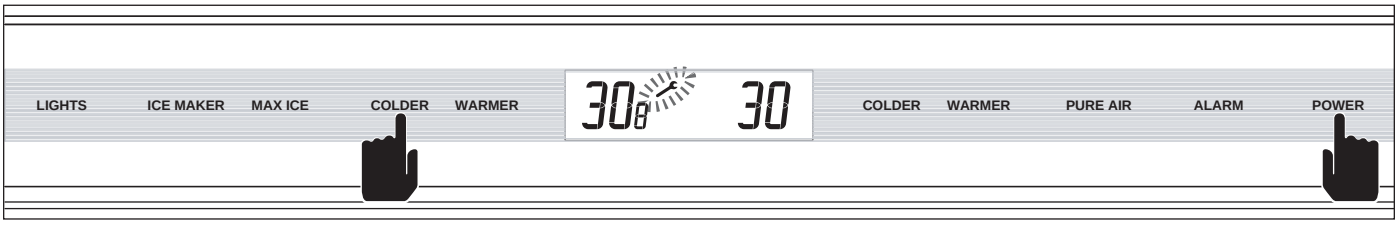


Figure 3-67. Initiate Fault Code Recall Mode - Press and Hold Either COLDER Key, Then the POWER Key (Example Shown: "30 8 30", Service Wrench Flashing and Alarm Chiming = Water Valve not Opened but Water Detected Passing Through)

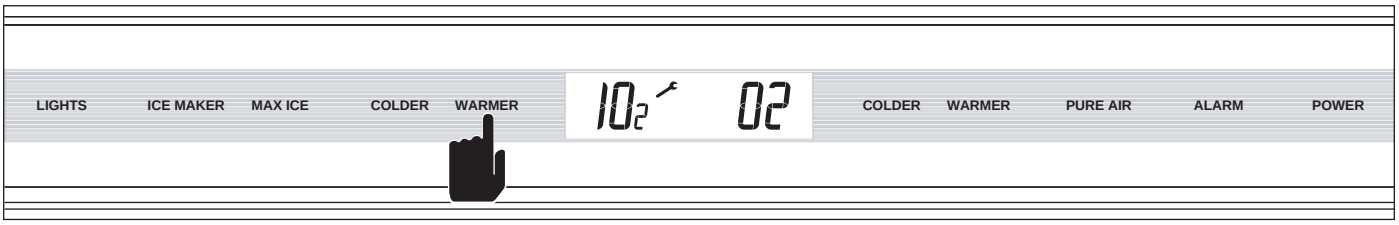
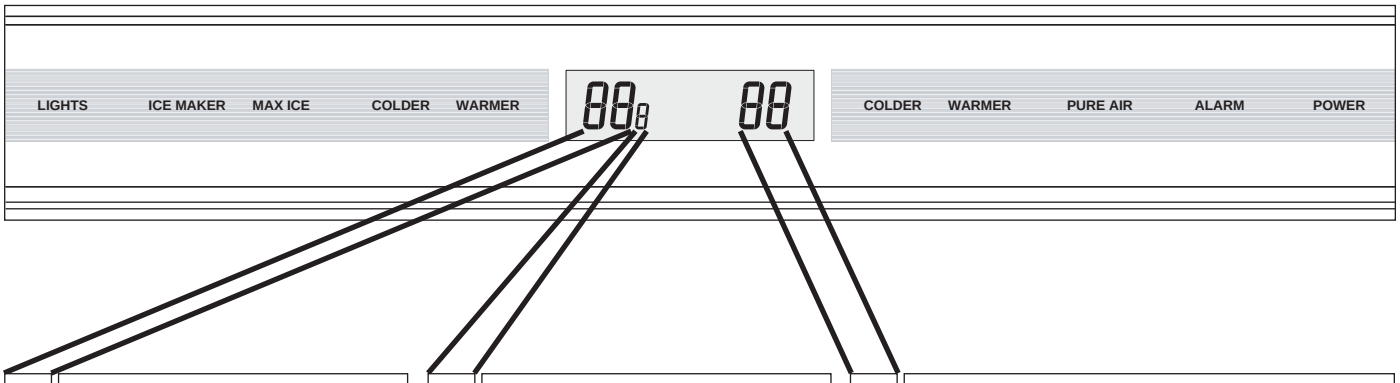


Figure 3-68. Press WARMER (or COLDER) Key to Toggle Through Fault Codes (Example Shown: "10 2 02" with Service Wrench Steady = Freezer Cabinet Thermistor Unstable)

(See the Fault Code Table with LCD Correlation Diagram on following page)

(See the Fault Code Troubleshooting Tables in Troubleshooting Guide section of this manual)

FAULT CODE TABLE WITH LCD CORRELATION DIAGRAM (PAGE 1 of 2)



10	Thermistor Faults
15	Relay Faults
20	Defrost Heater Faults
30	Ice/Water/Accessory Faults
35	Fan Faults
40	Runtime Faults
44	Glass Heater Faults
45	Lighting Faults
50	Flow Meter
60	Load/Component Faults
90	Control Faults
95	Diagnostics
98	Power Faults

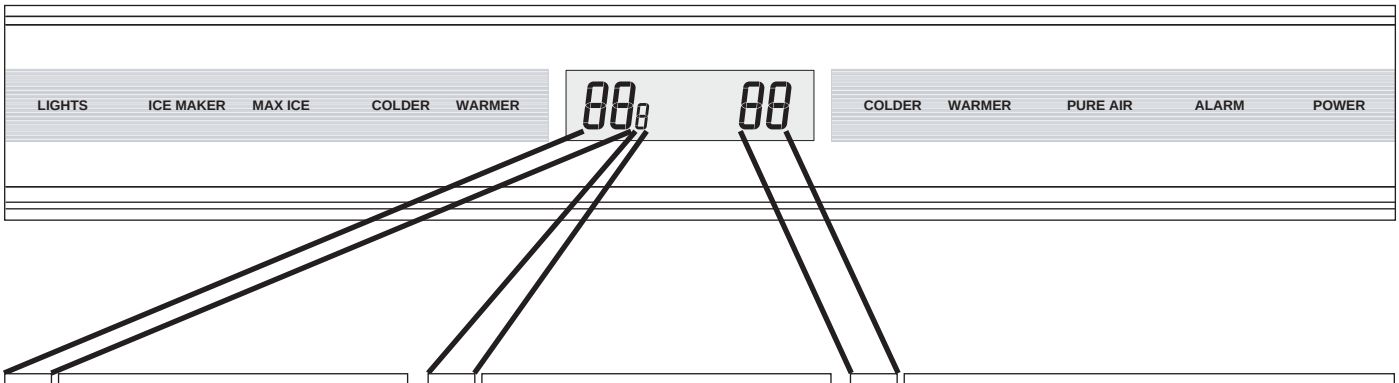
0	Misc
1	Refrigerator
2	Freezer
3	Condenser
4	Defrost System
5	Control System
6	Compressors
7	Ambient
8	Icemaker
9	Dispenser
A	Air Purifier
d	TC Drawer
F	Freezer Evaporator
H	High Voltage System
L	Lighting
r	Refrigerator Evaporator
U	Water Systems

00	Open
01	Short/Closed
02	Unstable
05	Miswire normal temps
06	Miswire overheat
07	Bad Ohms
09	Too Warm/Large Temp Differential
10	Second Device Open
11	Second Device Short/Closed
12	Second Device Unstable
20	Third Device Open
21	Third Device Short/Closed
22	Third Device Unstable
25	Diagnostics Failure
30	Valve Enabled Too Long
33	Speed Setting too Low
34	Speed Setting too High
35	Fan speed error
36	Fan current too low
37	Fan current too high
38	Fan Power Output Fault
39	DC Fan Output Fault
40	Excessive runtime
42	Primary Heater Fault
43	Secondary Heater Fault
44	Door Heater Output Fault
45	Burned out Light
46	No Position/State Detect

NOTE: These Columns are repeated on next page

NOTE: This Column is continued on next page

FAULT CODE TABLE WITH LCD CORRELATION DIAGRAM (PAGE 2 of 2)



10	Thermistor Faults
15	Relay Faults
20	Defrost Heater Faults
30	Ice/Water/Accessory Faults
35	Fan Faults
40	Runtime Faults
44	Glass Heater Faults
45	Lighting Faults
50	Flow Meter
60	Load/Component Faults
90	Control Faults
95	Diagnostics
98	Power Faults

0	Misc
1	Refrigerator
2	Freezer
3	Condenser
4	Defrost System
5	Control System
6	Compressors
7	Ambient
8	Icemaker
9	Dispenser
A	Air Purifier
d	TC Drawer
F	Freezer Evaporator
H	High Voltage System
L	Lighting
r	Refrigerator Evaporator
U	Water Systems

NOTE: These Columns are repeated from last page

50	Open Heater
55	Triac Open
56	Triac Short
60	No Load/Load Open
65	Stuck at Dispenser Water Valve Out
66	Stuck at Ice Water Valve Out
70	Bad Flash Write
71	Flash Initialized
72	Flash Memory Bad
73	Invalid Log Fault Checksum
74	Invalid E2 Checksum
75	Invalid Model E2 Checksum
80	No Communication
81	Communications Time-out
82	Partial Communications
83	Bad Micro Communication
84	Micro Initialization
85	Display Failure
86	Too Slow
87	No Flow
90	Framing Errors
92	Excessive Collisions
93	Data Overrun
95	FMEA Error
96	Calibration or Low Signal Error
97	Quantum SPI
98	Brownout
99	Other

NOTE: This Column is <u>continued</u> from last page

Temperature Log Recall Mode

The electronic control system logs/stores the average temperature of each individual thermistor every thirty (30) minutes, along with any possible event indicators. These thirty-minute periods are referred to as *"indexes".* Up to two-hundred forty (240) indexes can be stored for each thermistor, which is five (5) days of temperature history. After two-hundred forty (240) indexes are stored, each new index bumps the oldest index, with index number "240" being the oldest thirty minute temperature average. Accessing and viewing this temperature history data in the LCD is accomplished by initiating Temperature Log Recall Mode.

To initiate Temperature Log Recall Mode, begin with the unit ON and in Diagnostic Mode (See Figure 3-69).

NOTE: *If Fault Codes have been logged the control will enter Fault Code Recall Mode instead of Diagnostic Mode. If this happens press the ALARM key to shift the electronic control system into Diagnostic Mode.*

While in Diagnostic Mode, use a WARMER or COLDER key to toggle through the readings until the desired thermistor location code is displayed (See Figure 3-70) (r = Refrigerator, rE = Refrigerator Evaporator, F = Freezer, FE = Freezer Evaporator).

NOTE: *If "dr", "Cn" or "A", appear, continue to toggle past these codes as it is not possible to to enter Temperature Log Recall Mode for these thermistors.*

With the desired thermistor location code displayed, press and hold the POWER key first, then a WARMER key, then release both keys (See Figure 3-71); in the LCD will be a temperature reading at left and the Index number at right.

(Continued on next page)

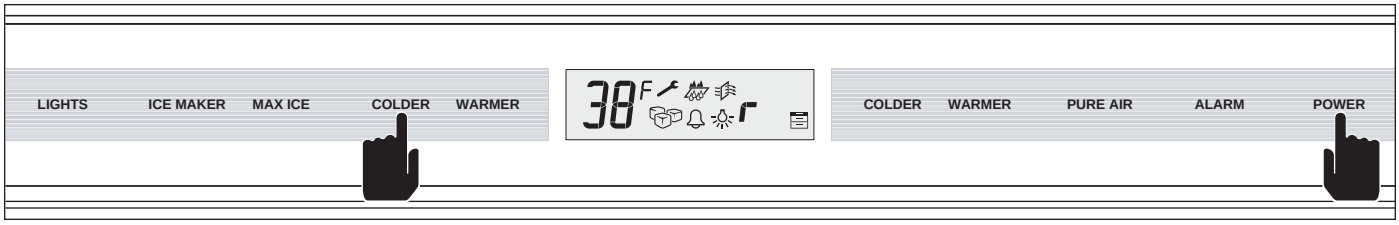


Figure 3-69. Initiate Diagnostic Mode - Press and Hold the POWER Key then Either COLDER Key

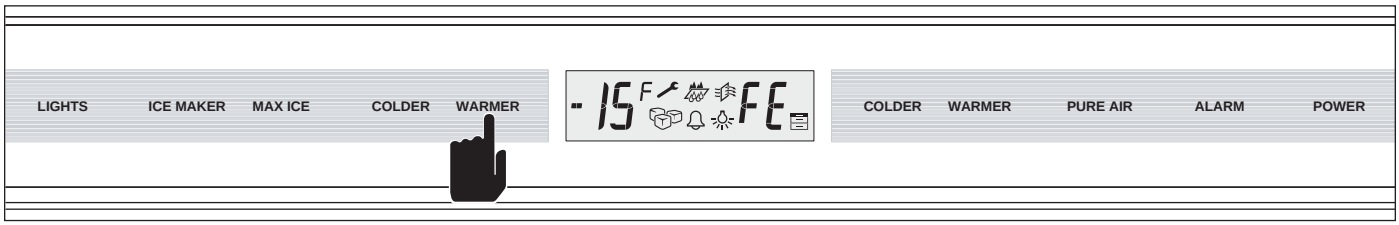


Figure 3-70. Toggle Thru Readings - Press WARMER (or COLDER) Key Until Desired Code is Displayed

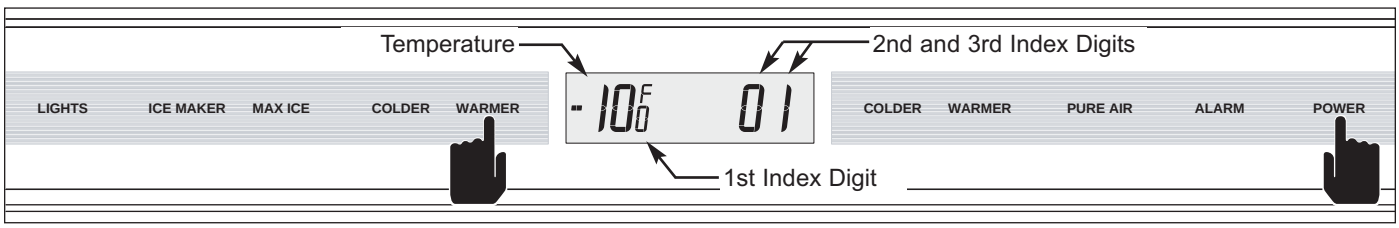


Figure 3-71. With Desired Thermistor Code Displayed, Press & Hold POWER Key First, then WARMER Key

Along with the temperature and index number, a thermistor location code will flash at three (3) second intervals in the first index digit area (“r” = Refrigerator, “r” followed by “E” = Refrigerator Evaporator, “F” = Freezer, “F” followed by “E” = Freezer Evaporator - See Figure 3-72 and 3-73).

Pressing the WARMER key (See Figure 3-74) while in Temperature Log Recall Mode will toggle up through the indexes, from 1 to 240, while pressing the COLDER key (See Figure 3-75) will toggle down through the indexes.

NOTE: *Temperature Log Recall Mode will end twenty (20) seconds after the last key stroke.*

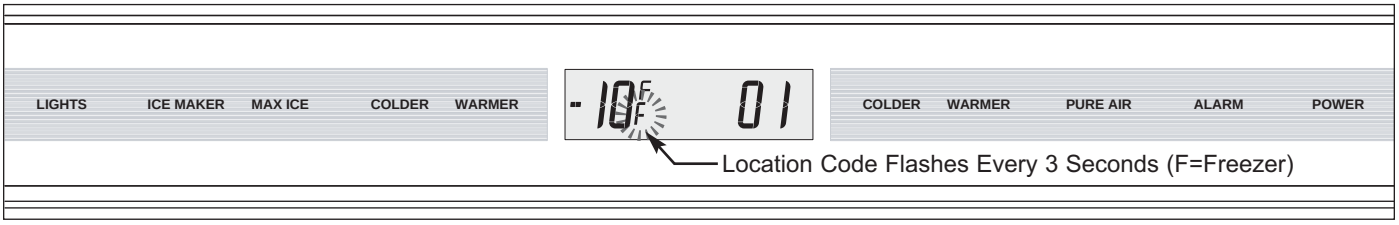


Figure 3-72. Thermistor Location Code Flashes at 3 second intervals (F then E = Freezer Evaporator)

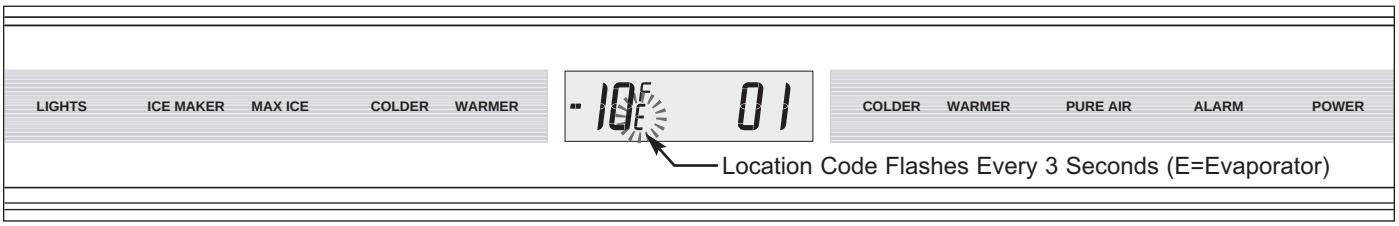


Figure 3-73. Thermistor Location Code Flashes at 3 second intervals (F then E = Freezer Evaporator)

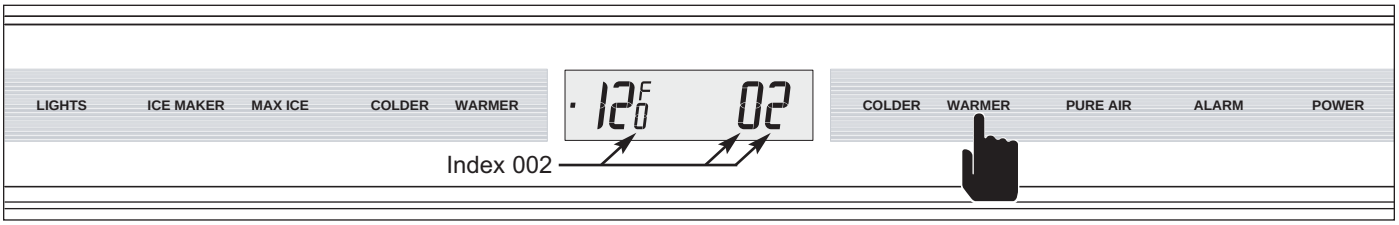


Figure 3-74. Toggle UP Through Indexes - Press and Hold WARMER Key, or Press in Multiple Key Strokes

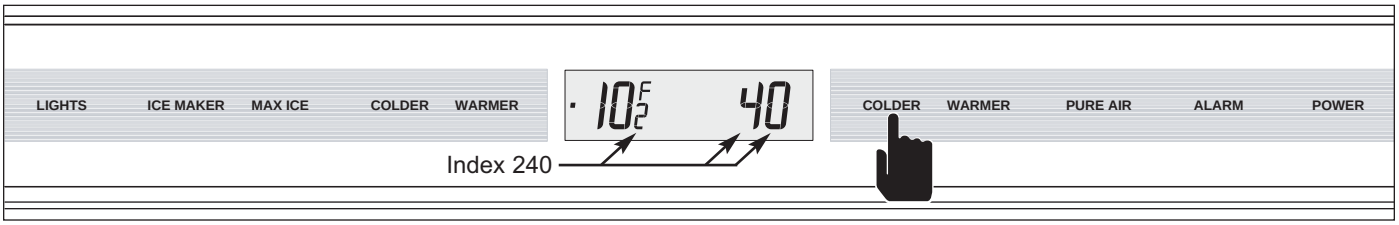


Figure 3-75. Toggle Down Through Indexes - Press and Hold COLDER Key, or Press in Multiple Key Strokes

Temperature Log Event Indicators - The diagrams below illustrate possible event indicators that may be observed while in Temperature Log Recall Mode. (See Figures 3-76 through 3-78)

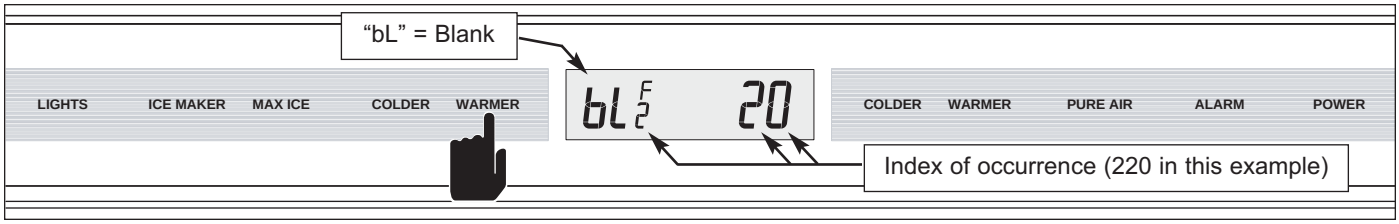


Figure 3-76. *"bL"* Indicates Index is "BLANK" = No Temperature Logged Yet
(Only possible within first 5 days of unit operation, or after new control board is installed during service)

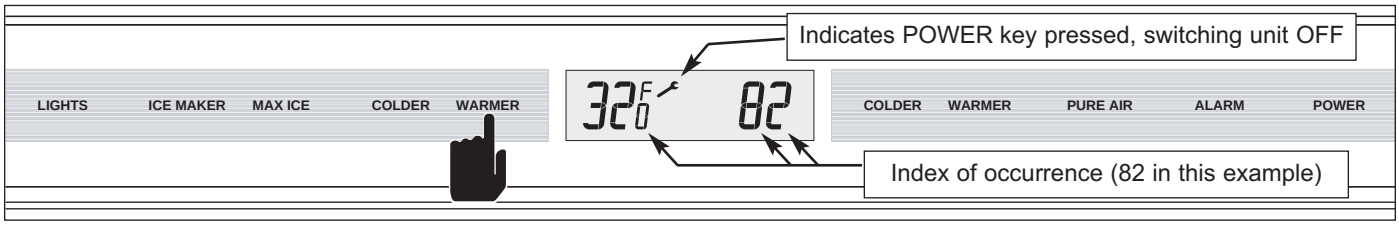


Figure 3-77. SERVICE Icon Illuminates = Unit was switched OFF During Index by Pressing POWER Key

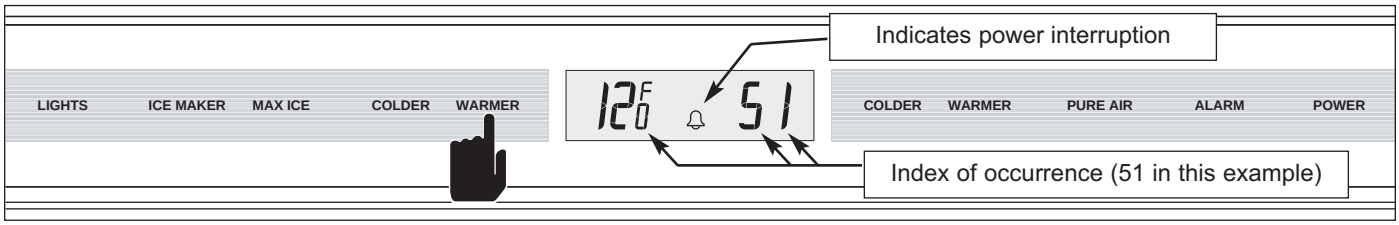


Figure 3-78. Bell Illuminates = Indicates Power Failure / Interruption During that Index Period

Temperature Log NOTES:

- *If Manual Compartment Disable Mode has been activated during any of the indexes, average temperatures will continue to be logged, but no event indicator will appear with these temperatures.*
- *If the unit was in Showroom Mode during any of the indexes, average temperatures will continue to be logged, but no event indicator will appear with these temperatures.*
- *If the unit was switched OFF by pressing the POWER key during any of the indexes and there was still power supplied to the unit, the average temperatures will continue to be logged. This means temperatures would be expected to rise and the SERVICE indicator would be present in all indexes in which the unit was switched OFF.*
- *Temperature Log Recall Mode will end 20 seconds after the last key stroke.*

Model Configuration Mode

The main control board is used in several different models, so it must be configured/programmed for the specific model it is used in through a series of key strokes at the control panel. This is called Model Configuration.

If a new control board is installed during a service call, a default configuration is automatically entered represented by “dE” and “FL” in the LCD during the short power up diagnostics test after power is supplied to the unit (See Figure 3-79). This indicates Model Configuration Mode must be initiated so the new new board can be configured for the model it was installed into.

Model Configuration Mode also allows a Service Technician to verify that the control board was configured correctly, and/or to reconfigure the control board if configured incorrectly.

To initiate Model Configuration Mode the unit must be ON and in Diagnostic Mode (See Figure 3-80).

NOTE: *If Fault Codes have been logged the control will enter Fault Code Recall Mode instead of Diagnostic Mode. If this happens press the ALARM key to shift the electronic control system into Diagnostic Mode.*

While in Diagnostic Mode, press and hold the POWER key for ten (10) seconds, until a model code appears in the LCD (See Figure 81 and Model Code Table on following page). Now, toggle through the model codes by pressing a WARMER or COLDER key in multiple key strokes until the appropriate model code is displayed (See Figures 3-82 and 3-83). With the appropriate model code displayed, press the POWER key and “Pr” and “g” appear, indicating a question as to whether this is the desired model code to be programmed (See Figure 3-84). If the code is correct, press the POWER key again within five (5) seconds to store the model configuration (See Figure 3-85).

NOTES:

- *The second press of the POWER key must occur within five (5) seconds of the first.*
- *If no keys are pressed within any thirty (30) seconds period after initiating Model Configuration Mode, the mode will automatically be exited, and the unit will revert back to the last model configured, or to the default setting.*
- *If the ALARM key is pressed, or if either pair of WARMER and COLDER keys are pressed during Model Configuration Mode, the mode will be exited.*

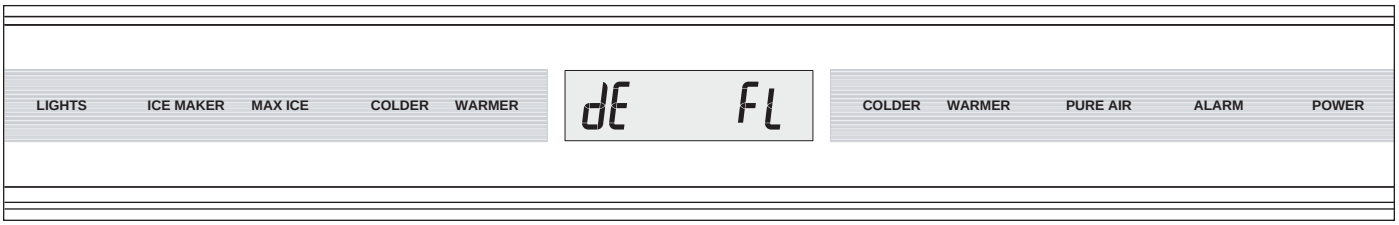


Figure 3-79. When New Board is Installed and Power Supplied “dE” and “FL” = Default Configuration; Model Configuration must be Performed

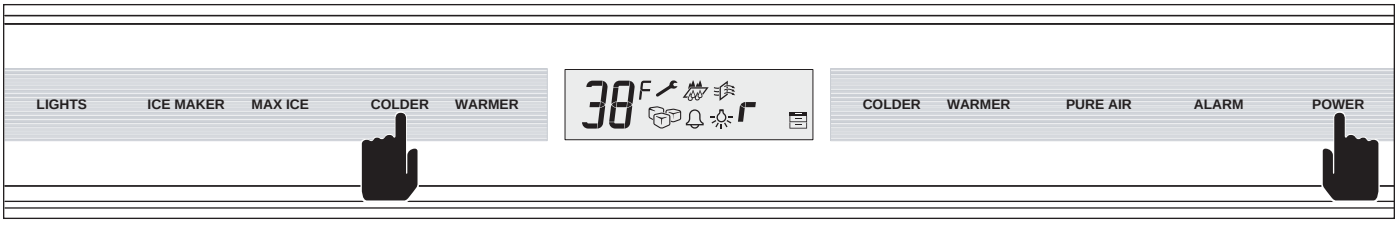


Figure 3-80. Initiate Diagnostic Mode First - Press and Hold Either COLDER Key, Then the POWER Key

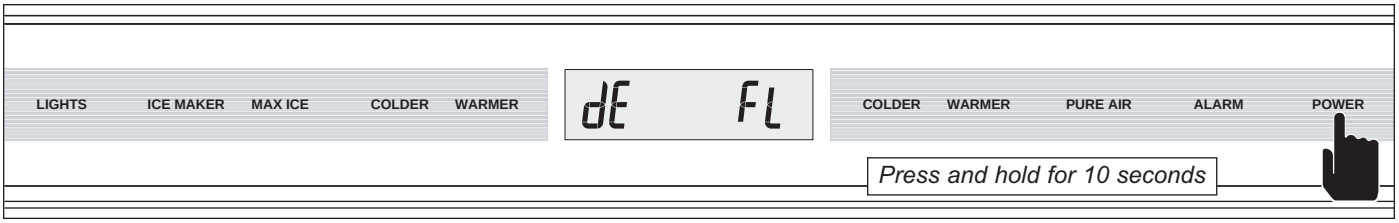


Figure 3-81. Initiate Model Configuration Mode - While in Diagnostic Mode, Press and Hold POWER Key for 10 seconds - “dE” and “FL” = Default Configuration

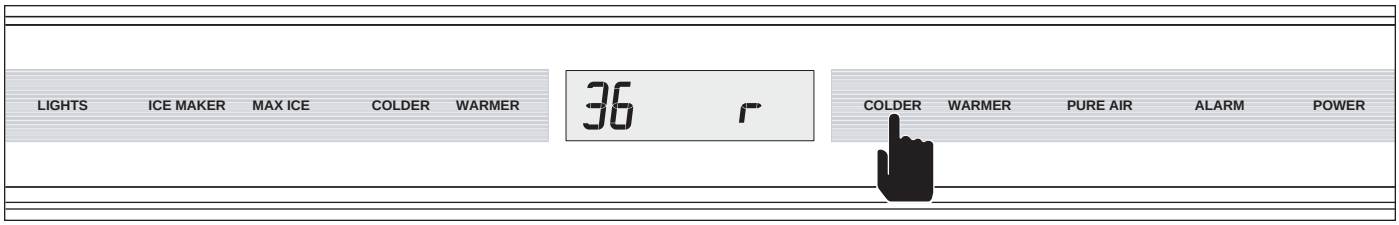


Figure 3-82. Toggle Through Model Codes with Multiple Key Strokes of COLDER or WARMER keys Until Correct Model Code is Displayed ("36" and "r" = 36" All Refrigerator)

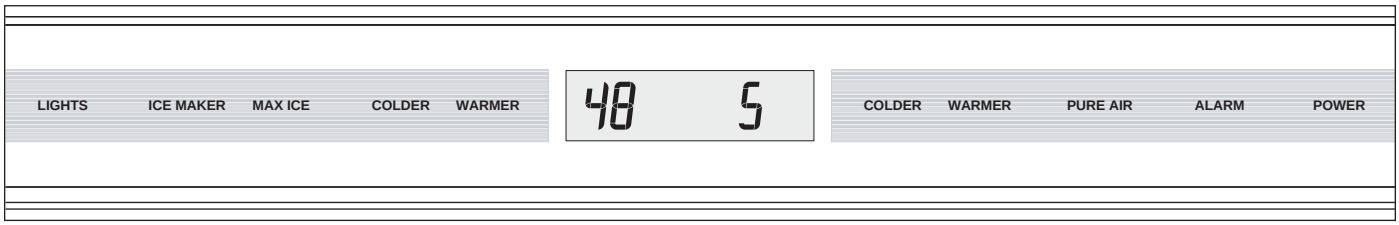


Figure 3-83. Stop When Correct Model Code is Displayed ("48" and "S" = 48" Side-by-Side)

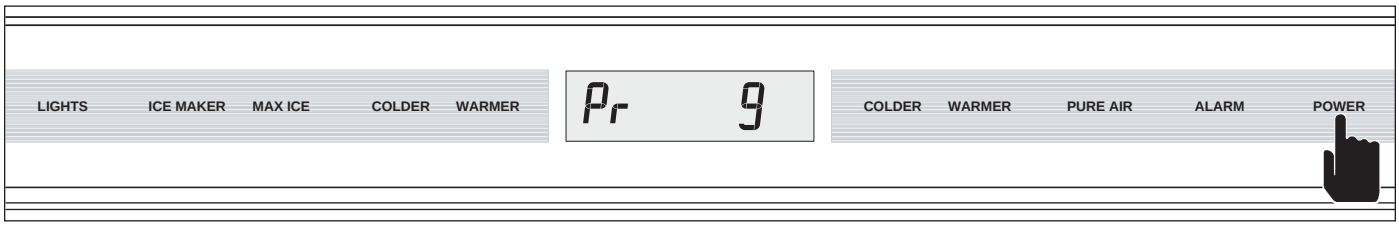


Figure 3-84. Press POWER Key when Correct Code is Displayed, "Pr" and "g" Appear on LCD Asking if the Code Displayed Should be Programmed/Stored

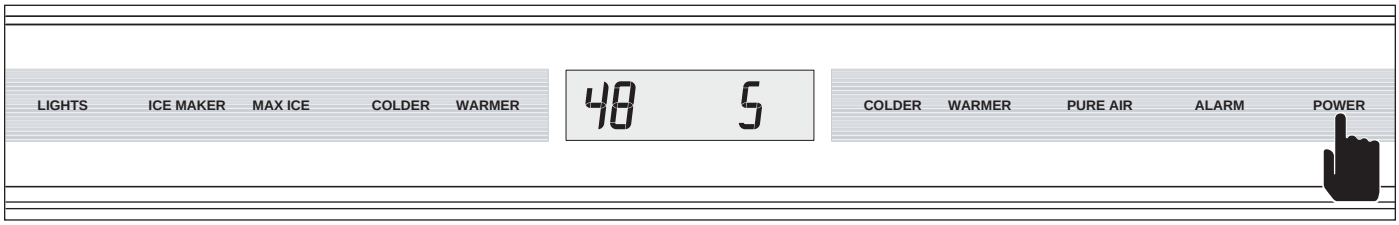


Figure 3-85. Press POWER Key Again - Configuration is Complete, Model Code is Displayed for 3 Seconds ("48" and "S" = 48" Side-by-Side), then Temperatures are Displayed

NOTES:

- *The main control board is used in domestic and international units. An "I" at the end of the model code indicates an International model code. However, the LCD can currently only display 4 digits, so if the code is 5 digits long (Ex: 30UGI, 36UGI, 36RGI, 42SDI & 48SDI), the 5th digit will not appear. Until this is addressed, please note that stopping when the appropriate model code is first observed (domestic only) should result in proper operation.*
- *When scrolling through model codes, please note that they do not appear in numerical order, as show in the tables at right. At this writing their order will be as shown in the tables below:*

36 U	42 S	36 UI	42 SI
48 SD	42 SD	48 SDI	42 SDI
48 S	36 S	48 SI	36 SI
36 R	36 UG	36 RI	36 UGI
36 F	36 RG	36 FI	36 RGI
30 U	30 UG	30 UI	30 UGI

DOMESTIC MODEL CODE TABLE

CODE	MODEL	CODE	MODEL
dE FL	* DEFAULT	36 U	BI36U
30 U	BI30U	36 U9	BI36UG
30 U9	BI30UG	42 S	BI42S
36 F	BI36F	42 Sd	BI42SD
36 r	BI36R	48 S	BI48S
36 r9	BI36RG	48 Sd	BI48SD
36 S	BI36S		

**** DEFAULT SETTING; MUST BE CONFIGURED.***

Manual Component Activation Mode

Manual Component Activation Mode allows a Service Technician to activate and toggle through various unit functions while observing the corresponding function codes and associated temperatures in the LCD. This mode also allows for voltage checks at the activated components without having to wait for the zone to call for cooling.

To initiate Manual Component Activation Mode, the unit must first be ON and in Diagnostic Mode (See Figure 3-86).

NOTE: *If Fault Codes have been logged the control will enter Fault Code Recall Mode instead of Diagnostic Mode. If this happens press the ALARM key to shift the electronic control system into Diagnostic Mode.*

While in Diagnostic Mode, and keeping in mind that the components can be activated in only one zone at a time, press and hold the desired zone's COLDER key and the POWER key for ten (10) seconds (See Figures 3-87 and 3-88), at which time all cooling functions will stop; the letters "OF" and "F" will appear in the LCD, and all icons in the LCD will illuminate.

The chosen zone's components can now be forced to ON for five (5) minutes, or back to the OFF states using the WARMER or COLDER keys, with the WARMER key activating the next step (component), while the COLDER key would activate a previous step (component). (See Manual Component Activation Tables on next page).

NOTE:

- *All temperatures displayed are current, real-time temperatures without weighted averaging or offsets.*
- *Pressing any key (other than the POWER or ALARM) during this mode restarts the five (5) minute timer.*
- *Pressing the POWER key during this mode forces the control back into Diagnostic Mode.*
- *Pressing the ALARM key will exit the mode, and return the unit to normal operation.*

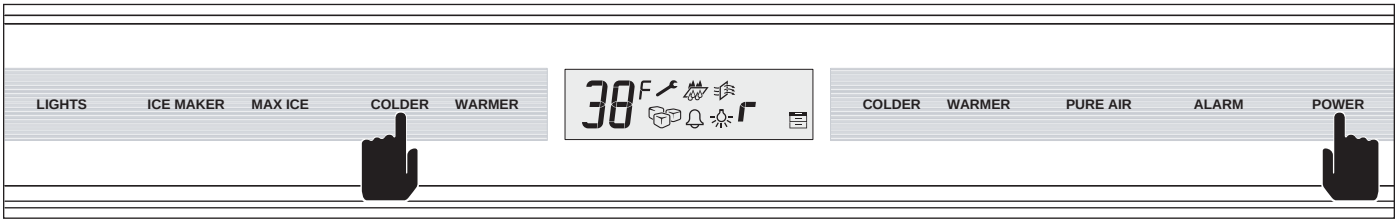


Figure 3-86. Initiate Diagnostic Mode First - Press and Hold Either COLDER Key, Then the POWER Key

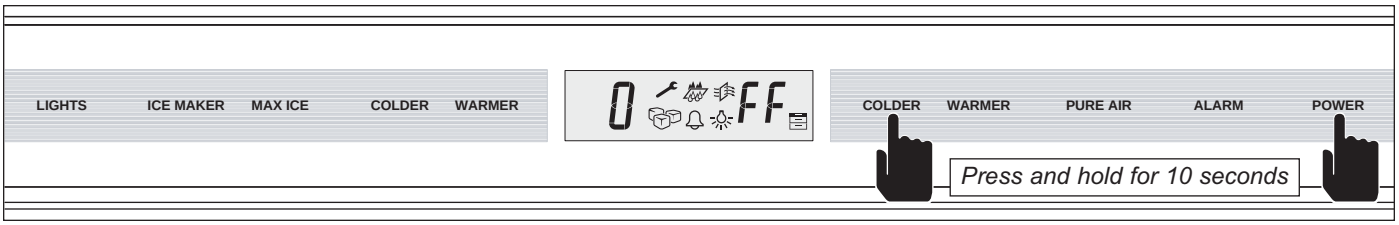


Figure 3-87. Initiate Manual Component Activation Mode for Refrigerator Components - While in Diagnostic Mode, Press and Hold Refrigerator COLDER and POWER for ten (10) seconds, Then Press Refrigerator WARMER or COLDER Key to Activate Components as Indicated in Table

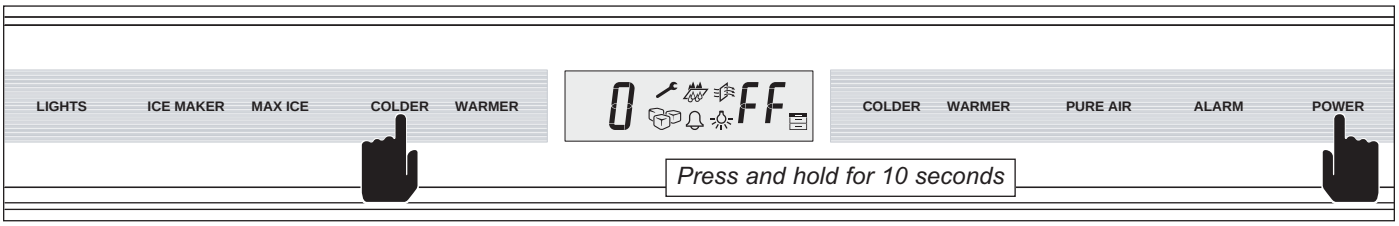


Figure 3-88. Initiate Manual Component Activation Mode for Freezer Components - While in Diagnostic Mode, Press and Hold Freezer COLDER and POWER for ten (10) seconds, Then Press Freezer WARMER or COLDER Key to Activate Components as Indicated in Table

REFRIGERATOR ZONE MANUAL COMPONENT ACTIVATION TABLE			
STEP	**FUNCTIONS / COMPONENT(S)**	**LCD VIEW**	**COMMENTS**
1	All Components OFF; All Lights OFF	0 FF	OFF Displayed; All Lights OFF
2	Ref Compressor ON	38F r	Zone Temp & r Displayed; Actual temps will vary
3	Ref Evaporator Fan ON (Comp stays ON)	28F rE 38F rC	Alternate Evap Temp & rE / Zone Temp & rC Display at 5 second intervals; Actual temps will vary
4	Condenser Fan ON (Comp/Evap fan stays ON)	38F Cd	Zone Temp & Cd Displayed; Actual temps will vary
5	Drawer Fan(s) ON (Comp/Evap/Cond fan switch OFF)	-84F dr 28F rE	Alternate -84 (-64 if set Celsius) & dr / Evap Temp & rE Display at 5 second intervals; Actual temps will vary
6	Drawer Fan(s) OFF	0 FF	OFF Displayed; All Lights ON
7	Air Purifier Light & Fan ON	Ar Ft	Ar & Ft Displayed
8	Everything OFF (Light relay ON/Lights OFF)	0 FF	OFF Displayed; All Lights OFF
9	Main Lights ON	LS On	LS & On Displayed; Main Lights ON; All else OFF
10	Accent/Display Lights ON	AC Lt	AC & Lt Displayed; All Lights ON
EXIT	Normal ON Mode	0F 38F	Press POWER to exit, or let time out

FREEZER ZONE MANUAL COMPONENT ACTIVATION TABLE			
STEP	**FUNCTIONS / COMPONENT(S)**	**LCD VIEW**	**COMMENTS**
1	All Components OFF; All Lights OFF	0 FF	OFF Displayed; All Lights OFF
2	Fre Compressor ON	0F F	Zone Temp & F Displayed; Actual temps will vary
3	Fre Evap Fan ON (Comp stays ON)	-10F FE 0F FC	Alternate Evap Temp & FE / Zone Temp & FC Display at 5 second intervals; Actual temps will vary
4	Condenser Fan ON (Comp/Evap fan stays ON)	0F Cd	Zone Temp & Cd Displayed; Actual temps will vary
5	Defrost Heater ON	-10F Et	Evap Temp & Et Displayed; Actual temps will vary
6	Defrost Heater ON; Evap Fan ON	-10F dE	Evap Temp & dE Displayed; Actual temps will vary
7	All Components OFF; All Lights OFF	0 FF	OFF Displayed; All Lights OFF
8	All Lights ON	LS On	LS & On Displayed; All Lights ON
EXIT	Normal ON Mode	0F 38F	Press POWER to exit, or let time out

TABLE NOTES:

The LCD will show Celsius temperatures during this mode if the appliance has been set to display Celsius units of measure.

"-84F" or "-64C" will appear in place of temperature if the thermistor is open or missing. Which one appears depends on whether the appliance is set to display Fahrenheit or Celsius units of measure.

Self-Test Mode

Initiating Self Test Mode forces the electronic control to cycle through all relays and triacs, switching components ON and OFF, and check for correct feedback information from various electrical components. Then, if a relay or triac fails to function properly, or if incorrect feedback is received, the appropriate fault codes will be logged.

To initiate Self Test Mode, the unit must be ON and in Diagnostic Mode (See Figure 3-89).

NOTE: *If Fault Codes have been logged the control will enter Fault Code Recall Mode instead of Diagnostic Mode. If this happens press the ALARM key to shift the electronic control system into Diagnostic Mode.*

Then, while in Diagnostic mode press and hold either set of COLDER and WARMER keys, then the POWER key, then release all three keys (See Figures 3-90). Self Test Mode will last approximately five (5) seconds, during which "tE St" will be displayed in the LCD. At the end of the self test, the current compartment temperature readings will appear in the LCD.

When Self Test Mode does end, it will be necessary to initiate Fault Code Recall Mode in order to view any fault codes that may have been logged during the self test (See Figure 3-91).

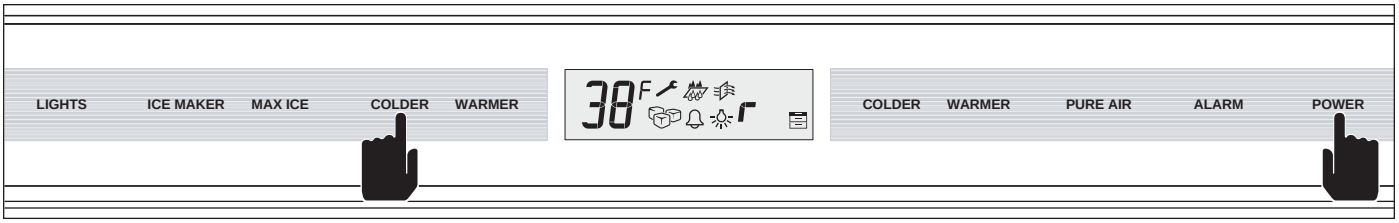


Figure 3-89. Initiate Diagnostic Mode First - Press and Hold Either COLDER Key, Then the POWER Key

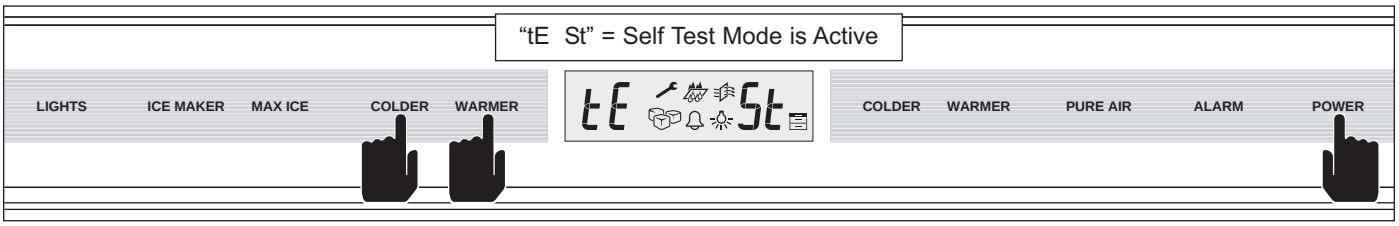


Figure 3-90. Initiate Self-Test Mode -
While in Diagnostic Mode, Press either set of COLDER and WARMER Keys and the POWER Key

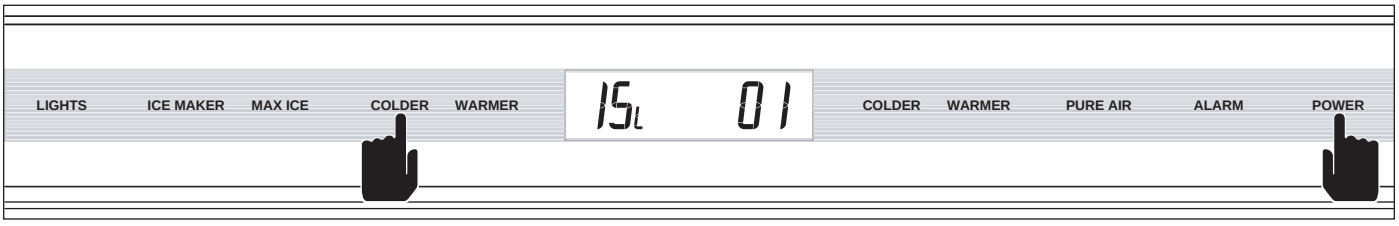


Figure 3-91. When Self Test Mode Ends, Initiate Fault Code Recall Mode -
Press and Hold Either COLDER Key, Then the POWER Key
(Example Shown: "15 L 01" = Main Lights Relay Stuck Closed. No Voltage to Lights)

SECTION 4

SEALED SYSTEM INFORMATION

HFC-134a REFRIGERANT SERVICE INFORMATION

The sealed system in the Built-In Series contain HFC-134a refrigerant. This section of the manual provides general rules for working with 134a, and procedures to be followed while servicing the sealed system. This is followed by diagrams illustrating sealed system operation, then model-specific refrigerant flow diagrams.

⚠ CAUTION

- **134a refrigerant requires Synthetic Ester oil in the compressor, and does not tolerate contamination from other refrigerants, moisture, petroleum-based lubricants, silicone lubricants, cleaning compounds, rust inhibitors, leak detection dyes, or any other type of additive.**
- **If servicing the sealed system, do not leave it nor any replacement components open to the atmosphere for more than ten (10) minutes, as the Synthetic Ester oil will attract moisture.**

General Rules for Working with 134a Refrigerant:

- Use equipment dedicated to 134a sealed system service only.
- Use only 134a refrigerant for back-flushing and sweep charging.
- Always replace the high-side filter-drier when servicing the sealed system.
- The high-side filter-drier must be cut from the sealed system. Never un-braze the drier as the heat will drive moisture into the sealed system.
- Do not leave the sealed system nor replacement compressor open to the atmosphere for more than then (10) minutes.
- When the rubber plugs are pulled from the service compressor, a release of pressure should be heard. If no release of pressure is heard, do not use the compressor.
- Use ONLY virgin 134a refrigerant when recharging the sealed system.

BUILT-IN SERIES SEALED SYSTEM REPAIR PROCEDURES	
Problem	**Service Procedures**
Non-Operating, Inefficient, Noisy Compressor	a. Capture refrigerant b. Replace Compressor c. Replace filter-drier d. Evacuate or sweep charge system e. Recharge system with Virgin 134a refrigerant. ***NOTE**: To check for a non-operating compressor, a hard start kit can be used.*
High Side leak	a. Capture refrigerant. b. Repair leak. c. Replace filter-drier. d. Evacuate or sweep charge system. e. Recharge system with Virgin 134a refrigerant.
Low Side Leak	a. Capture refrigerant. b. Repair leak (if at solder joint) or replace part. c. Back flush high side of sealed system. d. If all refrigerant has escaped & system is in vacuum, replace compressor. e. Replace filter-drier. f. Evacuate or sweep charge system. g. Recharge system with Virgin 134a refrigerant.
Contaminated Sealed System *Examples:* > *Burned out compressor* > *Excessive moisture from leak in condensate loop or in low side* > *Plugged capillary tube*	a. Capture refrigerant. b. Repair leak (if at solder joint) or replace part. c. Back flush high side of sealed system. d. Replace compressor. e. Replace filter-drier. f. Replace heat exchanger if cap tube is clogged. g. Install a low side drier on suction line. h. Evacuate or sweep charge sealed system. i. Recharge with Virgin 134a refrigerant.
Restriction ***NOTE**: If restriction is due to sealed system being contaminated, see Contaminated Sealed System above.*	a. Capture refrigerant. b. Locate and remove restriction or locate and replace part. c. Back flush high side of sealed system. d. Replace filter-drier. e. Evacuate or sweep charge system. f Recharge system with Virgin 134a refrigerant.
Overcharge	a. Capture refrigerant. b. Replace filter-drier. c. Evacuate or sweep charge system. d. Recharge system with Virgin 134a refrigerant.

SEALED SYSTEM OPERATION

The following six diagrams illustrate a basic sealed system. The components are listed in order of refrigerant flow, with an explanation of their fundamental role as part of a sealed system. ***NOTE:*** *These illustrations do not represent any specific Built-In Series sealed system.*

Compressor (Figure 4-1)
The compressor creates a high side and low side pressure difference in the sealed system by compressing the refrigerant gas, thus raising the pressure and temperature. The compressor pushes this high-pressure/high-heat gas through the door gasket seat heater loop to prevent sweating (on freezer systems the gas also travels through drain pan heater tubing to help evaporate water in the drain pan). The high-pressure/high-heat gas then travels to the condenser.

Condenser (Figure 4-2)
The high-pressure/high-heat gas travels through the condenser, where the heat is dissipated by cooler air being drawn over the condenser tubing by the condenser fan. This changes the gas into a high-pressure/warm liquid that then enters the high-side filter-drier.

High-Side Filter-Drier (Figure 4-3)
The high-pressure/warm liquid travels through the high-side filter-drier, which removes moisture from the refrigerant before it enters the capillary tube.

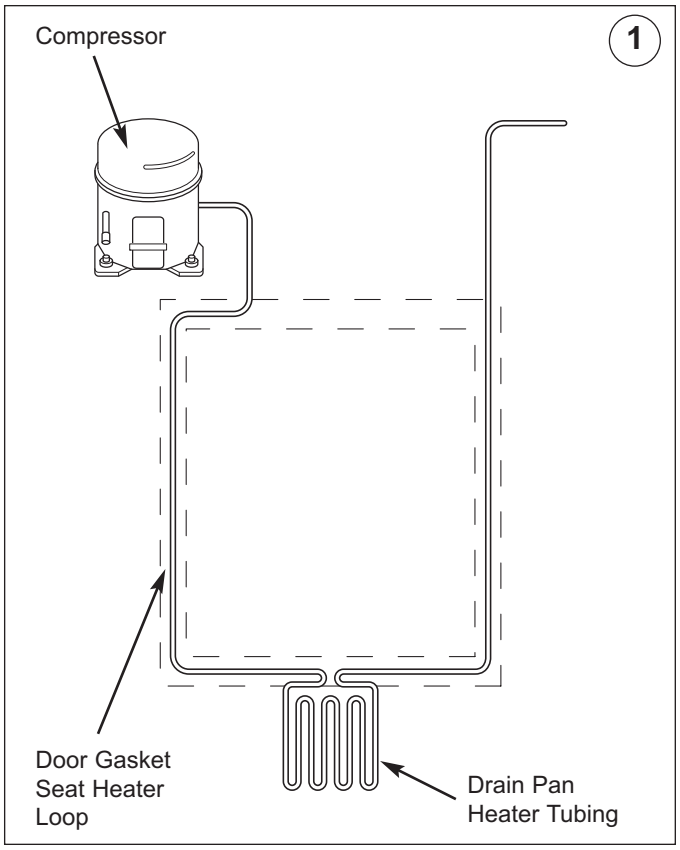


Figure 4-1. Compressor

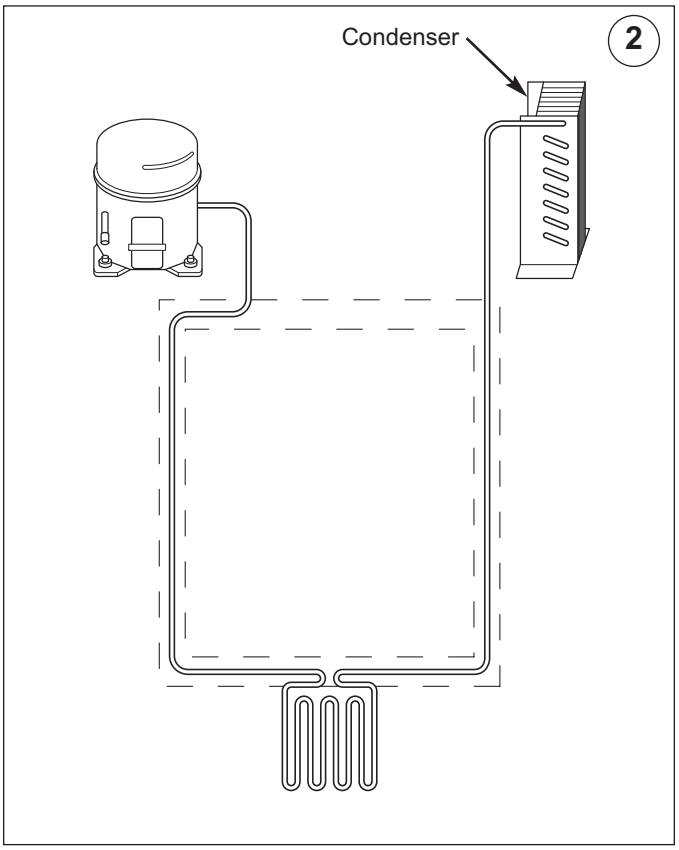


Figure 4-2. Condenser

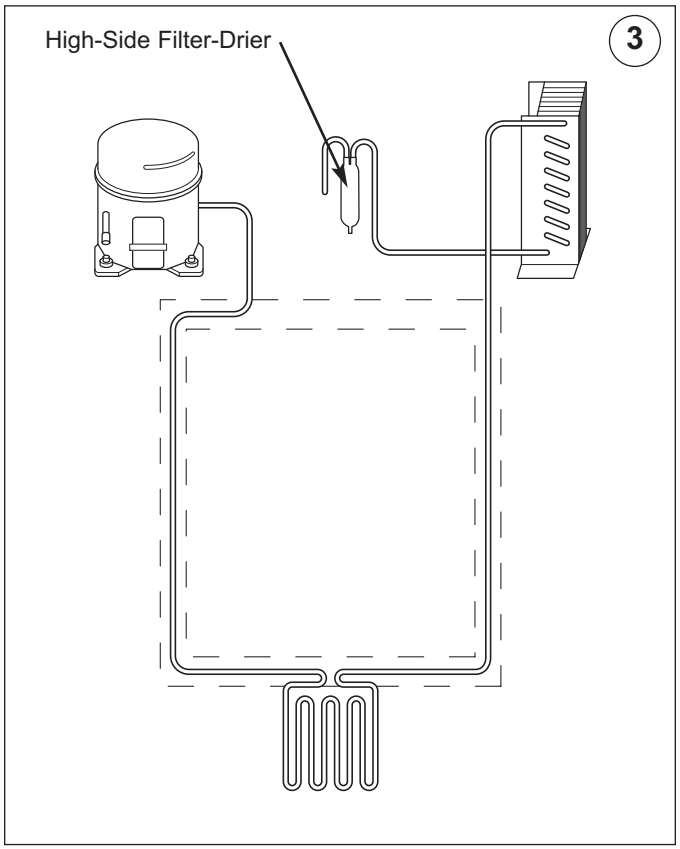


Figure 4-3. High-Side Filter-Drier

Capillary Tube (Part of Heat Exchanger) (Figure 4-4)
The high-pressure/warm liquid refrigerant travels through the long skinny capillary tube which is attached to the suction tube. (These two tubes soldered together create the heat exchanger.) As the high-pressure/warm liquid refrigerant travels through the capillary tube it gives up heat to the cool refrigerant gas traveling through the suction tube and the pressure drops, so it is a low-pressure/cool liquid before it enters the evaporator.

Evaporator (Figure 4-5)
As the low-pressure/cool liquid refrigerant enters the evaporator, it vaporizes. This is caused by a dramatic pressure change which occurs when the refrigerant enters the larger diameter evaporator tubing from the smaller diameter capillary tubing. This vapor travels through the evaporator absorbing heat from the compartment, gradually converting it to a cool gas. This cool gas then enters the suction line.

Suction Tube (& Heat Exchanger) (Figure 4-6)
The cool gas travels through the suction tube which is attached to the capillary tube. (As mentioned earlier, these two tubes soldered together create the heat exchanger.) As this cool refrigerant gas travels through the suction tube it absorbs heat from the warm liquid refrigerant traveling through the capillary tube, making it a luke warm gas. The lukewarm refrigerant gas returns to the compressor where the process begins again.

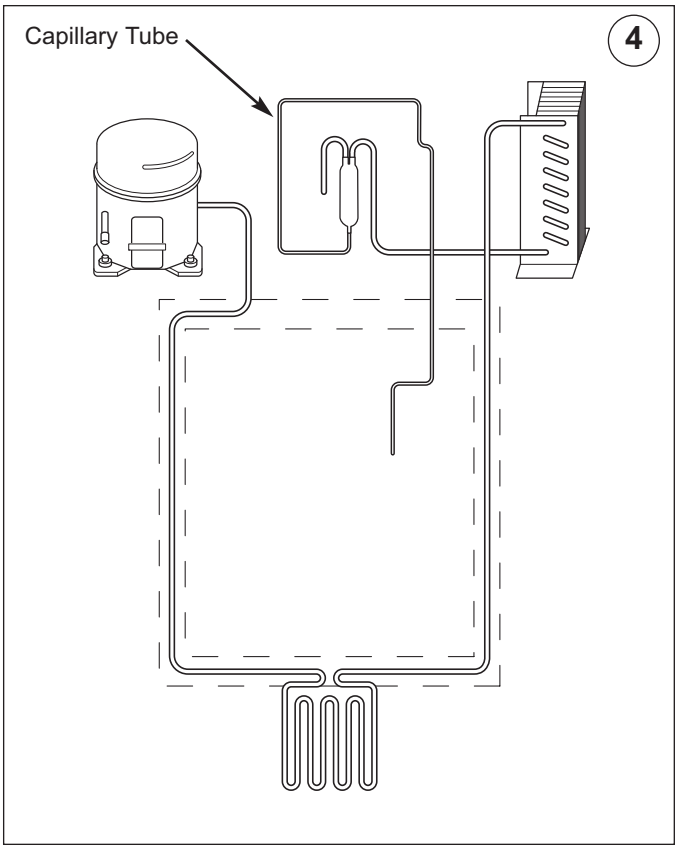


Figure 4-4. Capillary Tube (Part of Heat Exchanger)

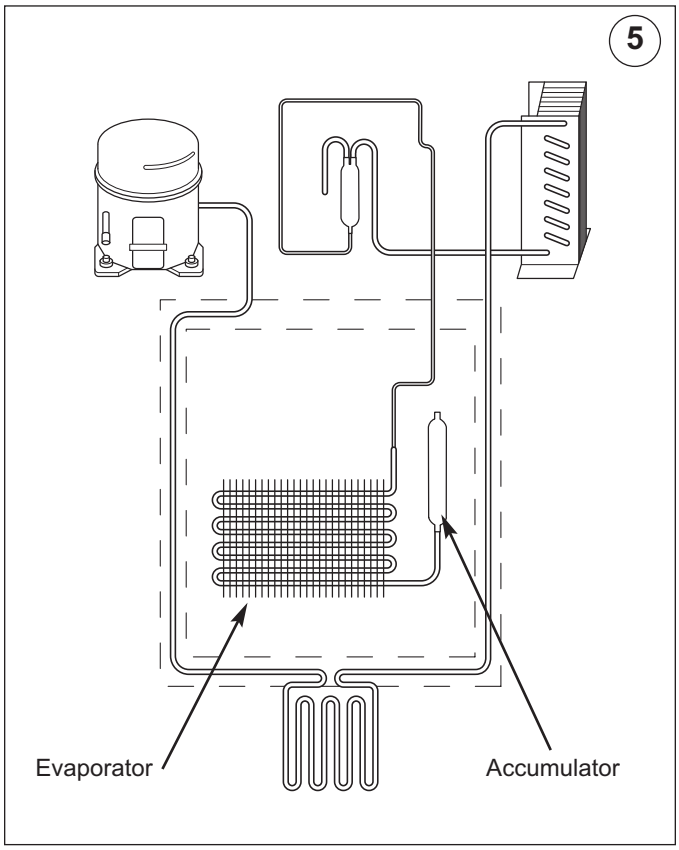


Figure 4-5. Evaporator

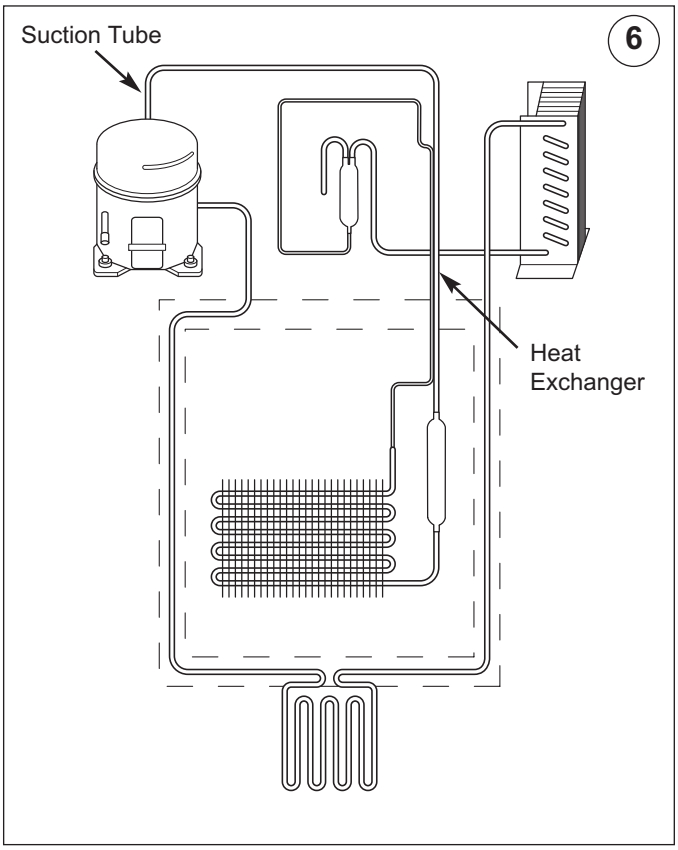


Figure 4-6. Suction Tube (Part of Heat Exchanger)

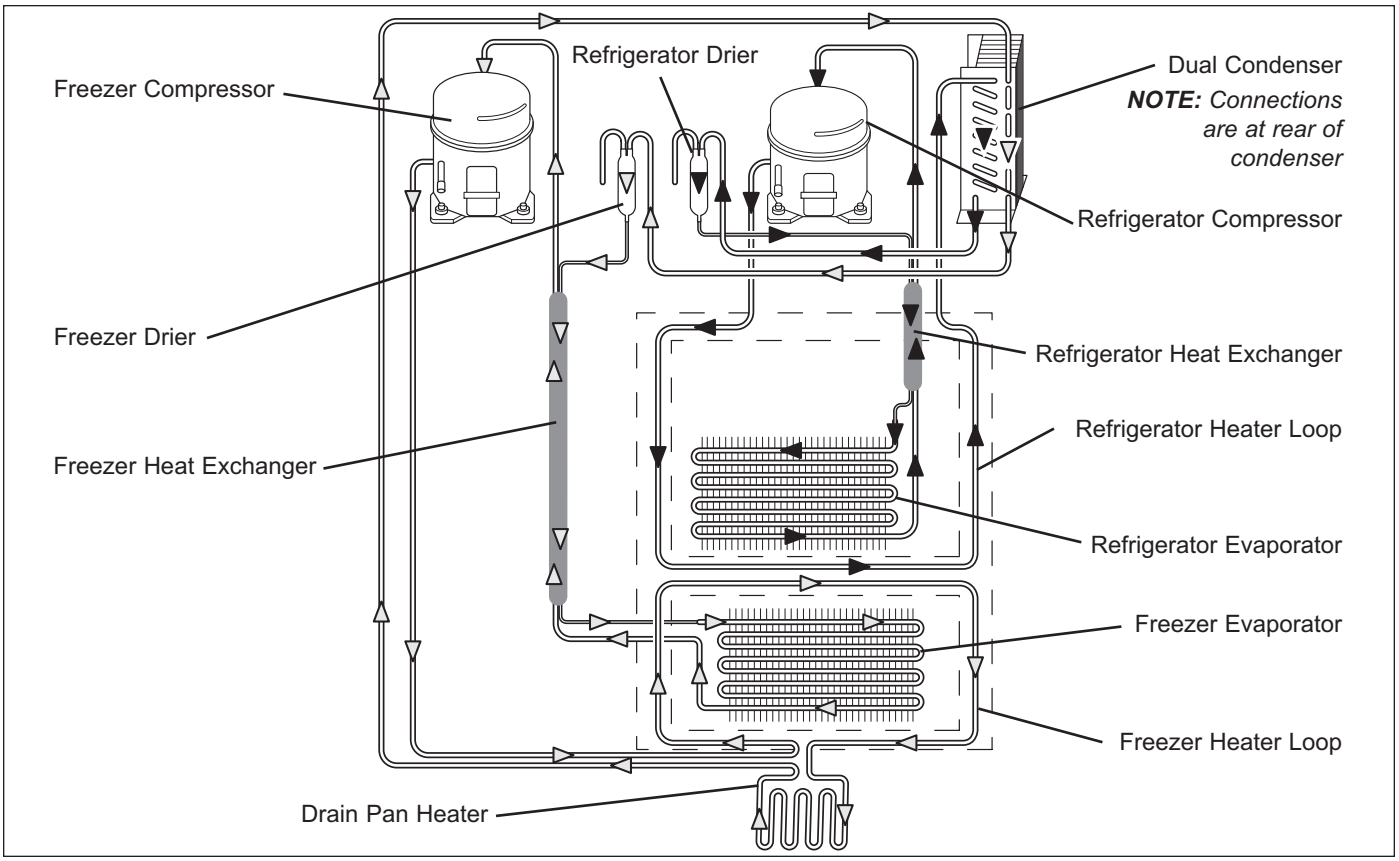


Figure 4-7. Models BI-30U, BI-30UG, BI-36U and BI-36UG Refrigerant Flow

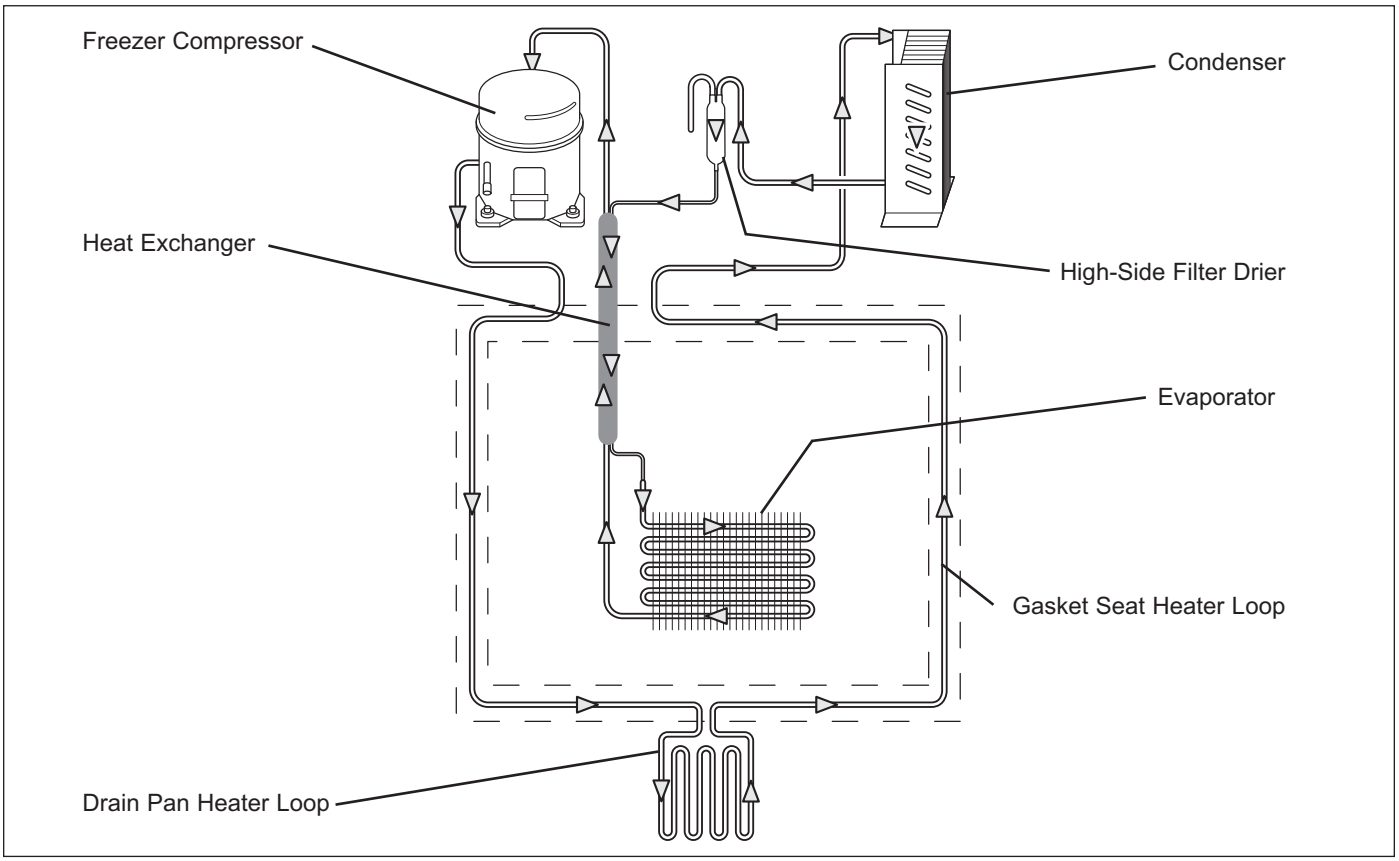


Figure 4-8. Models BI-36F Refrigerant Flow

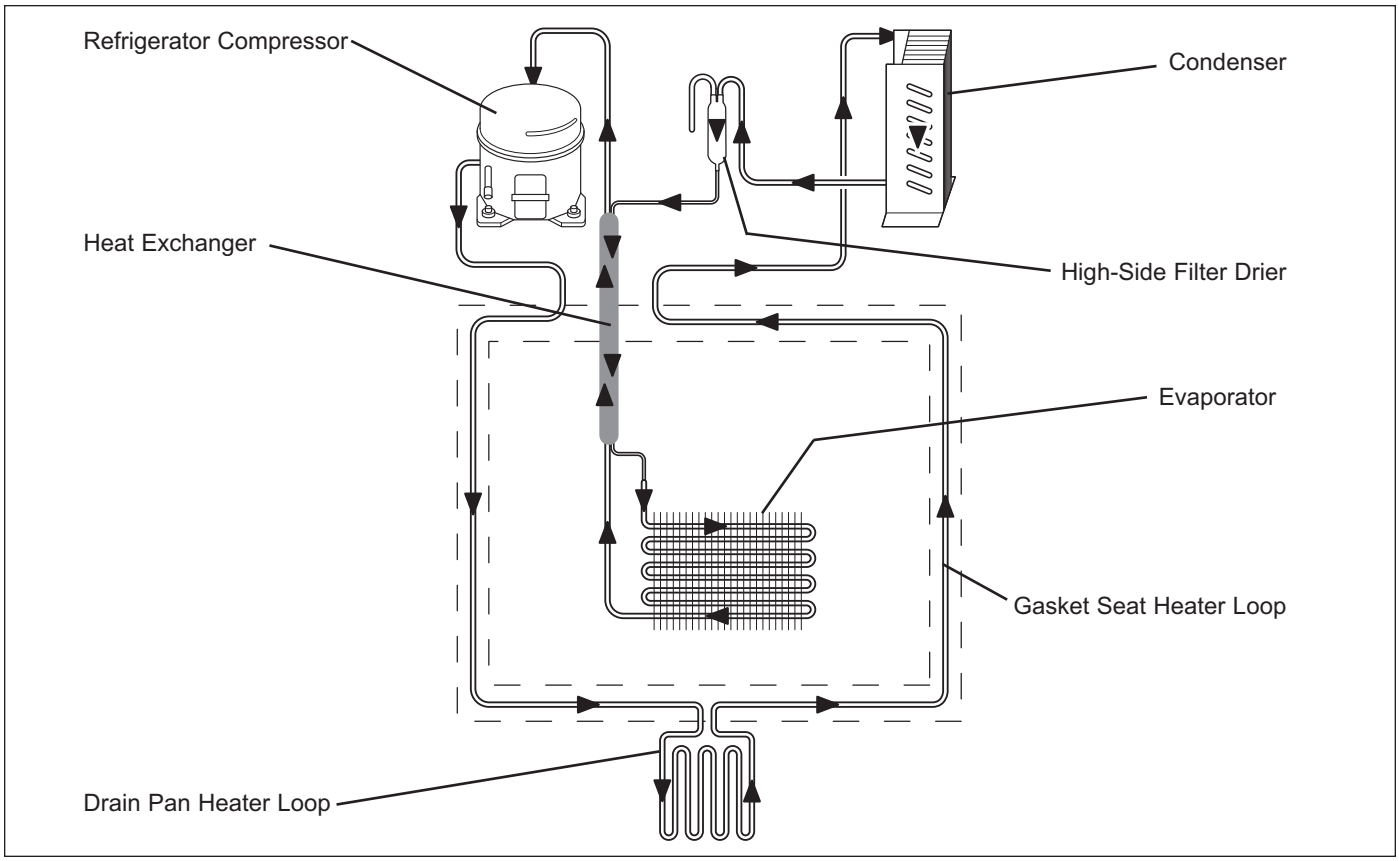


Figure 4-9. Models BI-36R and BI-36RG Refrigerant Flow

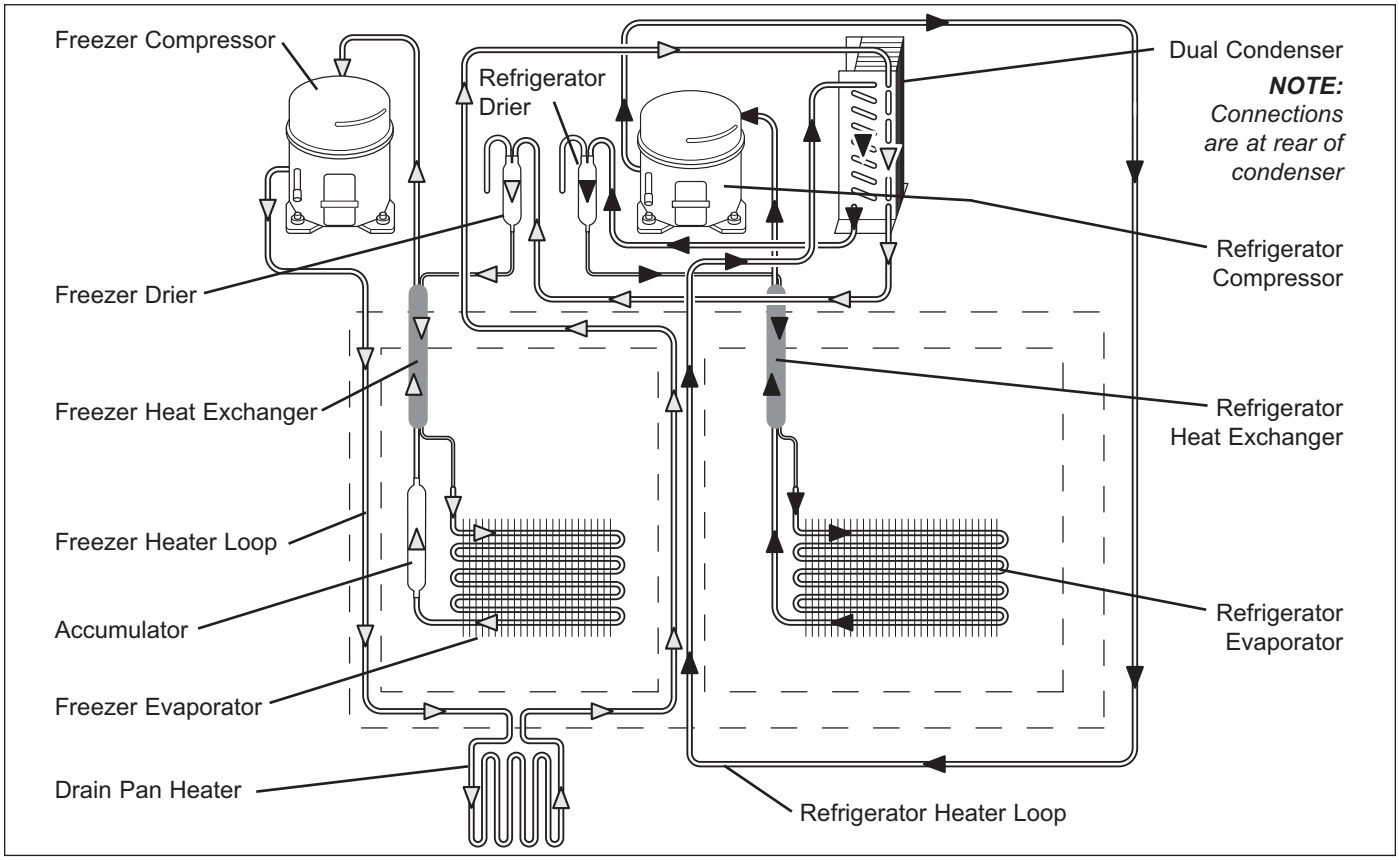


Figure 4-10. Models BI-36S, BI-42S, BI-42SD, BI-48S and BI-48SD Refrigerant Flow

SECTION 5

AIR FLOW

For proper airflow, evaporator fan blades must be pushed onto the fan motor shafts fully, so that the motor shafts touch the fan blade stop point.

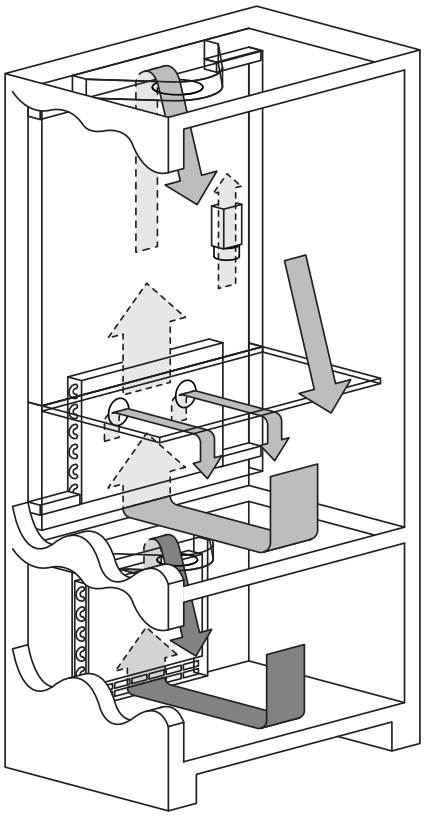


Figure 5-1. Air Flow, Models BI-30U, BI-30UG, BI-36U, BI-36UG

For proper airflow, the evaporator fan blade must be pushed onto the motor shaft fully, so that the motor shaft touches the fan blade stop point.

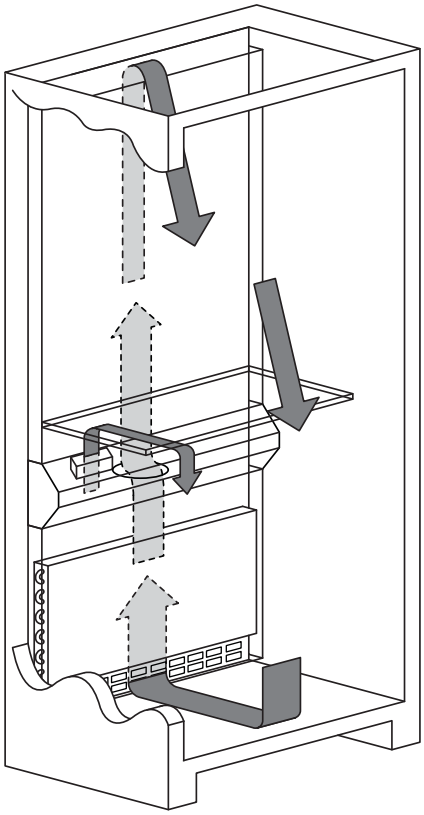
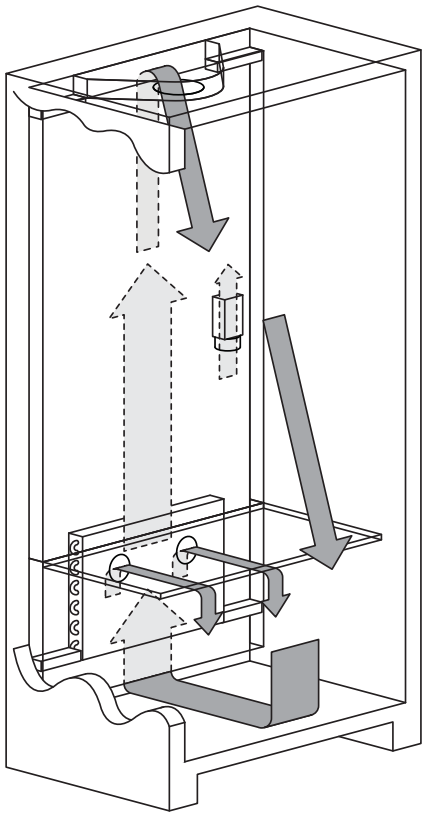
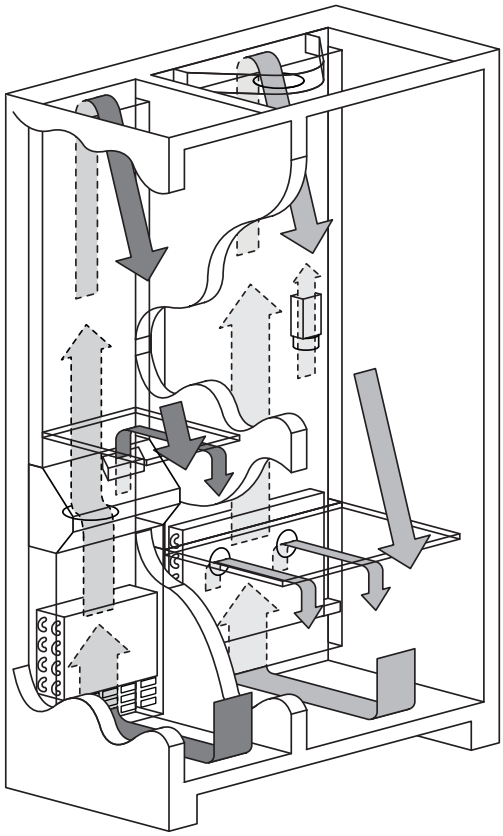


Figure 5-2. Air Flow, Model BI-36F



For proper airflow, the evaporator fan blade must be pushed onto the motor shaft fully, so that the motor shaft touches the fan blade stop point.

Figure 5-3. Air Flow, Model BI-36R and BI-36RG



For proper airflow, evaporator fan blades must be pushed onto the fan motor shafts fully, so that the motor shafts touch the fan blade stop point.

Figure 5-4. Air Flow, Models BI-36S, BI-42S and BI-48S

For proper airflow, evaporator fan blades must be pushed onto the fan motor shafts fully, so that the motor shafts touch the fan blade stop point.

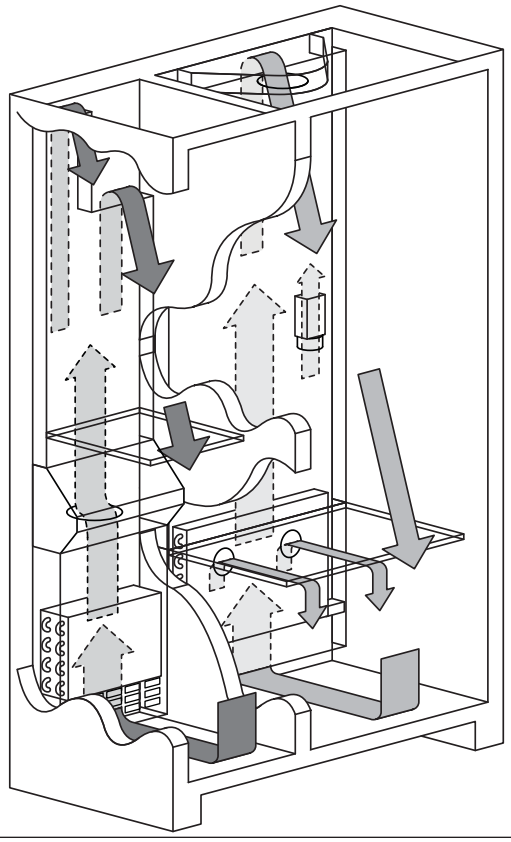


Figure 5-5. Air Flow, Models BI-42SD and BI-48SD

SECTION 6

ICEMAKER INFORMATION

ICEMAKER SYSTEM INFORMATION

Built-In Series units utilizes a Japan-Servo ® icemaker. Its operation is not complex, but understanding its components and operation cycle will assist a Service Technician in make proper diagnosis of problems.

⚠ WARNING

TO AVOID ELECTRIC SHOCK, ALWAYS DISCONNECT ELECTRICAL POWER TO UNIT WHEN SERVICING ICEMAKER.

NOTES:

- *The "ICE MAKER" key on the control panel activates the icemaker system. If the ice cube icon is not displayed on the LCD, the icemaker system is OFF.*
- *To allow ice to freeze fully and reduce effects of low water pressure, the electronic control disables the icemaker system for 45 minutes after each ice harvest.*
- *Power to the freezer lights, is monitored to help control icemaker operation. If the freezer door is open, power to the icemaker is interrupted.*
- *The icemaker system is disabled when the unit is in Sabbath Mode.*

ICEMAKER COMPONENTS

Following are descriptions that explain the function of each icemaker component. The components are diagramed in Figure 6-1 on the next page.

Support - The support is the housing around the electrical components and wire connections. The support is attached to the ice mold.

Mounting Plate - The drive motor, holding switch, water valve solenoid switch, timing gear, timing cam and water fill adjusting screw are attached to the metal mounting plate. The mounting plate is then attached to the support.

Drive Motor - 115 volts AC supplied to the drive motor causes the motor to operate. The motor has a single output shaft with a small gear. The motor gear drives/spins the timing gear.

Timing Gear - The timing gear is driven/spun by the drive motor gear and is attached to the timing cam.

Timing Cam - The timing cam is attached to the timing gear and the ice ejector is inserted into the center of the timing cam. As the timing cam rotates, high and low spots on the cam operate the water valve solenoid switch and the holding switch. The timing cam also moves the lever arm side to side and rotates the ice ejector.

Ice Mold - The ice mold is where the eight crescent shaped ice cubes are formed.

Mold Heater - The mold heater uses 165 watts to thaw the ice free from the mold.

Ice Ejector - The drive end of the ice ejector is "D" shaped to fit into the "D" shaped hole in the timing cam. It has eight blades which rotate and sweep the ice from the mold cavities during the ejection phase of the cycle.

Ice Stripper - The stripper is attached to the dumping side of the mold, serving as a decorative side cover and it also prevents ice from falling back into the mold.

Bearing / Inlet - The bearing / inlet is attached to the ice mold, opposite the support. Water enters the bearing / inlet and is directed to the ice mold. The bearing/inlet also supports the ice ejector at the end opposite the timing cam.

Thermostat - The thermostat is a single-pole, single-throw, bi-metal switch. At 15°F (-9°C) ± 3° it closes, starting the ice ejection phase.

Thermal-Mastic - A substance similar in appearance to grease that is applied between the thermostat and the ice mold. Its purpose is to increase thermal conductivity between the mold and the thermostat.

Lever Arm and Shut-off Arm - The lever arm is moved side to side by two revolutions of the timing cam. As it moves, it raises and lowers the shut-off arm and operates the shut-off switch to control the quantity of ice production. If the shut-off arm comes to rest on top of the ice in the storage bin during either revolution, the shut-off switch will remain open, stopping ice production at the end of that revolution.

Water Valve Solenoid Switch - A single-pole, double-throw type switch that allows electricity to the water valve solenoid, opening the valve, during the fill cycle.

Holding Switch - A single-pole, double-throw type switch that assures completion of a revolution once the icemaker has been energized.

Shut-off Switch - A single-pole, double-throw type switch that stops ice production when the ice bin is full.

TCO (Thermal Cut Out) - The TCO is thermal protection device in the wire harness that would open in the event of mechanical failure, thus protecting against over heating. (The TCO is not shown in diagram.)

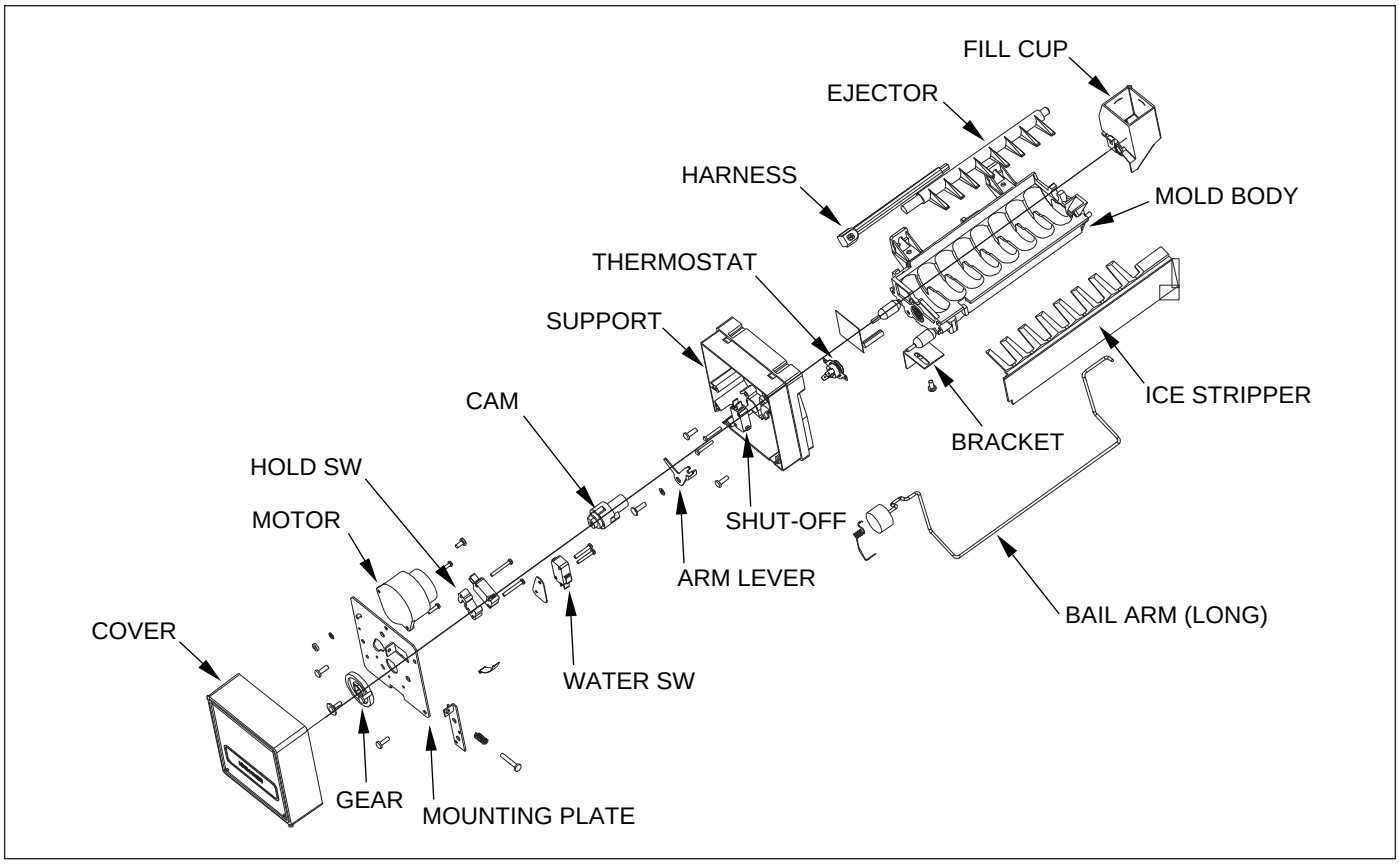


Figure 6-1. Diagram of Icemaker Components
(For reference only. Individual components are not available for Service. If problems with the icemaker are discovered, the entire icemaker must be replaced)

ICEMAKER OPERATION

The following series of electrical schematics illustrate a typical icemaker cycle of operation. Below each schematic is a diagram indicating the approximate location of the ice ejector and ice level arm during the phase the schematic indicates.

Freeze Phase of Ice Making Cycle (See Figure 6-2)

- The ice mold is filled with water.
- The thermostat is open.
- No icemaker components are energized.

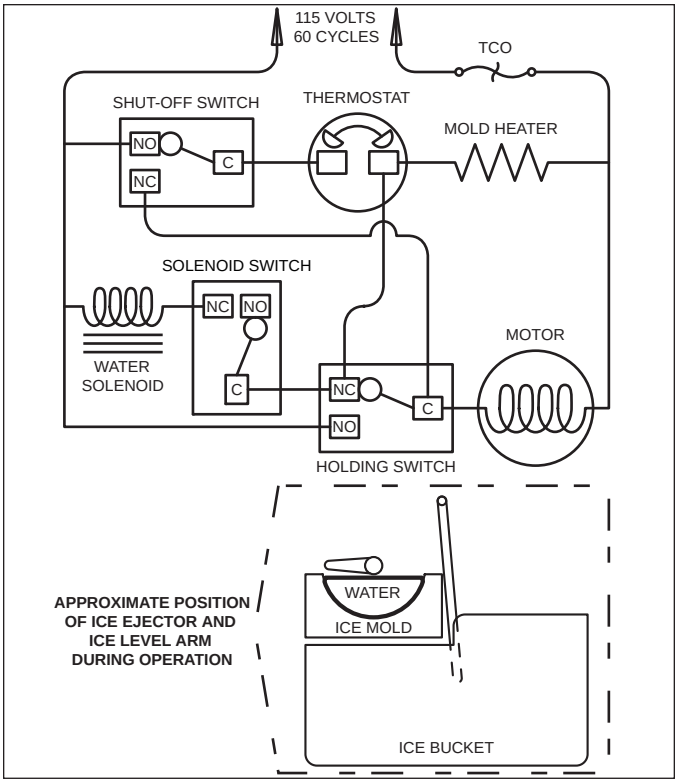


Figure 6-2. The Freeze Phase

Start of the First Revolution (See Figure 6-3)

- The water in the ice mold has turned to ice.
- At 15°F (-9°C) ± 3° the thermostat closes.
- The mold heater is energized through the thermostat.
- The drive motor is started through the thermostat and “normally closed” terminal of the holding switch.
- The ice ejector begins to turn and the shut-off arm begins to rise.

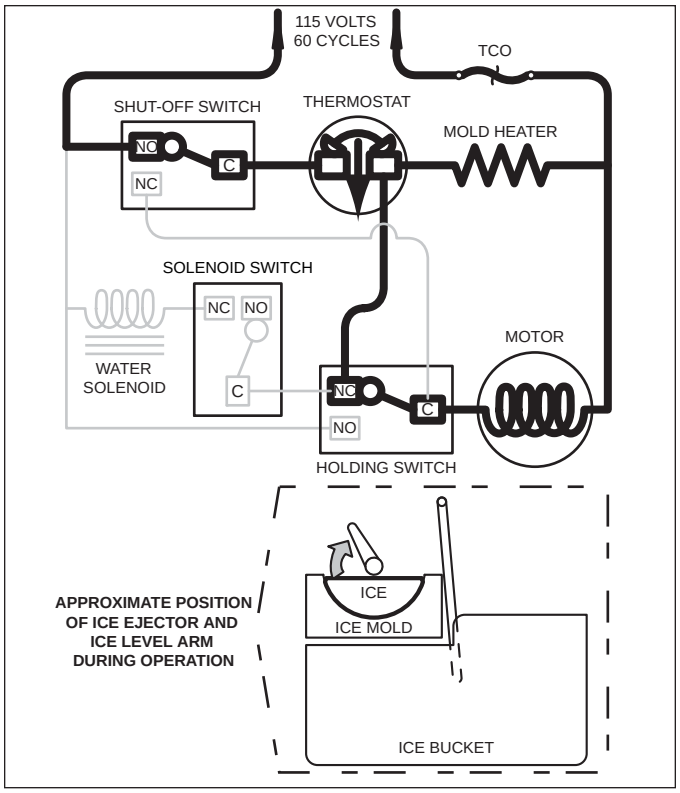


Figure 6-3. Start of First Revolution

First Revolution Continued (See Figure 6-4)

- The holding switch is tripped by the timing cam to “normally open” thus holding power to the motor.
- The mold heater remains energized through the thermostat.
- The shut-off arm begins to rise.

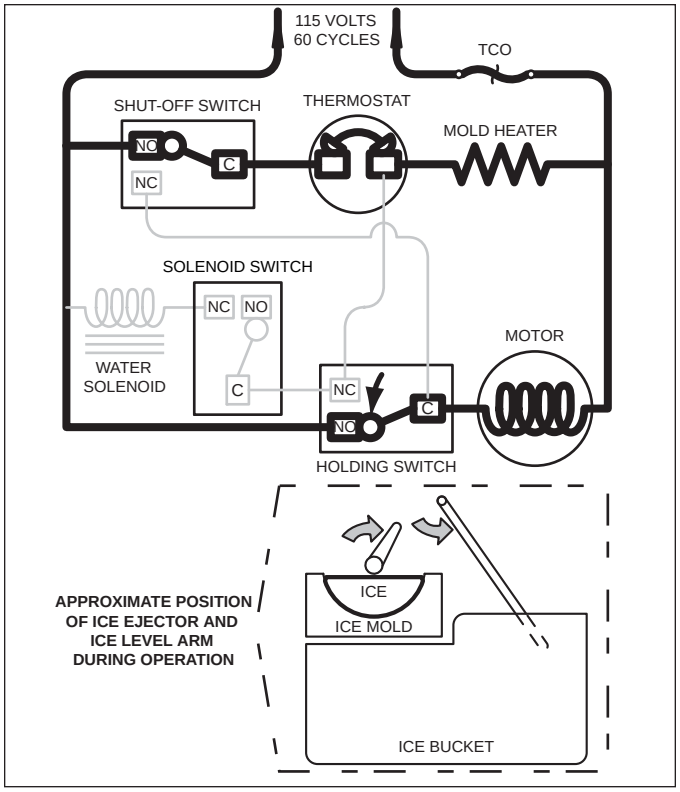


Figure 6-4. First Revolution Continued

First Revolution Continued (See Figure 6-5)

- The ice ejector reach the ice in the mold.
- The ice releases from the mold as the ejector blades begin to rotate the cubes out.
- The drive motor remains energized through the holding switch.
- The mold heater remains energized through the thermostat.
- As the shut-off arm rises, the shut off switch is tripped to “normally closed”, and then the shut-off arm begins to lower.

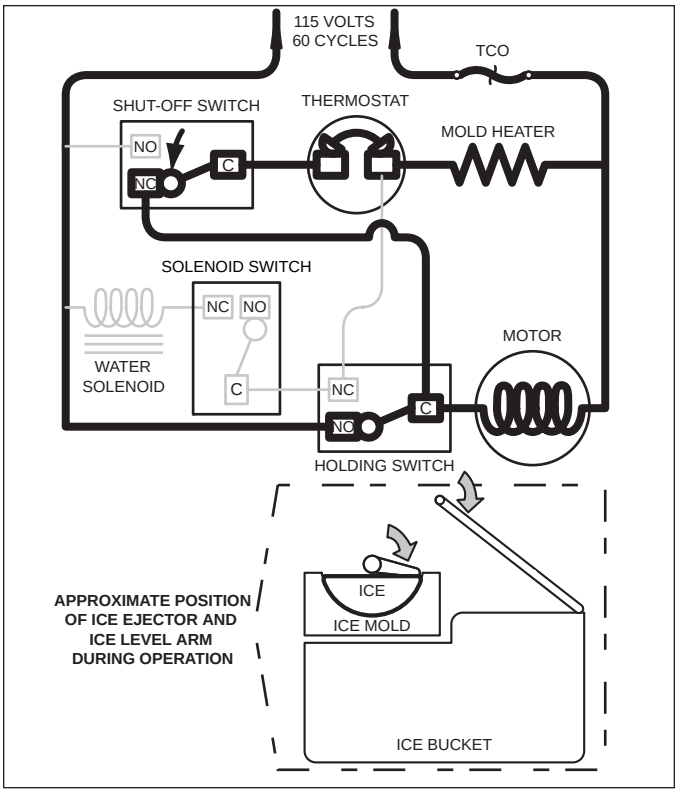


Figure 6-5. First Revolution Continued

First Revolution Continued (See Figure 6-6)

- The ice has released from the mold.
- The motor remains energized through the holding switch.
- The shut-off arm is lowered and the shut off switch is tripped to “normally open”.
- The water valve solenoid switch is tripped by the timing cam, but the solenoid is not energized because the thermostat is still closed and energizing the mold heater. (Electric current follows the path of least resistance.)

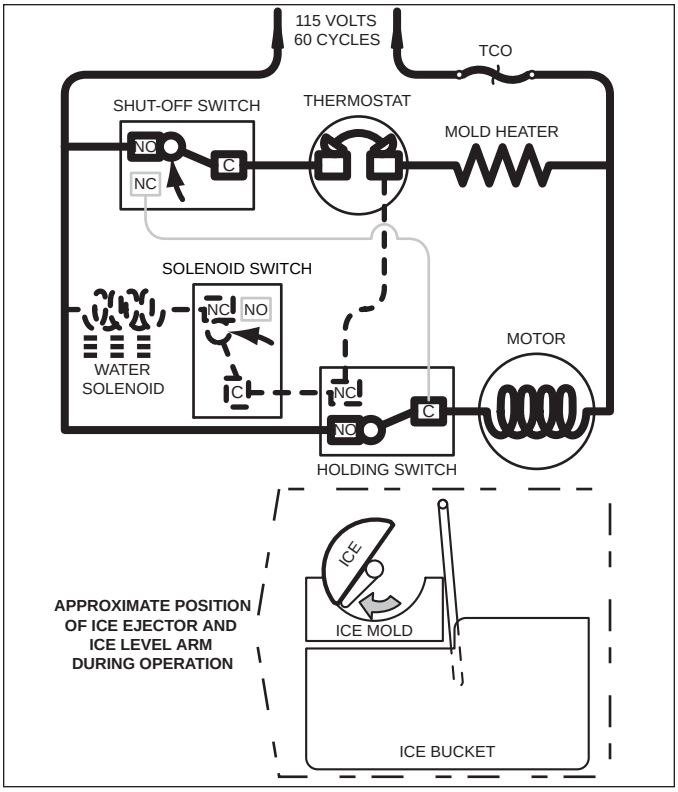


Figure 6-6. First Revolution Continued

End of First Revolution (See Figure 6-7)

- The water valve solenoid switch is tripped by the timing cam back to “normally open.”
- The timing cam trips the holding switch to “normally close,” which ends the first revolution, but the thermostat is still closed, so the motor is again started.
- The mold heater remains energized through the thermostat.

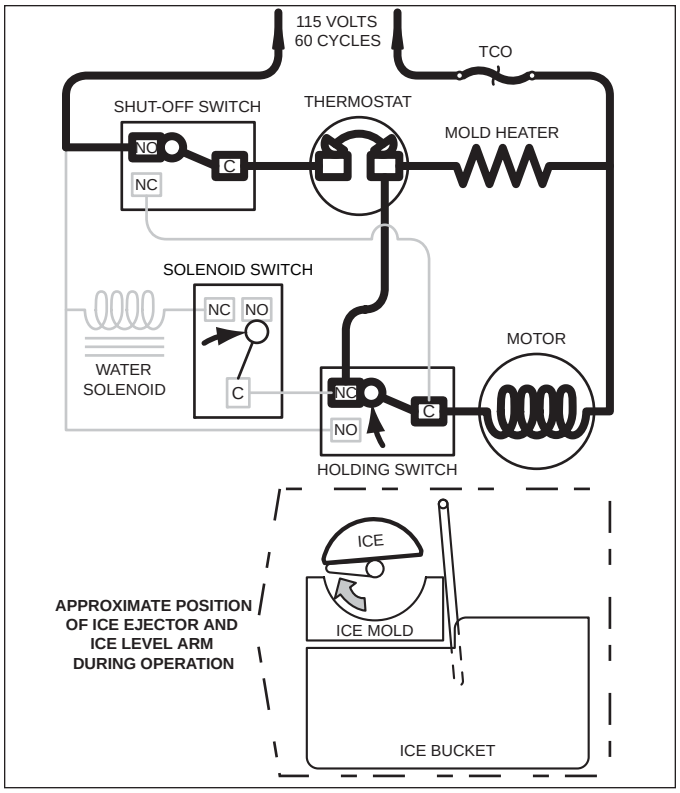


Figure 6-7. End of First Revolution

Start of Second Revolution:(See Figure 6-8)

- The water valve solenoid switch is tripped by the timing cam back to “normally open.”
- The timing cam trips the holding switch to “normally close,” which ends the first revolution, but the thermostat is still closed, so the motor is again started.
- The mold heater remains energized through the thermostat.

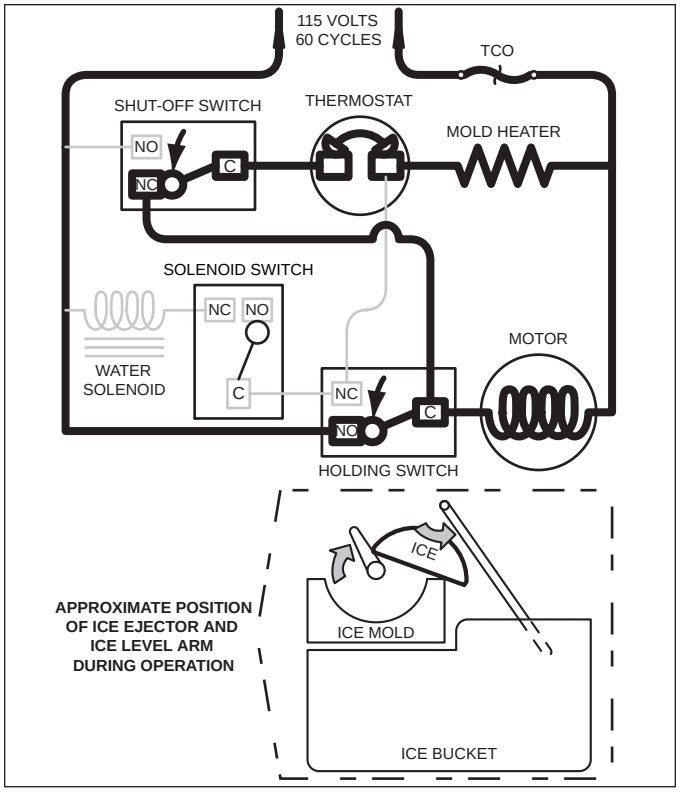


Figure 6-8. Start of Second Revolution

Second Revolution Continued (See Figure 6-9)

- The mold heater has warmed the thermostat, so the thermostat opens, and the mold heater is de-energized.
- If the shut-off arm comes to rest on top of the ice in the storage bin (as illustrated), so the shut-off switch will remain in the “normally closed” position.
- The motor remains energized through the holding switch.

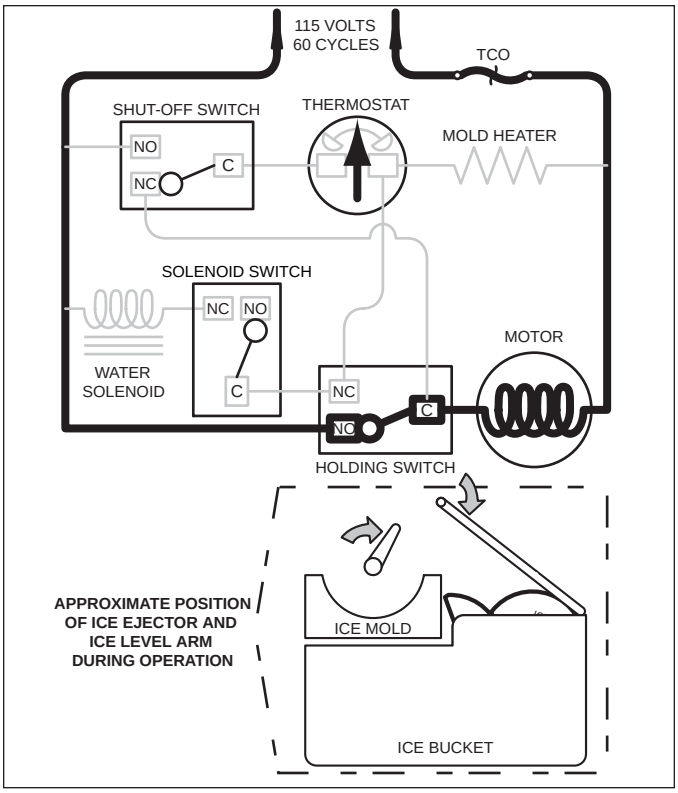


Figure 6-9. Second Revolution Continued

Second Revolution Continued (See Figure 6-10)

- The water valve solenoid switch is tripped by the timing cam. This time the solenoid is energized because the thermostat is open. The water solenoid is open for approximately seven seconds, filling the ice mold with water.
- the mold heater is energized through the solenoid switch and holding switch.

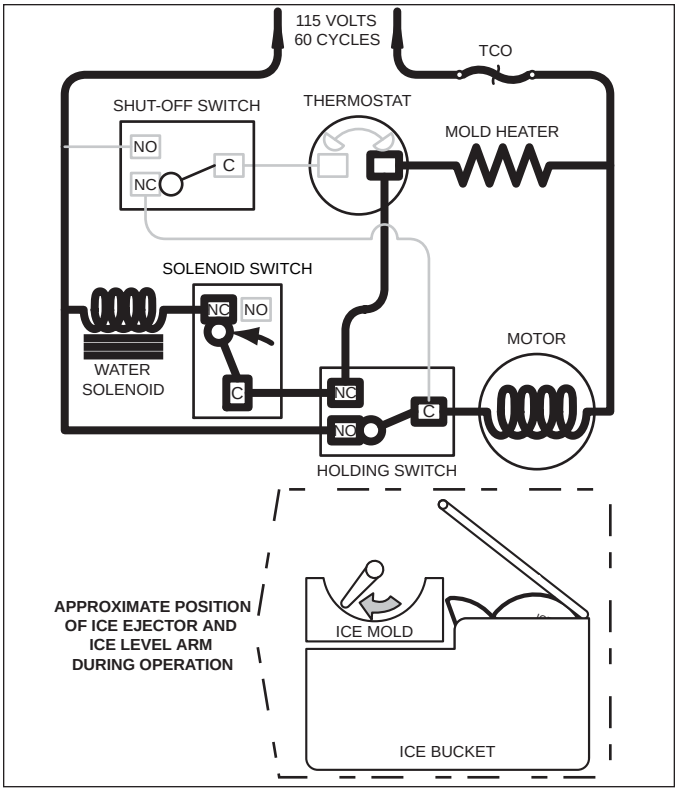


Figure 6-10. Second Revolution Continued

End of Ice making Cycle (See Figure 6-11)

- The water valve solenoid switch is tripped by the timing cam back to “normally open” ending the water fill.
- The timing cam trips the holding switch to “normally close,” which ends the second revolution.
- The thermostat is still open, so it does not start the drive motor.
- If the shut-off arm has come to rest on top of the ice in the storage bin (as illustrated), the shut-off switch remains in the “normally closed” position. This interrupts power from reaching the thermostat, until sufficient ice has been removed from the storage bin allowing the shut-off arm to lower.

NOTE: *To allow ice to freeze fully and reduce effects of low water pressure, the electronic control system disables the icemaker system for 45 minutes after each ice harvest.*

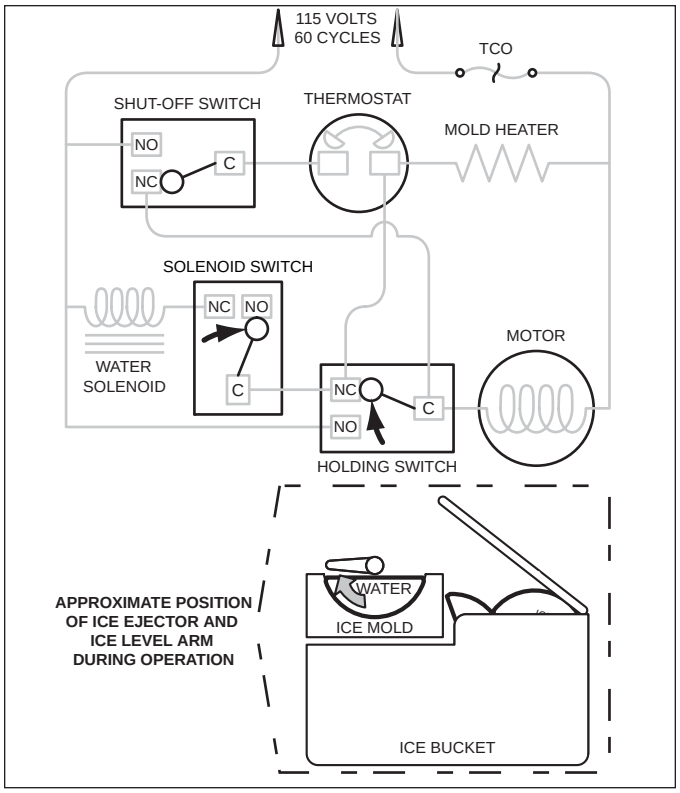


Figure 6-11. End of Ice Making Cycle

MANUALLY STOPPING ICE PRODUCTION

Ice production can be manually stopped two ways:

1. Press the “ICE MAKER” key on the control panel so that the ice cube icon is not displayed on the LCD.
2. Position the ice-level/shut-off arm in the up/OFF position (See Figure 6-12).

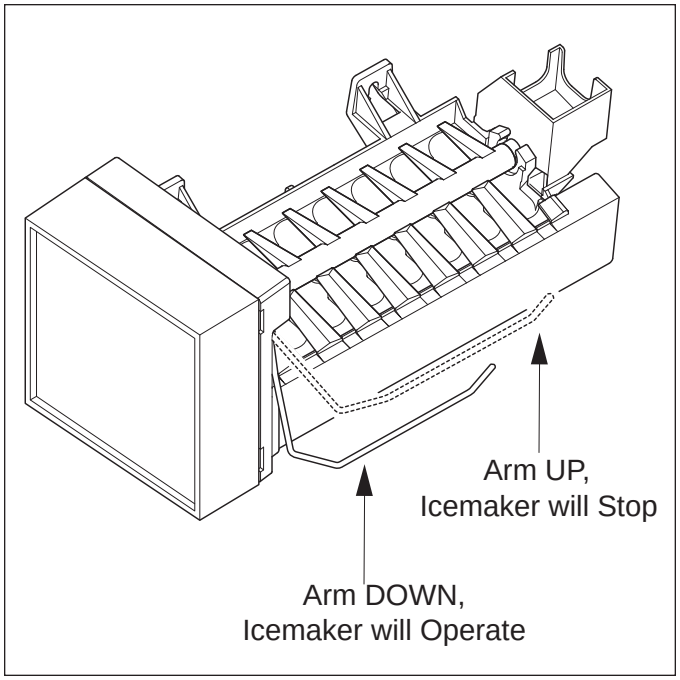


Figure 6-12. Stopping Icemaker

MANUALLY STARTING THE ICEMAKER

NOTE: *To allow ice to freeze fully and reduce effects of low water pressure, the electronic control disables the icemaker system for forty-five (45) minutes after each ice harvest. To bypass this 45 minute dwell for service purposes, press the the "ICE MAKER" key at the control panel to switch the system OFF, then again to switch it back ON.*

Manual Start Procedure:

1. Pry the icemaker front cover from the support using a flat-blade screwdriver or coin.
2. With a flat-blade screwdriver, turn the drive gear counterclockwise until the holding switch is activated, completing the circuit to the drive motor (this will be about a 1/8 turn). (See Figure 6-13) The icemaker will then complete its cycle automatically.

   NOTE: *If after 1/4 turn the icemaker is not running on its own, it may be in the 45 minute dwell period or there is an electrical or mechanical problem.*

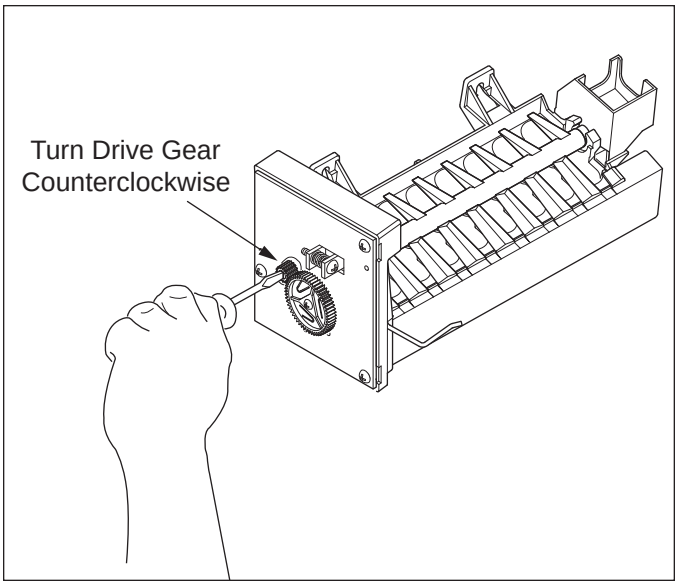


Figure 6-13. Manually Start Icemaker

ICEMAKER FAULT TESTING

Bypass 45-minute dwell by pressing ICE MAKER key to OFF, then again to ON. Now, depress the freezer light switch and manually start icemaker by turning driver gear counter-clockwise with screwdriver.

1 If icemaker starts & finishes cycle:
*(**NOTE:** If >15°F, icemaker will only complete 1 revolution.)*
a. Visually inspect electrical connections at icemaker & valve. Repair if necessary.
b. Check valve operation with test cord, if doesn't open, replace.
c. Check thermostat. (Open: 48°F ±6°, Close: 15°F ±3°). Replace icemaker if defective.
d. With icemaker in park position, check solenoid switch terminals "C" & "NO" for continuity. With ejector between 8:00 & 10:00 position, check solenoid switch terminals "C" & "NC" for continuity. If no continuity for either terminal check, replace icemaker.

2. If icemaker starts but does not finish cycle:
a. With icemaker in park position check holding switch terminals "C" & "NC" for continuity. Then with icemaker ejector between 10:00 & 12:00, check holding switch terminals "C" & "NO" for continuity. If no continuity for either terminal check, replace icemaker. (Refer to enclosed wiring diagram)
b. With icemaker in park position check shut-off switch terminals "C" & "NO" for continuity. With ejector between 12:00 & 2:00 check shut-off switch terminals "C" & "NC" for continuity. If no continuity for either terminal check, replace icemaker.
c. Check mold heater for 75-85Ω. If outside range, heater is bad, replace icemaker. If heater checks OK, thermostat is bad, replace icemaker.

3 If icemaker motor does NOT start:
a. Lower shutoff arm
b. Check motor operation with test cord. If motor doesn't run, replace icemaker.
c. Check power to and from icemaker rocker switch (if present). Reconnect or repair connection or replace switch as necessary.
d. Check for power from control board to icemaker. If power is present check & repair connection. If no power, replace control board.

QUICK REFERENCE

- Water Fill Time: May vary by water pressure
- Fill Tube Heater Ohm: 2850-3890Ω
- Mold Heater Ohm: 75-85Ω
- Water Valve Ohm: 160-165Ω
- Thermostat Open/Close - Open: 48°F ±6° Close: 15°F ±°3
- Water Pressure Needed: 20-120 psi constant

***NOTE:** This is a non-filtered water specification as water filters are generally rated at 30-100 psi.*

ICEMAKER TROUBLESHOOTING

No / Slow Ice Production
1 Ice maker system switched OFF. Switch system ON.
2 Shut off arm in up/OFF position. Move to ON position.
3 Freezer too warm. Check temp's & see troubleshooting guide in service manual.
4 Poor airflow over icemaker. Remove obstructions.
5 Ice cube jam. Remove ice & check water fill setting.
a. Water fill setting too low (< 6 sec's). Adjust fill setting.
b. Water fill setting too high (> 7 sec's). Adjust fill setting.
6 Water froze in inlet tube. Remove ice from tube. Check for power from control board to fill tube heater; Fill tube heater = 2850-3890Ω.
7 Water supply not constant 20-120 psi. Instruct customer.
8 Water line to unit pinched/kinked/clogged. Repair line.
9 Saddle valve not installed correctly. Reposition.
10 Saddle valve not fully open. Open valve fully.
11 Icemaker wire/connections loose/broken. Repair wiring.
12 Water valve wire/connections loose/broken. Repair wiring.
13 Defective water valve. Valve =160-165Ω. Replace valve.
14 Thermostat wire/connections loose/broken. Repair wiring.
15 TCO overheat or short. Fix cause or replace icemaker.
16 See Icemaker Fault Testing.

No Water Fill
1 Water supply switched OFF. Switch supply water line ON.
2 Water line to unit pinched/kinked/clogged. Repair line.
3 Saddle valve not installed correctly to supply line. Reposition.
4 Water froze in inlet tube. Remove ice from tube. Check for power from control board to fill tube heater; Fill tube heater = 2850-3890Ω.
5 Water valve wire/connections loose/broken. Repair wiring.
6 Defective water valve. Valve =160-165Ω. Replace valve.

Overflows / Ice Block Forms in Bucket / Oversized Cubes
1 Icemaker not level. Level icemaker.
2 Unit not level. Level unit
3 Water supply not constant 20-120 psi. Instruct customer.
4 Water froze in inlet tube. Remove ice from tube. Check for power from control board to fill tube heater; Fill tube heater = 2850-3890Ω.
5 Water fill setting too low (< 6 sec's). Adjust fill setting.
6 Water fill setting too high (> 7 sec's). Adjust fill setting.
7 Defective water valve. Valve =160-165Ω. Replace valve.

Ice Cubes Hollow or Small
1 Icemaker not level. Level icemaker.
2 Unit not level. Level unit
3 Water supply not constant 20-120 psi. Instruct customer.
4 Water fill setting too low (< 6 sec's). Adjust fill setting.
5 Too little thermalmastic on thermostat. Add thermalmastic.
6 Defective thermostat (Open = 48°F ±6°, Close = 15°F ±3°). Replace thermostat.

Too much Ice
1 Shut off arm/linkage bent/broken. Repair or replace arm/linkage.
2 If ejector blades rotate with arm in up/OFF position = Icemaker faulty. Replace icemaker.

SECTION 7

COMPONENT ACCESS AND REMOVAL

COMPONENT ACCESS AND REMOVAL

This section explains how to adjust, access and remove components. If different models have similar procedures, they are grouped together under the appropriate heading.

An attempt has been made to arrange these procedures in such a way as to simulate which components would need to be removed first in order to gain access to other components. When following a component removal procedure, it may be necessary to reference another component removal procedure listed earlier in this section.

This section is arranged as follows: ***Page:***

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

⚠ WARNING

- **IF PULLING A UNIT FROM ITS INSTALLATION BEYOND THE ANTI-TIP COMPONENTS, REMEMBER THAT IT COULD TIP FORWARD RESULTING IN SERIOUS INJURY OR DEATH. PULLING A UNIT FROM ITS INSTALLATION SHOULD ONLY BE PERFORMED BY AN AUTHORIZED SERVICE TECHNICIAN OR INSTALLER.**
- **TO AVOID ELECTRIC SHOCK, POWER TO THE UNIT MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS. IF THE UNIT IS PLUGGED IN, BUT HAS NOT BEEN SWITCHED ON BY PRESSING THE POWER KEY, LINE VOLTAGE IS STILL PRESENT AT THE MAIN CONTROL BOARD.**
- **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

- **If working in the compressor area, remember that compressor and tubing may be hot.**
- **If working on or around the evaporator or condenser, remember that evaporator and condenser fins are sharp.**

Models BI-30U / BI-36U Exterior Cosmetic / Mechanical Components

Kickplate

To remove a kickplate, extract the screws from the left and right corners of the kickplate, then pull the kickplate forward. (See Figure 7-1).

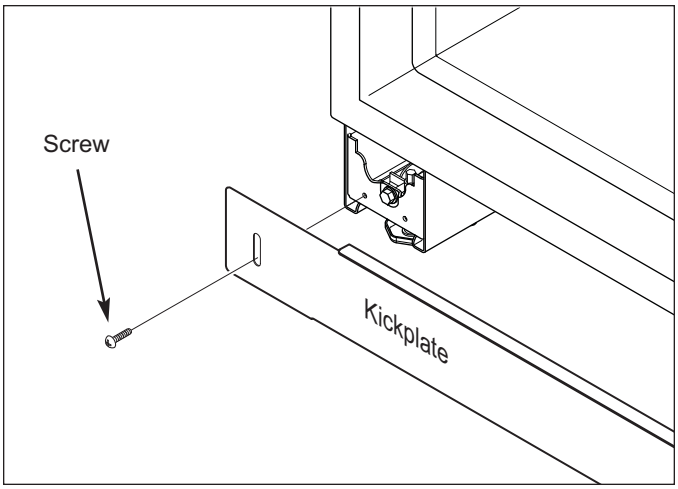


Figure 7-1. Kickplate Removal

Dual Installation Kickplate

A dual installation kickplate assembly is held in place with magnets at each end and one screw at top center. To remove the dual installation kickplate, the screw at top center must be extracted before pulling the dual installation kickplate forward (See Figure 7-1A).

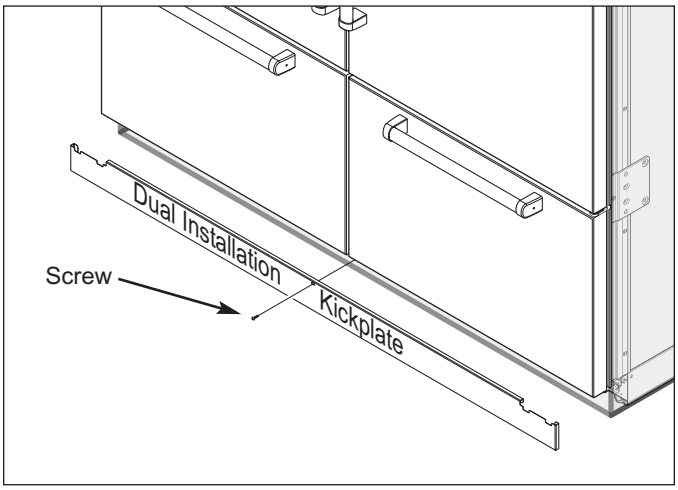


Figure 7-1A. Dual Installation Kickplate

Drain Pan

The drain pan slides in from the front of unit on two side brackets. A locating feature was built into the drain pan in the form of detentes at the bottom front that drop into notches at the front of the side brackets.

To remove the drain pan (See Figure 7-2):

1. Remove kickplate.
2. Push front of drain pan up slightly, then pull forward.

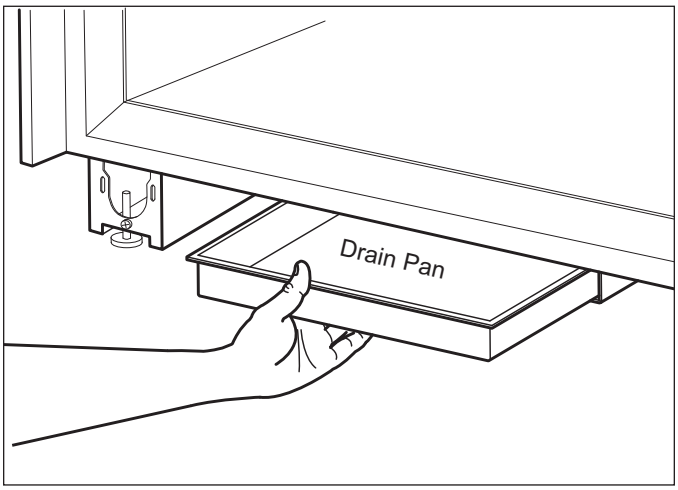


Figure 7-2. Drain Pan Removal

Water Valve Assembly

The water valve is located to the right of the drain pan and is attached to the valve bracket with screws.

NOTE: *Before attempting to remove the water valve assembly, switch the water supply to the unit off.*

To remove the water valve assembly, first remove the kickplate, then (See Figure 7-3):

1. With a valve assembly mounting screws and pull valve forward.
2. Disconnect AC and DC electrical leads.

   NOTE: *It may be necessary to cut a cable tie that is securing the AC electrical leads to the valve assembly.*
3. Disconnect inlet and outlet water tubes from valve by pushing the collar around the tubes toward the valve, while pulling the tubes away from the valve.

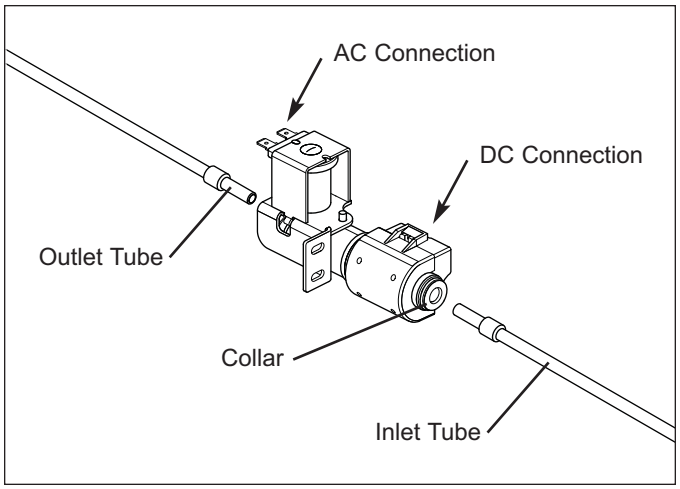


Figure 7-3. Water Valve Removal

Water Filter Cartridge

The water filter cartridge is located at the right hand top side of the unit behind grille assembly.

To remove the water filter cartridge, first lift open the front of the grille assembly, then (See Figure 7-4):

1. Push the cartridge in toward the water filter manifold to depress the spring and catch mechanism.
2. Then pull cartridge out of the manifold.

NOTE: *After a filter cartridge has been replaced, the reset button behind the unit grille must be pressed for five (5) seconds to clear the filter icon from the LCD and reset the water filter timer.*

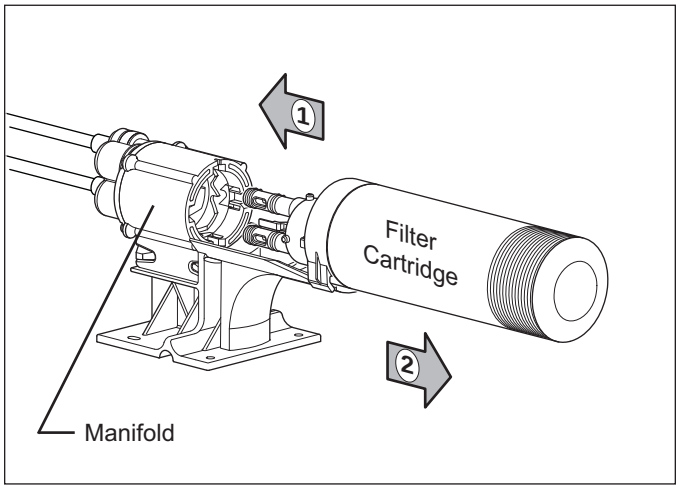


Figure 7-4. Water Filter Cartridge Removal

Water Filter Manifold

The water filter manifold is secured to the right hand top side of the unit with screws, behind grille assembly.

NOTE: *Before attempting to remove the water filter manifold, switch the water supply to the unit off.*

To remove the filter manifold, first lift open the front of the grille assembly and remove the water filter cartridge, then (See Figure 7-5):

1. Use a T-20, 6-lobe Torx type bit to extract the manifold mounting screws.
2. Pull the manifold forward and disconnect the water tubes by pushing the collar around the tubes toward the manifold, while pulling the tubes away from the manifold.

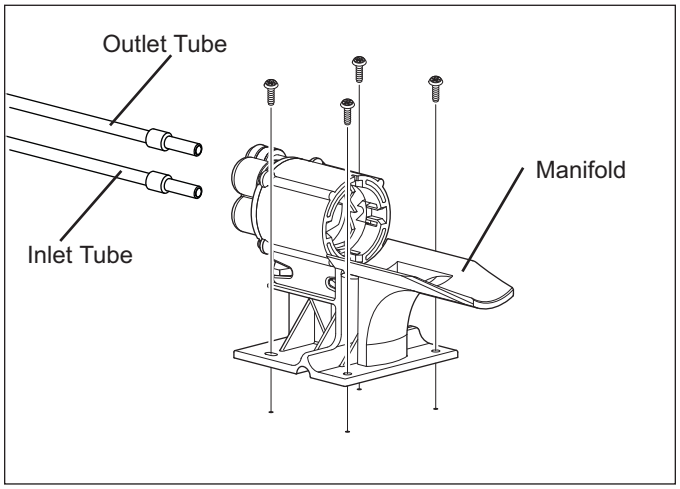


Figure 7-5. Water Filter Manifold Removal

Door Switch

The door switch is located at the top rear of the top cabinet frame, with the switch's actuator protruding through a hole in the front of the frame. A series of tabs and pegs hold the door switch in place.

To remove a door switch, first open the grill, then (See Figure 7-6):

1. Disconnect the switch electrical leads using a needle-nose pliers to pull the electrical lead housings away from the switch.
2. Use a small flat-blade screwdriver to pry the front retaining tab at each side of the switch back while lifting that side of the switch up. Repeat this step on each side of the switch.
3. Pull switch back and lift off of the top cabinet frame

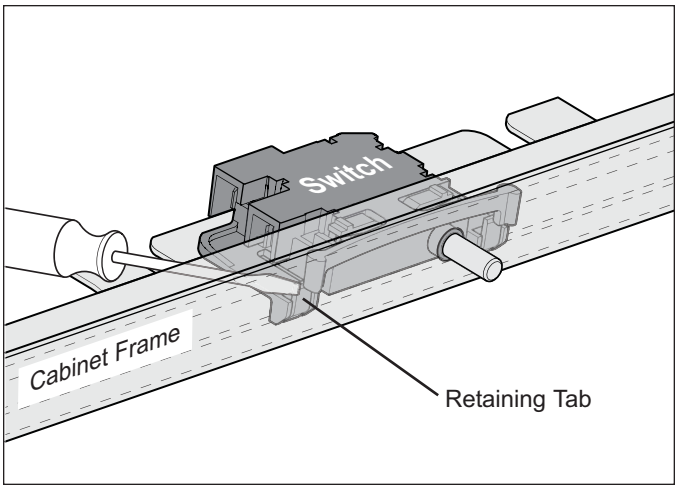


Figure 7-6. Door Switch Removal

Top Cabinet Trim

The top cabinet trim sits below the grille assembly. Screws pass through open ended slots in the trim to secure it to the top cabinet frame.

To remove the top cabinet trim first open the grill then, (See Figure 7-7):

1. Use a T-15, 6-lobe Torx type bit, to loosen, but not remove, the trim mounting screws.
2. Pull the trim forward. off of the unit.

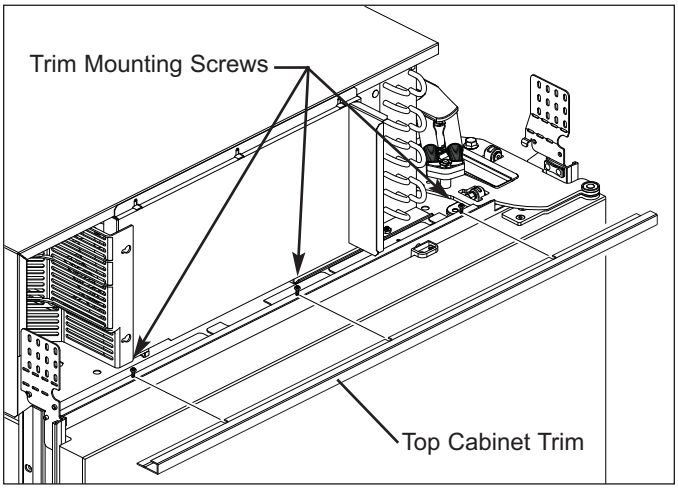


Figure 7-7. Top Cabinet Trim Removal

Grille Assembly

The grille assembly is attached at the top of the unit with screws passing through the grille's side frames into grille brackets.

To remove a grille assembly (See Figure 7-8):

1. Lift open the front of the grille assembly to access the mounting screws.
2. With a T-20, 6-lobe Torx type bit, extract the two front grille mounting screws, then loosen but do not remove the two rear mounting screws.
3. pull the grille assembly forward, off of the unit.

NOTE: *When reinstalling the grille assembly, line up the notches at back of grille side frames with the rear mounting screws, then push the grille assembly back.*

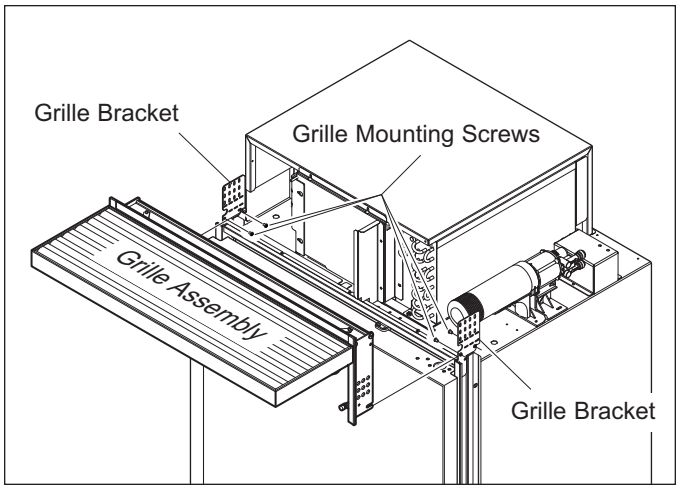


Figure 7-8. Grille Assembly Removal

Framed / Overlay Refrigerator Door Handle / Handle-Side Trim

The door handle on framed units and the handle-side trim on overlay units is attached to the door with screws. These screws are covered by a screw cover.

To remove a handle of handle-side trim, open the door then:

1. At the top of the door, insert a flat blade screwdriver into the channel of the screw cover and push the cover back, disengaging it from the handle or trim (See Figure 7-9).
2. With a T-20, 6-lobe Torx type bit, extract the handle-side trim mounting screws and pull the trim from the door (See Figure 7-10).

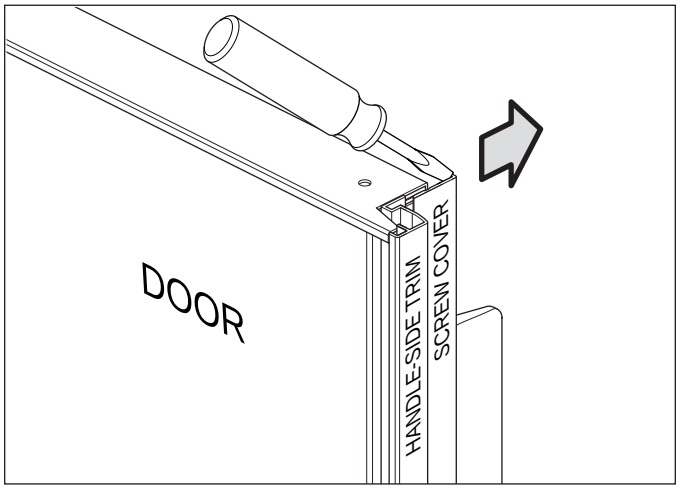


Figure 7-9. Screw Cover Removal

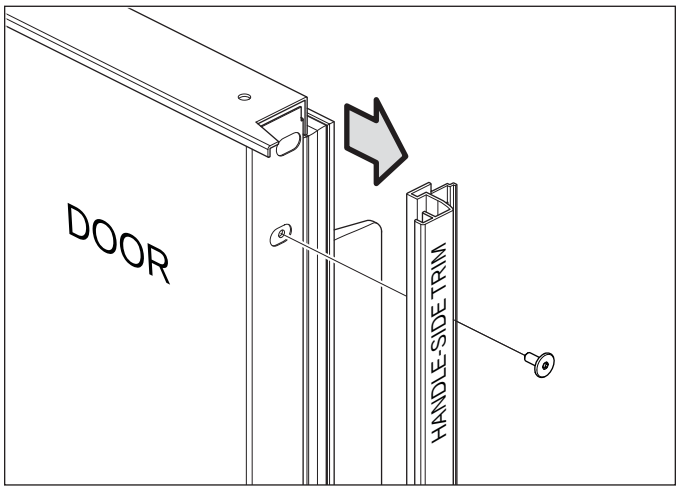


Figure 7-10. Handle / Handle-Side Trim Removal

Framed / Overlay Freezer Drawer Handle / Handle-Side Trim

The drawer handle on framed units and the handle-side trim on overlay units is attached to the top of the drawer with screws. These screws are covered by a screw cover.

To remove a handle of handle-side trim, open the drawer then:

1. At the back right-hand side of the top drawer trim, insert a flat blade screwdriver into the notch in the screw cover and pry the cover away form the drawer, disengaging it from the handle or trim (See Figure 7-11).
2. With a T-20, 6-lobe Torx type bit, extract the handle or top trim mounting screws and pull the handle or trim from the drawer (See Figure 7-12).

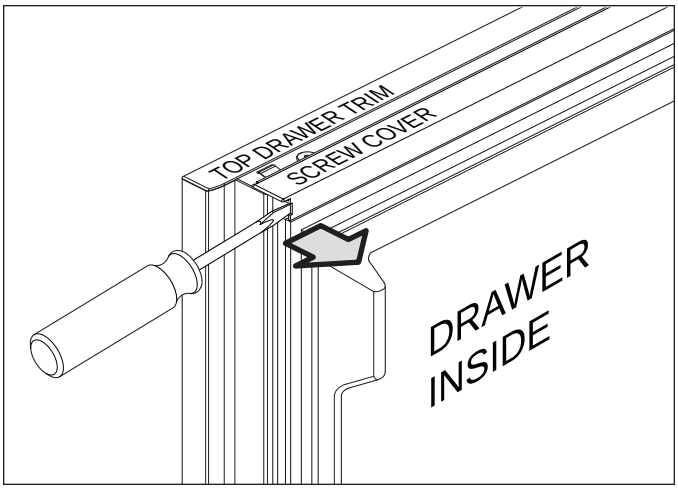


Figure 7-11. Screw Cover Removal

Stainless Steel Door / Drawer Handle Assembly

A screw inserted through the stainless steel handle standoffs into the handle secures the handle to the standoffs. The standoffs are then slides over threaded studs that are attached to the door shell. A socket head set-screw inserted through the side of the standoff secures the standoff to the stud.

To remove a stainless steel handle assembly (See Figure 7-13):

1. Use a 3/32” Allen-wrench to loosen the set-screw in each handle standoff.
2. Pull handle assembly off of the threaded studs.

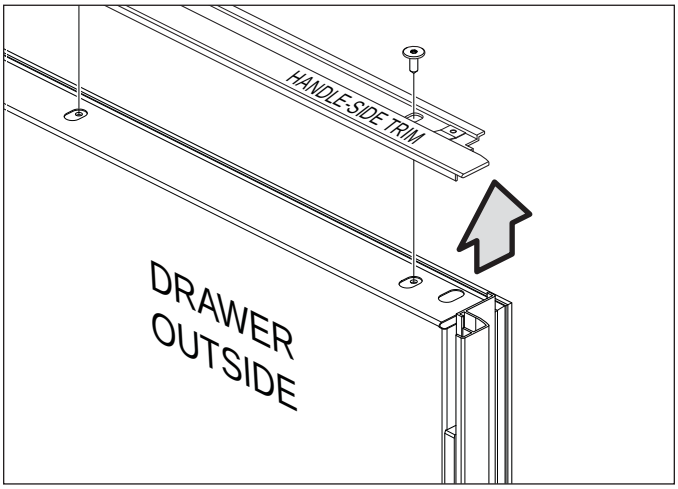


Figure 7-12. Handle / Handle-Side Trim Removal

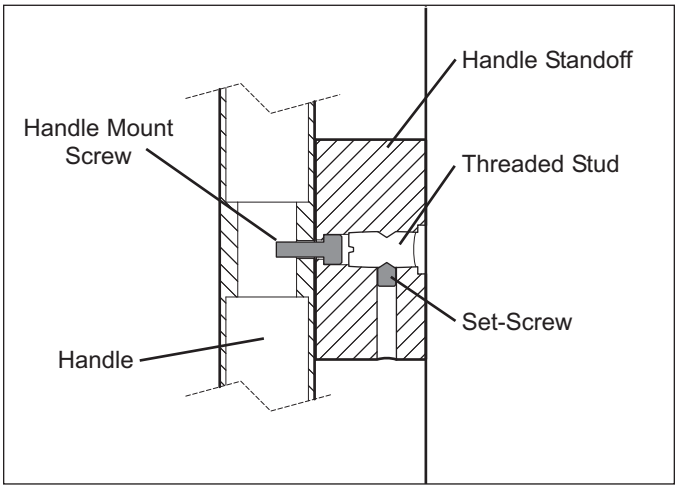


Figure 7-13. Cut-away View of SS Handle Assembly

Top Door Hinge Assembly

The top hinge assembly is secured to the unit with bolts that pass down through the cabinet hinge plate into threaded inserts. Screws passing down through the door hinge secure the hinge assembly to the door.

NOTE: *A special tool package is available to assist in removing a top hinge assembly. This tool package is provided with replacement hinge and door assemblies. If needed, order part #7011097. The directions below were written to be used with this tool package.*

To remove a top hinge assembly, the grille assembly and top cabinet trim must first be removed. If applicable, remove the water filter cartridge from above the hinge assembly, and if the unit has a glass door, pull the heater flex cable out of the cable retainer at the side of the hinge assembly at this time, then:

1. With the door open, use a 5/32" Allen wrench or bit to extract the top door hinge mounting screw nearest to the hinge pivot point (See Figure 7-14).
2. Use a 1/8" Allen wrench or bit to replace the screw just removed with the 1/4-20X1/2" setscrew, included in the tool package, inserting the setscrew down until its top is flush with the top surface of the door hinge (See Figure 7-14).

   NOTE: *If the setscrew is not inserted far enough it will damage the hinge plate when closing the door; if it is inserted too far it will not hold the door hinge in the correct position when closing the door.*
3. Extract the inner door hinge mounting screws, leaving the outermost screw in place (See Figure 7-14).
4. insert the hinge spacer, included in the special tool package, between the door closer guide and the back of the door closer track, then close the door (See Figure 7-14).

   NOTE: *This spacer will keep the door closer mechanism at the proper spacing to facilitate hinge assembly removal and reinstallation.*
5. With the door closed, use a socket wrench with an extension and a ½" socket to extract the cabinet hinge mounting bolts (See Figure 7-15).
6. Extract the outermost door hinge mounting screw (See Figure 7-15).
7. Lift the hinge assembly up off of the top of the unit, allowing the door to shift toward the handle side and come to rest against the main frame (See Figure 7-16).

   NOTE: *It may be necessary to use a flat blade screwdriver to pry the post at the end of the door closer arm up out of the hole in the top of the door assembly.*

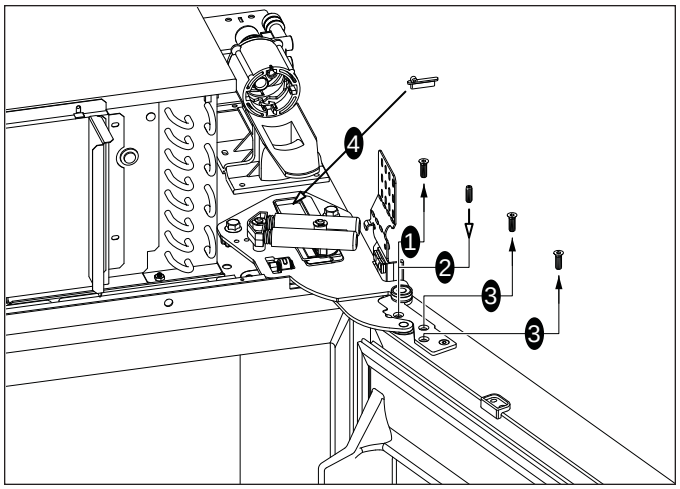


Figure 7-14. Top Door Hinge Screw Removal, Setscrew Installation and Spacer Installation

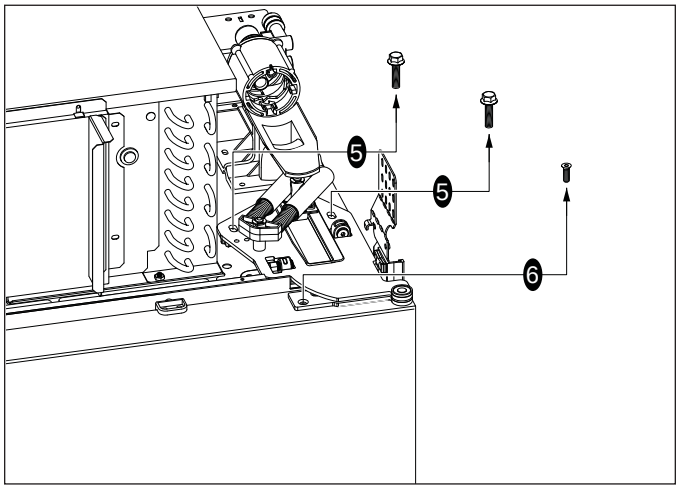


Figure 7-15. Cabinet Hinge Bolt Removal and Door Hinge Screw Removal

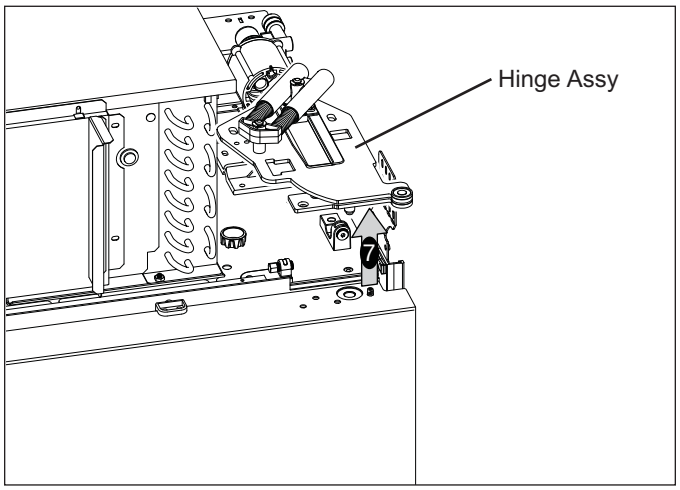


Figure 7-16. Top Door Hinge Assy Removal

Door Assembly

The door assembly is secured to the top and bottom door hinges with screws.

NOTE: *It will be necessary to have two people to perform this door assembly removal procedure.*

To remove a door assembly, the top hinge assembly must be removed first. And, If the unit has a glass door, unplug the heater flex cable from the wire harness before continuing. Then, (See Figure 7-17):

1. Use an assistant to open and hold the door between forty-five to ninety degrees.
2. Use a 5/32" Allen wrench or bit to extract the bottom door hinge mounting screws.
3. Have the assistant lift the door up off of the bottom door hinge assembly.

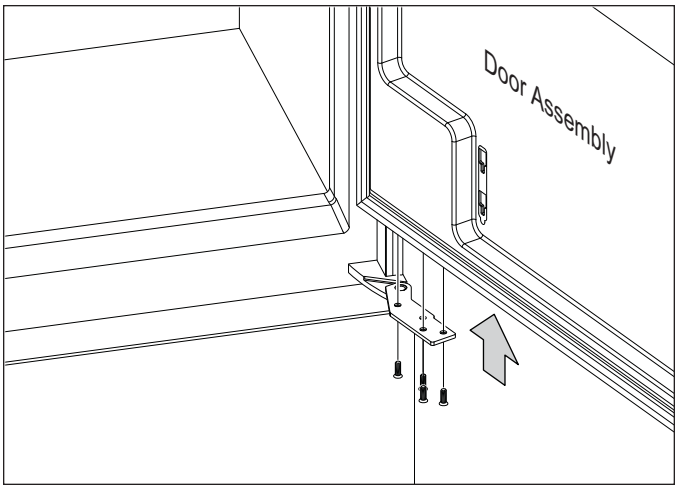


Figure 7-17. Door Assembly Removal

Bottom Door Hinge Assembly

The bottom door hinge assembly is attached to the hinge side plate with screws.

To remove a bottom door hinge assembly, the door must first be removed, then (See Figure 7-18):

1. Pull the unit approximately six (6) inches (152mm) out of its installation.
2. Use a 5/32" Allen wrench or bit to extract the hinge assembly mounting screws.

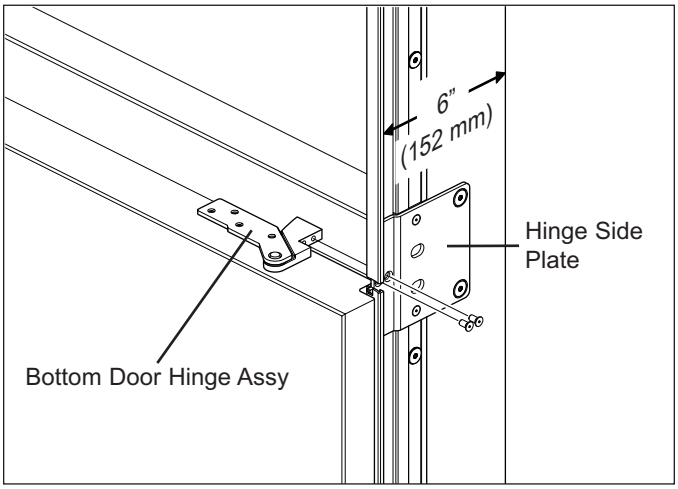


Figure 7-18. Bottom Door Hinge Assy Removal

Drawer Front Assembly

The drawer front assembly is attached to the drawer support rails with 1/4-20 X 3/4" Button Head Cap Screws.

To remove the drawer front assembly (See Figure 7-19):

1. Open drawer.
2. Use a 5/32" Allen wrench or bit to extract the screws from each side of drawer front assembly.

NOTE: *If removing the drawer front to access components inside the freezer compartment, it is best to leave the drawer front attached to the drawer support rails, and instead extract the screws that hold the support rails to the slides and pull the drawer front and support rails out together. In this way there should be no need for drawer adjustments when the drawer front is reinstalled.*

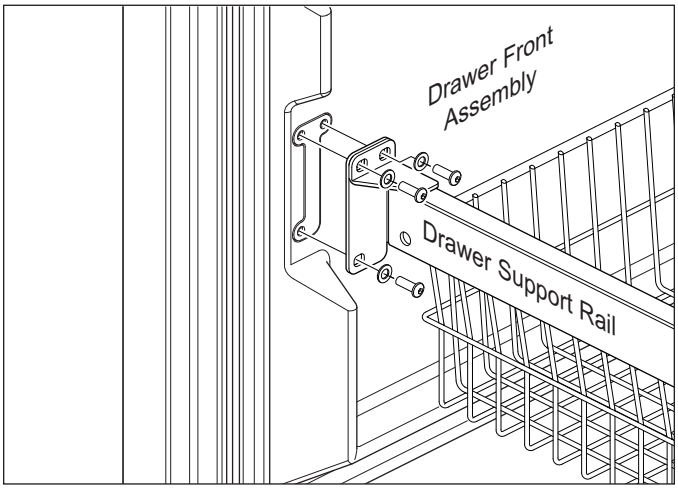


Figure 7-19. Drawer Front Assy Removal

Models BI-30U / BI-36U Refrigerator Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-20).

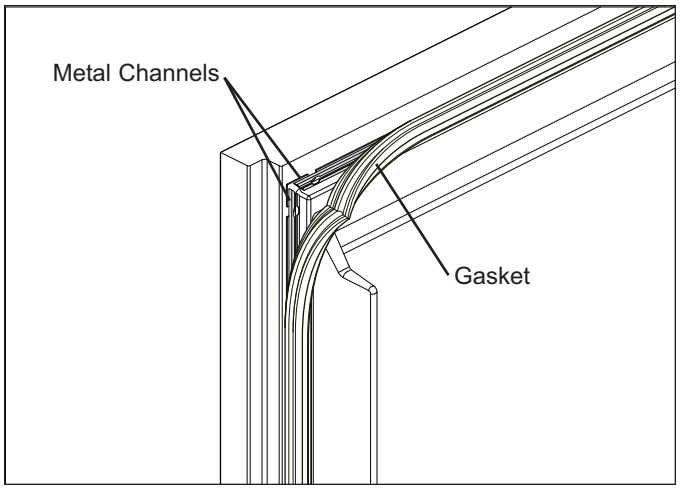


Figure 7-20. Door Gasket Removal

Adjustable Door Shelves and Dairy Compartment

Removal and adjustment of the upper door shelves and dairy compartment assembly is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-21).

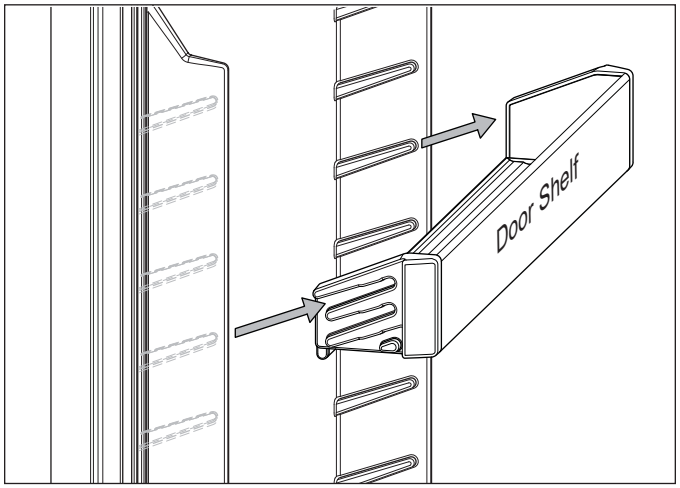


Figure 7-21. Adjustable Door Shelf

Non-adjustable Door Shelf

The lower non-adjustable door shelf has hooks at the back sides of its endcaps that fit into notches in the door liner.

To remove the non-Adjustable door shelf lift it up slightly then pull it from the notches in the door liner; to install it push in and down (See Figure 7-22)

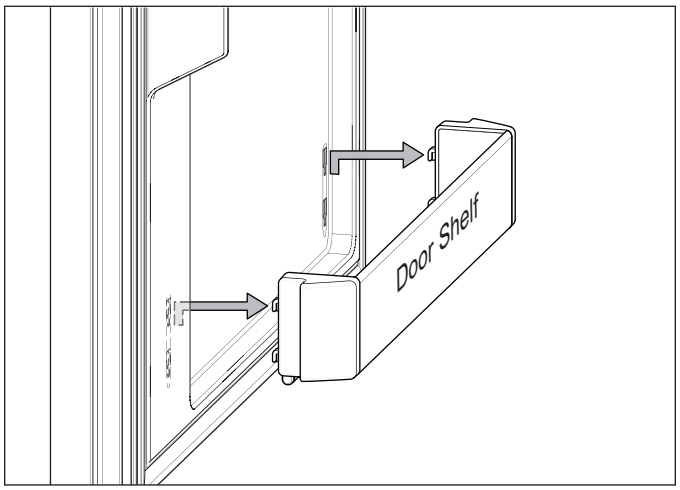


Figure 7-22. Non-Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a refrigerator cantilever shelf assembly (See Figure 7-23):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

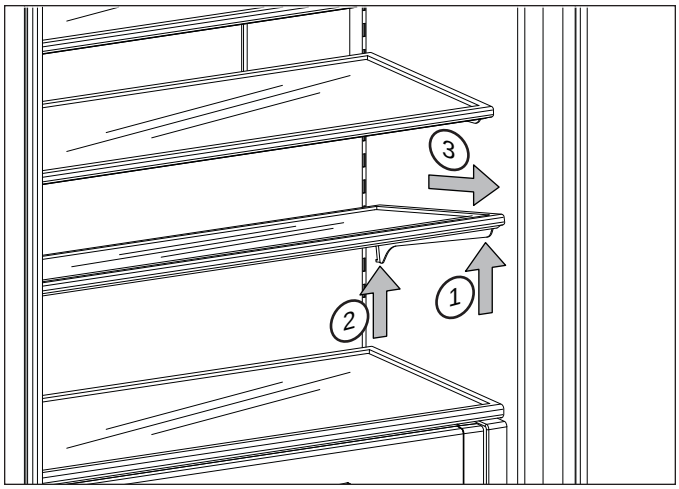


Figure 7-23. Cantilever Shelf Removal

Crisper Glass Shelf

The crisper glass shelf rests upon shelf standoffs that are mounted to the refrigerator side walls.

To remove the crisper glass shelf (See Figure 7-24):

1. Lift shelf straight up off of the standoffs.
2. Pull shelf forward, out of compartment.

Deli Drawer and/or Crisper Drawer Assembly

To remove a deli drawer assembly or crisper drawer assembly, open the drawer until it stops, then lift the front of the drawer up slightly off of the drawer slide while continuing to pull the assembly out of the compartment. (See Figure 7-25).

NOTE: *If the door is limited to a 90-degree opening, removing the non-adjustable door shelves will assist in this task.*

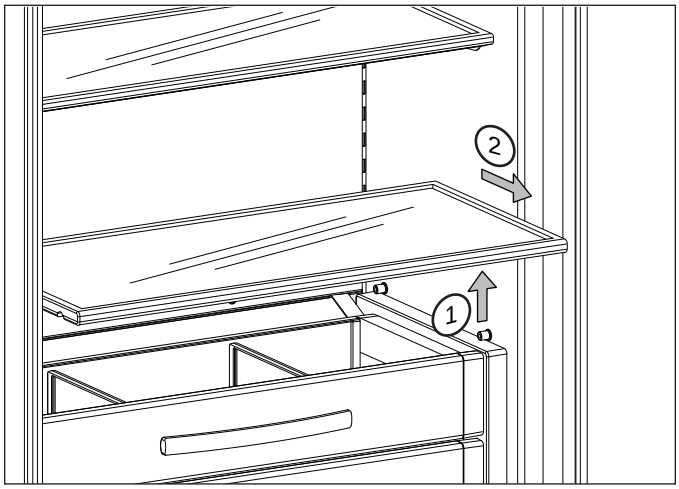


Figure 7-24. Crisper Shelf Removal

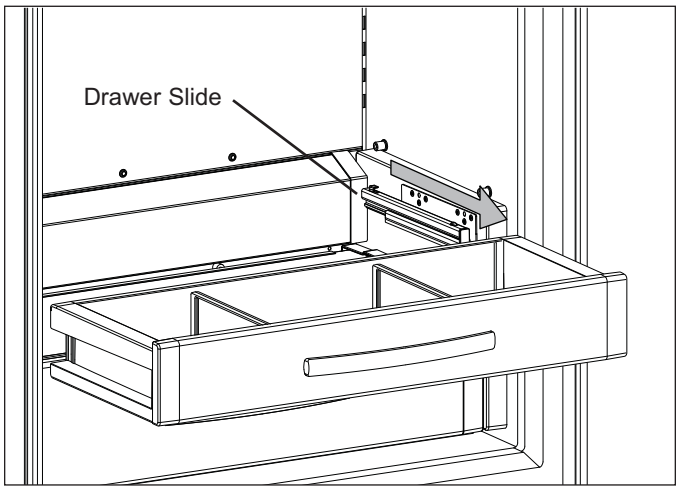


Figure 7-25. Refrigerator Drawer Removal

Glass Crisper Cover Assembly

The glass crisper cover assembly is located between the deli drawer and the top crisper drawer and is held in place by crisper cover supports attached to each side wall.

To remove the glass crisper cover assembly, first remove the deli drawer and the top crisper drawer, then (See Figure 7-26):

1. Grasp the assembly at the front edge toward each side.
2. Lift the front of the assembly upward and pull it forward to release it from the support retaining clips.

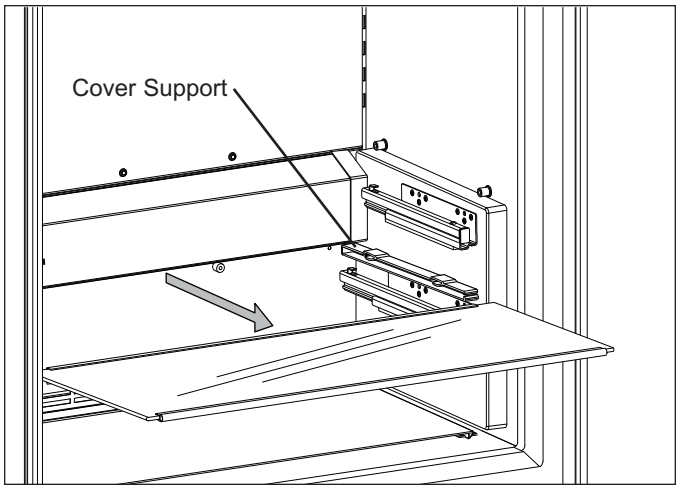


Figure 7-26. Crisper Cover Removal

Crisper Cover Support

The crisper cover supports are secured with screws to the compartment side wall and the crisper spacer assembly.

To remove a crisper cover support, the glass crisper cover must be removed first, then extract the support mounting screws and pull the support from the side wall or crisper spacer. (See Figure 7-27)

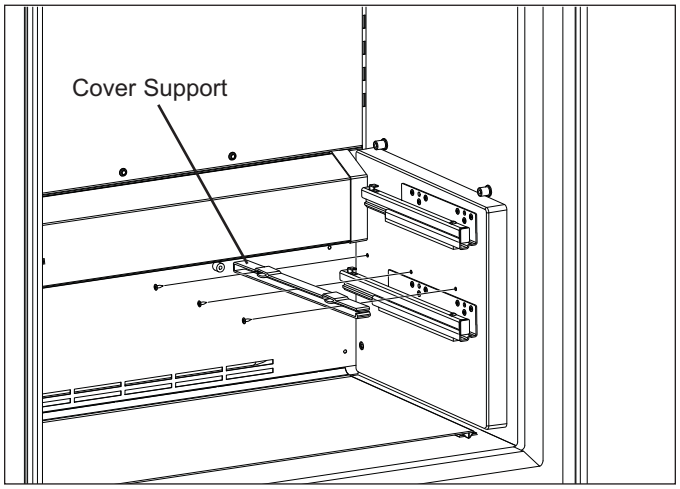


Figure 7-27. Crisper Cover Support Removal

Refrigerator Drawer Slide

The drawer slides are secured with screws to the compartment side walls and the crisper spacer assembly.

To remove a drawer slide, first remove the drawer assembly, then extract the slide's mounting screws and pull the slide from the side wall or crisper spacer. (See Figure 7-28)

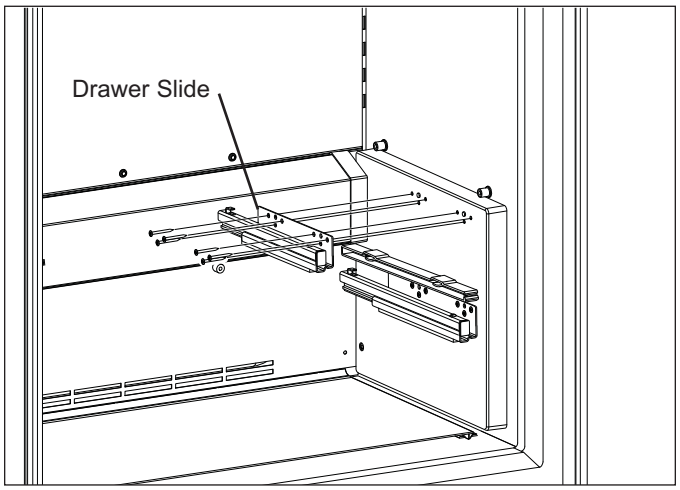


Figure 7-28. Drawer Slide Removal

Crisper Light Cover Assembly

The crisper light cover assembly is secured to the lower refrigerator duct by its upper flange and end caps engaging two crisper light cover supports that are part of the lower duct assembly.

To remove the lower light cover, first remove the crisper glass shelf and deli drawer assembly, then lift the light cover up at each end, disengaging it from the supports. (See Figure 7-29)

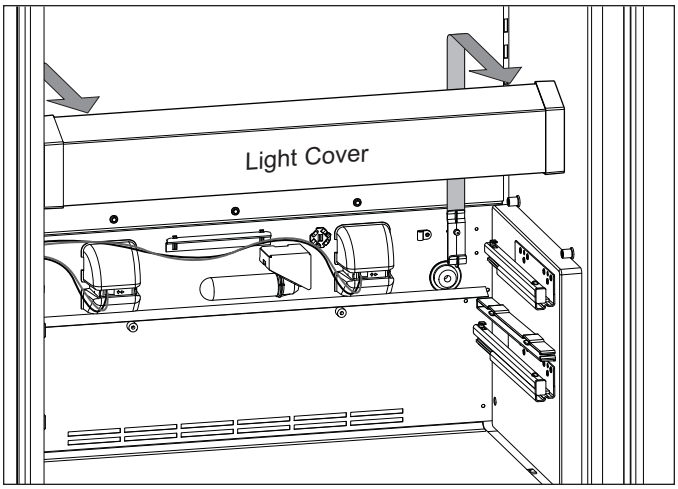


Figure 7-29. Crisper Light Cover Removal

Lower Light Bulb

The lower light assembly is located behind the crisper light cover.

To remove the lower light bulb, first remove the crisper glass shelf, deli drawer assembly and light cover, then turn the bulb counterclockwise to remove it from the light socket. (See Figure 7-30)

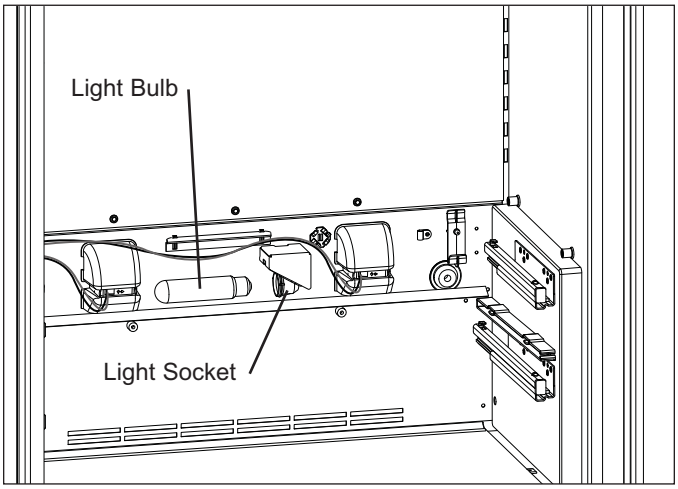


Figure 7-30. Lower Light Bulb Removal

Crisper Fan Assembly

A crisper fan assembly consist of a small fan motor and blade unit that is inserted into a notch in a small fan duct. This assembly is attached to the lower refrigerator duct by tabs at the side of the fan duct engaging the edges of the holes in the lower duct.

To remove a crisper fan assembly, the crisper glass shelf, deli drawer assembly and light cover must be removed first, then (See Figure 7-31):

1. Disconnect fan motor electrical leads.
2. Pull the fan wires out from under the wire clamps.
3. Squeeze the fan duct on both sides at the middle to disengage the tabs, then pull the assembly from the lower duct assembly.

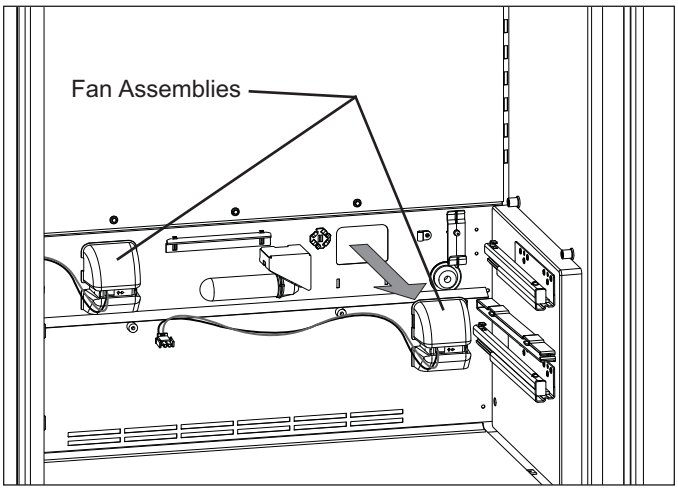


Figure 7-31. Crisper Fan Assembly Removal

Crisper Spacer Assembly

The crisper spacer assembly, which also holds the Consumer Use and Care Cards, is attached to the hinge side wall with screws.

To remove the crisper spacer assembly, first remove the crisper glass shelf, the drawer assemblies, the glass crisper cover, hinge-side drawer slides and the crisper light cover. Then, extract the crisper spacer mounting screws and pull the spacer assembly from the wall (See Figure 7-32)

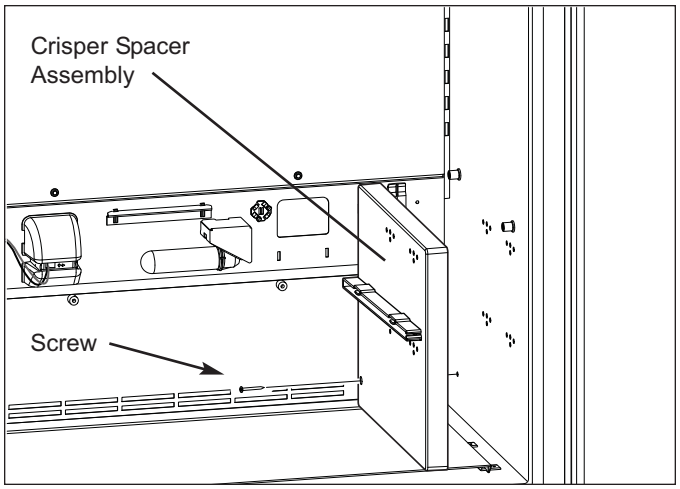


Figure 7-32. Crisper Spacer Assembly Removal

Air Purifier Cartridge

The air purification system is located behind a door on the upper refrigerator duct assembly.

To remove the air purifier cartridge (See Figure 7-33):

1. Pull bottom edge of door forward and up until it locks in the up position.
2. Grab top of inside flap and pull it forward and down (this will cause the cartridge to pop out of the socket).
3. Lift cartridge up from socket.

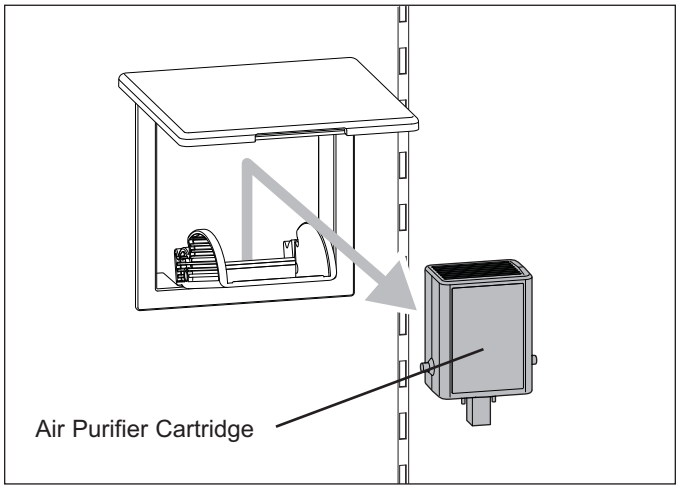


Figure 7-33. Air Purifier Cartridge Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the refrigerated compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the light diffuser (See Figure 7-34):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

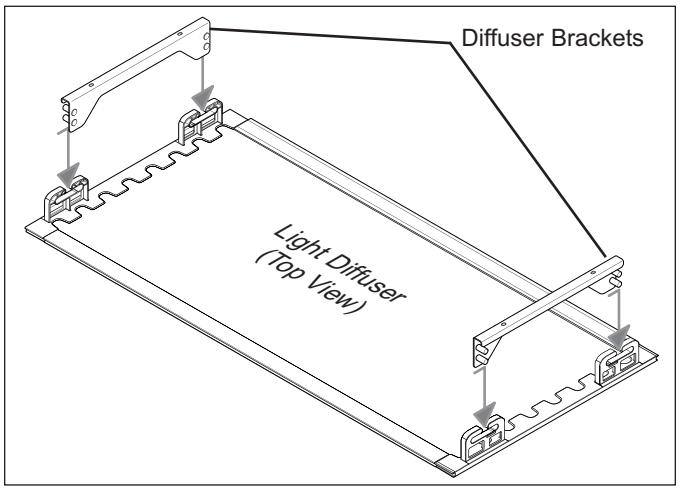


Figure 7-34. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The lighting assemblies are located behind the light diffuser at the top of the compartment.

To remove light bulbs, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-35)

Light bracket assemblies are secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser and light bulbs, then (See Figure 7-35):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

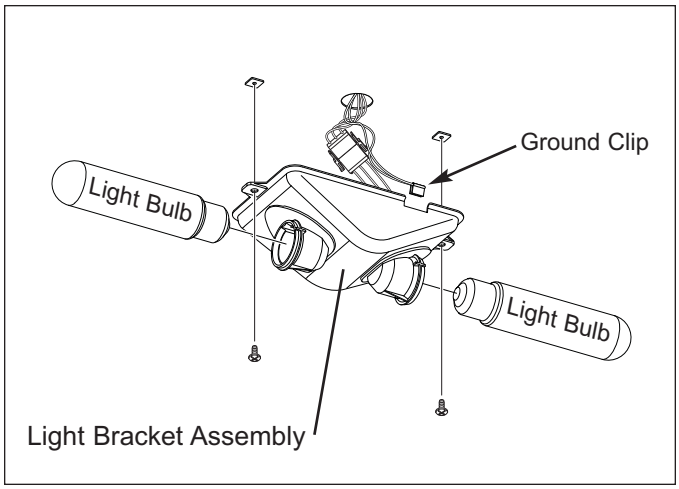


Figure 7-35. Upper Light Assembly

Control Panel Assembly (a.k.a. UIM - User Interface Module)

The control panel assembly (UIM) is located at the top front of the refrigerator compartment and is secured with tabs at each end fitting into slots in the display support.

To remove the control panel assembly, first remove the upper light diffuser, then (See Figure 7-36):

1. At each end of control panel assembly, reach behind the control panel and push the lower tabs upward while pulling the bottom edge away from the display support.
2. Once the lower tabs are disengaged, lower the assembly down and disconnect the electrical lead from the control panel assembly PC board.

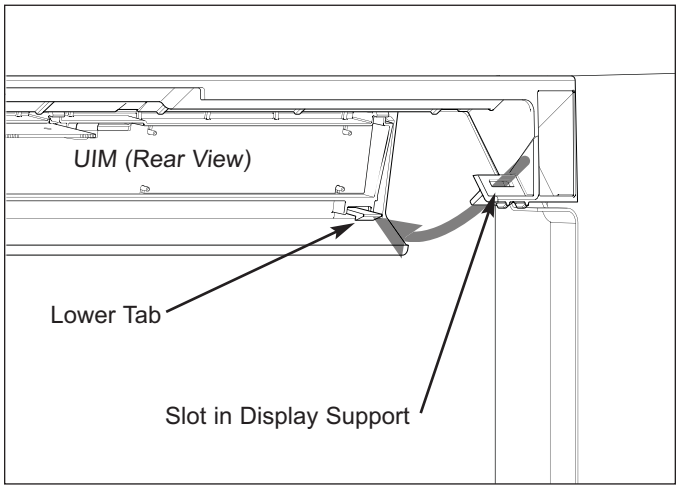


Figure 7-36. Control Panel Assembly Removal
(viewed from behind)

Upper Duct Assembly

The refrigerator upper duct assembly has notches at the bottom of each side flange that fit over locating pins on the shelf ladders; screws at the top of the duct secure it to the back wall of the compartment; at the bottom, plastic rivets hold it tight to the top flange of the lower duct assembly.

To remove the upper duct assembly, first remove all cantilever shelves, the crisper glass shelf and the upper light diffuser, then (See Figure 7-37):

1. At the bottom of duct, extract plastic rivet center posts using a fingernail, putty knife, or similar device, then pull rivets out.
2. Extract screws from top of upper duct.
3. Pull top of duct forward, about 45 degrees from vertical, then lift the duct up off of shelf ladder pins.

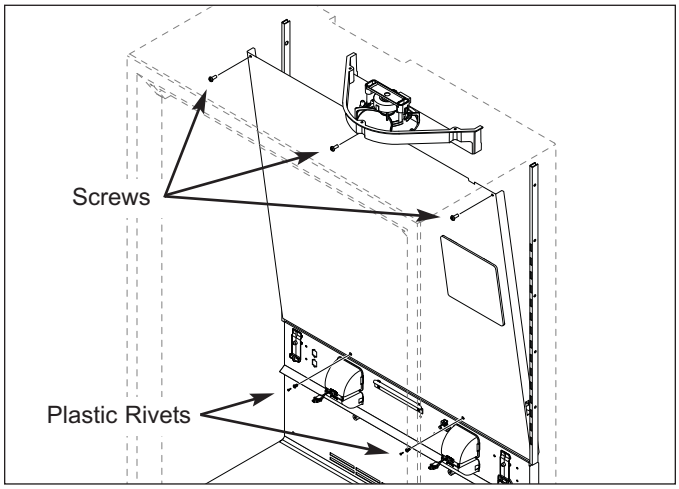


Figure 7-37. Upper Duct Assembly Removal

Shelf Ladder

Shelf ladders are held to the side walls with screws.

To remove a shelf ladder, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-38):

1. Extract shelf ladder mounting screws.
2. Pull shelf ladder from side wall.

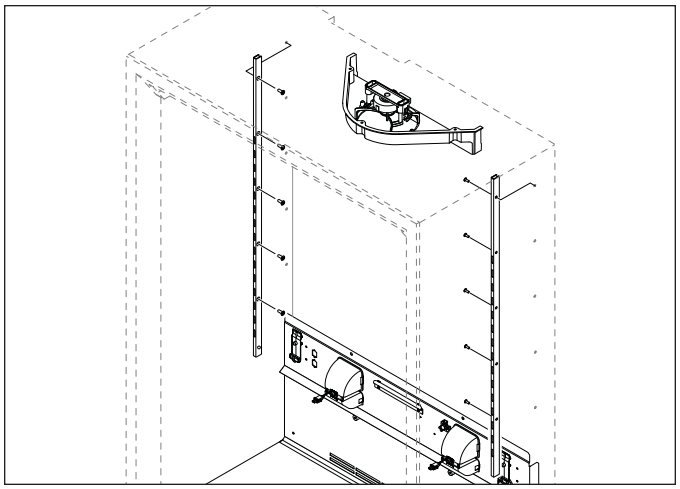


Figure 7-38. Shelf Ladder Removal

Evaporator Fan Shroud Assembly

The evaporator fan shroud is secured with screws to the compartment ceiling.

To remove the evaporator fan shroud assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-39):

1. Disconnect evaporator fan electrical leads.
2. Extract screws securing fan shroud to compartment ceiling and pull assembly from the compartment.

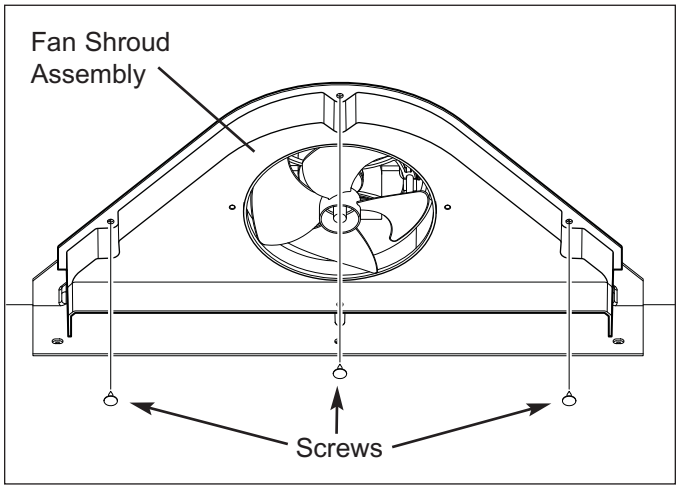


Figure 7-39. Evaporator Fan Shroud Assembly

Evaporator Fan Motor

The evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser, upper duct assembly and evaporator fan assembly, then (See Figure 7-40):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

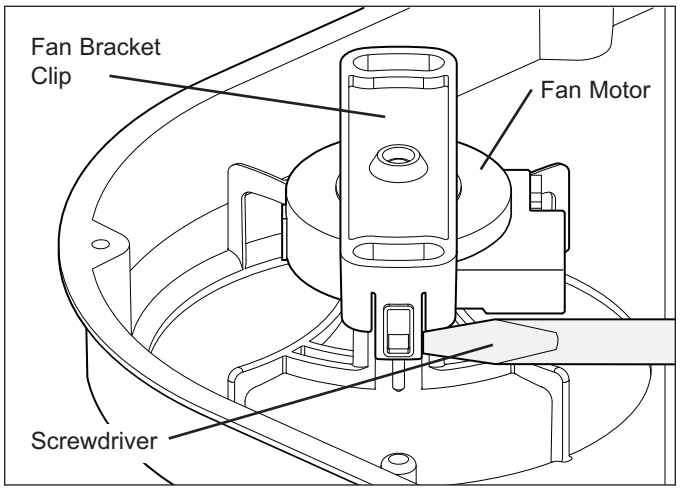


Figure 7-40. Fan Motor Removal

Air Purifier Pocket Assembly

The air purifier pocket assembly, consisting of the air purifier cartridge holder, a fan assembly and a transformer, is located behind the top evaporator cover, and is secured to the compartment back wall with screws.

To remove the air purifier pocket assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-41):

1. Disconnect fan motor wire leads and transformer wire leads from wire harness.
2. Extract air purifier pocket assembly mounting screws and remove assembly from unit.

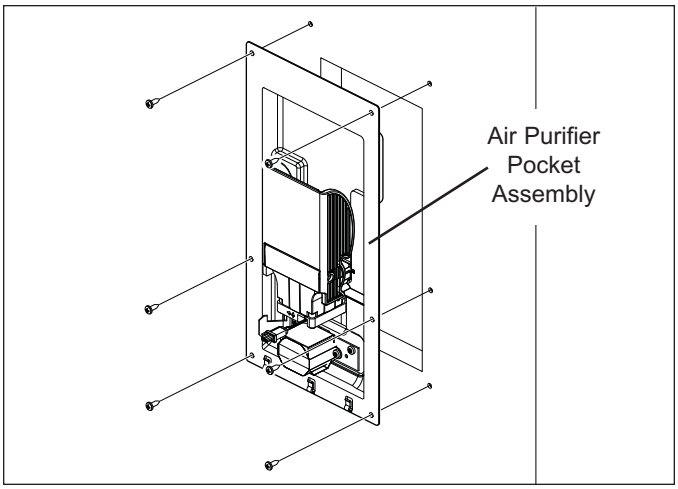


Figure 7-41. Air Purifier Pocket Removal

Refrigerator Compartment Thermistor

The refrigerator compartment thermistor is inserted into a thermistor clamp behind the upper duct assembly.

To remove the compartment thermistor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-42):

1. Pull thermistor from clamp.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

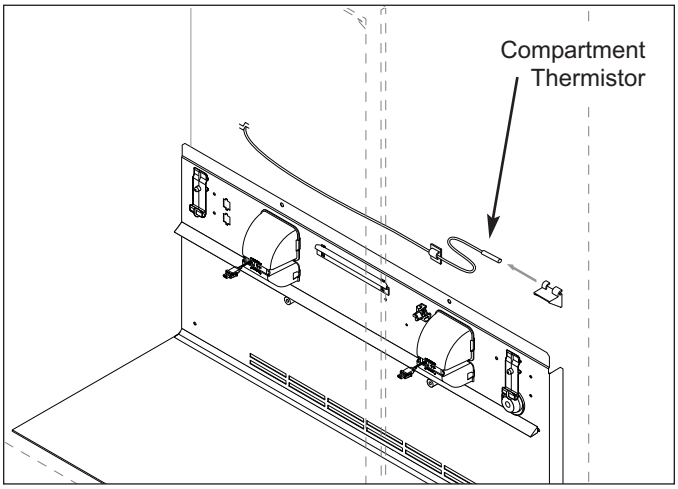


Figure 7-42. Compartment Thermistor Removal

Lower Duct Assembly

The lower duct assembly is positioned over the evaporator and held in place with screws passing through it into standoff screw grommets that are fastened to the compartment back wall.

To remove the lower duct assembly, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, and the crisper spacer, then (See Figure 7-43):

1. Disconnect crisper fan electrical leads from left side of lower duct assembly.
2. Extract lower duct mounting screws.
3. Lean top of duct forward and remove all panel mount electrical connections from duct, then remove duct from the unit.

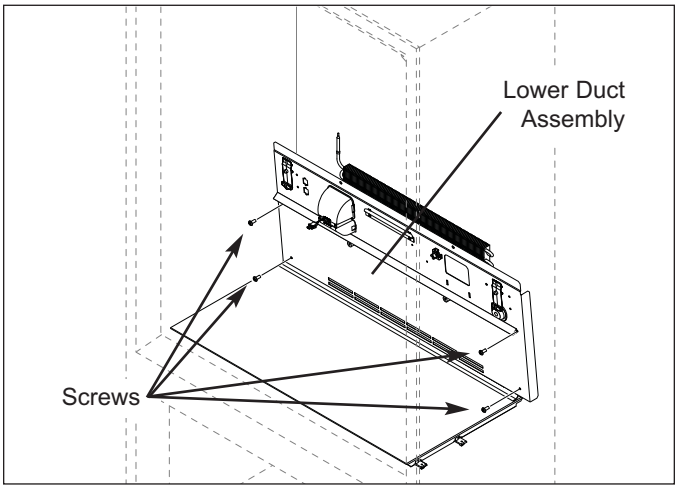


Figure 7-43. Lower Duct Assembly Removal

Refrigerator Evaporator Thermistor

The refrigerator evaporator thermistor is inserted six to ten inches into the opening below the third elbow on the left side of the evaporator.

To remove the evaporator thermistor, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, crisper spacer and lower duct assembly, then (See Figure 7-44):

1. Pull thermistor from evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

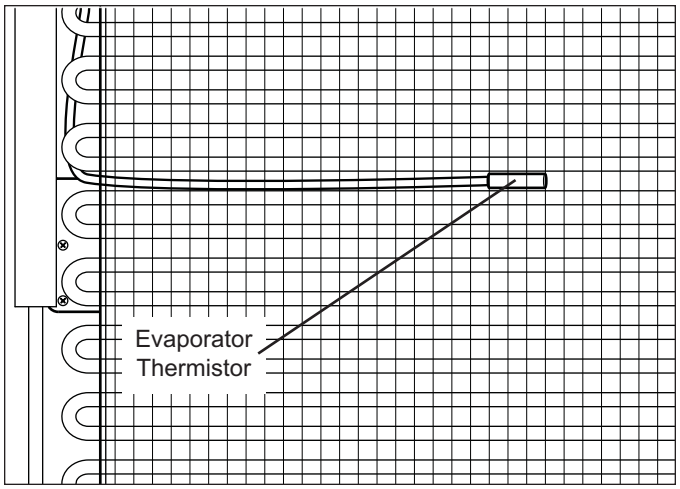


Figure 7-44. Evaporator Thermistor

Models BI-30U / BI-36U Freezer Interior Cosmetic / Mechanical Components

Drawer Gasket

A dart at the back of the drawer gasket fits into metal channels attached to the inside perimeter of the drawer.

NOTE: *To remove a drawer gasket, the drawer assembly must be removed from the unit.*

To remove a drawer gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-45).

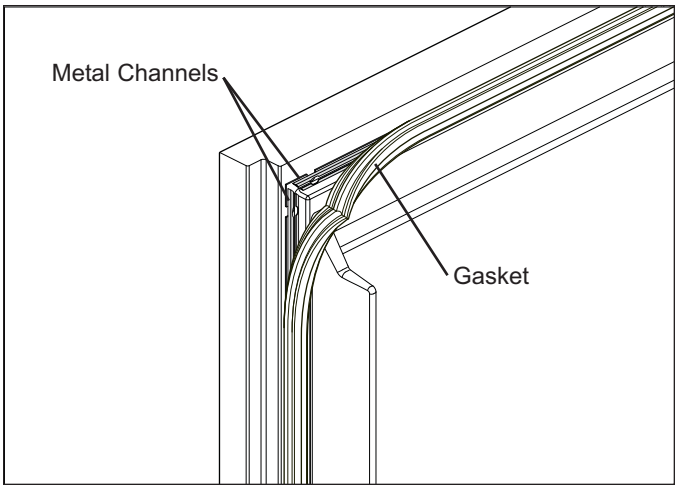


Figure 7-45. Drawer Gasket Removal

Upper Basket Assembly

To remove upper basket assembly (See Figure 7-46):

1. Pull upper basket fully forward.
2. Lift front of basket up slightly, then push upper basket slides back to disengage slide hooks from the slots at rear of basket assembly.
3. Continue pulling basket forward while lifting it up off of the slides.

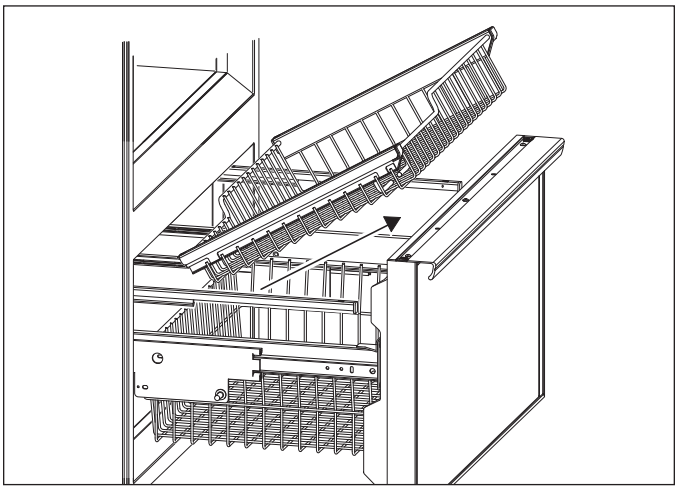


Figure 7-46. Upper Basket Assembly

Lower Basket Assembly

To remove a lower basket assembly, start with the freezer drawer fully open, and upper basket fully in, or removed. Then, lift the lower freezer basket up, off of the basket retainers, and out of the freezer compartment. (See Figure 7-47)

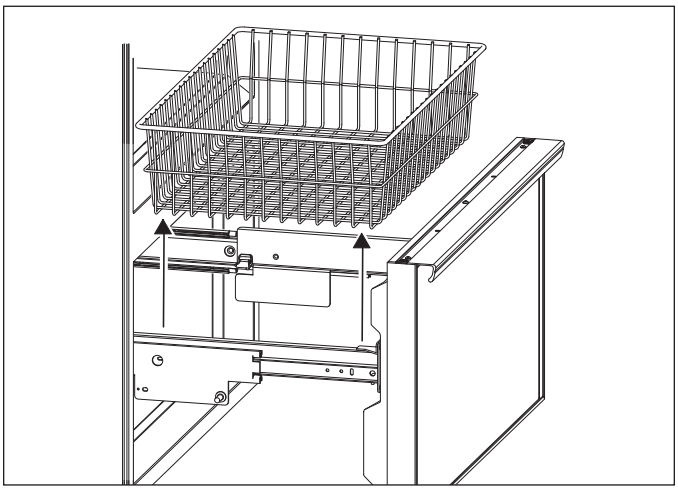


Figure 7-47. Lower Basket Assembly

Light Diffuser

The freezer light diffuser is a flexible plastic material and is held in place at the ceiling of the freezer compartment with diffuser retainers.

To remove the light diffuser, the top freezer basket must be removed first, then squeeze the diffuser at the middle so that its edges disengage from the diffuser retainers, and pull the diffuser from the compartment ceiling. (See Figures 7-48)

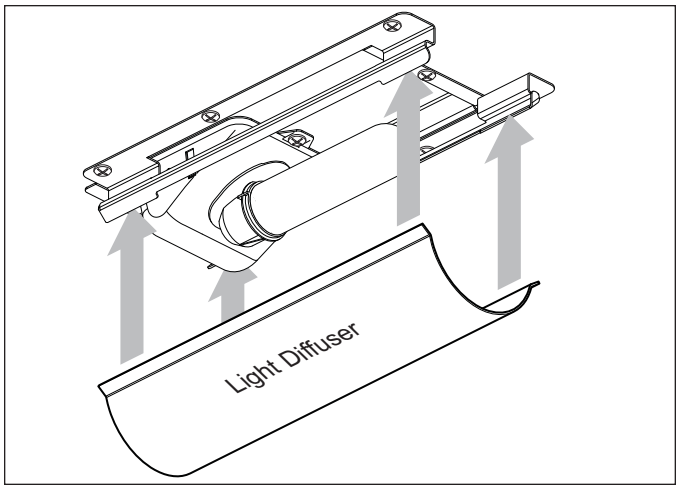


Figure 7-48. Freezer Light Diffuser Removal

Light Bulb and Light Bracket Assembly

The lighting assembly is located behind the light diffuser at the top of the compartment.

To remove the light bulb, first remove the top freezer basket and the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-49)

The light bracket assembly is secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the top basket and light diffuser, then (See Figure 7-49):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

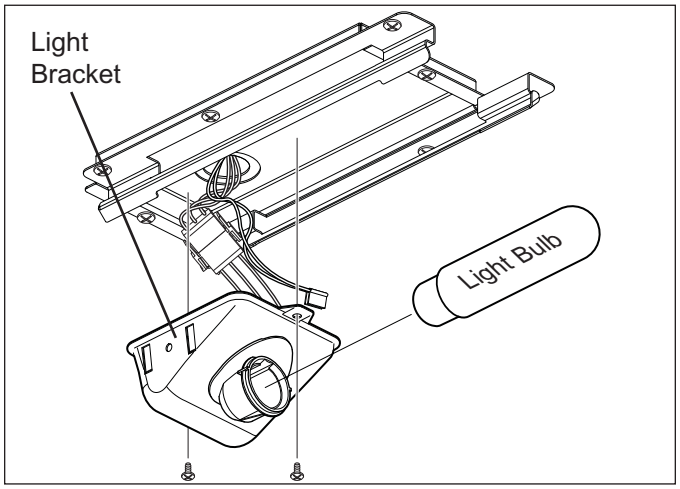


Figure 7-49. Freezer Light Assembly

Upper Freezer Basket Full Extension Slide

The upper freezer basket full extension slides are attached to the side walls of the freezer with screws.

To remove an upper freezer basket full extension slide, first remove the drawer front assembly and both freezer baskets, then extract the slide mounting screws and pull the slide from the freezer compartment. (See Figure 7-50)

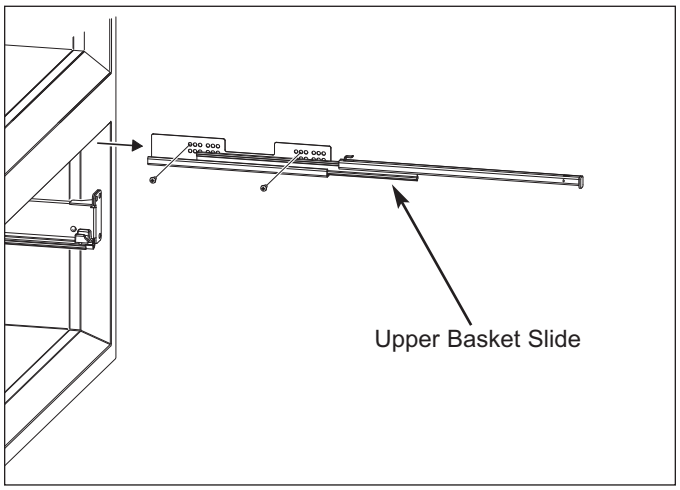


Figure 7-50. Upper Basket Full Extension Slide

Freezer Drawer Slide Rail Assembly

The drawer slide rail assemblies are attached to the full extension drawer slides with screws.

To remove a drawer slide rail assembly, first remove the drawer front assembly and the lower freezer basket, then (See Figure 7-51):

1. Extend slide rail out fully.
2. Extract slide rail mounting screws, then lift slide rail from the slide.

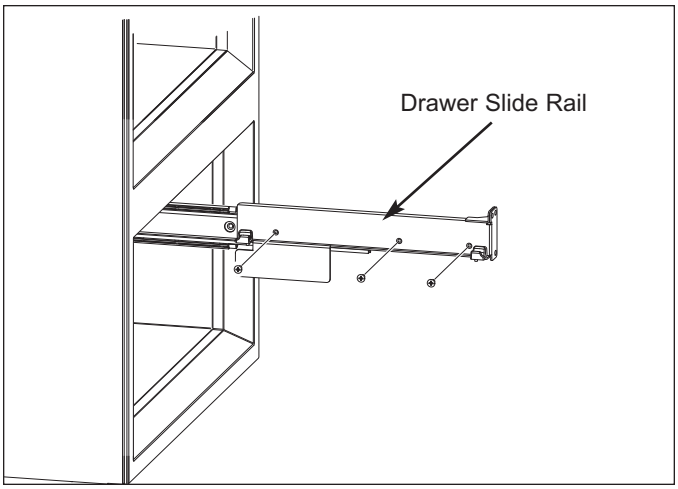


Figure 7-51. Freezer Drawer Slide Rail

Freezer Full Extension Drawer Slide Assembly

The full extension drawer slide assemblies are attached to the side walls with screws.

To remove a full extension drawer slide assembly, first remove the drawer front assembly, lower freezer basket and drawer slide rail assembly, then (See Figure 7-52):

1. Extend drawer slide until front access hole lines up with front mounting screw.
2. Extract slide mounting screws, then pull slide from the freezer compartment.

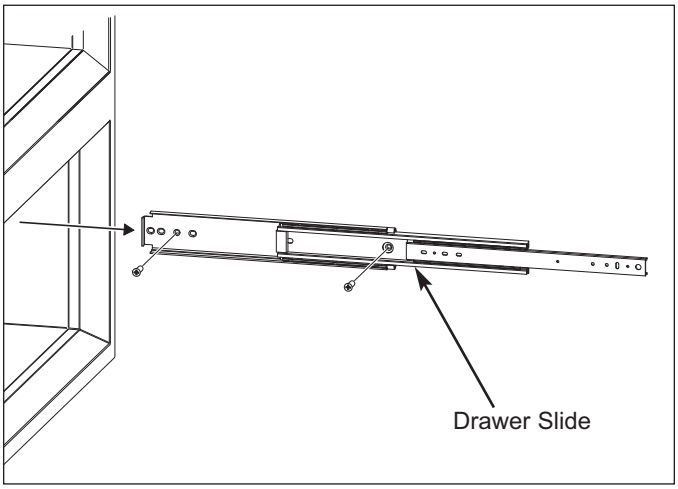


Figure 7-52. Full Extension Drawer Slide Assy.

Drawer Closer Assembly

The drawer closer assembly is attached to the left side wall with screws.

To access and remove a drawer closer assembly, first remove the drawer front assembly and the lower freezer basket. Then, extract the screws that secure the drawer closer to the side wall. (See Figure 7-53)

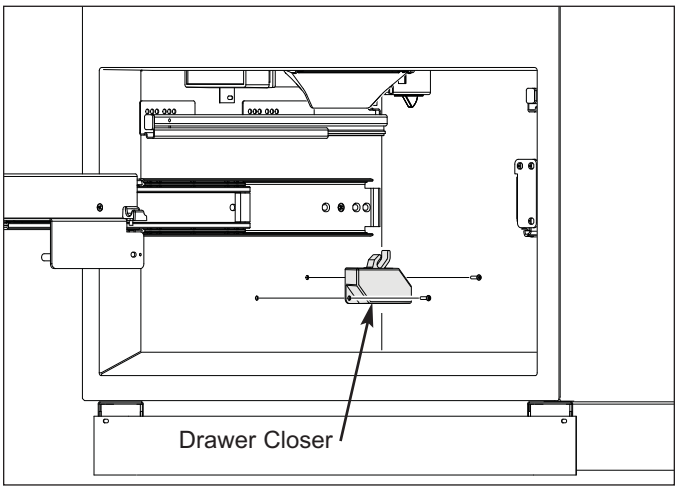


Figure 7-53. Drawer Closer Removal

Icemaker Assembly

The icemaker assembly is attached to the upper left-hand wall of the freezer compartment with two screws at top and one at the bottom.

To remove the icemaker assembly, first remove the drawer front assembly, lower freezer basket and upper freezer basket, then (See Figure 7-54):

1. Extract screw at bottom left of icemaker.
2. Extract screws at top of icemaker.
3. Pull icemaker forward and disconnect electrical leads.

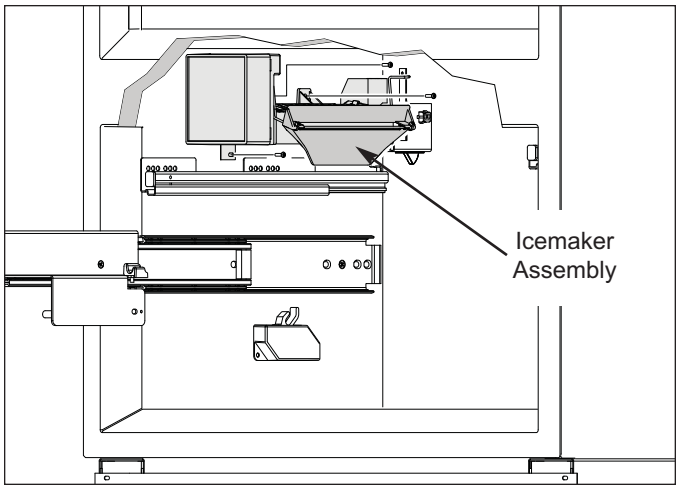


Figure 7-54. Icemaker Removal

Freezer Duct Assembly

The freezer duct assembly is positioned over the evaporator and held in place with screws passing through it into standoff screw grommets that are fastened to the compartment back wall.

NOTE: *The icemaker does not need to be removed in order to remove the evaporator cover, but because of the icemaker's location, removing it may make accessing the top left duct mounting screw easier.*

To remove the freezer duct assembly, first remove the drawer front assembly, upper freezer basket and lower freezer basket. Then, extract the duct mounting screws and pull the duct out of the freezer. (See Figure 7-55)

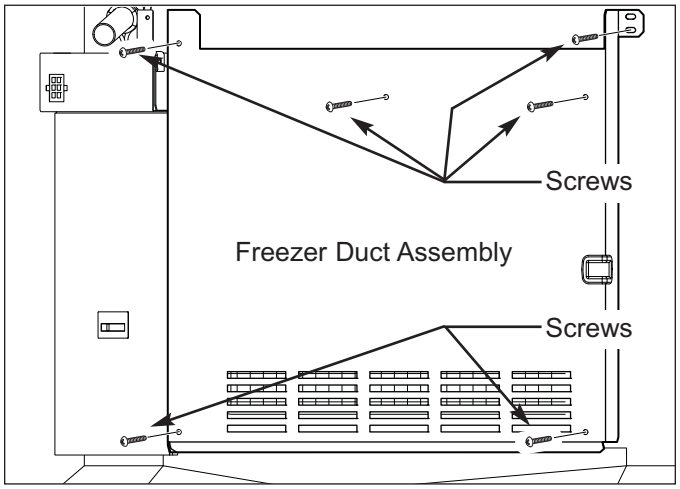


Figure 7-55. Freezer Duct Assembly Removal

Compartment Thermistor

The freezer compartment thermistor is secured to the ceiling of the freezer compartment with a screw and wire clamp.

To remove the freezer compartment thermistor, first remove the drawer front assembly, upper and lower baskets, and the freezer duct assembly, then (See Figure 7-56):

1. Loosen wire clamp mounting screw. and pull thermistor from clamp.
2. Cut thermistor’s wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

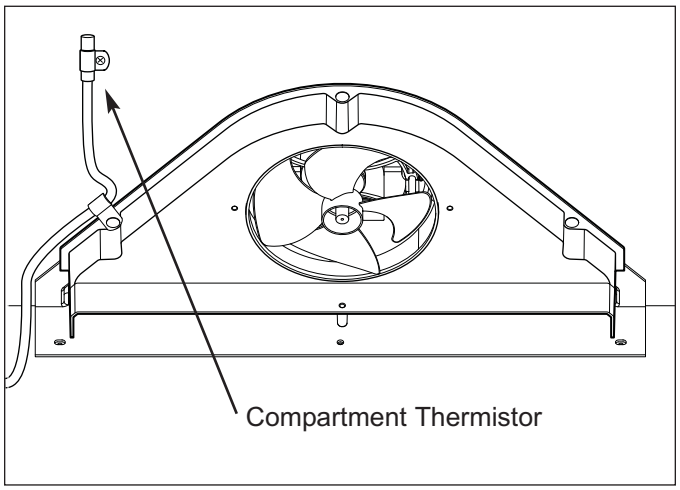


Figure 7-56. Compartment Thermistor Removal

Evaporator Fan Shroud Assembly

The freezer evaporator fan shroud is secured with screws to the compartment ceiling.

To remove the evaporator fan shroud assembly, first remove the drawer front assembly, upper freezer basket, lower basket and freezer duct assembly, then (See Figure 7-57):

1. Disconnect evaporator fan electrical leads.
2. Extract screws securing fan shroud to compartment ceiling and pull assembly from the compartment.

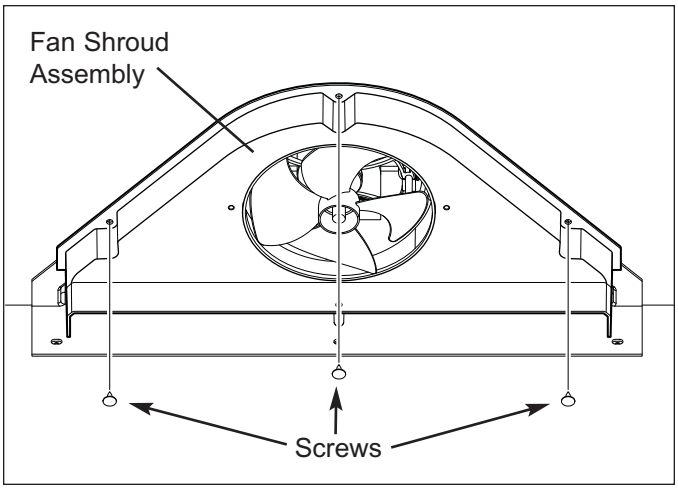


Figure 7-57. Evaporator Fan Shroud Assembly

Evaporator Fan Motor

The freezer evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove the drawer front assembly, upper freezer basket, lower basket, freezer duct assembly and evaporator fan assembly, then (See Figure 7-58):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

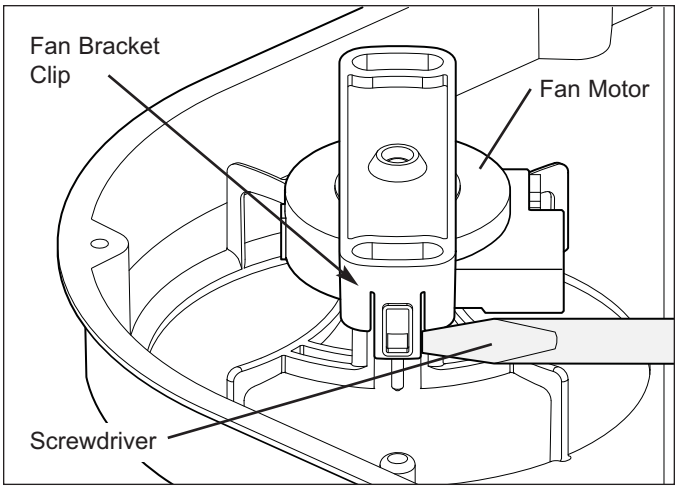


Figure 7-58. Fan Motor Removal

Freezer Wire Cover Assembly

The freezer wire cover assembly is secured to the left side of the back wall of the compartment with screws.

To remove the freezer wire cover, first remove the drawer front assembly, upper basket, lower basket, icemaker and the freezer duct assembly, then (See Figure 7-59):

1. Extract freezer wire cover mounting screws.
2. Slide fill tube heater off of fill tube.
3. Rotate wire cover to the left exposing electrical connections.
4. Disconnect all electrical connections behind the wire cover and remove it from the compartment.

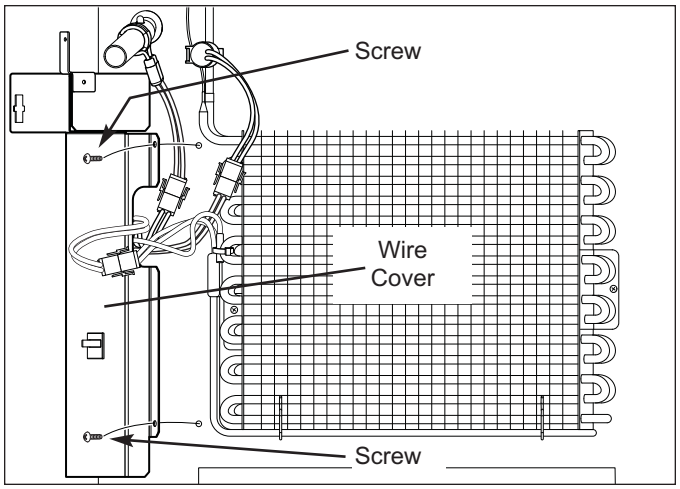


Figure 7-59. Freezer Wire Cover Removal

Freezer Defrost Terminator

The freezer defrost terminator is attached to the evaporator outlet tube.

To remove the defrost terminator, first remove the drawer front assembly, upper freezer basket, lower basket, icemaker, freezer duct assembly and the wire cover mounting screws, then (See Figure 7-60):

1. Rotate wire cover to the left exposing electrical connections.
2. Disconnect terminator electrical leads.
3. Pull terminator off of outlet tube.

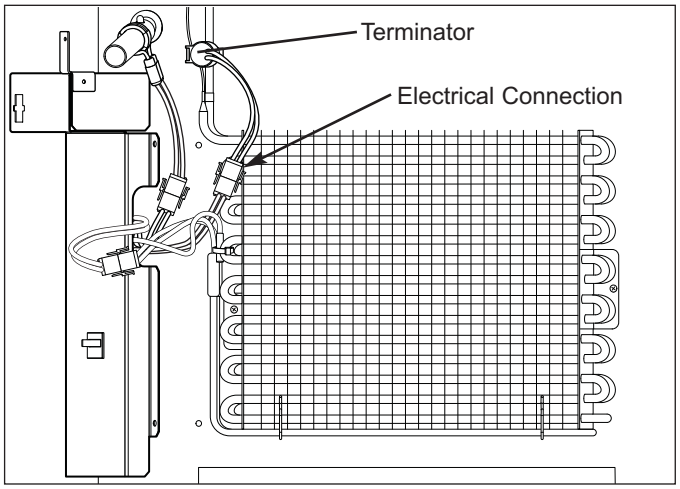


Figure 7-60. Defrost Terminator Removal

Icemaker Fill Tube Heater and Fill Tube

The icemaker fill tube heater slides over the fill tube in the upper left corner of the freezer compartment. The fill tube is secured in position by a rubber pin formed into the water inlet tube that locates in a hole on fill tube.

To remove the fill tube hearer, first remove the drawer front assembly, upper and lower freezer baskets, icemaker, freezer duct assembly and the wire cover mounting screws, then (See Figure 7-61):

1. Rotate wire cover to the left exposing electrical connections.
2. Disconnect fill tube heater electrical leads.
3. Push heater wire leads and grommet out of slot in wire cover and remove from compartment.

The fill tube is removed by pressing the rubber pin at the top of fill tube and pulling fill tube off the water inlet tube.

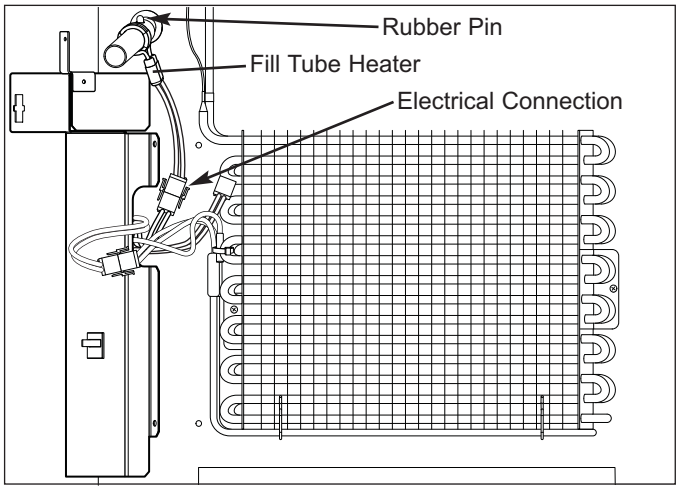


Figure 7-61. Icemaker Fill Tube Heater Removal

Evaporator Defrost Heater

The evaporator defrost heater is held in place at the bottom of the evaporator with defrost heater clips.

To remove the defrost heater, first remove the drawer front assembly, upper freezer basket, lower basket, icemaker, freezer duct assembly and the wire cover mounting screws, then (See Figure 7-62):

1. Rotate wire cover to the left exposing electrical connections.
2. Disconnect heater electrical leads.
3. Cut cable ties at top of heater on left side of evaporator.
4. Using a small needle-nose pliers, detach heater clips by pulling end tab of clips away from evaporator, then remove heater from compartment.

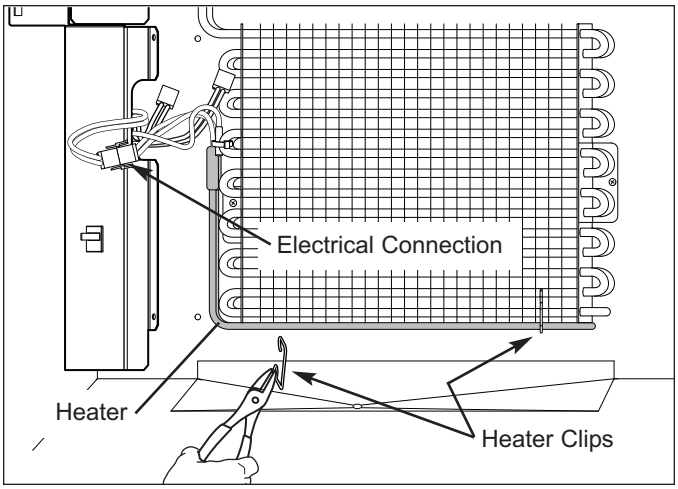


Figure 7-62. Defrost Heater Removal

Freezer Evaporator Thermistor

The freezer evaporator thermistor is secured with a cable tie to an evaporator return bend on the left side of the evaporator.

To remove the evaporator thermistor, first remove the drawer front assembly, upper and lower freezer baskets, icemaker, freezer duct assembly and the wire cover mounting screws, then (See Figure 7-63):

1. Rotate wire cover to the left exposing electrical connections.
1. Cut cable tie securing thermistor to evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

NOTE: *When replacing the thermistor be sure to attach the new thermistor to the same return elbow that the defective thermistor was removed from. At this writing, the thermistor is attached to the third elbow from the top in the front row of elbows on the left side.*

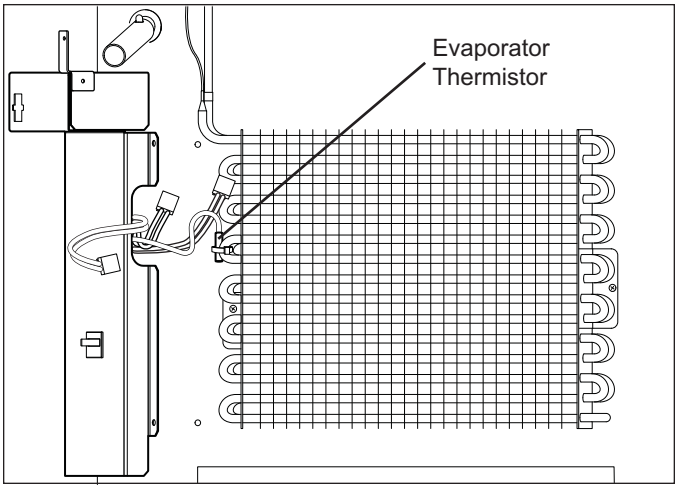


Figure 7-63. Evaporator Thermistor Removal.

Models BI-30U / BI-36U Compressor Area Mechanical Components

NOTE: *For water filter and filter manifold, see Exterior Cosmetic / Mechanical Components earlier in this section.*

Main Control Board

Screws hold the main control board inside a control housing that sits on a slide support bracket at the left side of the compressor area.

To remove the main control board assembly, the control grille and compressor shroud will need to be removed first, then (See Figure 7-64)

1. Grab front of control housing and pull it toward front of unit, off of the support bracket.
2. Disconnect wire leads from wire harness at right side of housing.
3. Disconnect communication cables from right side of control.
4. At top of control housing, lift the cover latches off of tabs along top of housing case, then separate the cover from the case.
5. Disconnect all wire leads from control board.
6. Extract control board mounting screws and lift board out of case.

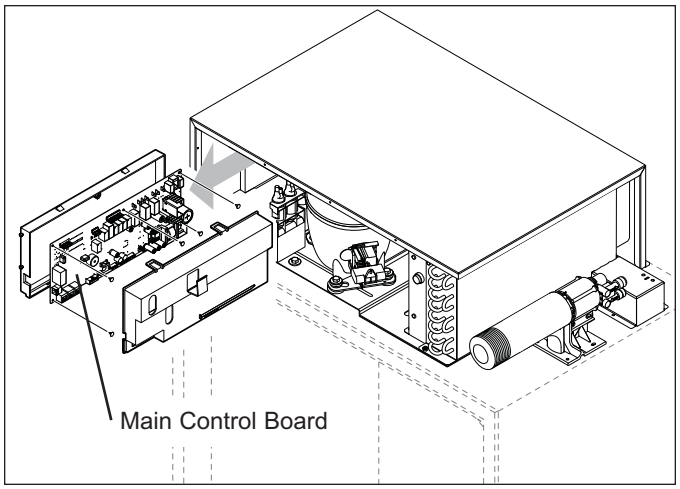


Figure 7-64. Control Board Assembly

Condenser Fan Shroud Assembly

Tabs at the back of the condenser fan shroud fit into grommets in the condenser's rear bracket. A hole in the bottom front flange of the condenser fan shroud fits down over a threaded stud, and a nut is then applied onto the stud. The front flange of the condenser fan shroud assembly is then secured to the front condenser bracket with screws.

To remove the condenser shroud assembly, first remove the top cabinet trim, top cabinet frame and compressor shroud, then (See Figure 7-65):

1. Extract condenser shroud mounting screws at front of condenser.
2. Extract nut from threaded stud at base of condenser fan shroud.
3. Pull assembly forward slightly, disconnect condenser fan electrical leads.
4. Disconnect filter reset switch electrical leads, then pull the assembly from the compressor area.

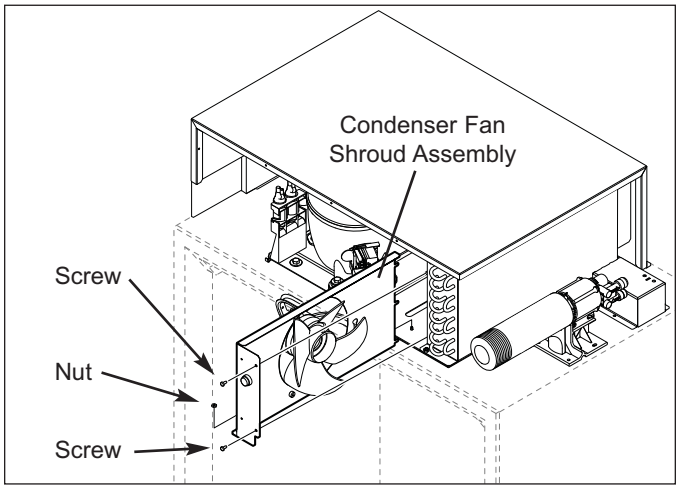


Figure 7-65. Condenser Fan Shroud Assembly

Condenser Fan Motor

The condenser fan is mounted to the condenser fan shroud with three fan mounting brackets that hook into grommets that are in the condenser fan shroud. At the back of the motor, screws pass through these brackets into the back of the fan motor. The condenser fan blade is held onto the fan motor shaft with a nut.

To remove the condenser fan motor, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-66):

1. Extract screws securing motor to brackets.
   NOTE: *The brackets will unhook from the grommets in the shroud after the screws are removed.*
2. To remove fan blade from fan motor:
   a. Grab blade and motor while turning nut counterclockwise.
   b. Then pull the blade from the motor shaft.

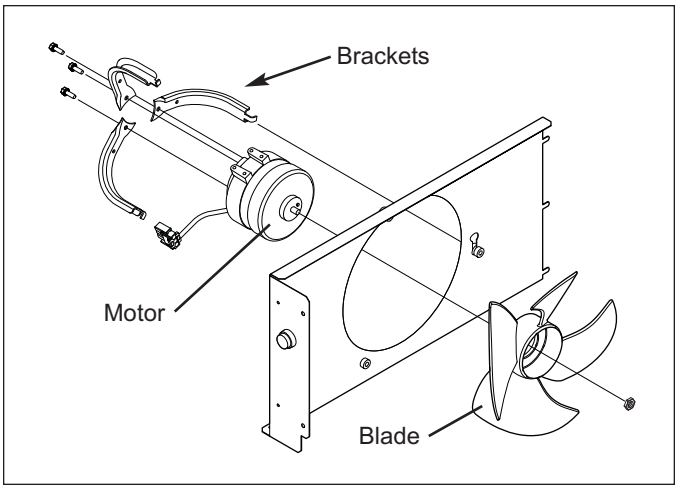


Figure 7-66. Condenser Fan Motor Removal

Water Filter Reset Switch

The water filter reset switch is secured to the inside of the condenser shroud front flange by retaining clips.

To remove the water filter reset switch, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-67):

1. Disconnect electrical leads from switch.
2. Using a needle-nose pliers, compress the retaining clips on switch body and push switch through condenser shroud flange.

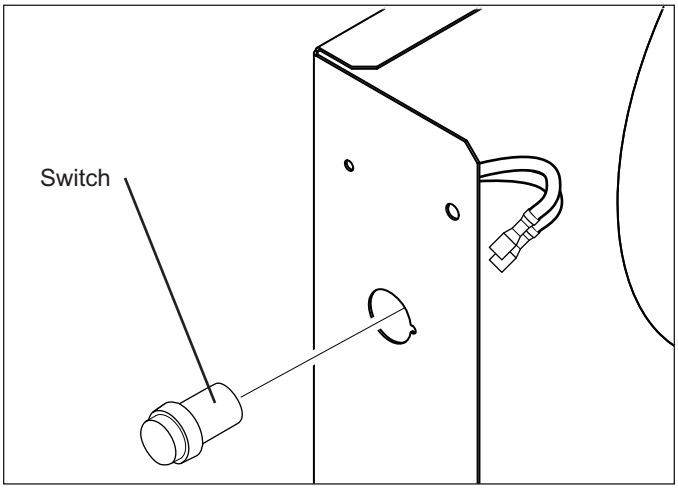


Figure 7-67. Filter Reset Switch Removal

Models BI-30U / BI-36U Sealed system Components

The sealed system components at the top of the appliance sit on a sliding unit tray. There is a slot in the unit tray running from front to back, with a bolt positioned in the middle of this slot and attached to the top of the appliance. This allows the tray to be pulled straight forward to aid in sealed system repairs. (See Figure 7-68) When not being moved for service, a bolt passing down through a hole at the front of the unit tray holds it in place.

⚠ WARNING

UNIT COULD TIP FORWARD! MAKE SURE THE ANTI-TIP BRACKETS ARE IN PLACE AND THE UNIT IS PROPERLY ANCHORED BEFORE ATTEMPTING TO SLIDE THE UNIT TRAY OUT.

NOTES:

- *Removing the condenser fan shroud assembly before sliding the unit tray out will allow greater access to sealed system components on the tray. See condenser Fan Shroud Assembly removal instructions earlier in this section.*
- *When tapping into the sealed system, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*
- *Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.*

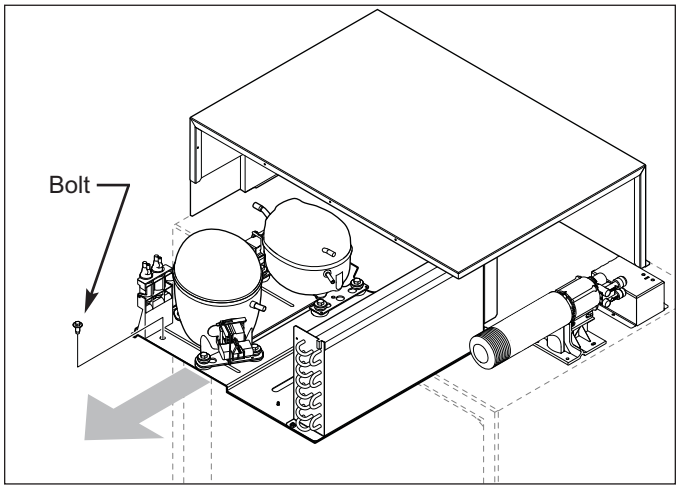


Figure 7-68. Sliding Out the Unit Tray

High-Side Filter-Drier

NOTE: *It is not necessary to slide the unit tray forward in order to replace a high-side filter-drier.*

To remove a high-side filter-drier, first capture the refrigerant from sealed system, then (See Figure 7-69):

1. With a file, score a line around capillary tube 1” or less from drier outlet, then fatigue capillary tube at this line until it separates.
2. With a tube-cutter, cut inlet tube 1” or less from drier inlet.

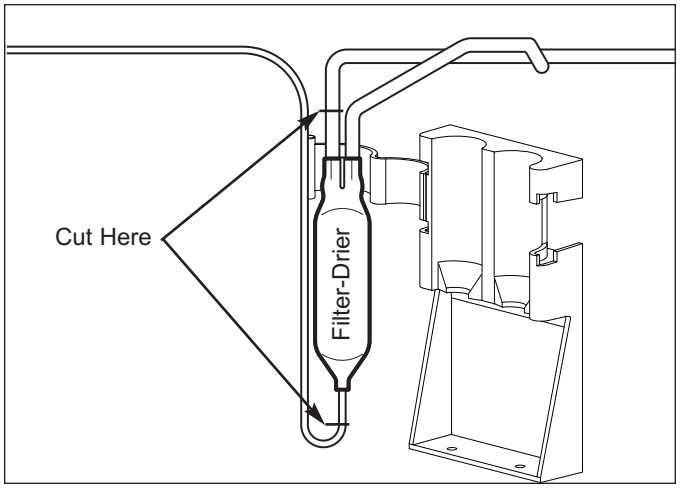


Figure 7-69. Filter-Drier Removal

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 1 above.*
- *When installing replacement filter-drier, insert capillary tube until it touches screen inside drier, then pull capillary tube away from screen approximately 3/8" before brazing.* (See Figure 7-70).
- *Filter-drier outlet must be facing downward in order to function properly.*

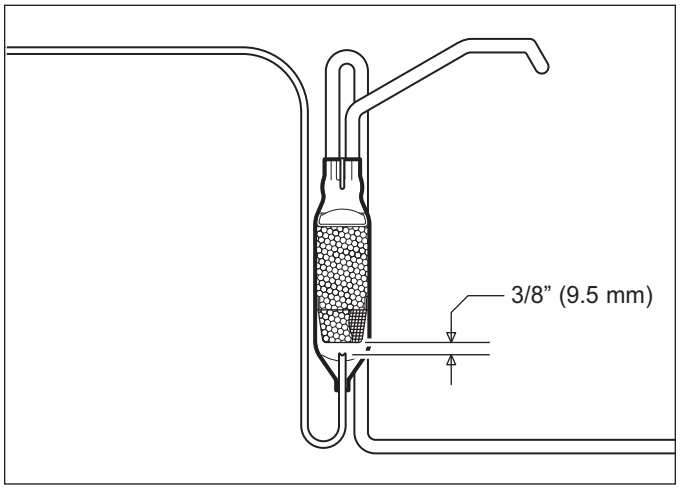


Figure 7-70. Capillary Tube Insertion Note

Compressor

Compressors are secured to the unit tray with three shoulder screws that pass down through rubber grommets in the compressor base and into holes in unit tray. A metal tab formed into the unit tray passes up through the fourth rubber grommet and the compressor base.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-30U / Bi-36U Sealed System Components before continuing.*
- *The compressor at the front is the freezer compressor, at the rear is the refrigerator compressor.*

After capturing the refrigerant from the sealed system, (See Figure 7-71):

1. Disconnect wire leads from compressor electricals.
2. Using a tube cutter, cut suction and discharge tubes approximately 1” from compressor stubs.

   NOTE: *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
3. Extract compressor mounting shoulder screws, then lift compressor off of unit tray.

NOTE: *After replacing the compressor, take care to not kink tubing as the unit tray is slid back into position.*

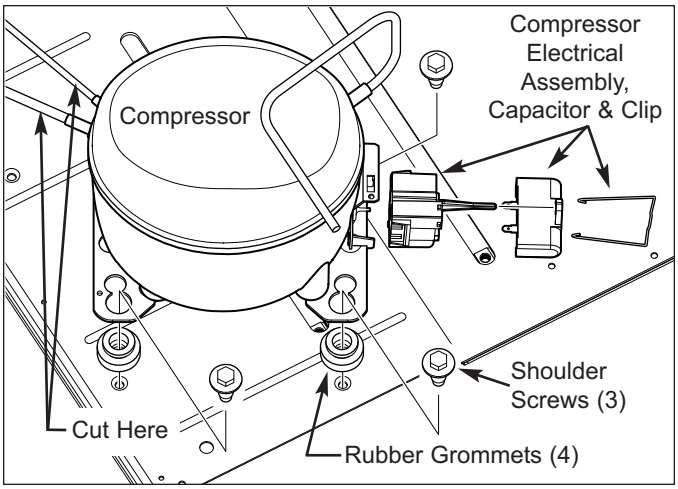


Figure 7-71. Compressor Removal

Condenser

Holes in the front and rear bottom flanges of the condenser fit over threaded studs in the unit tray, then a nut is applied to each threaded stud to hold the condenser in place.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-30U / Bi-36U Sealed System Components before continuing.*
- *The condenser inlet and outlet stubs are at the rear of the condenser.*

After capturing the refrigerant from the sealed system, (See Figure 7-72):

1. Remove nuts from threaded studs at the front and rear of condenser, then lift condenser slightly to clear threaded studs and pull condenser forward.
2. Using a tube cutter, cut condenser inlet and outlet tubes approximately 1” from condenser stubs, then remove condenser fully from unit tray.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After replacing the condenser, take care to not kink tubing as the unit tray is slid back into position.*

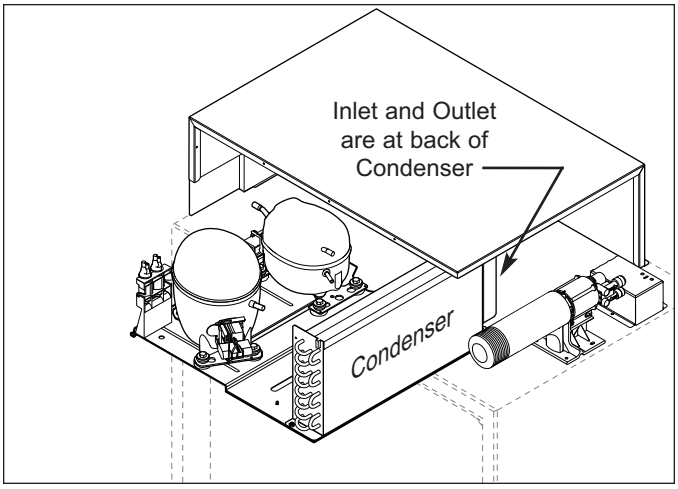


Figure 7-72. Condenser Removal

Refrigerator or Freezer Evaporator

The refrigerator and freezer evaporators are attached to the rear walls of their respective compartments with screws, behind the compartment duct assemblies. See Duct Assembly removal procedures earlier in this section.

NOTES:
- *The high-side filter-drier must also be replaced when replacing an evaporator.*
- *The electrical components on a freezer evaporator will be reused, so remove the defrost heater, defrost terminator and evaporator thermistor from the freezer evaporator.*

To remove an evaporator, first capture the refrigerant from the sealed system, then (See Figure 7-73 or 7-74):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 2 above.*

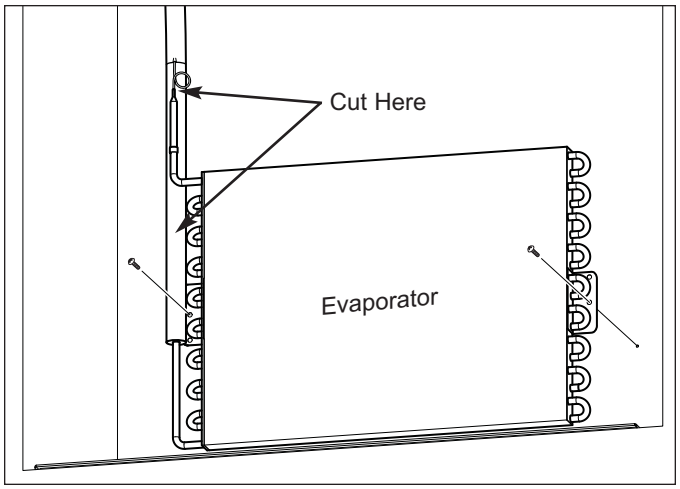


Figure 7-73. Refrigerator Evaporator Removal

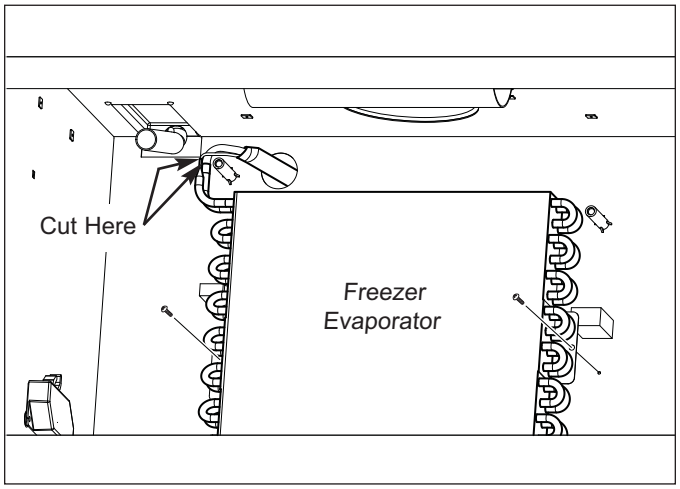


Figure 7-74. Freezer Evaporator Removal

Refrigerator or Freezer Heat Exchanger

The refrigerator heat exchanger passes through the ceiling of the refrigerator compartment. The freezer heat exchanger passes through the back wall of the freezer compartment.

NOTES:

- *The high-side filter-drier must also be replaced when replacing a heat exchanger.*
- *It will be necessary to pull the unit from its installation and remove the rear duct in order to replace a freezer heat exchanger. See WARNINGS at beginning of this section.*

To remove a heat exchanger, first capture the refrigerant from the sealed system, then (See Figure 7-75 or 7-76):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.
4. With a tin snips, or similar tool, cut heat exchanger in compartment as close as possible to wall or ceiling where heat exchanger passes through.
5. Use a tube-cutter to cut drier from condenser outlet tube.
6. Using a tube cutter, cut suction line approximately 1” from compressor.
7. Pull remaining heat exchanger from unit.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *When replacing the heat exchanger, it is recommended to attach it at the evaporator end first, then feed the heat exchanger through hole, up to compressor area.*

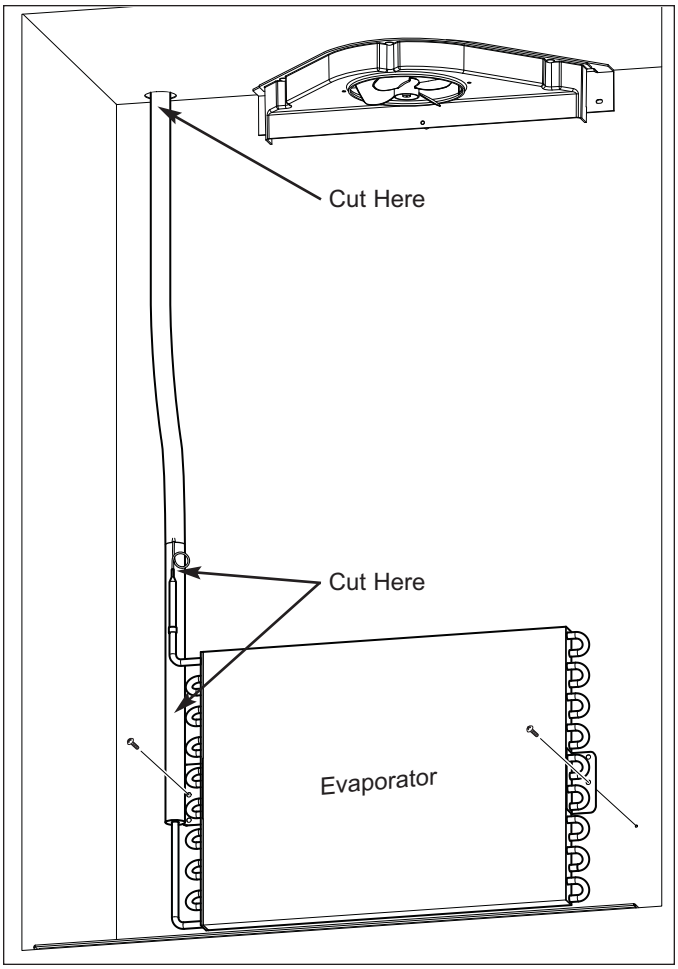


Figure 7-75. Refrigerator Heat Exchanger Removal

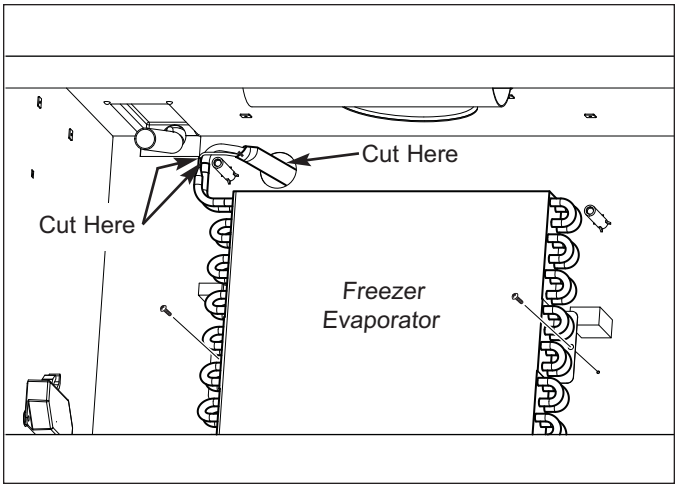


Figure 7-76. Freezer Heat Exchanger Removal
(Back of Unit Not Shown)

Model BI-36F Exterior Cosmetic / Mechanical Components

Kickplate

To remove a kickplate, extract the screws from the left and right corners of the kickplate, then pull the kickplate forward. (See Figure 7-77).

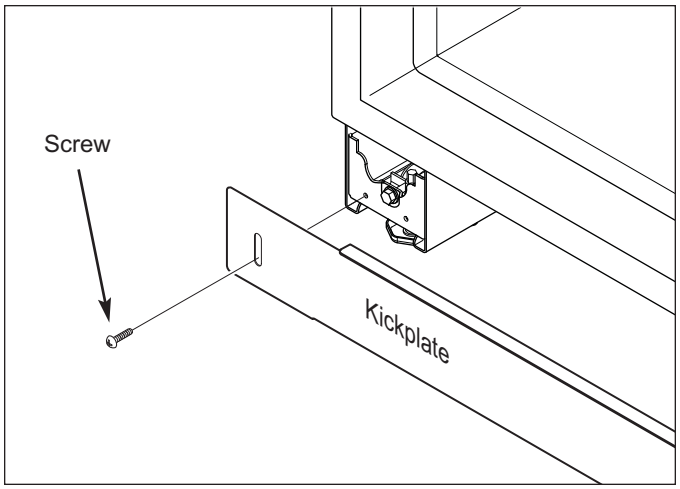


Figure 7-77. Kickplate Removal

Dual Installation Kickplate

A dual installation kickplate assembly is held in place with magnets at each end and one screw at top center. To remove the dual installation kickplate, the screw at top center must be extracted before pulling the dual installation kickplate forward (See Figure 7-77A).

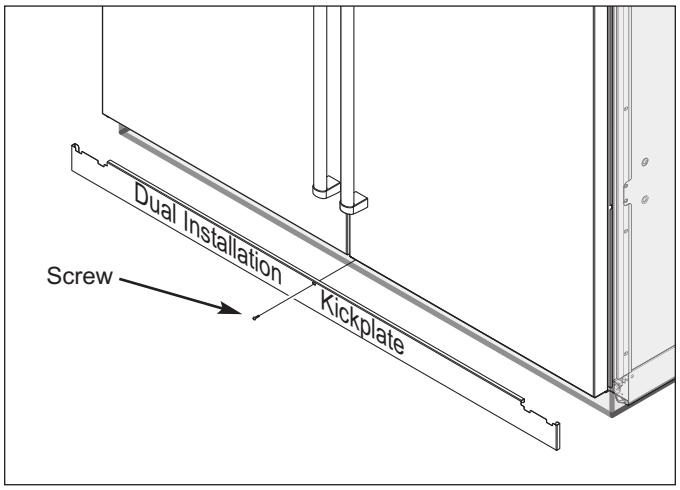


Figure 7-77A. Dual Installation Kickplate

Drain Pan

The drain pan slides in from the front of unit on two side brackets. A locating feature was built into the drain pan in the form of detentes at the bottom front that drop into notches at the front of the side brackets.

To remove the drain pan (See Figure 7-78):

1. Remove kickplate.
2. Push front of drain pan up slightly, then pull forward.

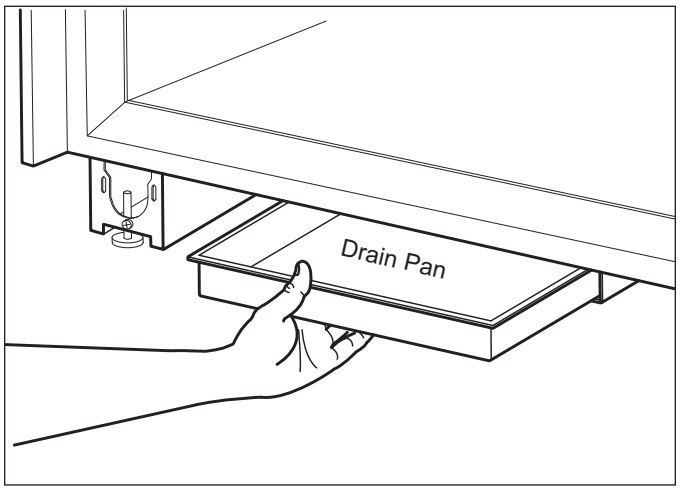


Figure 7-78. Drain Pan Removal

Water Valve Assembly

The water valve is located to the right of the drain pan and is attached to the valve bracket with screws.

NOTE: *Before attempting to remove the water valve assembly, switch the water supply to the unit off.*

To remove the water valve assembly, first remove the kickplate, then (See Figure 7-78):

1. With a valve assembly mounting screws and pull valve forward.
2. Disconnect AC and DC electrical leads.

   NOTE: *It may be necessary to cut a cable tie that is securing the AC electrical leads to the valve assembly.*
3. Disconnect inlet and outlet water tubes from valve by pushing the collar around the tubes toward the valve, while pulling the tubes away from the valve.

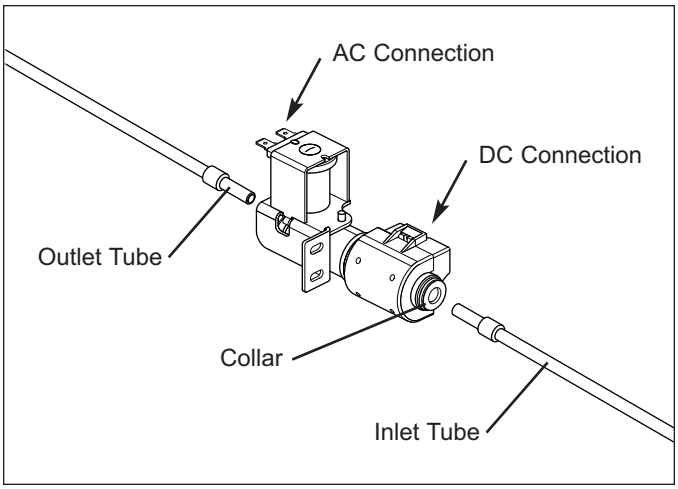


Figure 7-79. Water Valve Removal

Water Filter Cartridge

The water filter cartridge is located at the right hand top side of the unit behind grille assembly.

To remove the water filter cartridge, first lift open the front of the grille assembly, then (See Figure 7-80):

1. Push the cartridge in toward the water filter manifold to depress the spring and catch mechanism.
2. Then pull cartridge out of the manifold.

NOTE: *After a filter cartridge has been replaced, the reset button behind the unit grille must be pressed for five (5) seconds to clear the filter icon from the LCD and reset the water filter timer.*

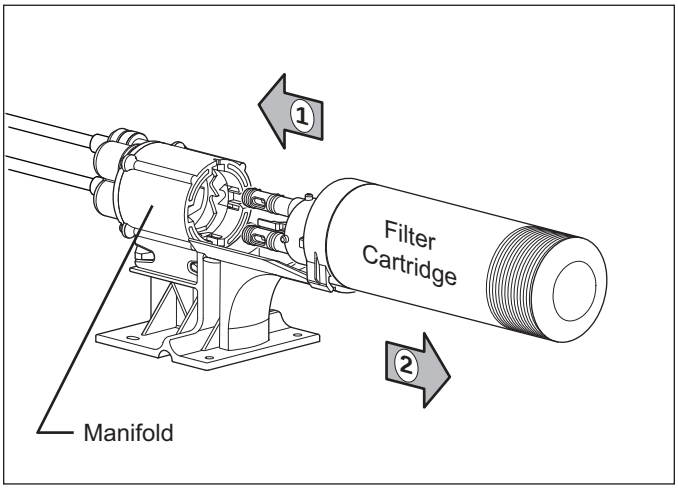


Figure 7-80. Water Filter Cartridge Removal

Water Filter Manifold

The water filter manifold is secured to the right hand top side of the unit with screws, behind grille assembly.

NOTE: *Before attempting to remove the water filter manifold, switch the water supply to the unit off.*

To remove the filter manifold, first lift open the front of the grille assembly and remove the water filter cartridge, then (See Figure 7-81):

1. Use a T-20, 6-lobe Torx type bit to extract the manifold mounting screws.
2. Pull the manifold forward and disconnect the water tubes by pushing the collar around the tubes toward the manifold, while pulling the tubes away from the manifold.

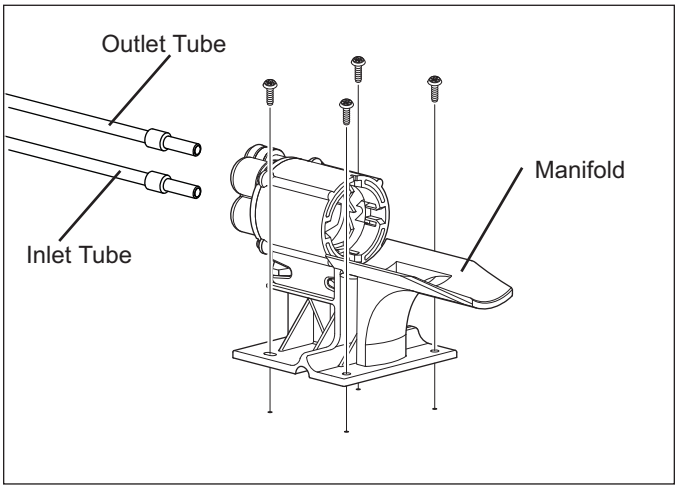


Figure 7-81. Water Filter Manifold Removal

Door Switch

The door switch is located at the top rear of the top cabinet frame, with the switch's actuator protruding through a hole in the front of the frame. A series of tabs and pegs hold the door switch in place.

To remove a door switch, first open the grill, then (See Figure 7-82):

1. Disconnect the switch electrical leads using a needle-nose pliers to pull the electrical lead housings away from the switch.
2. Use a small flat-blade screwdriver to pry the front retaining tab at each side of the switch back while lifting that side of the switch up. Repeat this step on each side of the switch.
3. Pull switch back and lift off of the top cabinet frame

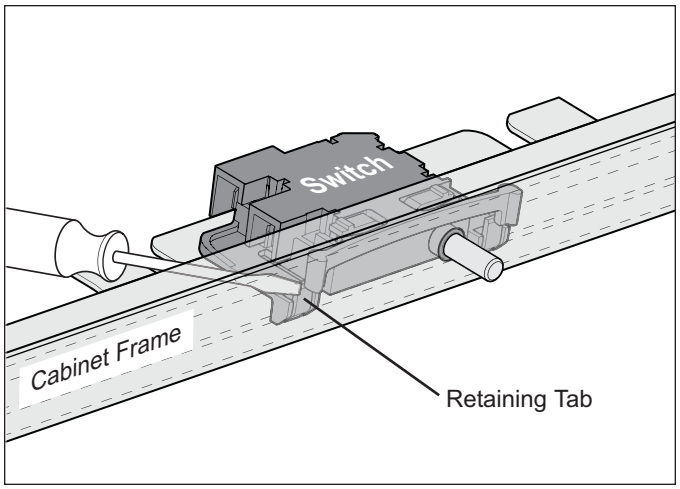


Figure 7-82. Door Switch Removal

Top Cabinet Trim

The top cabinet trim sits below the grille assembly. Screws pass through open ended slots in the trim to secure it to the top cabinet frame.

To remove the top cabinet trim first open the grill then, (See Figure 7-83):

1. Use a T-15, 6-lobe Torx type bit, to loosen, but not remove, the trim mounting screws.
2. Pull the trim forward. off of the unit.

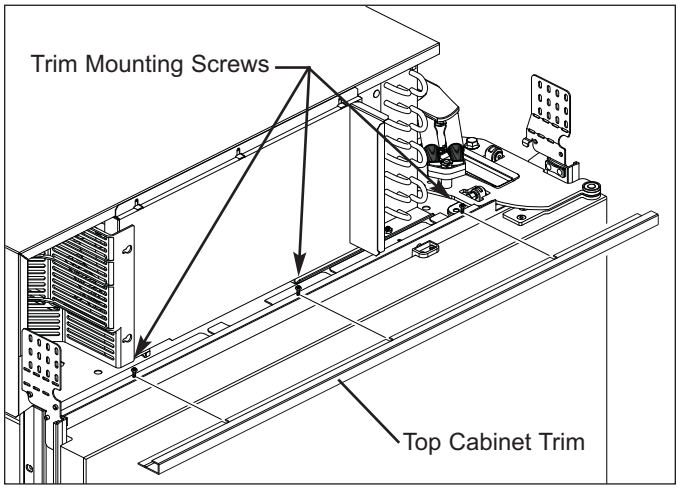


Figure 7-83. Top Cabinet Trim Removal

Grille Assembly

The grille assembly is attached at the top of the unit with screws passing through the grille's side frames into grille brackets.

To remove a grille assembly (See Figure 7-84):

1. Lift open the front of the grille assembly to access the mounting screws.
2. With a T-20, 6-lobe Torx type bit, extract the two front grille mounting screws, then loosen but do not remove the two rear mounting screws.
3. pull the grille assembly forward, off of the unit.

NOTE: *When reinstalling the grille assembly, line up the notches at back of grille side frames with the rear mounting screws, then push the grille assembly back.*

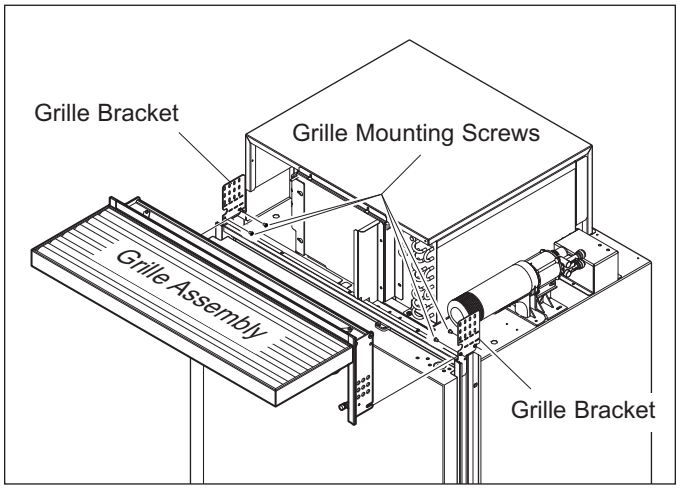


Figure 7-84. Grille Assembly Removal

Framed / Overlay Door Handle / Handle-Side Trim

The door handle on framed units and the handle-side trim on overlay units is attached to the door with screws. These screws are covered by a screw cover.

To remove a handle of handle-side trim, open the door then:

1. At the top of the door, insert a flat blade screwdriver into the channel of the screw cover and push the cover back, disengaging it from the handle or trim (See Figure 7-85).
2. With a T-20, 6-lobe Torx type bit, extract the handle-side trim mounting screws and pull the trim from the door (See Figure 7-86).

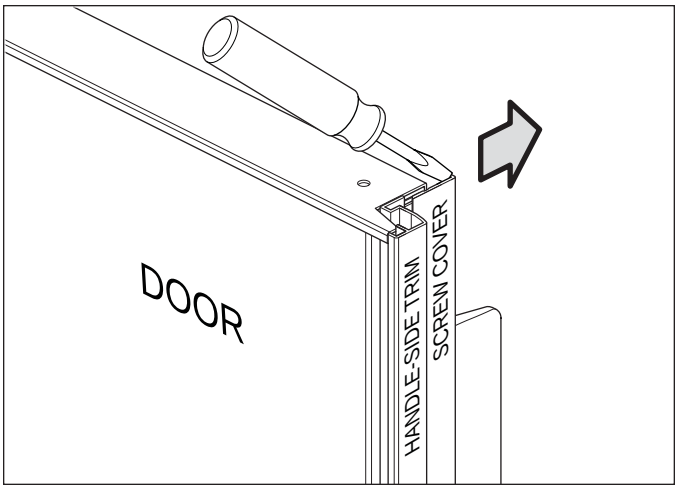


Figure 7-85. Screw Cover Removal

Stainless Steel Door Handle Assembly

A screw inserted through the stainless steel handle standoffs into the handle secures the handle to the standoffs. The standoffs are then slides over threaded studs that are attached to the door shell. A socket head set-screw inserted through the side of the standoff secures the standoff to the stud.

To remove a stainless steel handle assembly (See Figure 7-87):

1. Use a 3/32” Allen-wrench to loosen the set-screw in each handle standoff.
2. Pull handle assembly off of the threaded studs.

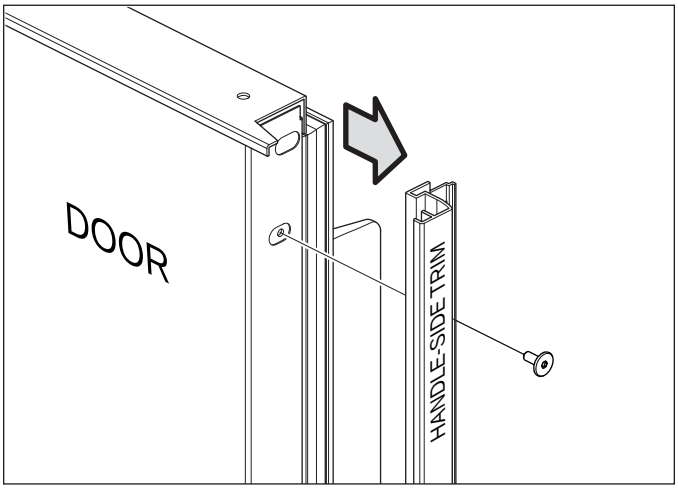


Figure 7-86. Handle / Handle-Side Trim Removal

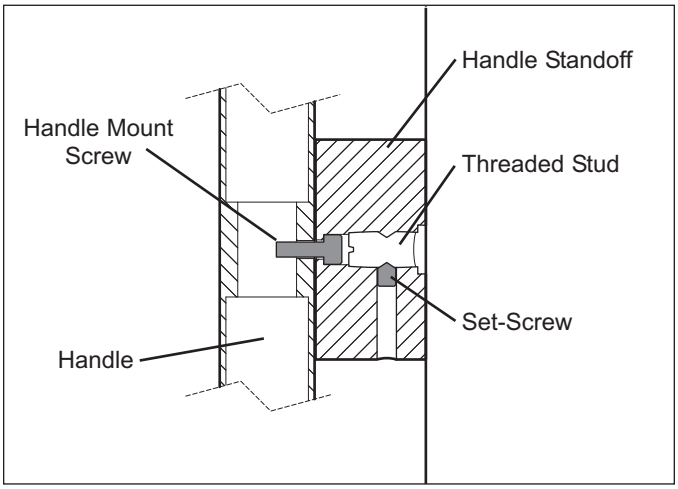


Figure 7-87. Cut-away View of SS Handle Assembly

Top Door Hinge Assembly

The top hinge assembly is secured to the unit with bolts that pass down through the cabinet hinge plate into threaded inserts. Screws passing down through the door hinge secure the hinge assembly to the door.

NOTE: *A special tool package is available to assist in removing a top hinge assembly. This tool package is provided with replacement hinge and door assemblies. If needed, order part #7011097. The directions below were written to be used with this tool package.*

To remove a top hinge assembly, the grille assembly and top cabinet trim must be removed first. If removing a right-hand door, remove the water filter cartridge at this time, then:

1. With the door open, use a 5/32" Allen wrench or bit to extract the top door hinge mounting screw nearest to the hinge pivot point (See Figure 7-88).
2. Use a 1/8" Allen wrench or bit to replace the screw just removed with the 1/4-20X1/2" setscrew, included in the tool package, inserting the setscrew down until its top is flush with the top surface of the door hinge (See Figure 7-88).

   NOTE: *If the setscrew is not inserted far enough it will damage the hinge plate when closing the door; if it is inserted too far it will not hold the door hinge in the correct position when closing the door.*

3. Extract the inner door hinge mounting screws, leaving the outermost screw in place (See Figure 7-88).
4. insert the hinge spacer, included in the special tool package, between the door closer guide and the back of the door closer track, then close the door (See Figure 7-88).

   NOTE: *This spacer will keep the door closer mechanism at the proper spacing to facilitate hinge assembly removal and reinstallation.*

5. With the door closed, use a socket wrench with an extension and a ½" socket to extract the cabinet hinge mounting bolts (See Figure 7-89).
6. Extract the outermost door hinge mounting screw (See Figure 7-89).
7. Lift the hinge assembly up off of the top of the unit, allowing the door to shift toward the handle side and come to rest against the main frame (See Figure 7-90).

   NOTE: *It may be necessary to use a flat blade screwdriver to pry the post at the end of the door closer arm up out of the hole in the top of the door assembly.*

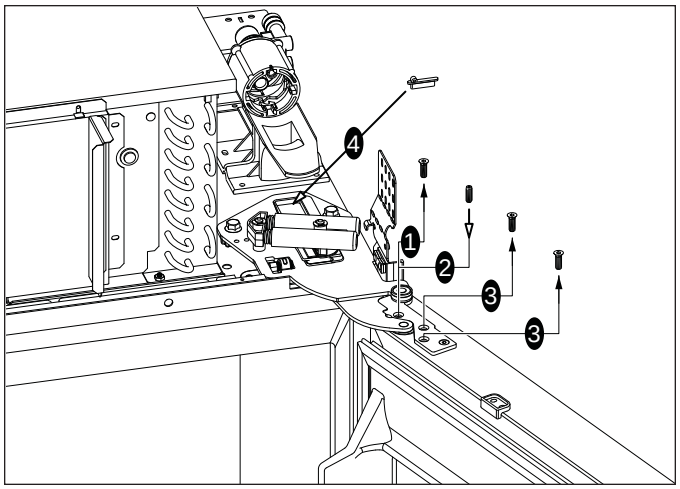


Figure 7-88. Top Door Hinge Screw Removal, Setscrew Installation and Spacer Installation

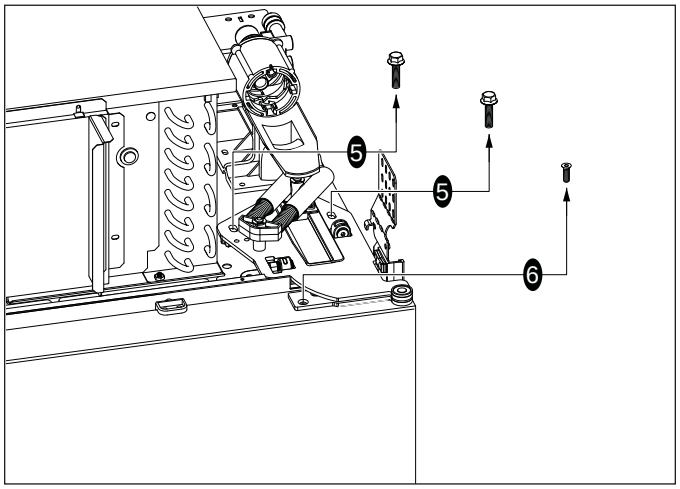


Figure 7-89. Cabinet Hinge Bolt Removal and Door Hinge Screw Removal

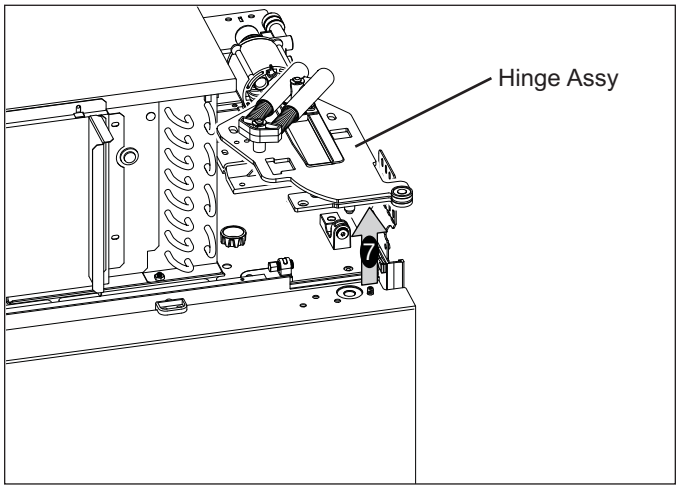


Figure 7-90. Top Door Hinge Assy Removal

Door Assembly

The door assembly is secured to the top and bottom door hinges with screws. The post of the bottom door hinge fits down into a bearing in the bottom cabinet hinge assembly's door adjuster.

To remove a door assembly, the top hinge assembly must be removed first. Then, with one hand at each side of the door, open the door forty-five to ninety degrees and lift it off of the bottom cabinet hinge assembly. (See Figure 7-91)

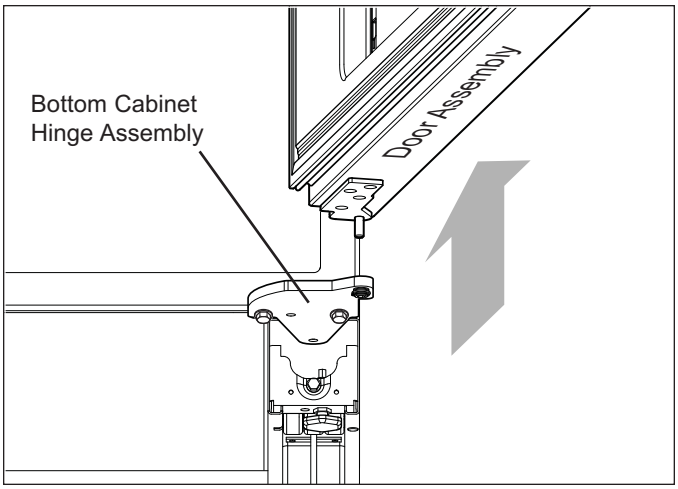


Figure 7-91. Door Assembly Removal

Bottom Cabinet Hinge Assembly

The bottom cabinet hinge assembly is attached to the bottom of the unit with bolts.

To remove the bottom cabinet hinge assembly, first remove the top hinge assembly and the door. Then, using a 1/2" wrench or socket, extract the cabinet hinge mounting bolts and pull the hinge assembly from the unit. (See Figure 7-92)

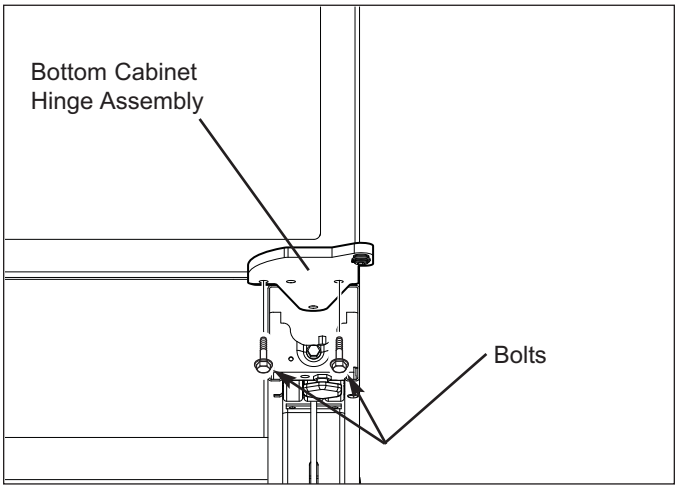


Figure 7-92. Cabinet Hinge Assembly Removal

Model BI-36F Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-93).

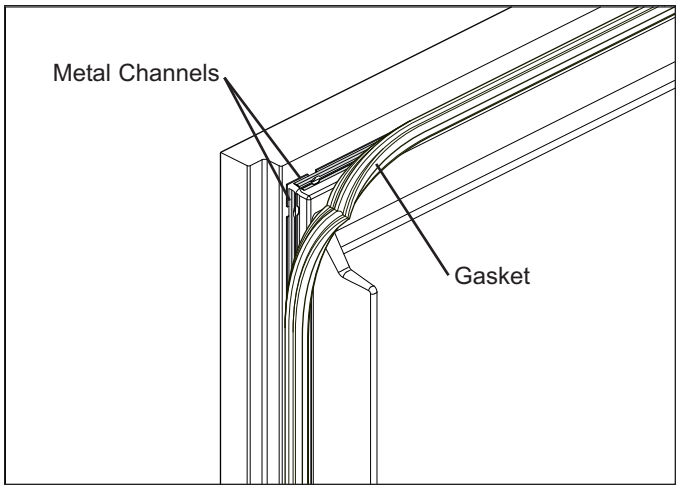


Figure 7-93. Door Gasket Removal

Adjustable Door Shelves

Removal and adjustment of the door shelves is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-94).

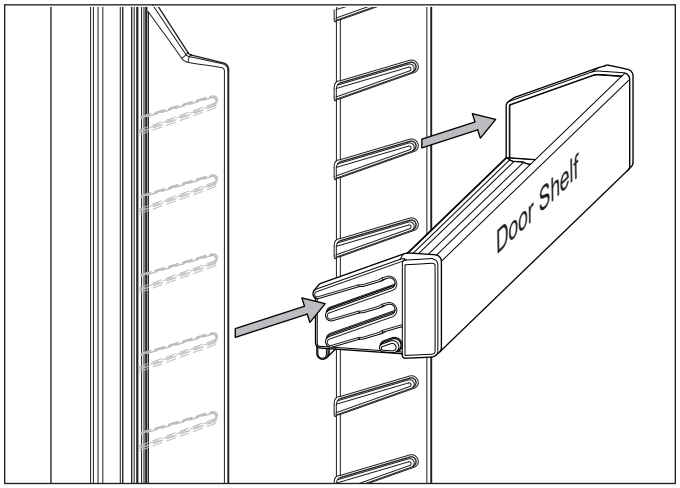


Figure 7-94. Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a freezer cantilever wire shelf assembly (See Figure 7-95):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

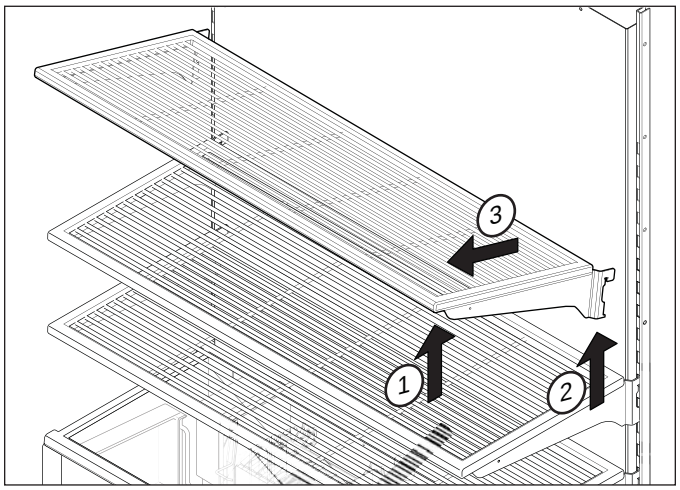


Figure 7-95. Cantilever Shelf Removal

Fixed Glass Shelf Assembly

The freezer fixed glass shelf rests upon shelf standoffs that are mounted to the freezer side walls.

To remove the freezer fixed glass shelf (See Figure 7-96):

1. Lift shelf straight up off of the standoffs.
2. Pull shelf forward, out of compartment.

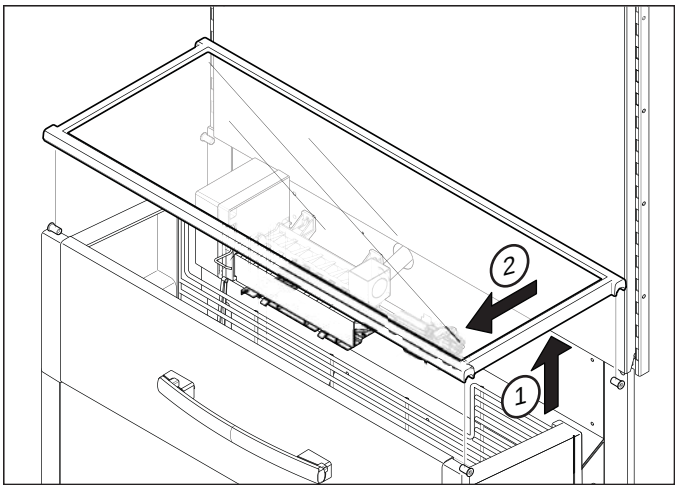


Figure 7-96. Freezer Glass Shelf Removal

Ice Bin

To remove the ice bin, open the top freezer basket and lift the ice bin out of the basket (Not Shown)

Freezer Basket Assembly

To remove a freezer basket assembly (See Figure 7-97):

1. Pull basket open until it stops.
2. Remove basket contents.
3. Simultaneously depress both locking tabs under bottom front corners of basket assembly and lift up on basket front.
4. With basket front straight up, place bottom corner of basket on hinge side into gap between door and face frame, then pivot other end of basket assembly out of the compartment.

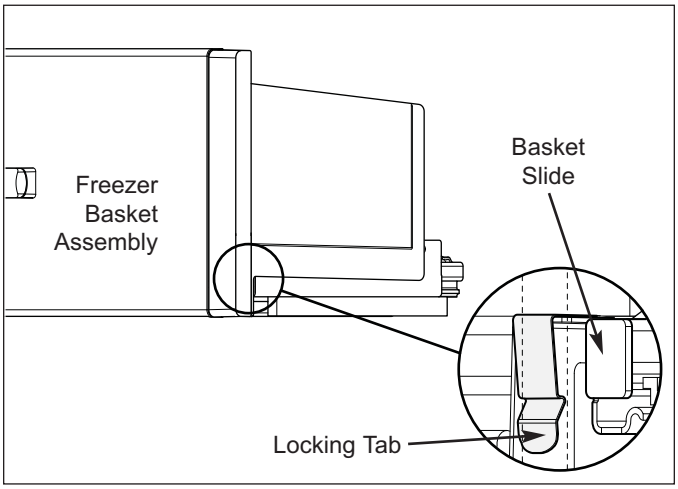


Figure 7-97. Freezer Basket Assembly Removal

Lower Light Bulb

To remove the lower light bulb, first remove the middle freezer basket assembly, then reach behind the lower light shield and turn the bulb counterclockwise to remove it. (See Figure 7-98)

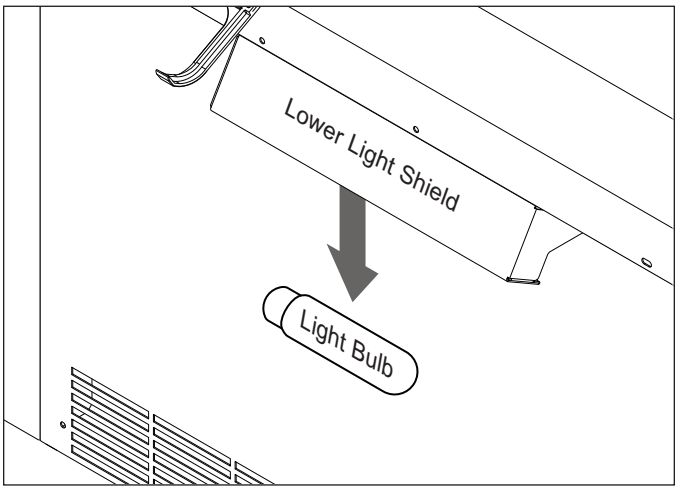


Figure 7-98. Lower Light Bulb Removal

Icemaker Assembly

The icemaker assembly is attached to the left side of the middle duct assembly with screws.

To remove ice maker, first remove the fixed glass shelf assembly and the upper freezer basket assembly, then (See Figure 7-99):

1. Use a small flat-blade screwdriver to pry latches of male electrical connector from tabs of female connector, then disconnect icemaker electrical leads.
2. Extract icemaker mounting screws (two at top, one at bottom), then pull icemaker assembly from compartment.

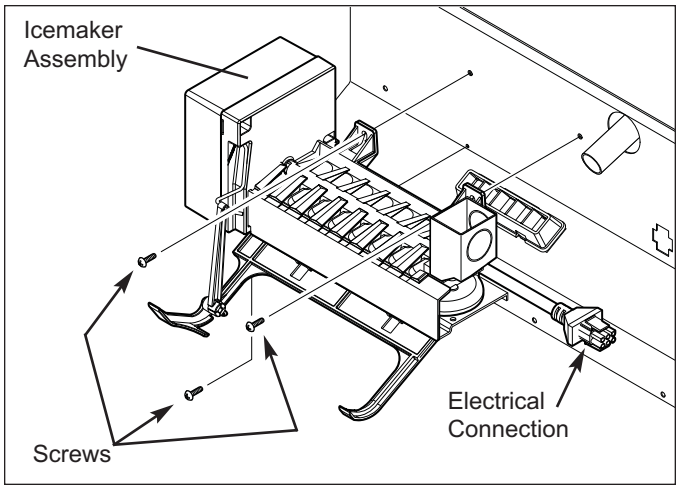


Figure 7-99. Icemaker Assembly Removal

Freezer Basket Slide

The basket slides are secured with screws to the compartment side walls.

To remove a basket slide, first remove the basket assembly, then extract the slide's mounting screws and pull the slide from the side wall. (See Figure 7-100)

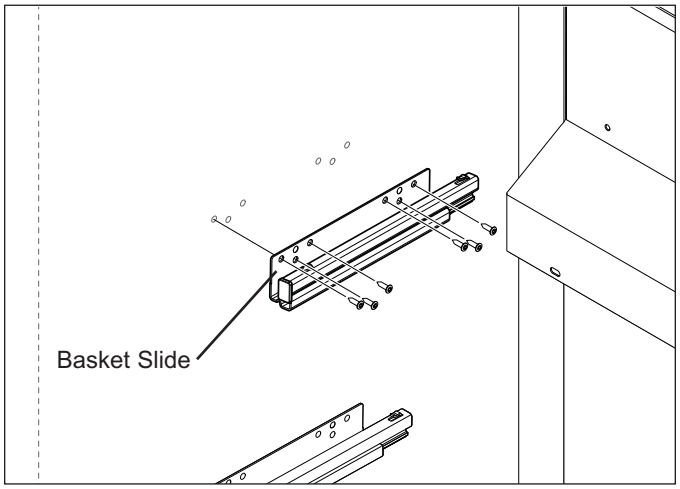


Figure 7-100. Freezer Basket Slide Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the freezer compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the upper light diffuser assembly (See Figure 7-101):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

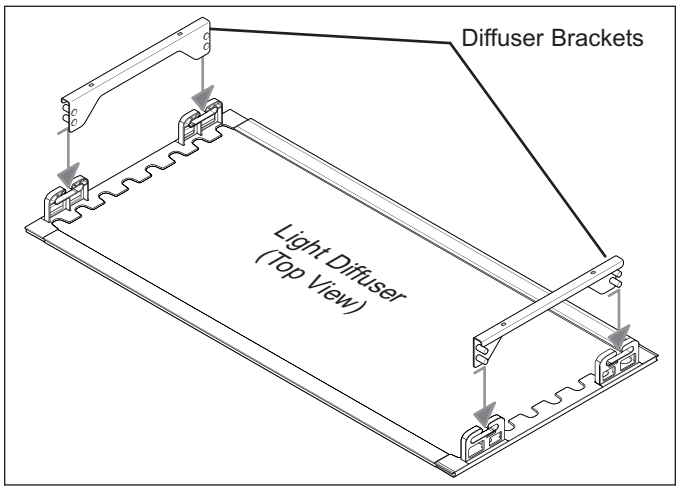


Figure 7-101. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The lighting assemblies are located behind the light diffuser at the top of the compartment.

To remove light bulbs, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-102)

Light bracket assemblies are secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser and light bulbs, then (See Figure 7-102):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

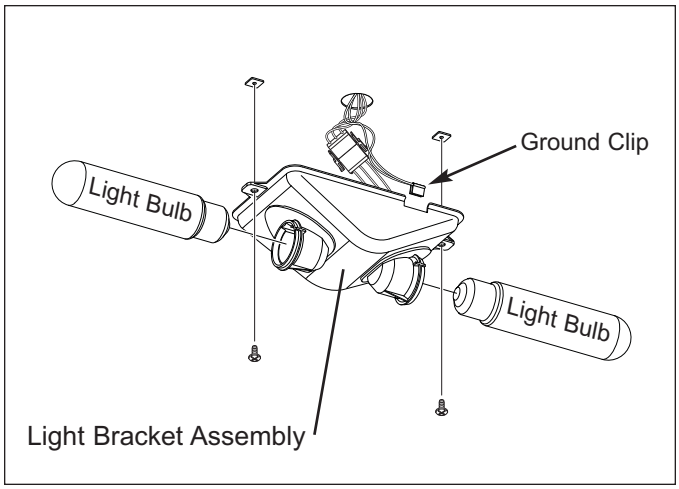


Figure 7-102. Upper Light Assembly

Control Panel Assembly (a.k.a. UIM - User Interface Module)

The control panel assembly (UIM) is located at the top front of the freezer compartment and is secured with tabs at each end fitting into slots in the display support.

To remove the control panel assembly, first remove the upper light diffuser, then (See Figure 7-103):

1. At each end of control panel assembly, reach behind the control panel and push the lower tabs upward while pulling the bottom edge away from the display support.
2. Once the lower tabs are disengaged, lower the assembly down and disconnect the electrical lead from the control panel assembly PC board.

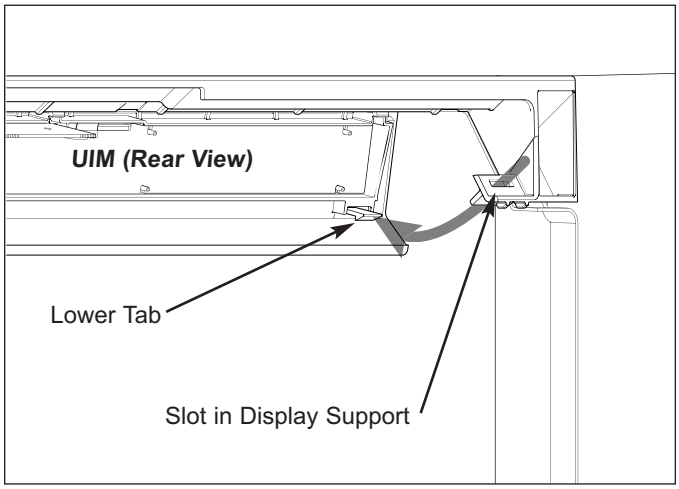


Figure 7-103. Control Panel Assembly Removal
(viewed from behind)

Upper Duct Assembly

The upper freezer duct assembly has notches at the bottom of each side flange that fit over locating pins on the shelf ladders; screws at the top of the duct secure it to the back wall of the compartment.

To remove the upper duct assembly, first remove all cantilever shelves, the fixed glass shelf and the upper light diffuser assembly, then (See Figure 7-104):

1. Extract screws from top of upper duct.
2. Pull top of duct forward, about 45 degrees from vertical, then lift the duct up off of shelf ladder pins.

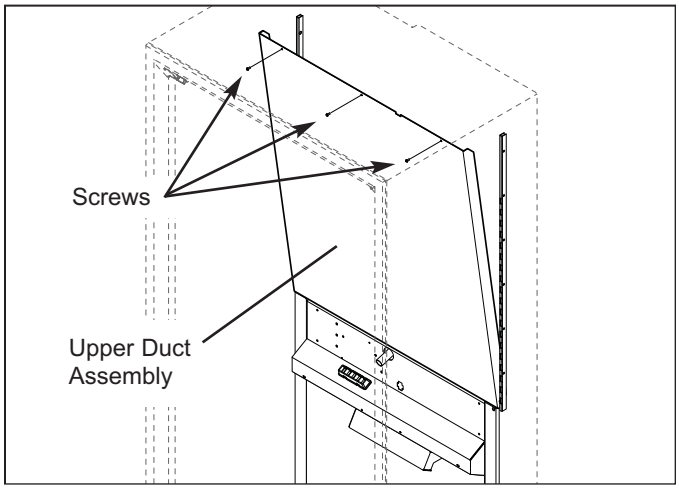


Figure 7-102. Upper Duct Assembly Removal

Shelf Ladder

Shelf ladders are held to the side walls with screws.

To remove a shelf ladder, first remove all cantilever shelves, the fixed glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-105):

1. Extract shelf ladder mounting screws.
2. Pull shelf ladder from side wall.

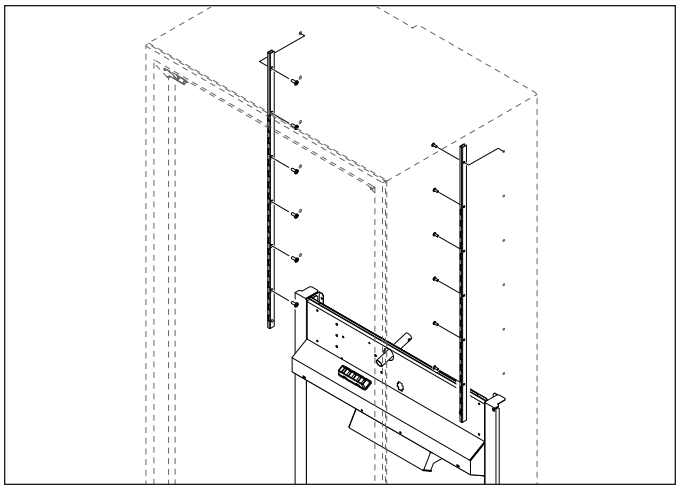


Figure 7-105. Shelf Ladder Removal

Middle Duct Assembly

The middle duct assembly is secured to the compartment back wall, lower duct assembly and the evaporator fan assembly with screws.

To remove the middle duct assembly, first remove all cantilever shelves, the fixed glass shelf, upper freezer basket, icemaker assembly, upper light diffuser and upper duct assembly, then (See Figure 7-106):

1. Pull fill tube heater from fill tube.
2. Extract middle duct assembly mounting screws and pull duct forward slightly.
3. Work fill tube heater wires through plastic grommet, and disconnect icemaker wire harness panel mount electrical plug from the duct. Then pull the duct assembly from the compartment.

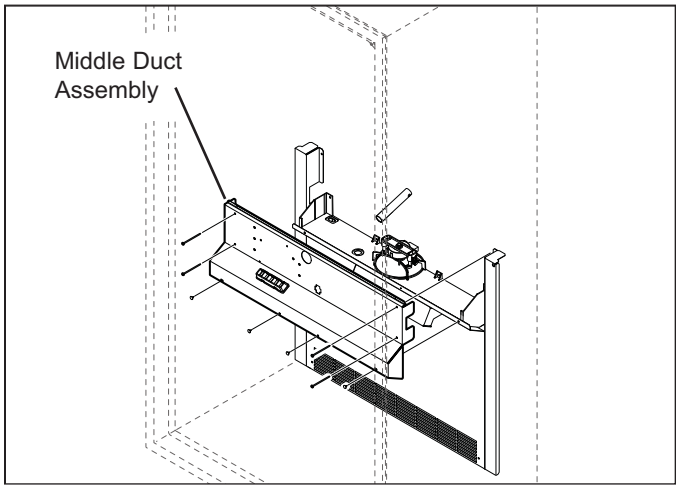


Figure 7-106. Middle Duct Assembly Removal

Fill Tube Heater

To Remove the fill tube heater, first remove all cantilever shelves, the fixed glass shelf, upper freezer basket, icemaker assembly, upper light diffuser and upper duct assembly, then unplug the heater and remove it from the compartment (See Figure 7-107):

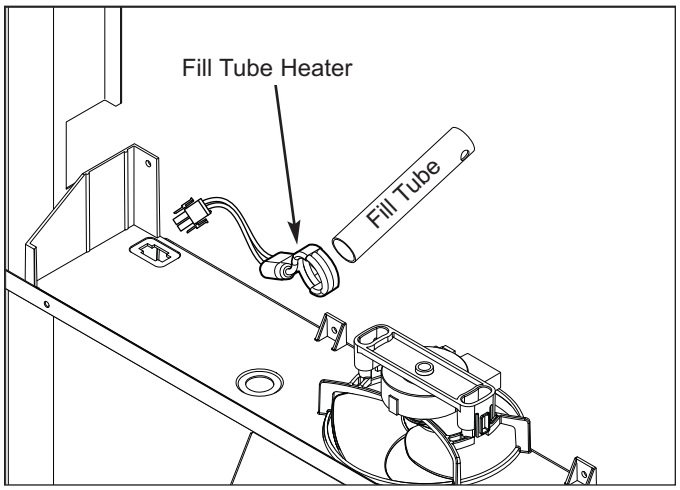


Figure 7-107. Fill Tube Heater Removal

Lower Duct Assembly

The lower duct assembly is held in place with screws at the top and bottom.

To remove the lower duct assembly, first remove all cantilever shelves, the fixed glass shelf, all freezer baskets, icemaker assembly, upper light diffuser, upper duct assembly and middle duct assembly, then (See Figure 7-108):

1. Extract mounting screws a bottom of lower duct assembly.
2. Pull duct assembly forward slightly until the wire leads for the lower light assembly are visible, then disconnect wire leads from light fixture.
3. Pull lower duct assembly from unit.

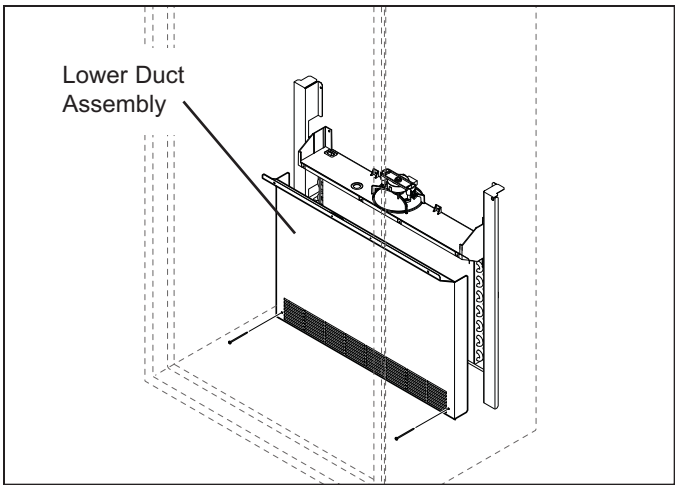


Figure 7-108. Lower Duct Assembly Removal

Evaporator Fan Motor

The freezer evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove all cantilever shelves, the fixed glass shelf, all freezer baskets, icemaker assembly, upper light diffuser, upper duct assembly, middle duct assembly an lower duct assembly, then (See Figure 7-109):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

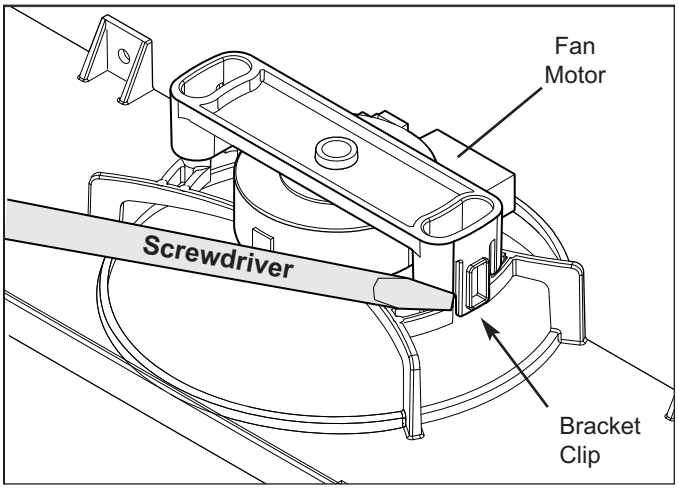


Figure 7-109. Evaporator Fan Removal

Evaporator Defrost Heater

The evaporator defrost heater is held in place at the bottom of the evaporator with defrost heater clips.

To remove the defrost heater, first remove all cantilever shelves, the fixed glass shelf, all freezer baskets, icemaker assembly, upper light diffuser, upper duct assembly, middle duct assembly an lower duct assembly, then (See Figure 7-110):

1. Disconnect heater electrical leads.
2. Using a small needle-nose pliers, detach heater clips by pulling end tab of clips away from evaporator, then remove heater from compartment.

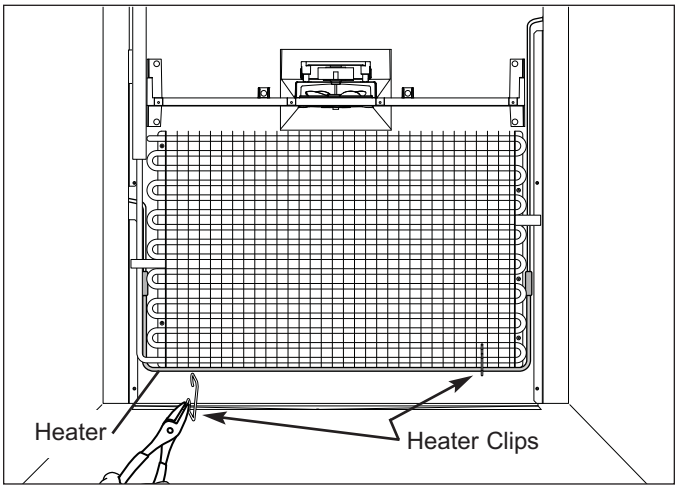


Figure 7-110. Defrost Heater Removal

Freezer Defrost Terminator

The freezer defrost terminator is attached to the evaporator outlet.

To remove the defrost terminator, first remove all cantilever shelves, the fixed glass shelf, all freezer baskets, icemaker assembly, upper light diffuser, upper duct assembly, middle duct assembly an lower duct assembly, then (See Figure 7-111):

1. Extract the left wire cover mounting screws and pull wire cover from compartment.
2. Disconnect terminator electrical leads.
3. Pull terminator off of evaporator outlet tube.

NOTE: *When replacing the terminator be sure to attach the new terminator in the same location that the defective terminator was removed from.*

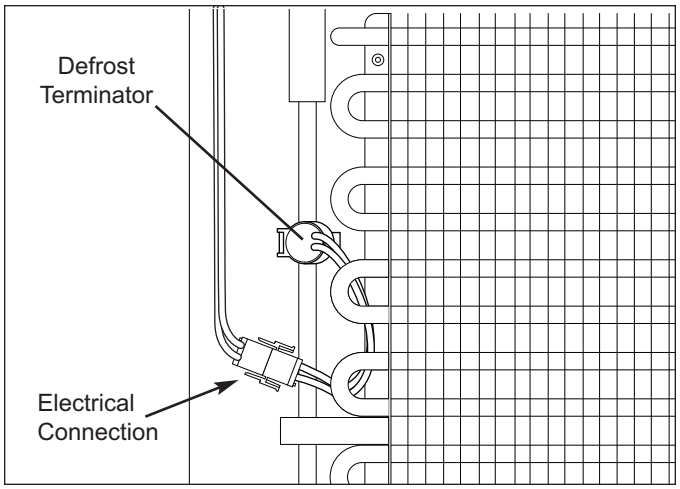


Figure 7-111. Defrost Terminator Removal

Freezer Evaporator Thermistor

The freezer evaporator thermistor is secured with a cable tie to an evaporator return bend on the right side of the evaporator.

To remove the evaporator thermistor, first remove all cantilever shelves, the fixed glass shelf, all freezer baskets, icemaker assembly, upper light diffuser, upper duct assembly, middle duct assembly an lower duct assembly, then (See Figure 7-112):

1. Extract the right wire cover mounting screws and pull wire cover from compartment.
2. Cut cable tie securing thermistor to evaporator.
3. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

NOTE: *When replacing the thermistor be sure to attach the new thermistor to the same return elbow that the defective thermistor was removed from. At this writing, the thermistor is attached to the third elbow from the top in the front row of elbows on the right side.*

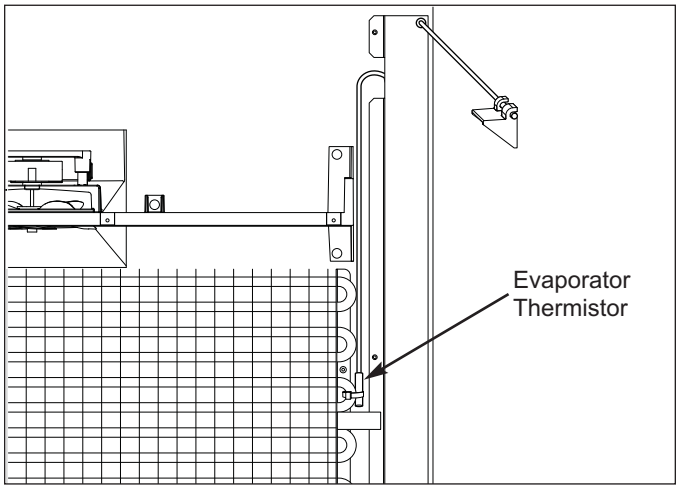


Figure 7-112. Evaporator Thermistor Removal

Freezer Compartment Thermistor

The freezer compartment thermistor is inserted into a thermistor clamp that is attached to the right wall of the compartment, below the fixed glass shelf.

To remove the compartment thermistor, first remove all cantilever shelves, the fixed glass shelf, all freezer baskets, icemaker assembly, upper light diffuser, upper duct assembly, middle duct assembly an lower duct assembly, then (See Figure 7-111):

1. Extract the right wire cover mounting screws and pull wire cover from compartment.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

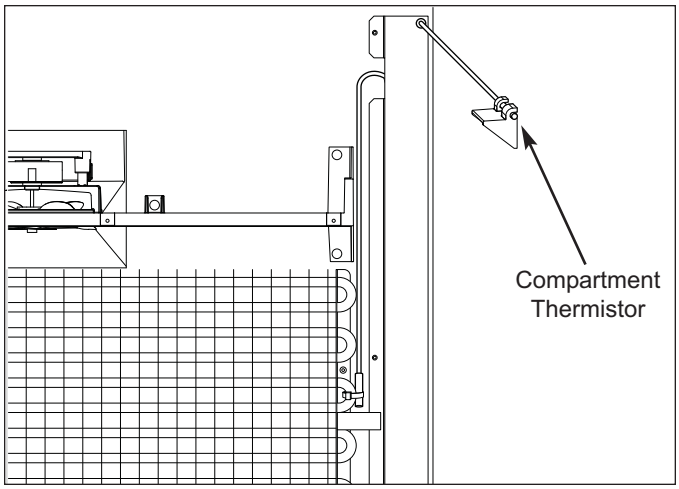


Figure 7-113. Compartment Thermistor Removal

Model BI-36F Compressor Area Mechanical Components

NOTE: *For water filter and filter manifold, see Exterior Cosmetic / Mechanical Components earlier in this section.*

Main Control Board

Screws hold the main control board inside a control housing that sits on a slide support bracket at the left side of the compressor area.

To remove the main control board assembly, the control grille and compressor shroud will need to be removed first, then (See Figure 7-114)

1. Grab front of control housing and pull it toward front of unit, off of the support bracket.
2. Disconnect wire leads from wire harness at right side of housing.
3. Disconnect communication cables from right side of control.
4. At top of control housing, lift the cover latches off of tabs along top of housing case, then separate the cover from the case.
5. Disconnect all wire leads from control board.
6. Extract control board mounting screws and lift board out of case.

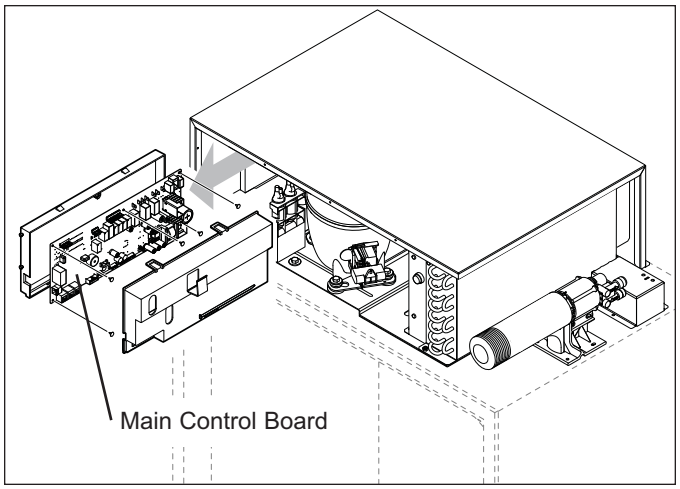


Figure 7-114. Control Board Assembly

Condenser Fan Shroud Assembly

Tabs at the back of the condenser fan shroud fit into grommets in the condenser's rear bracket. A hole in the bottom front flange of the condenser fan shroud fits down over a threaded stud, and a nut is then applied onto the stud. The front flange of the condenser fan shroud assembly is then secured to the front condenser bracket with screws.

To remove the condenser shroud assembly, first remove the top cabinet trim, top cabinet frame and compressor shroud, then (See Figure 7-115):

1. Extract condenser shroud mounting screws at front of condenser.
2. Extract nut from threaded stud at base of condenser fan shroud.
3. Pull assembly forward slightly, disconnect condenser fan electrical leads.
4. Disconnect filter reset switch electrical leads, then pull the assembly from the compressor area.

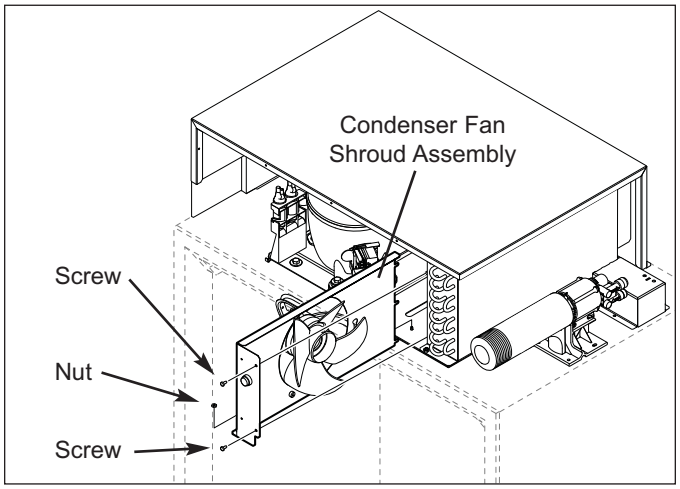


Figure 7-115. Condenser Fan Shroud Assembly

Condenser Fan Motor

The condenser fan is mounted to the condenser fan shroud with three fan mounting brackets that hook into grommets that are in the condenser fan shroud. At the back of the motor, screws pass through these brackets into the back of the fan motor. The condenser fan blade is held onto the fan motor shaft with a nut.

To remove the condenser fan motor, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-116):

1. Extract screws securing motor to brackets.
   NOTE: *The brackets will unhook from the grommets in the shroud after the screws are removed.*
2. To remove fan blade from fan motor:
   a. Grab blade and motor while turning nut counterclockwise.
   b. Then pull the blade from the motor shaft.

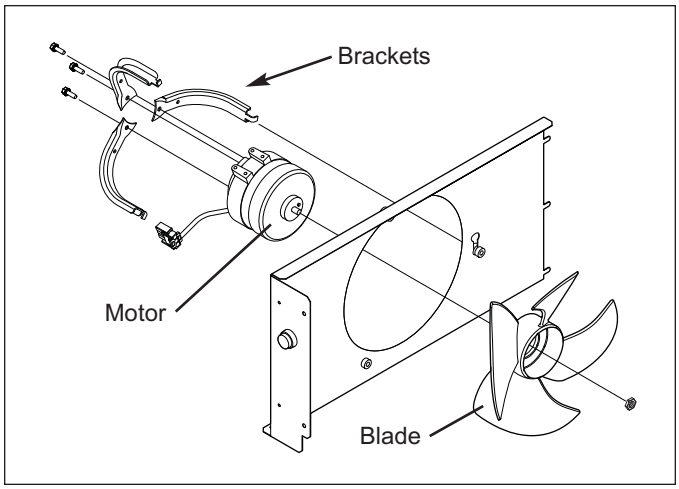


Figure 7-116. Condenser Fan Motor Removal

Water Filter Reset Switch

The water filter reset switch is secured to the inside of the condenser shroud front flange by retaining clips.

To remove the water filter reset switch, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-117):

1. Disconnect electrical leads from switch.
2. Using a needle-nose pliers, compress the retaining clips on switch body and push switch through condenser shroud flange.

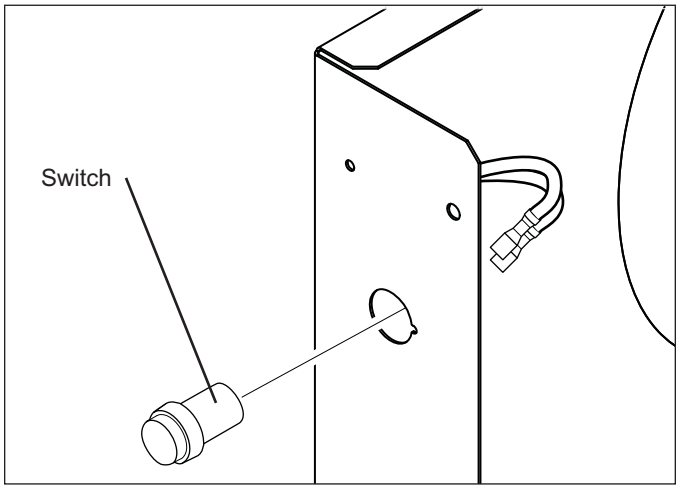


Figure 7-117. Filter Reset Switch Removal

Model BI-36F Sealed system Components

The sealed system components at the top of the appliance sit on a sliding unit tray. There is a slot in the unit tray running from front to back, with a bolt positioned in the middle of this slot and attached to the top of the appliance. This allows the tray to be pulled straight forward to aid in sealed system repairs. (See Figure 7-118) When not being moved for service, a bolt passing down through a hole at the front of the unit tray holds it in place.

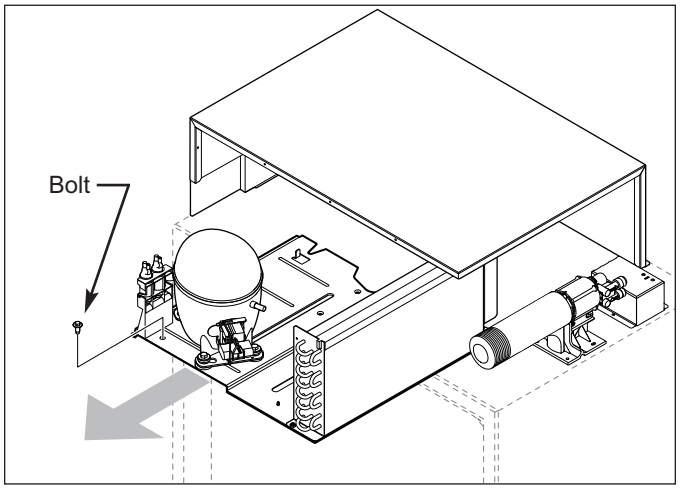


Figure 7-118. Sliding Out the Unit Tray

⚠ WARNING

UNIT COULD TIP FORWARD! MAKE SURE THE ANTI-TIP BRACKETS ARE IN PLACE AND THE UNIT IS PROPERLY ANCHORED BEFORE ATTEMPTING TO SLIDE THE UNIT TRAY OUT.

NOTES:

- *Removing the condenser fan shroud assembly before sliding the unit tray out will allow greater access to sealed system components on the tray. See condenser Fan Shroud Assembly removal instructions earlier in this section.*
- *When tapping into the sealed system, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*
- *Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.*

High-Side Filter-Drier

NOTE: *It is not necessary to slide the unit tray forward in order to replace a high-side filter-drier.*

To remove a high-side filter-drier, first capture the refrigerant from sealed system, then (See Figure 7-119):

1. With a file, score a line around capillary tube 1” or less from drier outlet, then fatigue capillary tube at this line until it separates.
2. With a tube-cutter, cut inlet tube 1” or less from drier inlet.

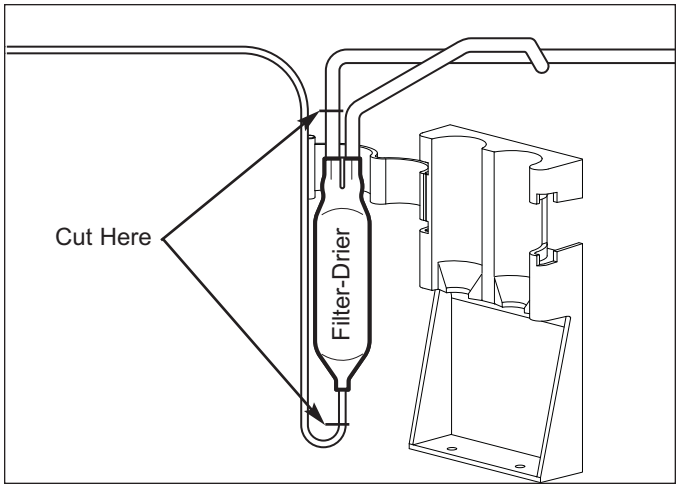


Figure 7-119. Filter-Drier Removal

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 1 above.*
- *When installing replacement filter-drier, insert capillary tube until it touches screen inside drier, then pull capillary tube away from screen approximately 3/8" before brazing.* (See Figure 7-120).
- *Filter-drier outlet must be facing downward in order to function properly.*

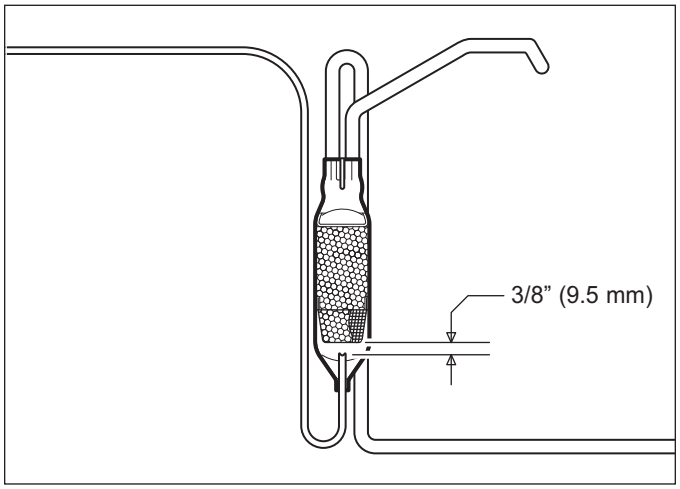


Figure 7-120. Capillary Tube Insertion Note

Compressor

Compressors are secured to the unit tray with three shoulder screws that pass down through rubber grommets in the compressor base and into holes in unit tray. A metal tab formed into the unit tray passes up through the fourth rubber grommet and the compressor base.

NOTE: *See information, WARNING and NOTES under the heading of Model BI-36F Sealed System Components before continuing.*

After capturing the refrigerant from the sealed system, (See Figure 7-121):

1. Disconnect wire leads from compressor electricals.
2. Using a tube cutter, cut suction and discharge tubes approximately 1" from compressor stubs.

   NOTE: *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
3. Extract compressor mounting shoulder screws, then lift compressor off of unit tray.

NOTE: *After replacing the compressor, take care to not kink tubing as the unit tray is slid back into position.*

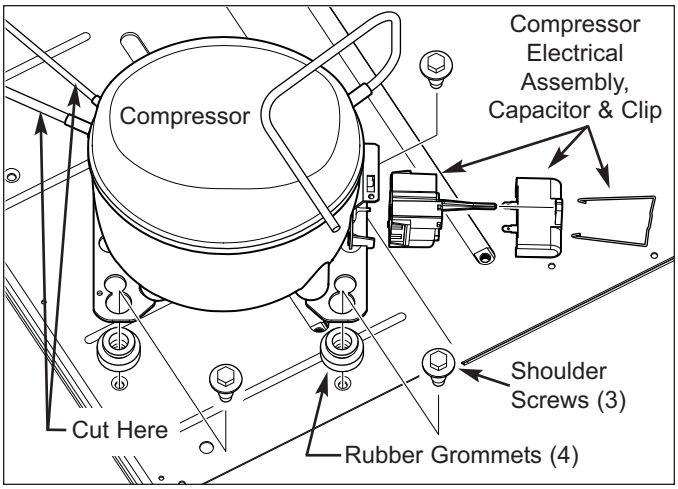


Figure 7-121. Compressor Removal

Condenser

Holes in the front and rear bottom flanges of the condenser fit over threaded studs in the unit tray, then a nut is applied to each threaded stud to hold the condenser in place.

NOTES:
- *See information, WARNING and NOTES under the heading of Model BI-36F Sealed System Components before continuing.*
- *The condenser inlet and outlet stubs are at the rear of the condenser.*

After capturing the refrigerant from the sealed system, (See Figure 7-122):

1. Remove nuts from threaded studs at the front and rear of condenser, then lift condenser slightly to clear threaded studs and pull condenser forward.
2. Using a tube cutter, cut condenser inlet and outlet tubes approximately 1" from condenser stubs, then remove condenser fully from unit tray.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After replacing the condenser, take care to not kink tubing as the unit tray is slid back into position.*

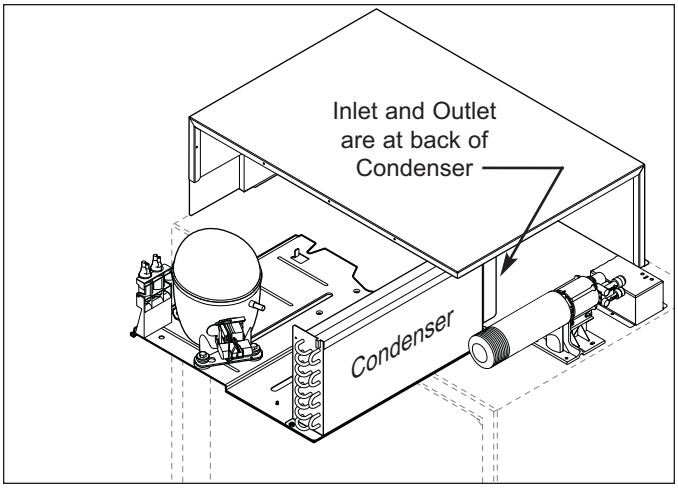


Figure 7-122. Condenser Removal

Freezer Evaporator

The freezer evaporator is attached to the rear wall of the compartment with screws, behind the compartment duct assemblies. See Duct Assembly removal procedures earlier in this section.

NOTES: *The high-side filter-drier must also be replaced when replacing an evaporator.*

To remove the evaporator, first capture the refrigerant from the sealed system, then (See Figure 7-123):

1. Remove defrost heater, defrost terminator and evaporator thermistor from evaporator.
2. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
3. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
4. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 2 above.*

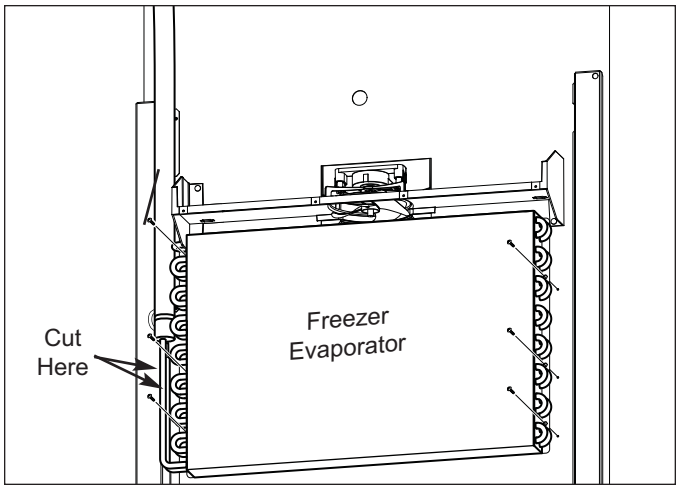


Figure 7-123. Freezer Evaporator Removal

Heat Exchanger

The freezer heat exchanger passes through the ceiling of the compartment.

NOTES:

- *The high-side filter-drier must also be replaced when replacing a heat exchanger.*

To remove a heat exchanger, first capture the refrigerant from the sealed system, then (See Figure 7-124):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.
4. With a tin snips, or similar tool, cut heat exchanger in compartment as close as possible to ceiling where heat exchanger passes through.
5. Use a tube-cutter to cut drier from condenser outlet tube.
6. Using a tube cutter, cut suction line approximately 1” from compressor.
7. Pull remaining heat exchanger from unit.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *When replacing the heat exchanger, it is recommended to attach it at the evaporator end first, then feed the heat exchanger through hole, up to compressor area.*

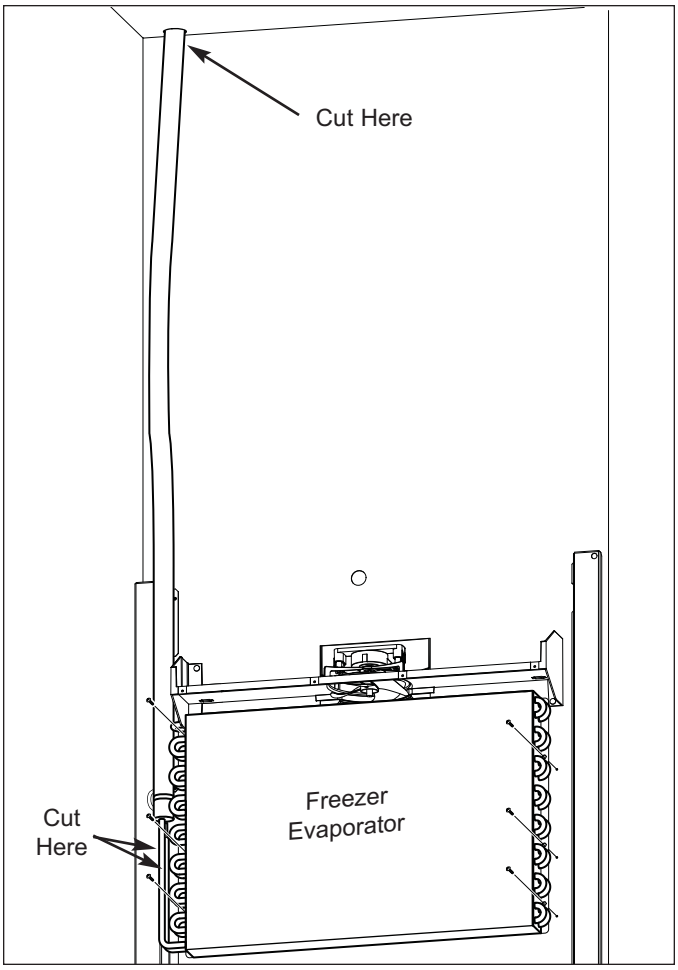


Figure 7-124. Freezer Heat Exchanger Removal

Model BI-36R Exterior Cosmetic / Mechanical Components

Kickplate

To remove a kickplate, extract the screws from the left and right corners of the kickplate, then pull the kickplate forward. (See Figure 7-125).

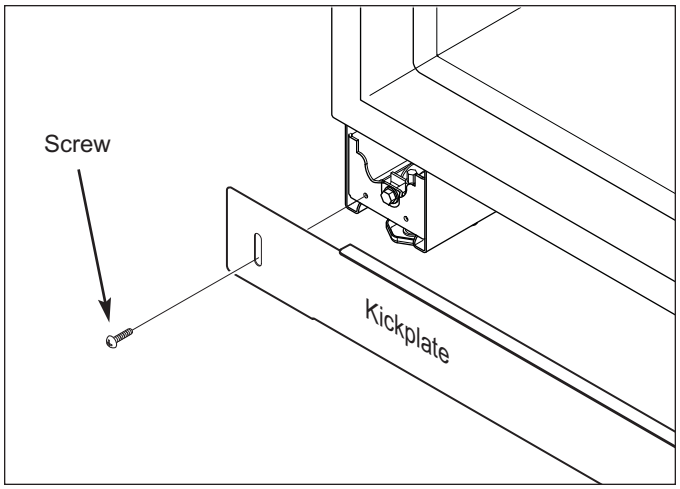


Figure 7-125. Kickplate Removal

Dual Installation Kickplate

A dual installation kickplate assembly is held in place with magnets at each end and one screw at top center. To remove the dual installation kickplate, the screw at top center must be extracted before pulling the dual installation kickplate forward (See Figure 7-125A).

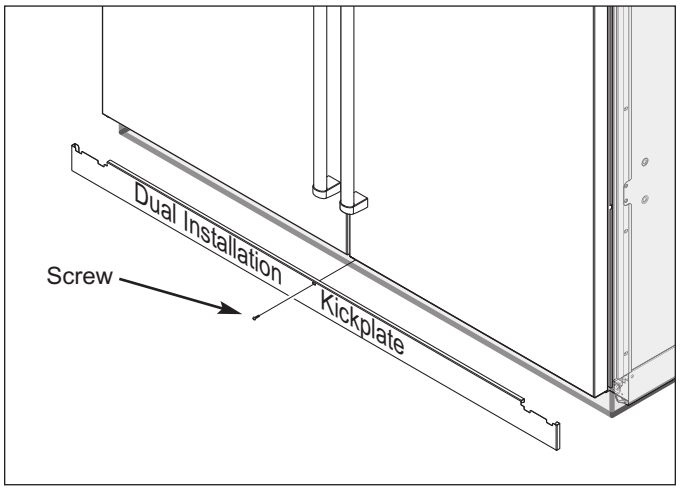


Figure 7-125A. Dual Installation Kickplate

Drain Pan

The drain pan slides in from the front of unit on two side brackets. A locating feature was built into the drain pan in the form of detentes at the bottom front that drop into notches at the front of the side brackets.

To remove the drain pan (See Figure 7-126):

1. Remove kickplate.
2. Push front of drain pan up slightly, then pull forward.

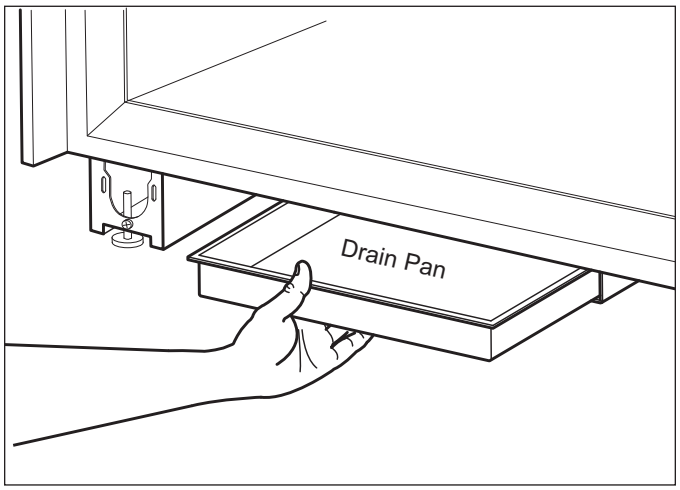


Figure 7-126. Drain Pan Removal

Door Switch

The door switch is located at the top rear of the top cabinet frame, with the switch's actuator protruding through a hole in the front of the frame. A series of tabs and pegs hold the door switch in place.

To remove a door switch, first open the grill, then (See Figure 7-127):

1. Disconnect the switch electrical leads using a needle-nose pliers to pull the electrical lead housings away from the switch.
2. Use a small flat-blade screwdriver to pry the front retaining tab at each side of the switch back while lifting that side of the switch up. Repeat this step on each side of the switch.
3. Pull switch back and lift off of the top cabinet frame

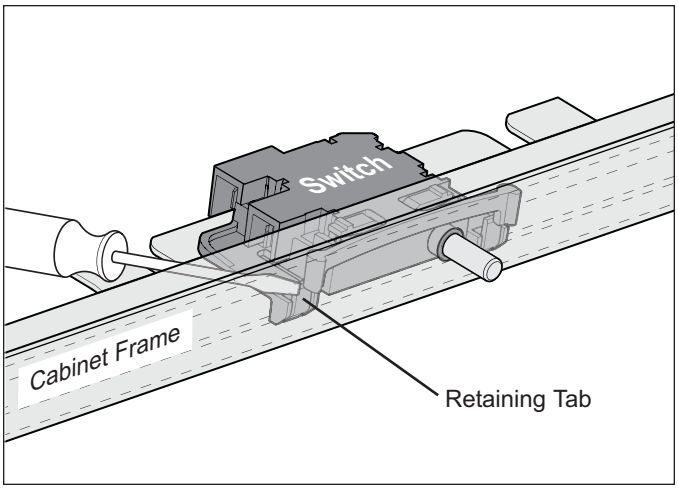


Figure 7-127. Door Switch Removal

Top Cabinet Trim

The top cabinet trim sits below the grille assembly. Screws pass through open ended slots in the trim to secure it to the top cabinet frame.

To remove the top cabinet trim first open the grill then, (See Figure 7-128):

1. Use a T-15, 6-lobe Torx type bit, to loosen, but not remove, the trim mounting screws.
2. Pull the trim forward. off of the unit.

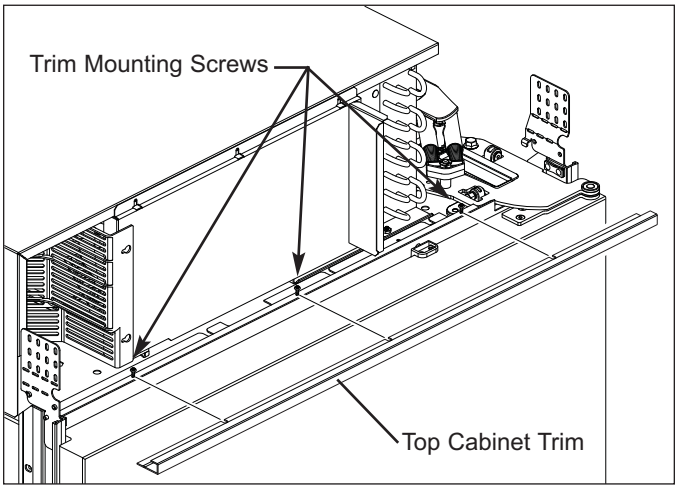


Figure 7-128. Top Cabinet Trim Removal

Grille Assembly

The grille assembly is attached at the top of the unit with screws passing through the grille's side frames into grille brackets.

To remove a grille assembly (See Figure 7-129):

1. Lift open the front of the grille assembly to access the mounting screws.
2. With a T-20, 6-lobe Torx type bit, extract the two front grille mounting screws, then loosen but do not remove the two rear mounting screws.
3. pull the grille assembly forward, off of the unit.

NOTE: *When reinstalling the grille assembly, line up the notches at back of grille side frames with the rear mounting screws, then push the grille assembly back.*

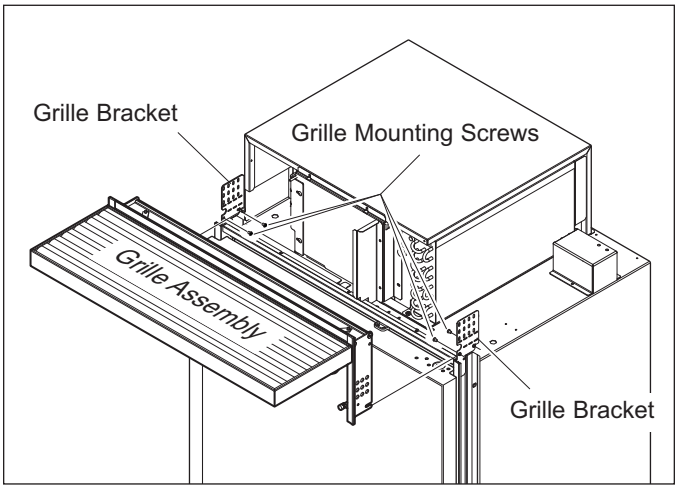


Figure 7-129. Grille Assembly Removal

Framed / Overlay Refrigerator Door Handle / Handle-Side Trim

The door handle on framed units and the handle-side trim on overlay units is attached to the door with screws. These screws are covered by a screw cover.

To remove a handle of handle-side trim, open the door then:

1. At the top of the door, insert a flat blade screwdriver into the channel of the screw cover and push the cover back, disengaging it from the handle or trim (See Figure 7-9).
2. With a T-20, 6-lobe Torx type bit, extract the handle-side trim mounting screws and pull the trim from the door (See Figure 7-10).

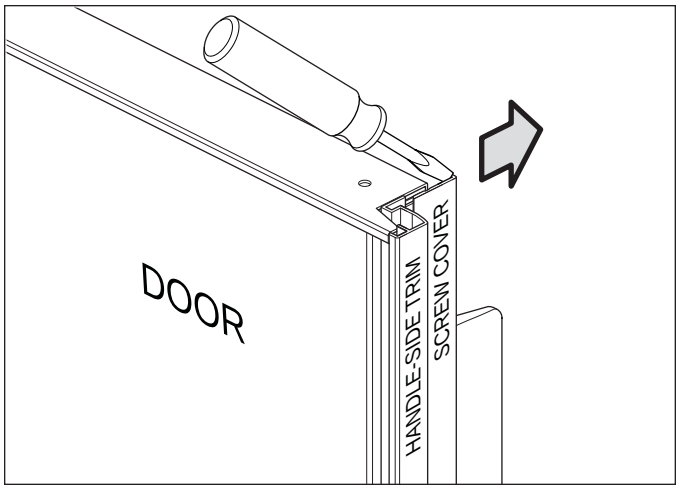


Figure 7-130. Screw Cover Removal

Stainless Steel Door Handle Assembly

A screw inserted through the stainless steel handle standoffs into the handle secures the handle to the standoffs. The standoffs are then slides over threaded studs that are attached to the door shell. A socket head set-screw inserted through the side of the standoff secures the standoff to the stud.

To remove a stainless steel handle assembly (See Figure 7-132):

1. Use a 3/32” Allen-wrench to loosen the set-screw in each handle standoff.
2. Pull handle assembly off of the threaded studs.

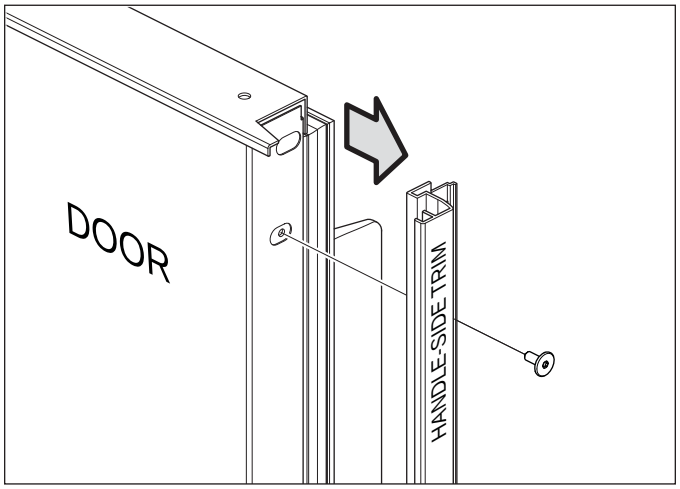


Figure 7-131. Handle / Handle-Side Trim Removal

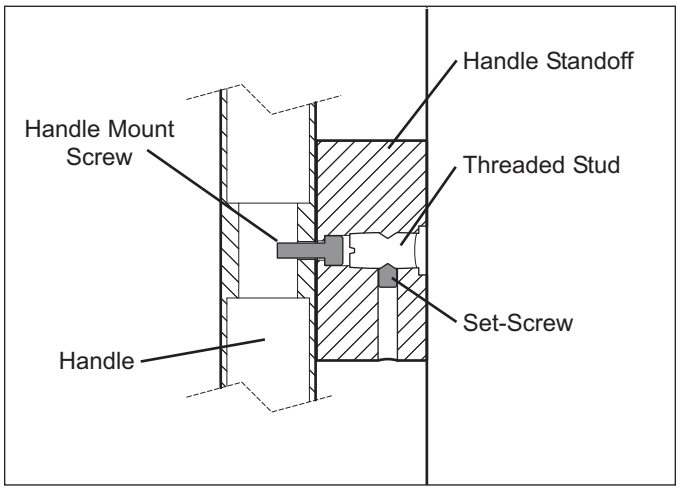


Figure 7-132. Cut-away View - SS Handle Assembly

Top Door Hinge Assembly

The top hinge assembly is secured to the unit with bolts that pass down through the cabinet hinge plate into threaded inserts. Screws passing down through the door hinge secure the hinge assembly to the door.

NOTE: *A special tool package is available to assist in removing a top hinge assembly. This tool package is provided with replacement hinge and door assemblies. If needed, order part #7011097. The directions below were written to be used with this tool package.*

To remove a top hinge assembly, the grille assembly and top cabinet trim must first be removed. If the unit has a glass door, pull the heater flex cable out of the cable retainer at the side of the hinge assembly at this time, then:

1. With the door open, use a 5/32" Allen wrench or bit to extract the top door hinge mounting screw nearest to the hinge pivot point (See Figure 7-133).
2. Use a 1/8" Allen wrench or bit to replace the screw just removed with the 1/4-20X1/2" setscrew, included in the tool package, inserting the setscrew down until its top is flush with the top surface of the door hinge (See Figure 7-133).

   NOTE: *If the setscrew is not inserted far enough it will damage the hinge plate when closing the door; if it is inserted too far it will not hold the door hinge in the correct position when closing the door.*

3. Extract the inner door hinge mounting screws, leaving the outermost screw in place (See Figure 7-133).
4. insert the hinge spacer, included in the special tool package, between the door closer guide and the back of the door closer track, then close the door (See Figure 7-133).

   NOTE: *This spacer will keep the door closer mechanism at the proper spacing to facilitate hinge assembly removal and reinstallation.*

5. With the door closed, use a socket wrench with an extension and a ½" socket to extract the cabinet hinge mounting bolts (See Figure 7-134).
6. Extract the outermost door hinge mounting screw (See Figure 7-134).
7. Lift the hinge assembly up off of the top of the unit, allowing the door to shift toward the handle side and come to rest against the main frame (See Figure 7-135).

   NOTE: *It may be necessary to use a flat blade screwdriver to pry the post at the end of the door closer arm up out of the hole in the top of the door assembly.*

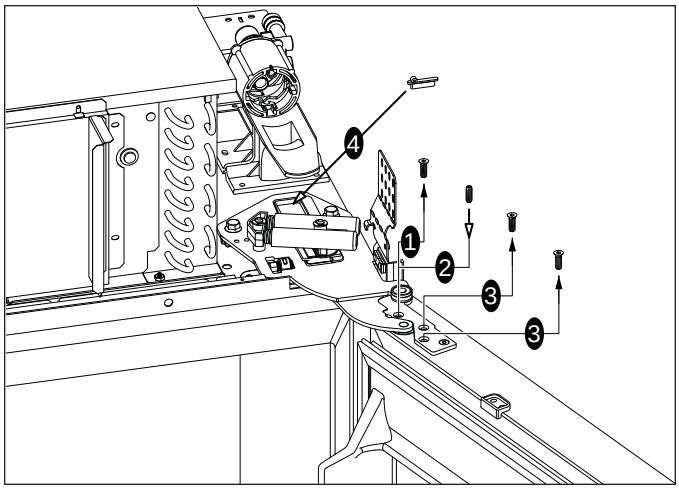


Figure 7-133. Top Door Hinge Screw Removal, Setscrew Installation and Spacer Installation

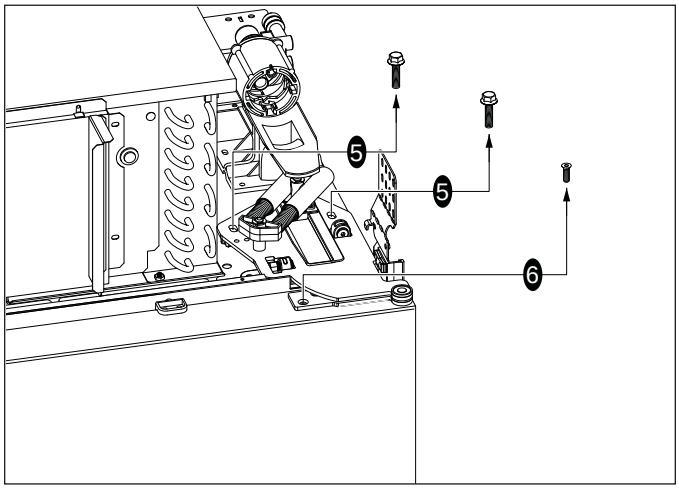


Figure 7-134. Cabinet Hinge Bolt Removal and Door Hinge Screw Removal

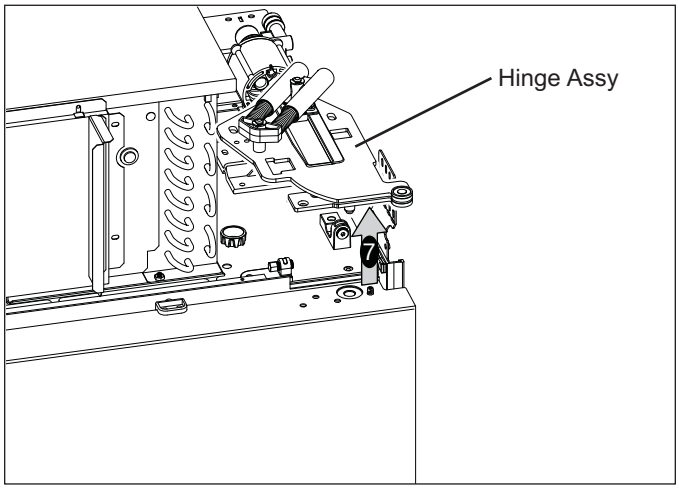


Figure 7-135. Top Door Hinge Assy Removal

Door Assembly

The door assembly is secured to the top and bottom door hinges with screws. The post of the bottom door hinge fits down into a bearing in the bottom cabinet hinge assembly's door adjuster.

To remove a door assembly, the top hinge assembly must be removed first. Then, with one hand at each side of the door, open the door forty-five to ninety degrees and lift it off of the bottom cabinet hinge assembly. (See Figure 7-136)

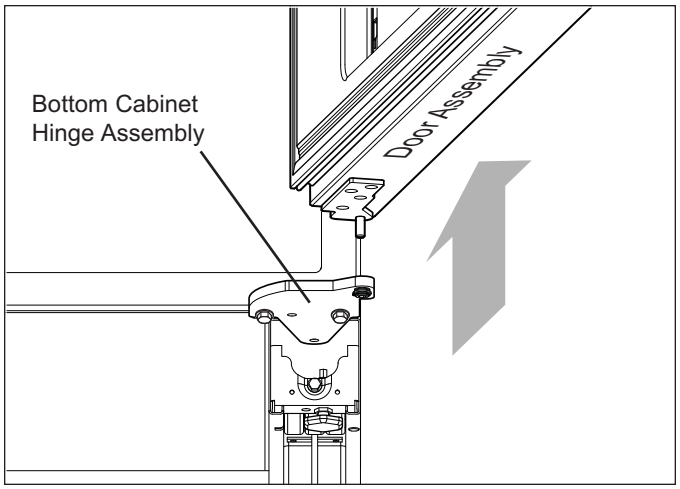


Figure 7-136. Door Assembly Removal

Bottom Cabinet Hinge Assembly

The bottom cabinet hinge assembly is attached to the bottom of the unit with bolts.

To remove the bottom cabinet hinge assembly, first remove the top hinge assembly and the door. Then, using a 1/2" wrench or socket, extract the cabinet hinge mounting bolts and pull the hinge assembly from the unit. (See Figure 7-137)

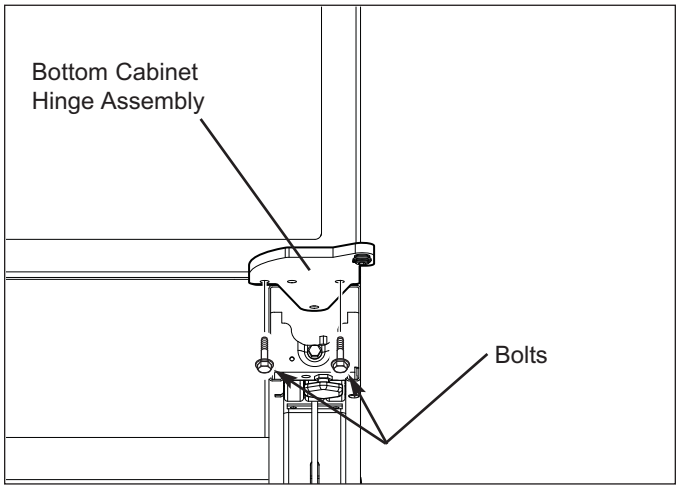


Figure 7-137. Cabinet Hinge Assembly Removal

Model BI-36R Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-138).

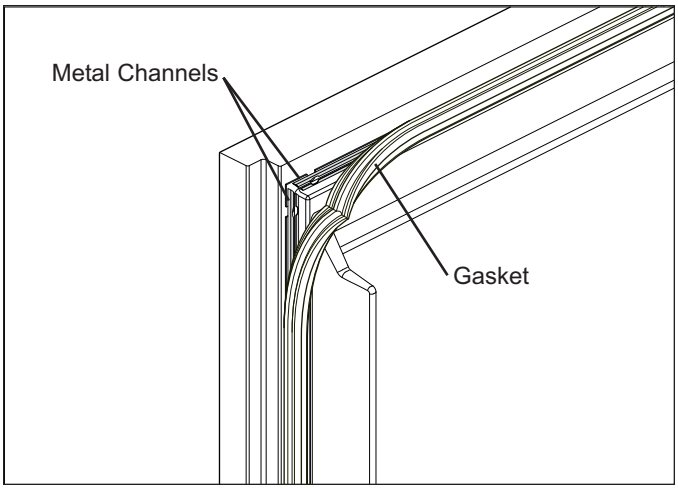


Figure 7-138. Door Gasket Removal

Adjustable Door Shelves and Dairy Compartment

Removal and adjustment of the upper door shelves and dairy compartment assembly is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-139).

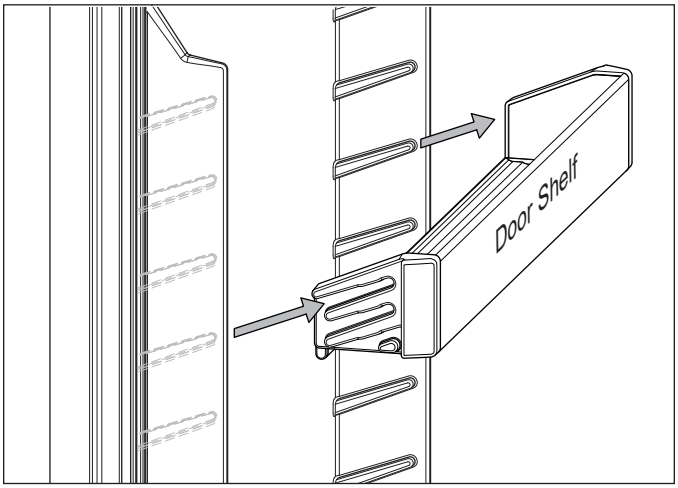


Figure 7-139. Adjustable Door Shelf

Non-adjustable Door Shelf

The lower non-adjustable door shelf has hooks at the back sides of its endcaps that fit into notches in the door liner.

To remove the non-Adjustable door shelf lift it up slightly then pull it from the notches in the door liner; to install it push in and down (See Figure 7-140)

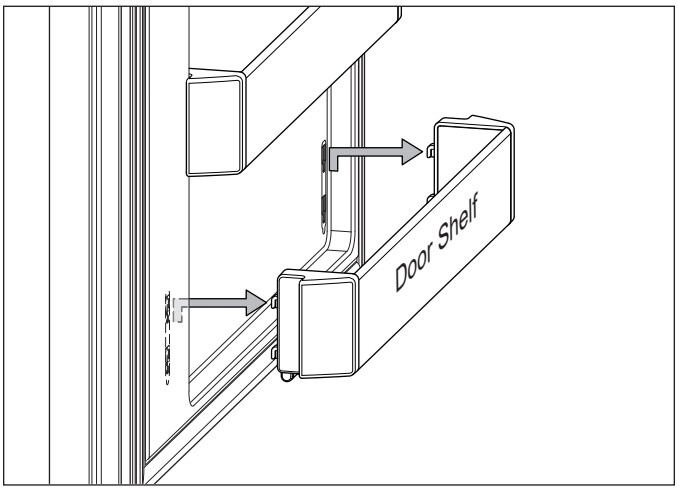


Figure 7-140. Non-Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a refrigerator cantilever shelf assembly (See Figure 7-141):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

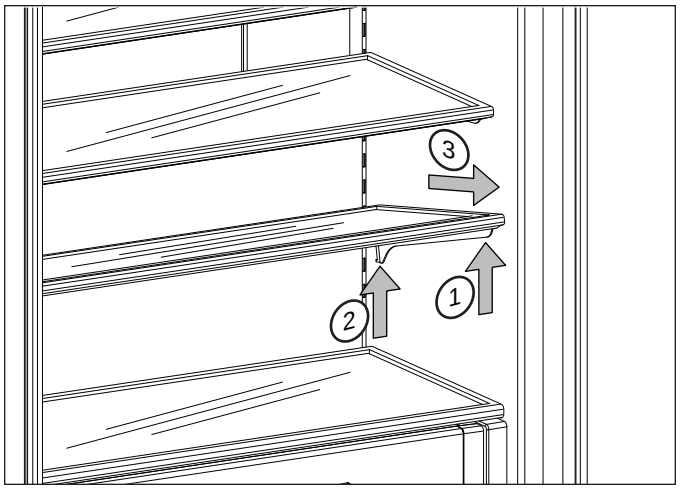


Figure 7-141. Cantilever Shelf Removal

Crisper Glass Shelf

The crisper glass shelf rests upon shelf standoffs that are mounted to the refrigerator side walls.

To remove the crisper glass shelf (See Figure 7-142):

1. Lift shelf straight up off of the standoffs.
2. Pull shelf forward, out of compartment.

Deli Drawer and/or Crisper Drawer Assembly

To remove a deli drawer assembly or crisper drawer assembly, open the drawer until it stops, then lift the front of the drawer up slightly off of the drawer slide while continuing to pull the assembly out of the compartment. (See Figure 7-143).

NOTE: *If the door is limited to a 90-degree opening, removing the non-adjustable door shelves will assist in this task.*

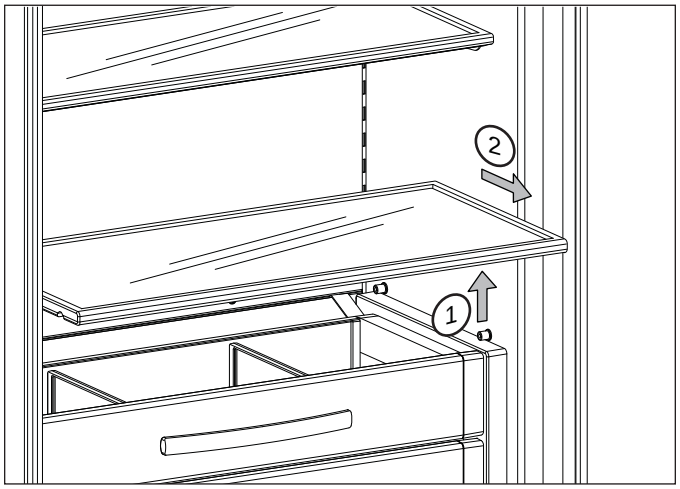


Figure 7-142. Crisper Shelf Removal

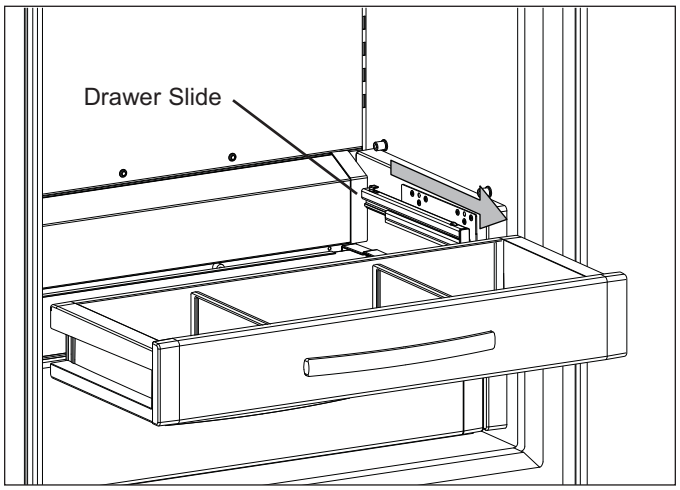


Figure 7-143. Refrigerator Drawer Removal

Glass Crisper Cover Assembly

The glass crisper cover assembly is located between the deli drawer and the top crisper drawer and is held in place by crisper cover supports attached to each side wall.

To remove the glass crisper cover assembly, first remove the deli drawer and the top crisper drawer, then (See Figure 7-144):

1. Grasp the assembly at the front edge toward each side.
2. Lift the front of the assembly upward and pull it forward to release it from the support retaining clips.

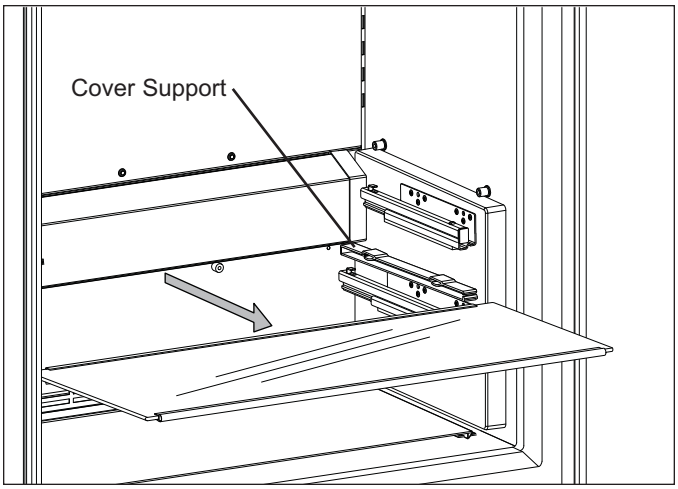


Figure 7-144. Crisper Cover Removal

Crisper Cover Support

The crisper cover supports are secured with screws to the compartment side wall and the crisper spacer assembly.

To remove a crisper cover support, the glass crisper cover must be removed first, then extract the support mounting screws and pull the support from the side wall or crisper spacer. (See Figure 7-145)

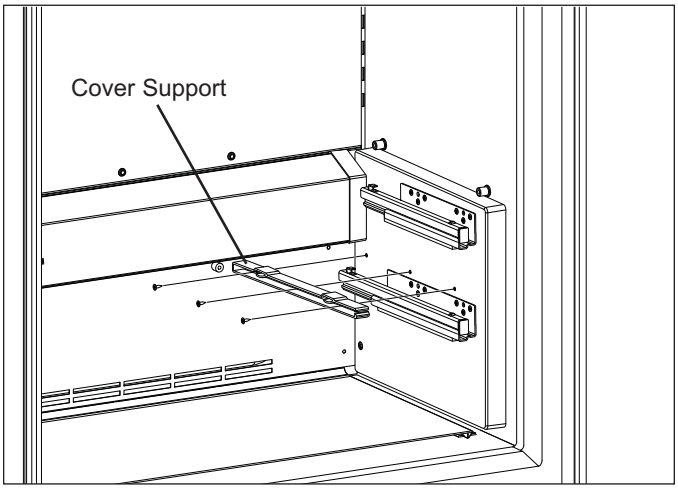


Figure 7-145. Crisper Cover Support Removal

Refrigerator Drawer Slide

The drawer slides are secured with screws to the compartment side walls and the crisper spacer assembly.

To remove a drawer slide, first remove the drawer assembly, then extract the slide's mounting screws and pull the slide from the side wall or crisper spacer. (See Figure 7-146)

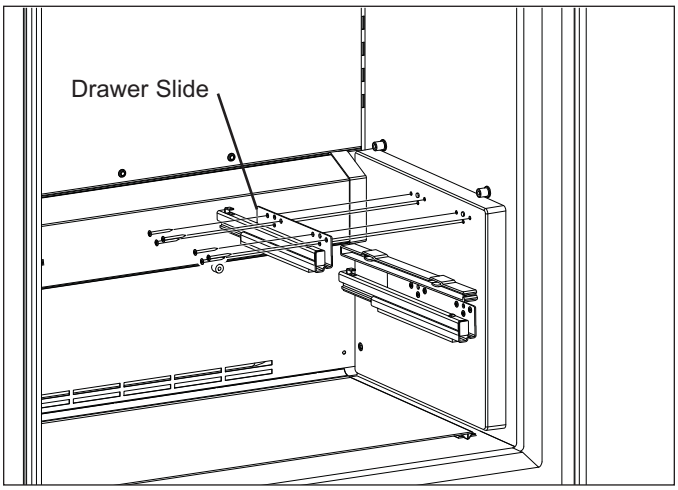


Figure 7-146. Drawer Slide Removal

Crisper Light Cover Assembly

The crisper light cover assembly is secured to the lower refrigerator duct by its upper flange and end caps engaging two crisper light cover supports that are part of the lower duct assembly.

To remove the lower light cover, first remove the crisper glass shelf and deli drawer assembly, then lift the light cover up at each end, disengaging it from the supports. (See Figure 7-147)

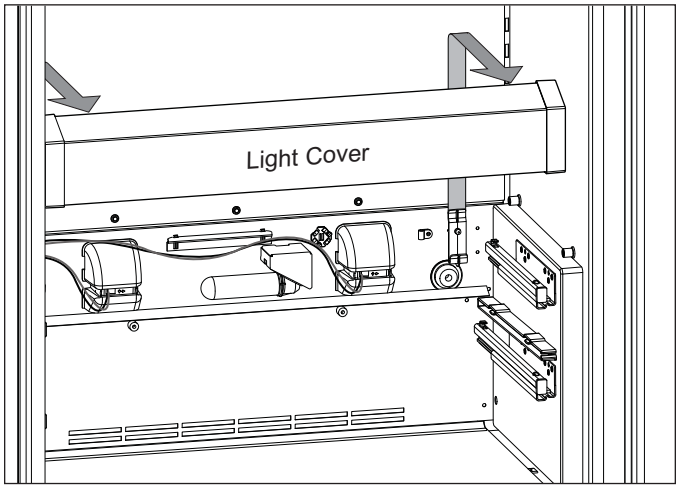


Figure 7-147. Crisper Light Cover Removal

Lower Light Bulb

The lower light assembly is located behind the crisper light cover.

To remove the lower light bulb, first remove the crisper glass shelf, deli drawer assembly and light cover, then turn the bulb counterclockwise to remove it from the light socket. (See Figure 7-148)

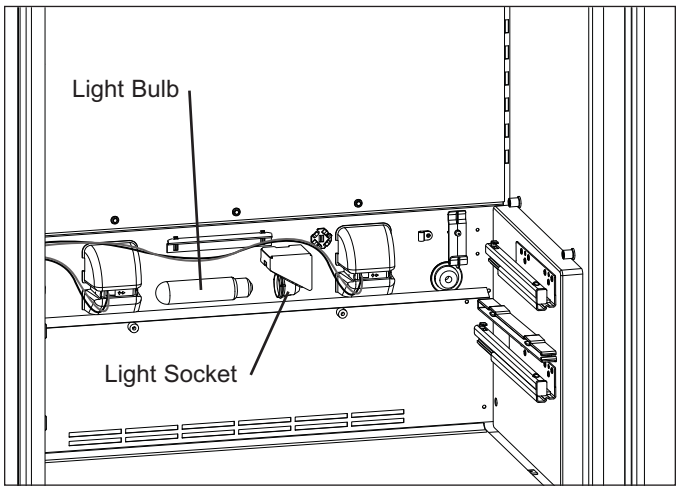


Figure 7-148. Lower Light Bulb Removal

Crisper Fan Assembly

A crisper fan assembly consist of a small fan motor and blade unit that is inserted into a notch in a small fan duct. This assembly is attached to the lower refrigerator duct by tabs at the side of the fan duct engaging the edges of the holes in the lower duct.

To remove a crisper fan assembly, the crisper glass shelf, deli drawer assembly and light cover must be removed first, then (See Figure 7-149):

1. Disconnect fan motor electrical leads.
2. Pull the fan wires out from under the wire clamps.
3. Squeeze the fan duct on both sides at the middle to disengage the tabs, then pull the assembly from the lower duct assembly.

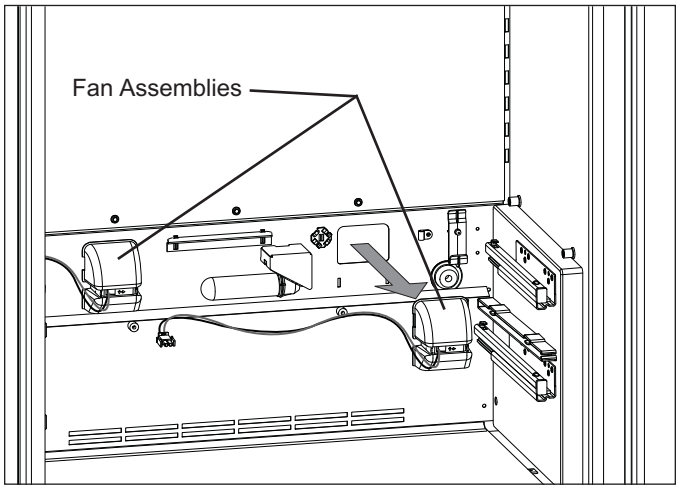


Figure 7-149. Crisper Fan Assembly Removal

Crisper Spacer Assembly

The crisper spacer assembly, which also holds the Consumer Use and Care Cards, is attached to the hinge side wall with screws.

To remove the crisper spacer assembly, first remove the crisper glass shelf, the drawer assemblies, the glass crisper cover, hinge-side drawer slides and the crisper light cover. Then, extract the crisper spacer mounting screws and pull the spacer assembly from the wall (See Figure 7-150)

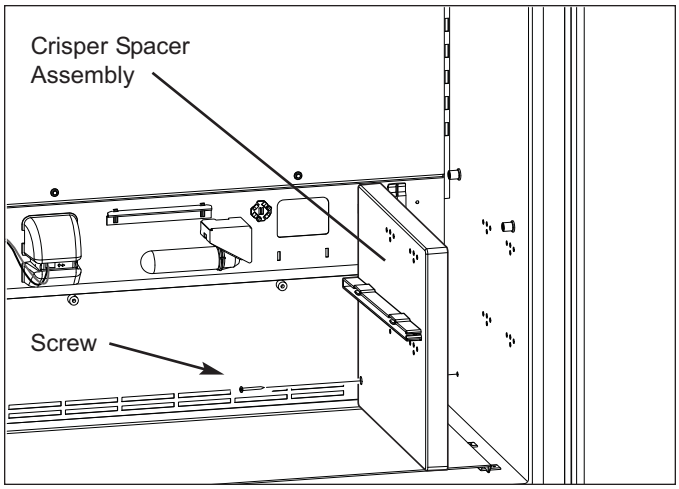


Figure 7-150. Crisper Spacer Assembly Removal

Air Purifier Cartridge

The air purification system is located behind a door on the upper refrigerator duct assembly.

To remove the air purifier cartridge (See Figure 7-151):

1. Pull bottom edge of door forward and up until it locks in the up position.
2. Grab top of inside flap and pull it forward and down (this will cause the cartridge to pop out of the socket).
3. Lift cartridge up from socket.

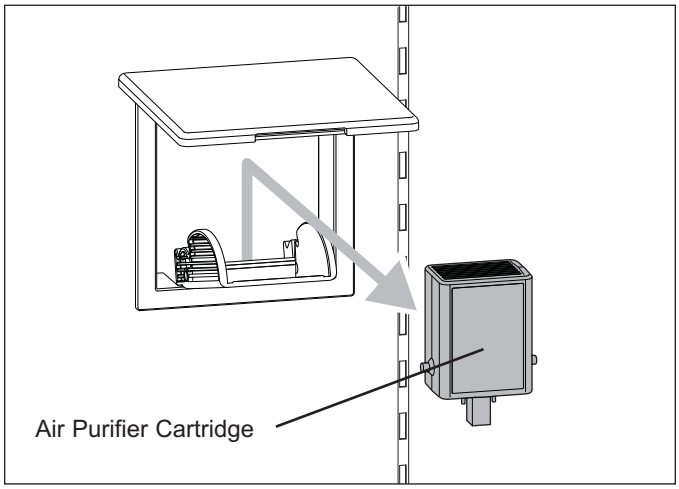


Figure 7-151. Air Purifier Cartridge Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the refrigerated compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the light diffuser (See Figure 7-152):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

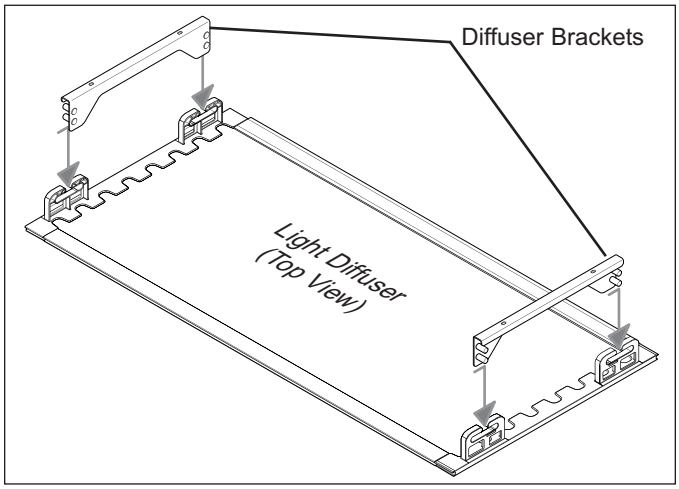


Figure 7-152. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The lighting assemblies are located behind the light diffuser at the top of the compartment.

To remove light bulbs, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-153)

Light bracket assemblies are secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser and light bulbs, then (See Figure 7-153):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

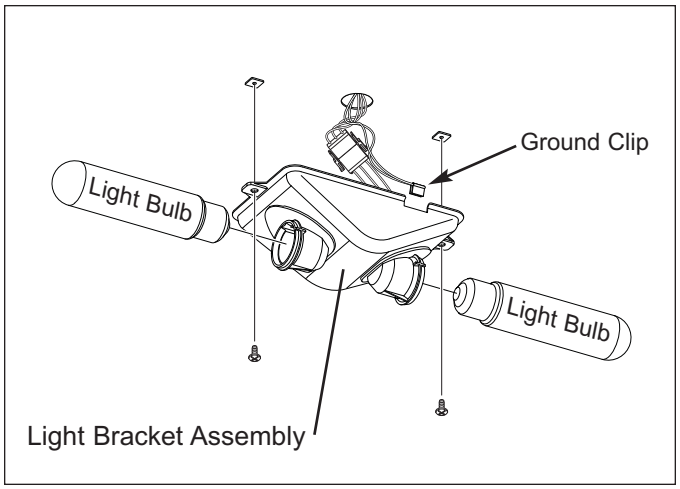


Figure 7-153. Upper Light Assembly

Control Panel Assembly (a.k.a. UIM - User Interface Module)

The control panel assembly (UIM) is located at the top front of the refrigerator compartment and is secured with tabs at each end fitting into slots in the display support.

To remove the control panel assembly, first remove the upper light diffuser, then (See Figure 7-154):

1. At each end of control panel assembly, reach behind the control panel and push the lower tabs upward while pulling the bottom edge away from the display support.
2. Once the lower tabs are disengaged, lower the assembly down and disconnect the electrical lead from the control panel assembly PC board.

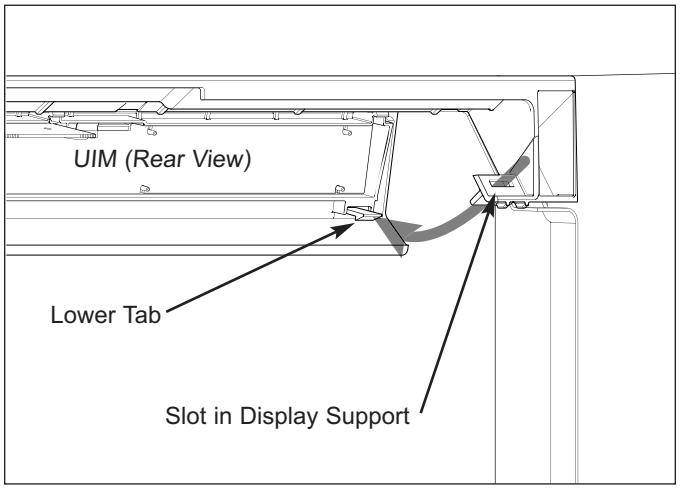


Figure 7-154. Control Panel Assembly Removal
(viewed from behind)

Upper Duct Assembly

The refrigerator upper duct assembly has notches at the bottom of each side flange that fit over locating pins on the shelf ladders; screws at the top of the duct secure it to the back wall of the compartment; at the bottom, plastic rivets hold it tight to the top flange of the lower duct assembly.

To remove the upper duct assembly, first remove all cantilever shelves, the crisper glass shelf and the upper light diffuser, then (See Figure 7-155):

1. At the bottom of duct, extract plastic rivet center posts using a fingernail, putty knife, or similar device, then pull rivets out.
2. Extract screws from top of upper duct.
3. Pull top of duct forward, about 45 degrees from vertical, then lift the duct up off of shelf ladder pins.

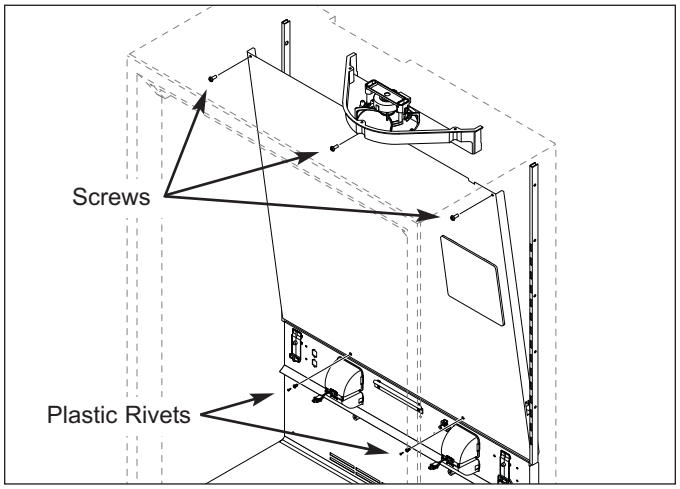


Figure 7-155. Upper Duct Assembly Removal

Shelf Ladder

Shelf ladders are held to the side walls with screws.

To remove a shelf ladder, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-156):

1. Extract shelf ladder mounting screws.
2. Pull shelf ladder from side wall.

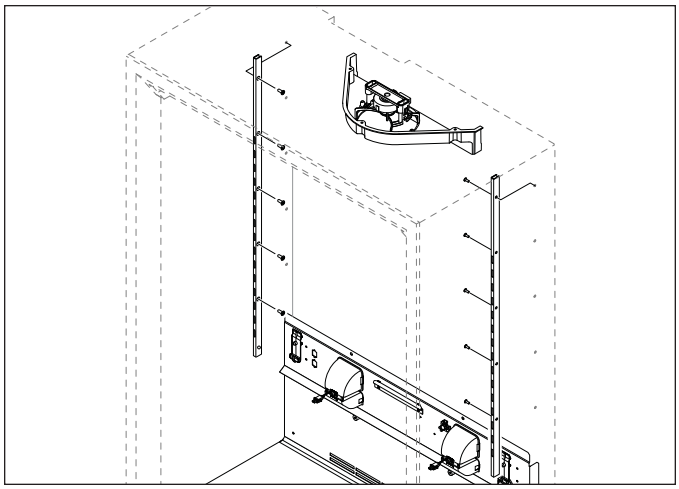


Figure 7-156. Shelf Ladder Removal

Evaporator Fan Shroud Assembly

The evaporator fan shroud is secured with screws to the compartment ceiling.

To remove the evaporator fan shroud assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-157):

1. Disconnect evaporator fan electrical leads.
2. Extract screws securing fan shroud to compartment ceiling and pull assembly from the compartment.

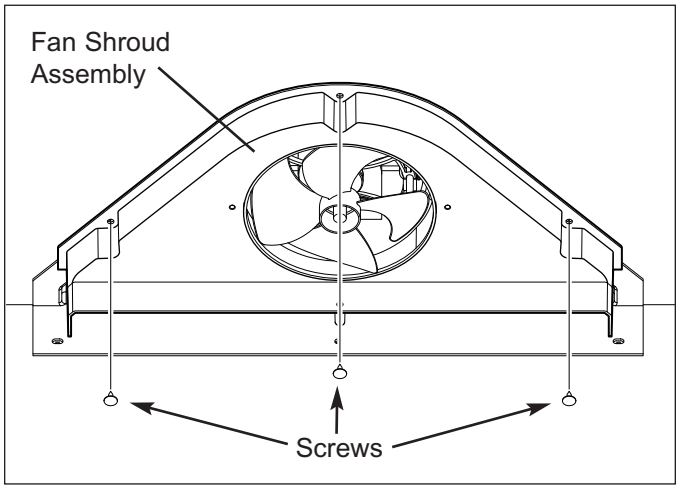


Figure 7-157. Evaporator Fan Shroud Assembly

Evaporator Fan Motor

The evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser, upper duct assembly and evaporator fan assembly, then (See Figure 7-158):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

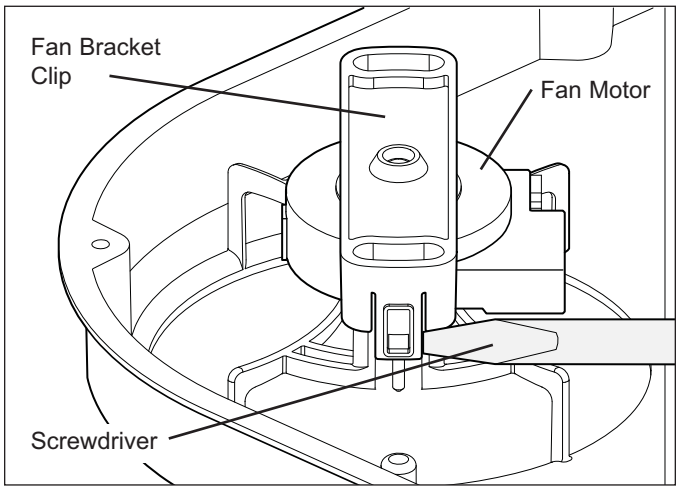


Figure 7-158. Fan Motor Removal

Air Purifier Pocket Assembly

The air purifier pocket assembly, consisting of the air purifier cartridge holder, a fan assembly and a transformer, is located behind the top evaporator cover, and is secured to the compartment back wall with screws.

To remove the air purifier pocket assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-159):

1. Disconnect fan motor wire leads and transformer wire leads from wire harness.
2. Extract air purifier pocket assembly mounting screws and remove assembly from unit.

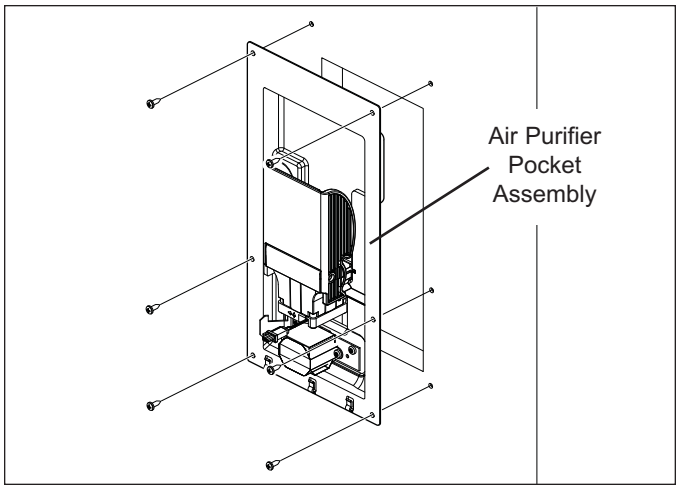


Figure 7-159. Air Purifier Pocket Removal

Refrigerator Compartment Thermistor

The refrigerator compartment thermistor is inserted into a thermistor clamp behind the upper duct assembly.

To remove the compartment thermistor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-160):

1. Pull thermistor from clamp.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

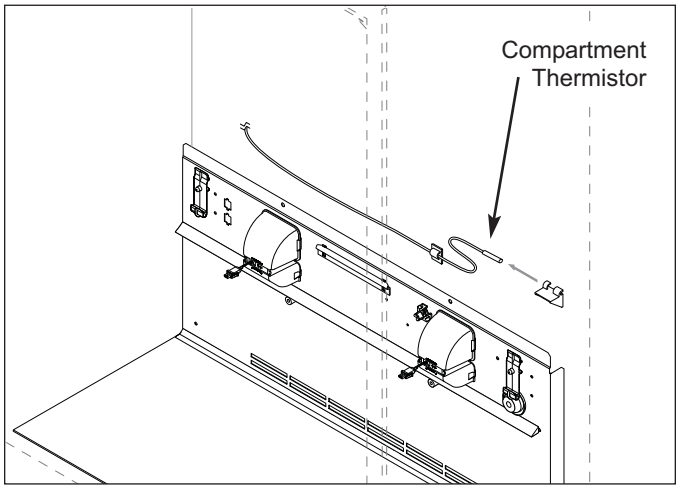


Figure 7-160. Compartment Thermistor Removal

Lower Duct Assembly

The lower duct assembly is positioned over the evaporator and held in place with screws passing through it into standoff screw grommets that are fastened to the compartment back wall.

To remove the lower duct assembly, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, and the crisper spacer, then (See Figure 7-161):

1. Disconnect crisper fan electrical leads from left side of lower duct assembly.
2. Extract lower duct mounting screws.
3. Lean top of duct forward and remove all panel mount electrical connections from duct, then remove duct from the unit.

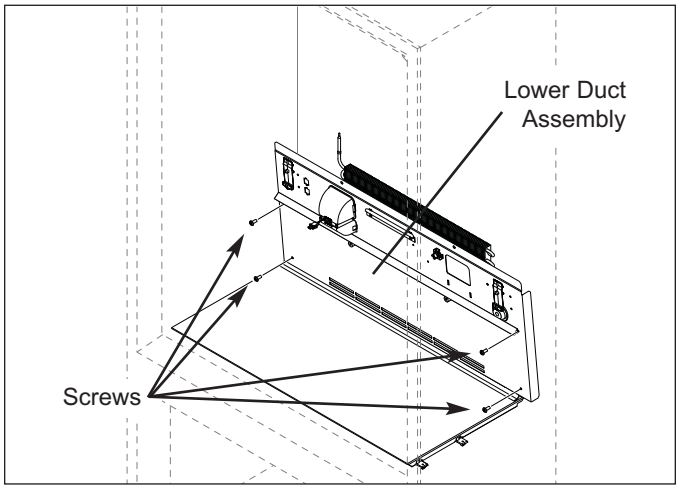


Figure 7-161. Lower Duct Assembly Removal

Refrigerator Evaporator Thermistor

The refrigerator evaporator thermistor is inserted six to ten inches into the opening below the third elbow on the left side of the evaporator.

To remove the evaporator thermistor, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, crisper spacer and lower duct assembly, then (See Figure 7-162):

1. Pull thermistor from evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

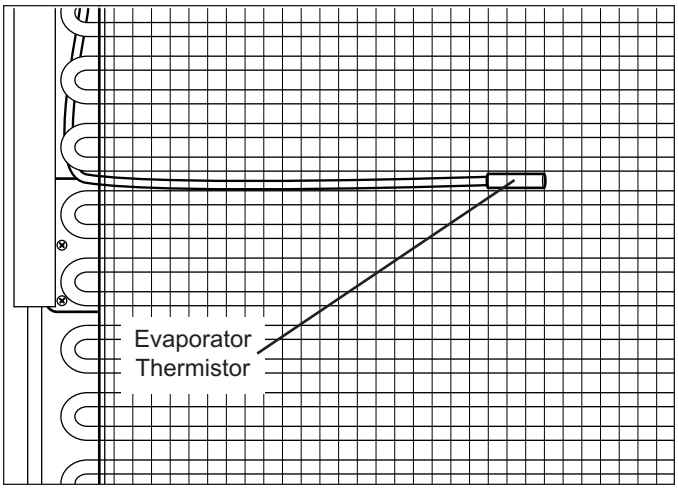


Figure 7-162. Evaporator Thermistor

Models BI-36R Compressor Area Mechanical Components

Main Control Board

Screws hold the main control board inside a control housing that sits on a slide support bracket at the left side of the compressor area.

To remove the main control board assembly, the control grille and compressor shroud will need to be removed first, then (See Figure 7-163)

1. Grab front of control housing and pull it toward front of unit, off of the support bracket.
2. Disconnect wire leads from wire harness at right side of housing.
3. Disconnect communication cables from right side of control.
4. At top of control housing, lift the cover latches off of tabs along top of housing case, then separate the cover from the case.
5. Disconnect all wire leads from control board.
6. Extract control board mounting screws and lift board out of case.

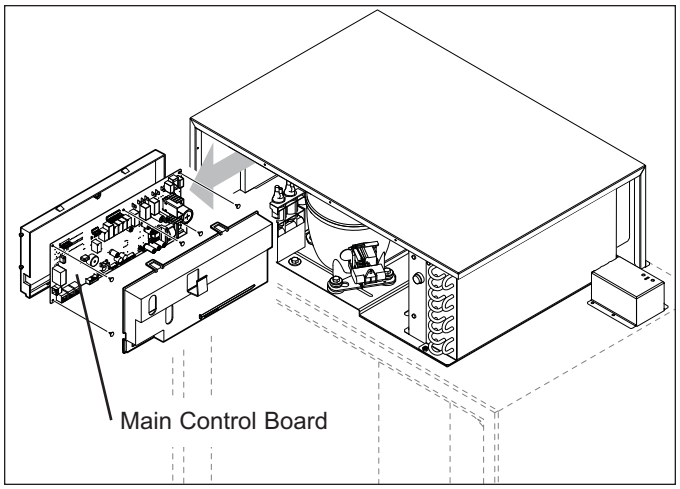


Figure 7-163. Control Board Assembly

Condenser Fan Shroud Assembly

Tabs at the back of the condenser fan shroud fit into grommets in the condenser's rear bracket. A hole in the bottom front flange of the condenser fan shroud fits down over a threaded stud, and a nut is then applied onto the stud. The front flange of the condenser fan shroud assembly is then secured to the front condenser bracket with screws.

To remove the condenser shroud assembly, first remove the top cabinet trim, top cabinet frame and compressor shroud, then (See Figure 7-164):

1. Extract condenser shroud mounting screws at front of condenser.
2. Extract nut from threaded stud at base of condenser fan shroud.
3. Pull assembly forward slightly, disconnect condenser fan electrical leads, then pull the assembly from the compressor area.

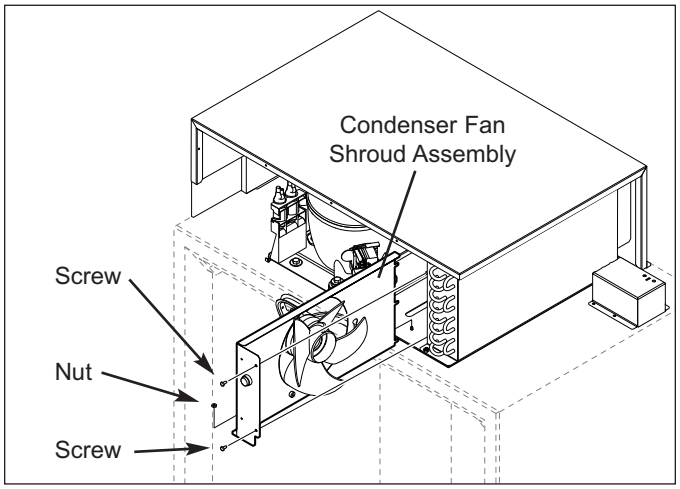


Figure 7-164. Condenser Fan Shroud Assembly

Condenser Fan Motor

The condenser fan is mounted to the condenser fan shroud with three fan mounting brackets that hook into grommets that are in the condenser fan shroud. At the back of the motor, screws pass through these brackets into the back of the fan motor. The condenser fan blade is held onto the fan motor shaft with a nut.

To remove the condenser fan motor, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-165):

1. Extract screws securing motor to brackets.

   NOTE: *The brackets will unhook from the grommets in the shroud after the screws are removed.*
2. To remove fan blade from fan motor:
   a. Grab blade and motor while turning nut counterclockwise.
   b. Then pull the blade from the motor shaft.

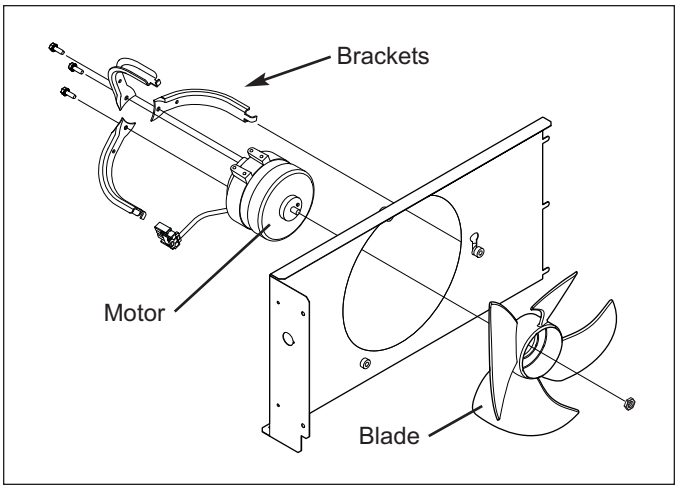


Figure 7-165. Condenser Fan Motor Removal

Models BI-36R Sealed System Components

The sealed system components at the top of the appliance sit on a sliding unit tray. There is a slot in the unit tray running from front to back, with a bolt positioned in the middle of this slot and attached to the top of the appliance. This allows the tray to be pulled straight forward to aid in sealed system repairs. (See Figure 7-166) When not being moved for service, a bolt passing down through a hole at the front of the unit tray holds it in place.

⚠ WARNING

UNIT COULD TIP FORWARD! MAKE SURE THE ANTI-TIP BRACKETS ARE IN PLACE AND THE UNIT IS PROPERLY ANCHORED BEFORE ATTEMPTING TO SLIDE THE UNIT TRAY OUT.

NOTES:

- *Removing the condenser fan shroud assembly before sliding the unit tray out will allow greater access to sealed system components on the tray. See condenser Fan Shroud Assembly removal instructions earlier in this section.*
- *When tapping into the sealed system, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*
- *Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.*

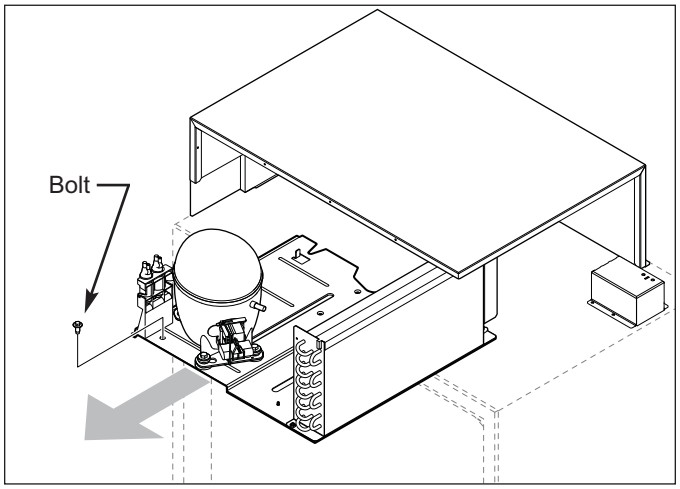


Figure 7-166. Sliding Out the Unit Tray

High-Side Filter-Drier

NOTE: *It is not necessary to slide the unit tray forward in order to replace a high-side filter-drier.*

To remove a high-side filter-drier, first capture the refrigerant from sealed system, then (See Figure 7-167):

1. With a file, score a line around capillary tube 1” or less from drier outlet, then fatigue capillary tube at this line until it separates.
2. With a tube-cutter, cut inlet tube 1” or less from drier inlet.

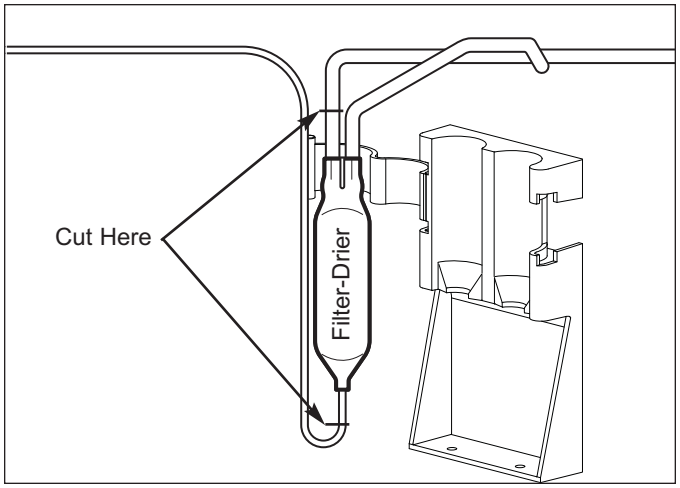


Figure 7-167. Filter-Drier Removal

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 1 above.*
- *When installing replacement filter-drier, insert capillary tube until it touches screen inside drier, then pull capillary tube away from screen approximately 3/8" before brazing.* (See Figure 7-168).
- *Filter-drier outlet must be facing downward in order to function properly.*

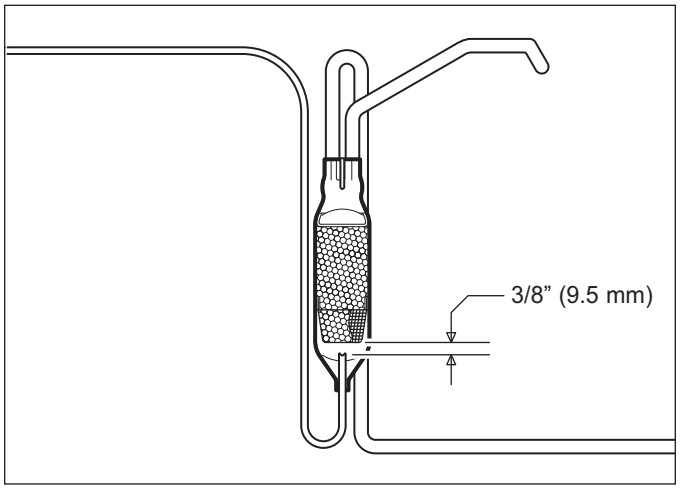


Figure 7-168. Capillary Tube Insertion Note

Compressor

Compressors are secured to the unit tray with three shoulder screws that pass down through rubber grommets in the compressor base and into holes in unit tray. A metal tab formed into the unit tray passes up through the fourth rubber grommet and the compressor base.

NOTE: *See information, WARNING and NOTES under the heading of Models BI-36R Sealed System Components before continuing.*

After capturing the refrigerant from the sealed system, (See Figure 7-169):

1. Disconnect wire leads from compressor electricals.
2. Using a tube cutter, cut suction and discharge tubes approximately 1" from compressor stubs.

   NOTE: *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
3. Extract compressor mounting shoulder screws, then lift compressor off of unit tray.

NOTE: *After replacing the compressor, take care to not kink tubing as the unit tray is slid back into position.*

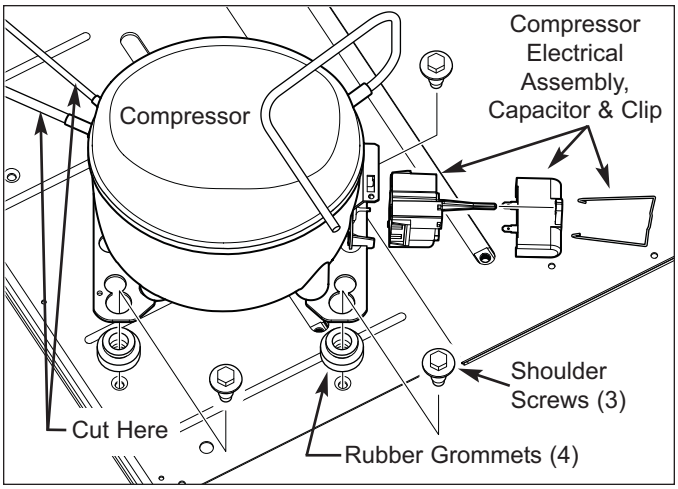


Figure 7-121. Compressor Removal

Condenser

Holes in the front and rear bottom flanges of the condenser fit over threaded studs in the unit tray, then a nut is applied to each threaded stud to hold the condenser in place.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-36R Sealed System Components before continuing.*
- *The condenser inlet and outlet stubs are at the rear of the condenser.*

After capturing the refrigerant from the sealed system, (See Figure 7-170):

1. Remove nuts from threaded studs at the front and rear of condenser, then lift condenser slightly to clear threaded studs and pull condenser forward.
2. Using a tube cutter, cut condenser inlet and outlet tubes approximately 1" from condenser stubs, then remove condenser fully from unit tray.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After replacing the condenser, take care to not kink tubing as the unit tray is slid back into position.*

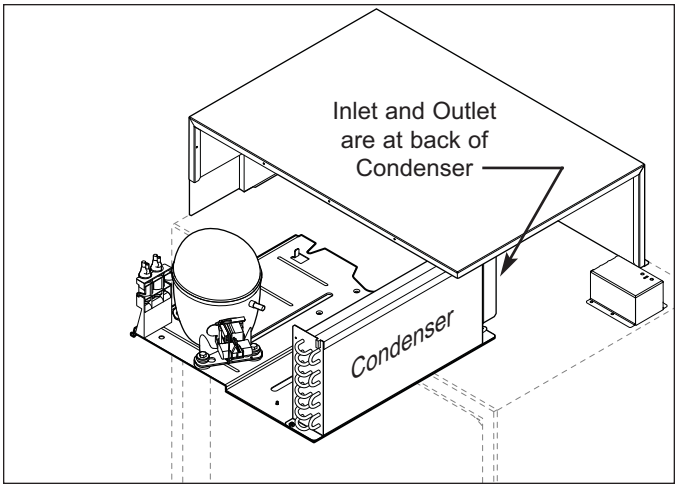


Figure 7-122. Condenser Removal

Refrigerator Evaporator

The evaporator is attached to the rear wall of the compartment with screws, behind the compartment duct assemblies. See Duct Assembly removal procedures earlier in this section.

NOTES: *The high-side filter-drier must also be replaced when replacing an evaporator.*

To remove the evaporator, first capture the refrigerant from the sealed system, then (See Figure 7-171):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 2 above.*

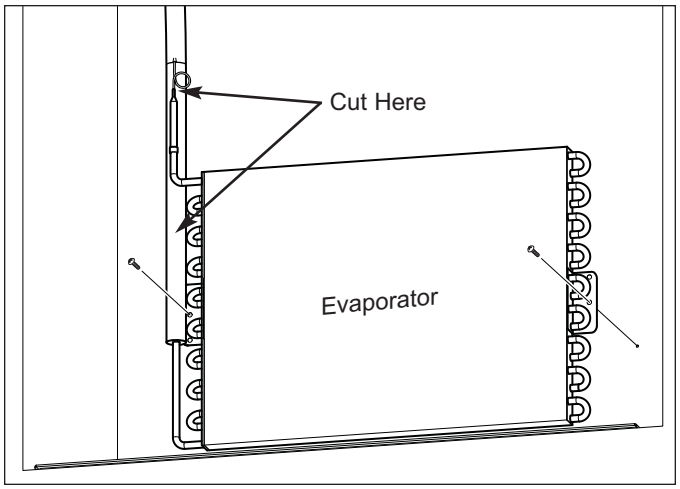


Figure 7-171. Refrigerator Evaporator Removal

Heat Exchanger

The heat exchanger passes through the ceiling of the compartment.

NOTES:

- *The high-side filter-drier must also be replaced when replacing a heat exchanger.*

To remove a heat exchanger, first capture the refrigerant from the sealed system, then (See Figure 7-172):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.
4. With a tin snips, or similar tool, cut heat exchanger in compartment as close as possible to ceiling where heat exchanger passes through.
5. Use a tube-cutter to cut drier from condenser outlet tube.
6. Using a tube cutter, cut suction line approximately 1” from compressor.
7. Pull remaining heat exchanger from unit.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *When replacing the heat exchanger, it is recommended to attach it at the evaporator end first, then feed the heat exchanger through hole, up to compressor area.*

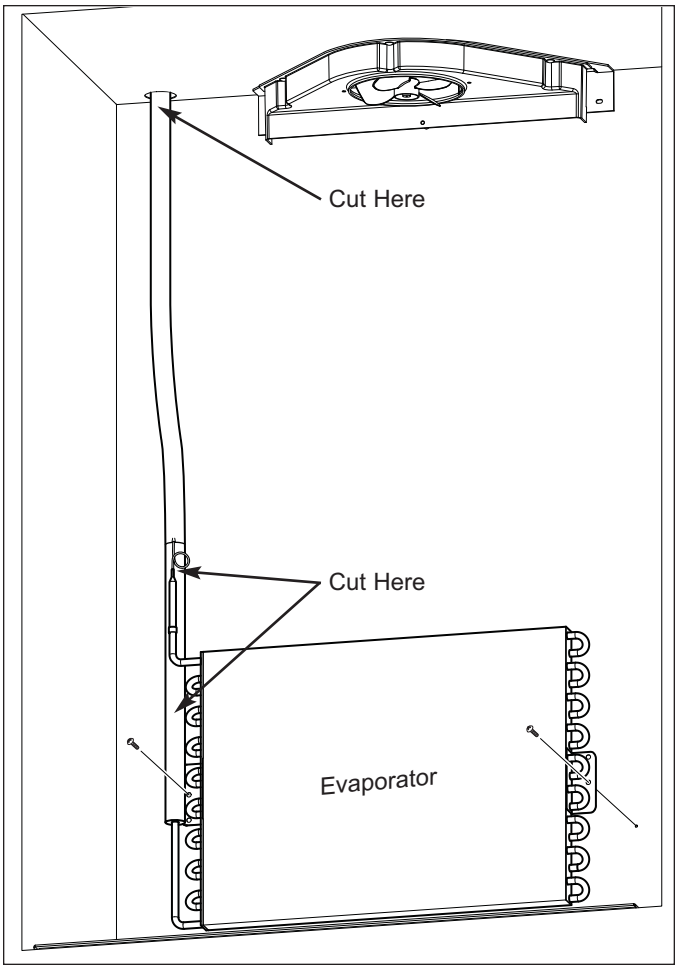


Figure 7-172. Refrigerator Heat Exchanger Removal

Models BI-36S / BI-42S / BI-48S Exterior Cosmetic / Mechanical Components

Kickplate

To remove a kickplate, extract the screws from the left and right corners of the kickplate, then pull the kickplate forward. (See Figure 7-173).

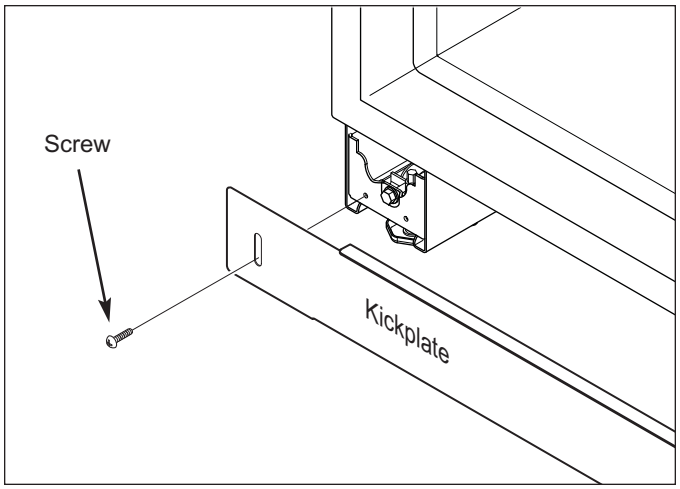


Figure 7-173. Kickplate Removal

Drain Pan

The drain pan slides in from the front of unit on two side brackets. A locating feature was built into the drain pan in the form of detentes at the bottom front that drop into notches at the front of the side brackets.

To remove the drain pan (See Figure 7-174):

1. Remove kickplate.
2. Push front of drain pan up slightly, then pull forward.

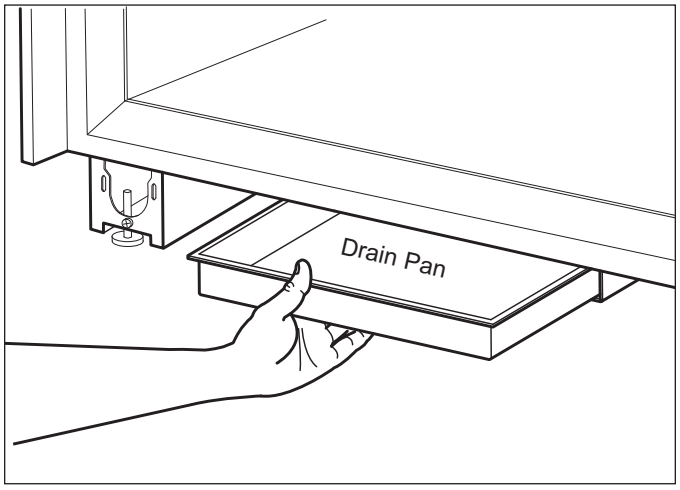


Figure 7-174. Drain Pan Removal

Water Valve Assembly

The water valve is located to the right of the drain pan and is attached to the valve bracket with screws.

NOTE: *Before attempting to remove the water valve assembly, switch the water supply to the unit off.*

To remove the water valve assembly, first remove the kickplate, then (See Figure 7-175):

1. With a valve assembly mounting screws and pull valve forward.
2. Disconnect AC and DC electrical leads.

   NOTE: *It may be necessary to cut a cable tie that is securing the AC electrical leads to the valve assembly.*
3. Disconnect inlet and outlet water tubes from valve by pushing the collar around the tubes toward the valve, while pulling the tubes away from the valve.

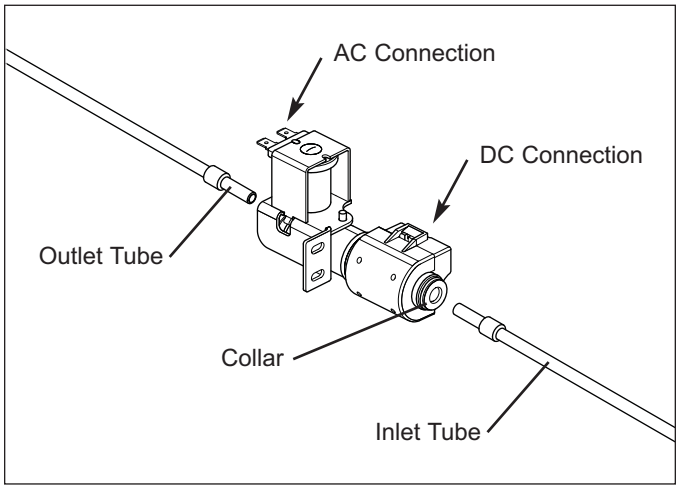


Figure 7-175. Water Valve Removal

Water Filter Cartridge

The water filter cartridge is located at the right hand top side of the unit behind grille assembly.

To remove the water filter cartridge, first lift open the front of the grille assembly, then (See Figure 7-176):

1. Push the cartridge in toward the water filter manifold to depress the spring and catch mechanism.
2. Then pull cartridge out of the manifold.

NOTE: *After a filter cartridge has been replaced, the reset button behind the unit grille must be pressed for five (5) seconds to clear the filter icon from the LCD and reset the water filter timer.*

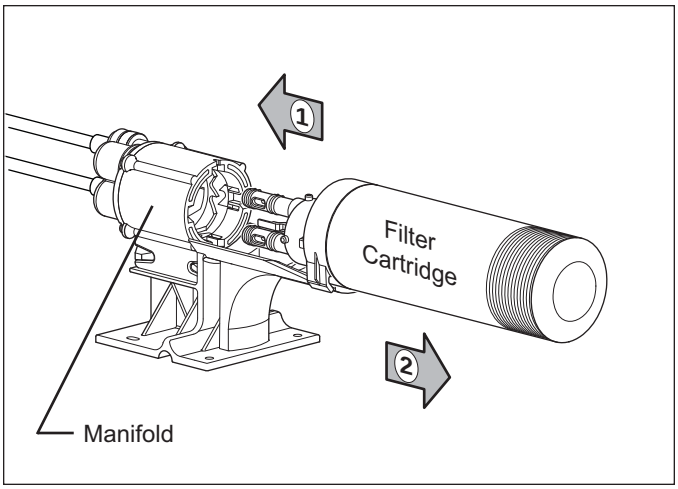


Figure 7-176. Water Filter Cartridge Removal

Water Filter Manifold

The water filter manifold is secured to the right hand top side of the unit with screws, behind grille assembly.

NOTE: *Before attempting to remove the water filter manifold, switch the water supply to the unit off.*

To remove the filter manifold, first lift open the front of the grille assembly and remove the water filter cartridge, then (See Figure 7-177):

1. Use a T-20, 6-lobe Torx type bit to extract the manifold mounting screws.
2. Pull the manifold forward and disconnect the water tubes by pushing the collar around the tubes toward the manifold, while pulling the tubes away from the manifold.

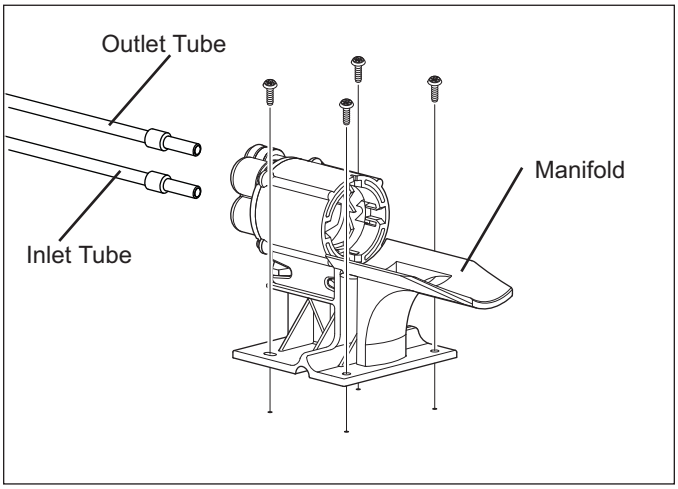


Figure 7-177. Water Filter Manifold Removal

Door Switches

The door switches are located at the top rear of the top cabinet frame, with their actuators protruding through holes in the front of the frame. A series of tabs and pegs hold the door switches in place.

To remove a door switch, first open the grill, then (See Figure 7-178):

1. Disconnect the switch electrical leads using a needle-nose pliers to pull the electrical lead housings away from the switch.
2. Use a small flat-blade screwdriver to pry the front retaining tab at each side of the switch back while lifting that side of the switch up. Repeat this step on each side of the switch.
3. Pull switch back and lift off of the top cabinet frame

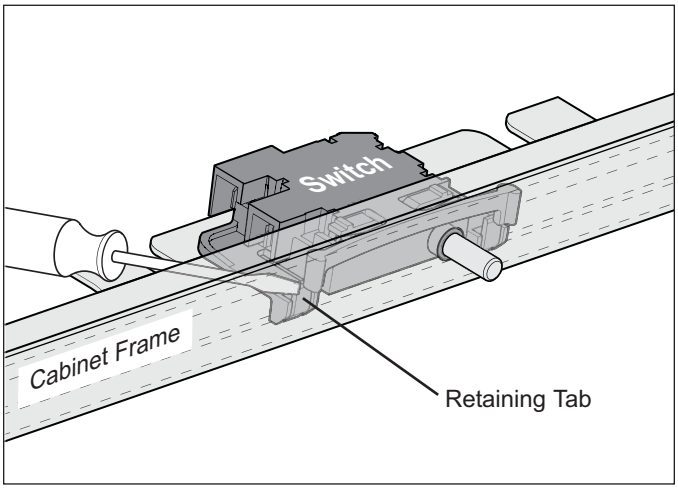


Figure 7-178. Door Switch Removal

Top Cabinet Trim

The top cabinet trim sits below the grille assembly. Screws pass through open ended slots in the trim to secure it to the top cabinet frame.

To remove the top cabinet trim first open the grill then, (See Figure 7-179):

1. Use a T-15, 6-lobe Torx type bit, to loosen, but not remove, the trim mounting screws.
2. Pull the trim forward. off of the unit.

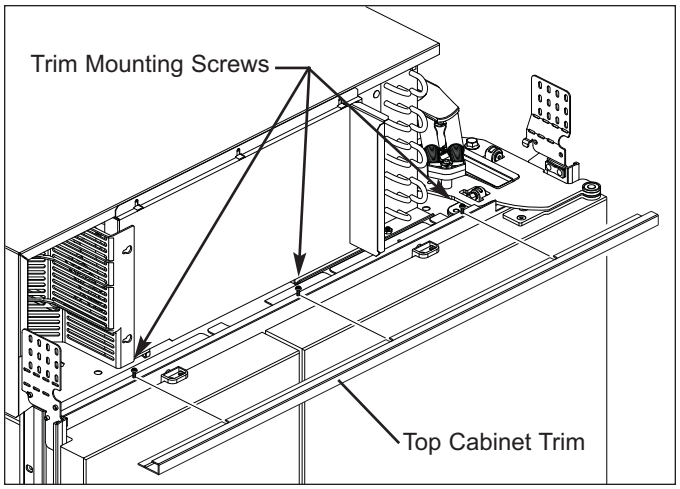


Figure 7-179. Top Cabinet Trim Removal

Grille Assembly

The grille assembly is attached at the top of the unit with screws passing through the grille's side frames into grille brackets.

To remove a grille assembly (See Figure 7-180):

1. Lift open the front of the grille assembly to access the mounting screws.
2. With a T-20, 6-lobe Torx type bit, extract the two front grille mounting screws, then loosen but do not remove the two rear mounting screws.
3. pull the grille assembly forward, off of the unit.

NOTE: *When reinstalling the grille assembly, line up the notches at back of grille side frames with the rear mounting screws, then push the grille assembly back.*

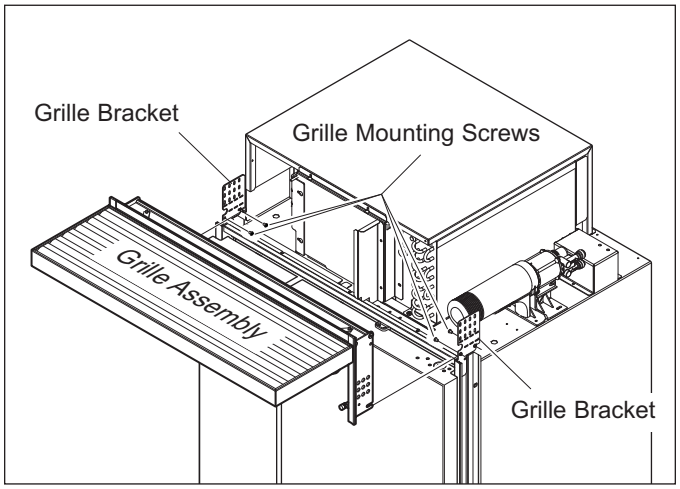


Figure 7-180. Grille Assembly Removal

Framed / Overlay Refrigerator Door Handle / Handle-Side Trim

The door handle on framed units and the handle-side trim on overlay units is attached to the door with screws. These screws are covered by a screw cover.

To remove a handle of handle-side trim, open the door then:

1. At the top of the door, insert a flat blade screwdriver into the channel of the screw cover and push the cover back, disengaging it from the handle or trim (See Figure 7-181).
2. With a T-20, 6-lobe Torx type bit, extract the handle-side trim mounting screws and pull the trim from the door (See Figure 7-182).

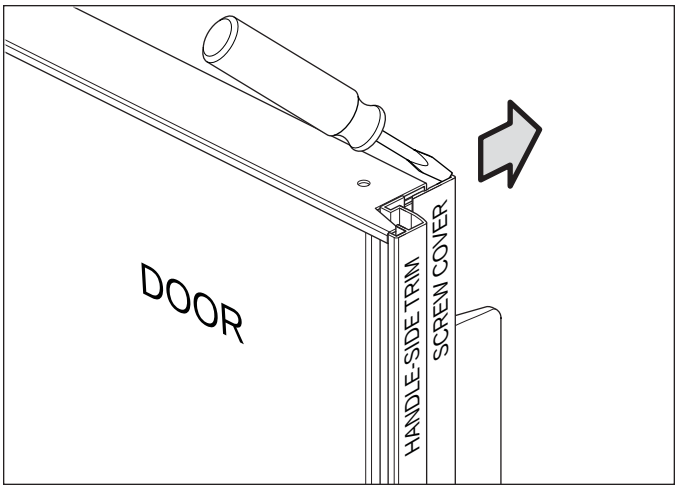


Figure 7-181. Screw Cover Removal

Stainless Steel Door Handle Assembly

A screw inserted through the stainless steel handle standoffs into the handle secures the handle to the standoffs. The standoffs are then slides over threaded studs that are attached to the door shell. A socket head set-screw inserted through the side of the standoff secures the standoff to the stud.

To remove a stainless steel handle assembly (See Figure 7-183):

1. Use a 3/32” Allen-wrench to loosen the set-screw in each handle standoff.
2. Pull handle assembly off of the threaded studs.

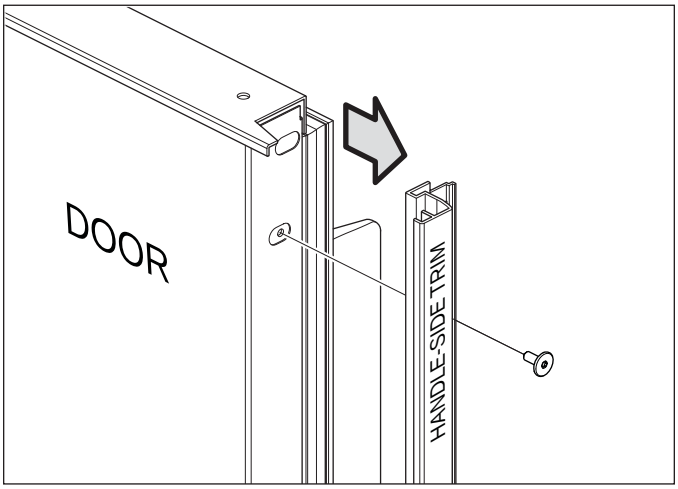


Figure 7-182. Handle / Handle-Side Trim Removal

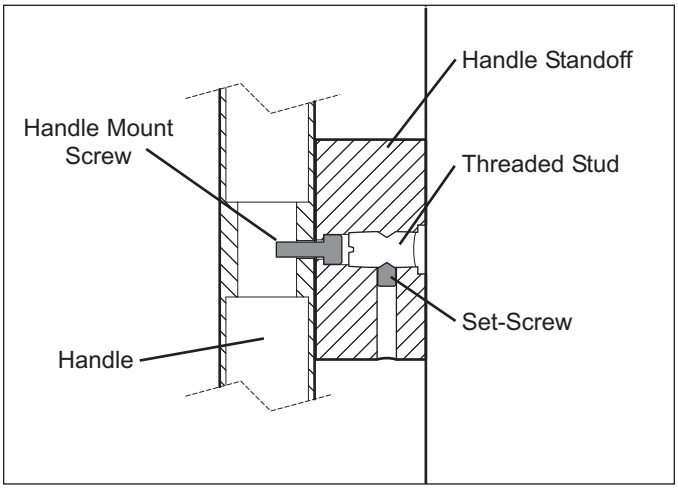


Figure 7-183. Cut-away View - SS Handle Assembly

Top Door Hinge Assembly

Top hinge assemblies are secured to the unit with bolts that pass down through the cabinet hinge plates into threaded inserts. Screws passing down through the door hinges secure the hinge assemblies to the doors.

NOTE: *A special tool package is available to assist in removing a top hinge assembly. This tool package is provided with replacement hinge and door assemblies. If needed, order part #7011097. The directions below were written to be used with this tool package.*

To remove a top hinge assembly, the grille assembly and top cabinet trim must first be removed. If applicable, remove the water filter cartridge from above the hinge assembly, then:

1. With the door open, use a 5/32" Allen wrench or bit to extract the top door hinge mounting screw nearest to the hinge pivot point (See Figure 7-184).
2. Use a 1/8" Allen wrench or bit to replace the screw just removed with the 1/4-20X1/2" setscrew, included in the tool package, inserting the setscrew down until its top is flush with the top surface of the door hinge (See Figure 7-184).

   NOTE: *If the setscrew is not inserted far enough it will damage the hinge plate when closing the door; if it is inserted too far it will not hold the door hinge in the correct position when closing the door.*
3. Extract the inner door hinge mounting screws, leaving the outermost screw in place (See Figure 7-184).
4. insert the hinge spacer, included in the special tool package, between the door closer guide and the back of the door closer track, then close the door (See Figure 7-184).

   NOTE: *This spacer will keep the door closer mechanism at the proper spacing to facilitate hinge assembly removal and reinstallation.*
5. With the door closed, use a socket wrench with an extension and a ½" socket to extract the cabinet hinge mounting bolts (See Figure 7-185).
6. Extract the outermost door hinge mounting screw (See Figure 7-185).
7. Lift the hinge assembly up off of the top of the unit, allowing the door to shift toward the handle side and come to rest against the other door (See Figure 7-186).

   NOTE: *It may be necessary to use a flat blade screwdriver to pry the post at the end of the door closer arm up out of the hole in the top of the door assembly.*

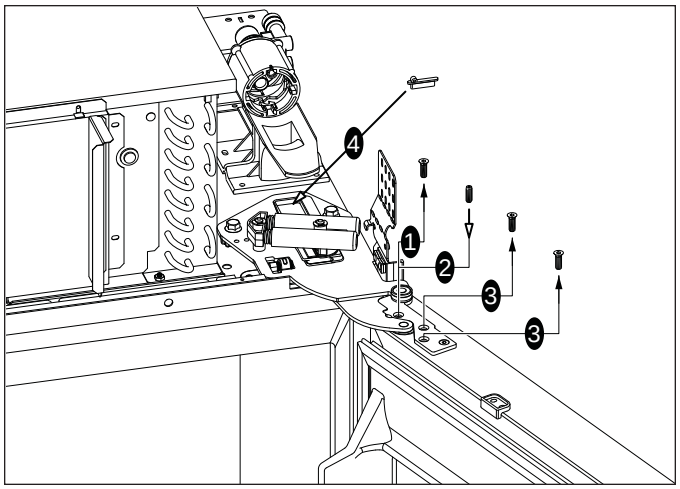


Figure 7-184. Top Door Hinge Screw Removal, Setscrew Installation and Spacer Installation

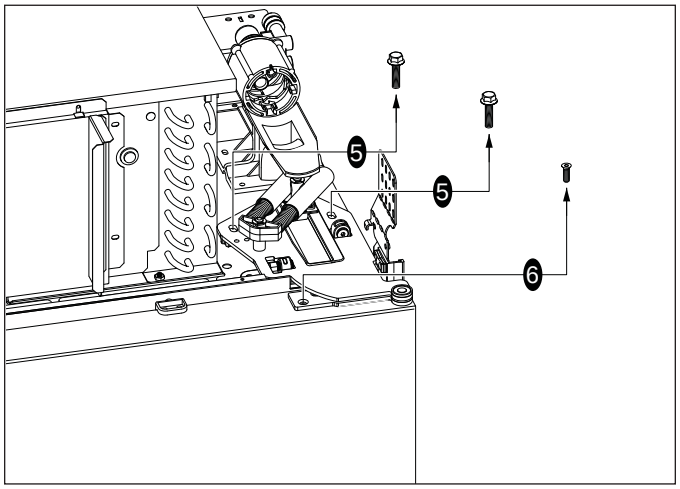


Figure 7-185. Cabinet Hinge Bolt Removal and Door Hinge Screw Removal

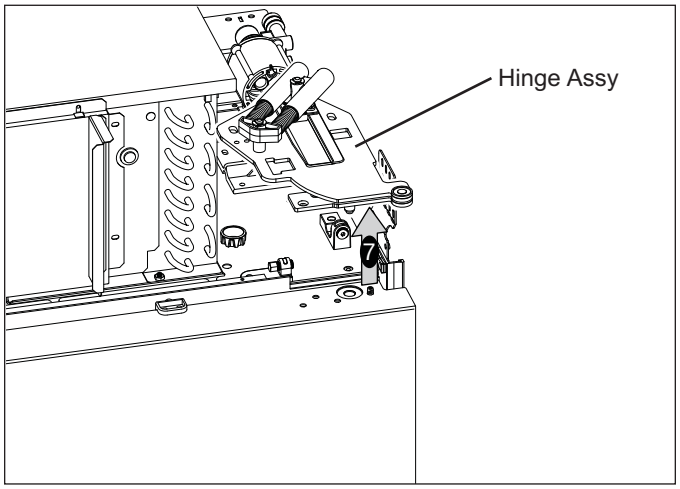


Figure 7-186. Top Door Hinge Assy Removal

Door Assembly

Door assemblies are secured to the top and bottom door hinges with screws. The bottom door hinges have a post that fits down into bearings in the bottom cabinet hinge assemblies door adjusters.

To remove a door assembly, the top hinge assembly must be removed first. Then, with one hand at each side of the door, open the door forty-five to ninety degrees and lift it off of the bottom cabinet hinge assembly. (See Figure 7-187)

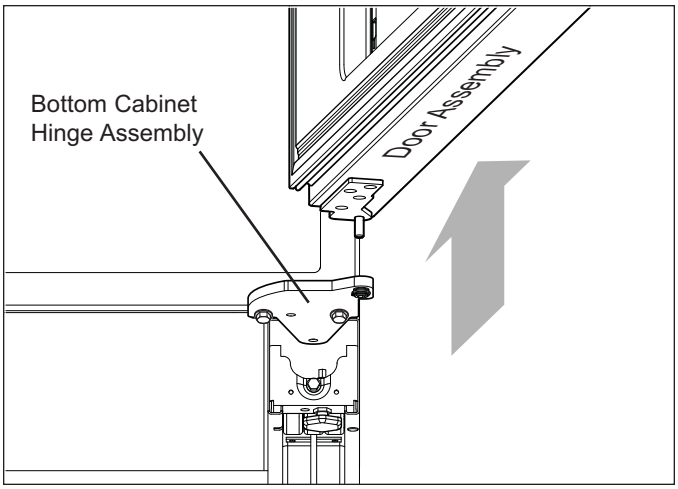


Figure 7-187. Door Assembly Removal

Bottom Cabinet Hinge Assembly

The bottom cabinet hinge assembly is attached to the bottom of the unit with bolts.

To remove the bottom cabinet hinge assembly, first remove the top hinge assembly and the door. Then, using a 1/2” wrench or socket, extract the cabinet hinge mounting bolts and pull the hinge assembly from the unit. (See Figure 7-188)

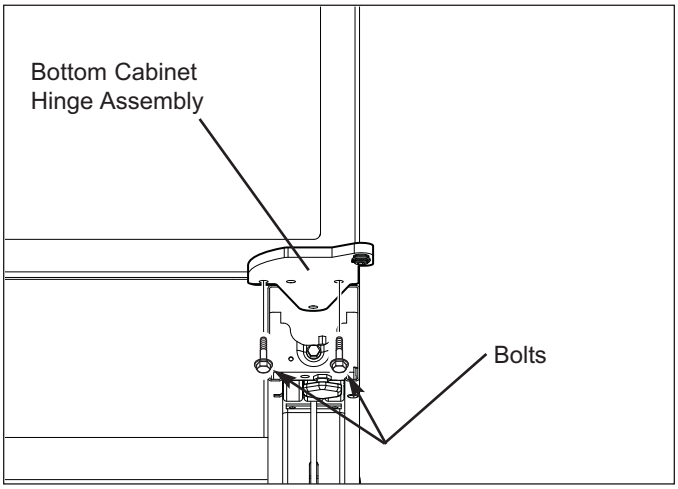


Figure 7-188. Cabinet Hinge Assembly Removal

Models BI-36S / BI-42S / BI-48S Refrigerator Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-189).

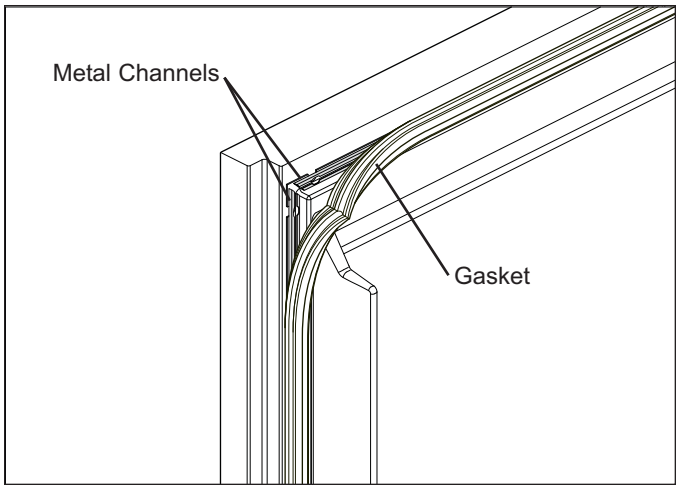


Figure 7-189. Door Gasket Removal

Adjustable Door Shelves and Dairy Compartment

Removal and adjustment of the upper door shelves and dairy compartment assembly is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-190).

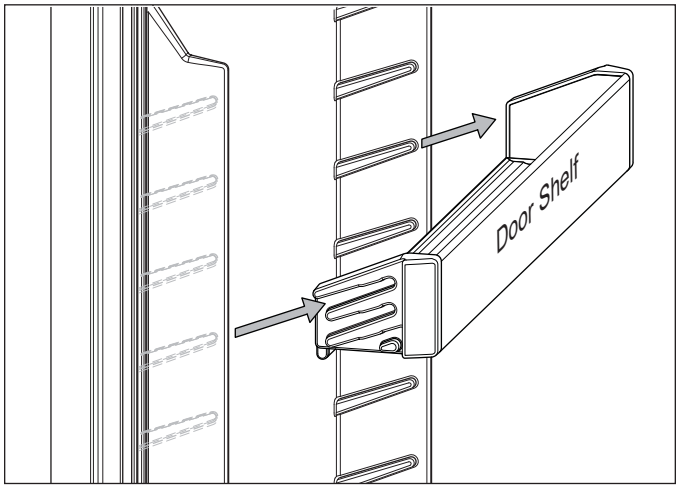


Figure 7-190. Adjustable Door Shelf

Non-adjustable Door Shelf

The lower non-adjustable door shelf has hooks at the back sides of its endcaps that fit into notches in the door liner.

To remove the non-Adjustable door shelf lift it up slightly then pull it from the notches in the door liner; to install it push in and down (See Figure 7-191)

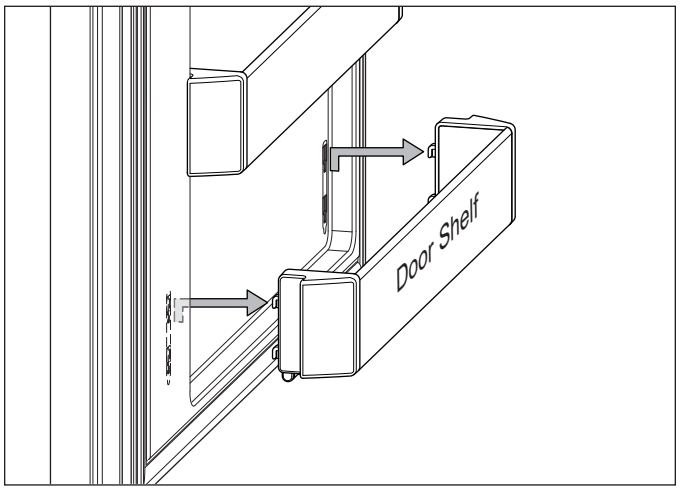


Figure 7-191. Non-Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a refrigerator cantilever shelf assembly (See Figure 7-192):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

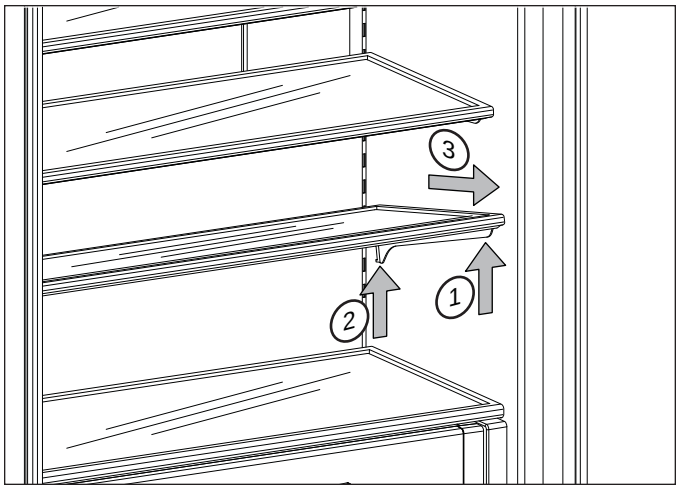


Figure 7-192. Cantilever Shelf Removal

Crisper Glass Shelf

The crisper glass shelf rests upon shelf standoffs that are mounted to the refrigerator side walls.

To remove the crisper glass shelf (See Figure 7-193):

1. Lift shelf straight up off of the standoffs.
2. Pull shelf forward, out of compartment.

Deli Drawer and/or Crisper Drawer Assembly

To remove a deli drawer assembly or crisper drawer assembly, open the drawer until it stops, then lift the front of the drawer up slightly off of the drawer slide while continuing to pull the assembly out of the compartment. (See Figure 7-194).

NOTE: *If the door is limited to a 90-degree opening, removing the non-adjustable door shelves will assist in this task.*

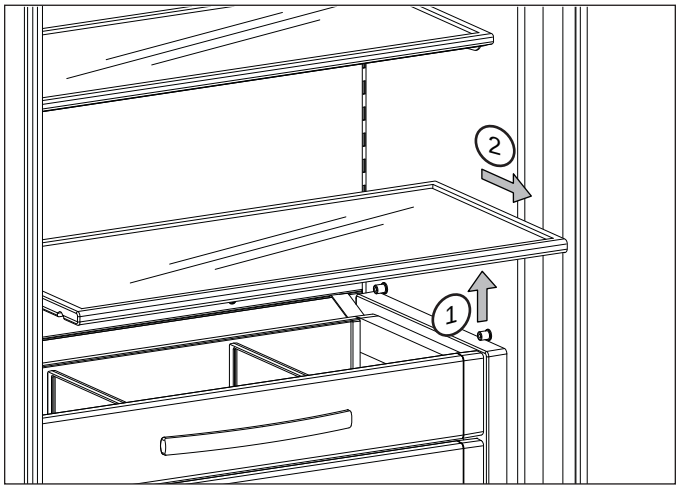


Figure 7-193. Crisper Shelf Removal

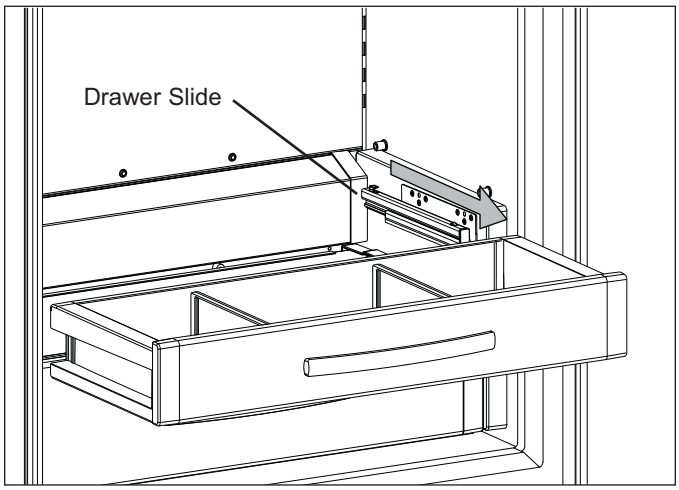


Figure 7-194. Refrigerator Drawer Removal

Glass Crisper Cover Assembly

The glass crisper cover assembly is located between the deli drawer and the top crisper drawer and is held in place by crisper cover supports attached to each side wall.

To remove the glass crisper cover assembly, first remove the deli drawer and the top crisper drawer, then (See Figure 7-195):

1. Grasp the assembly at the front edge toward each side.
2. Lift the front of the assembly upward and pull it forward to release it from the support retaining clips.

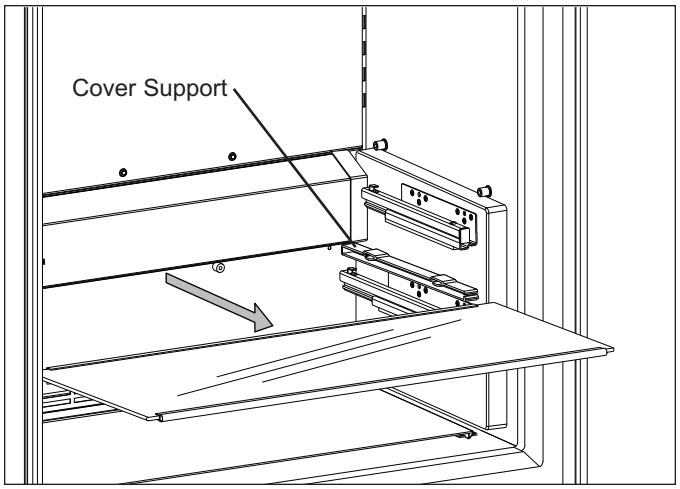


Figure 7-195. Crisper Cover Removal

Crisper Cover Support

The crisper cover supports are secured with screws to the compartment side wall and the crisper spacer assembly.

To remove a crisper cover support, the glass crisper cover must be removed first, then extract the support mounting screws and pull the support from the side wall or crisper spacer. (See Figure 7-196)

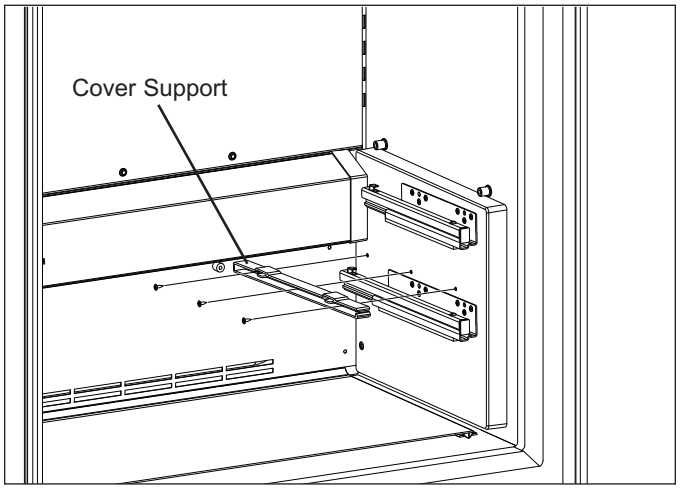


Figure 7-196. Crisper Cover Support Removal

Refrigerator Drawer Slide

The drawer slides are secured with screws to the compartment side walls and the crisper spacer assembly.

To remove a drawer slide, first remove the drawer assembly, then extract the slide's mounting screws and pull the slide from the side wall or crisper spacer. (See Figure 7-197)

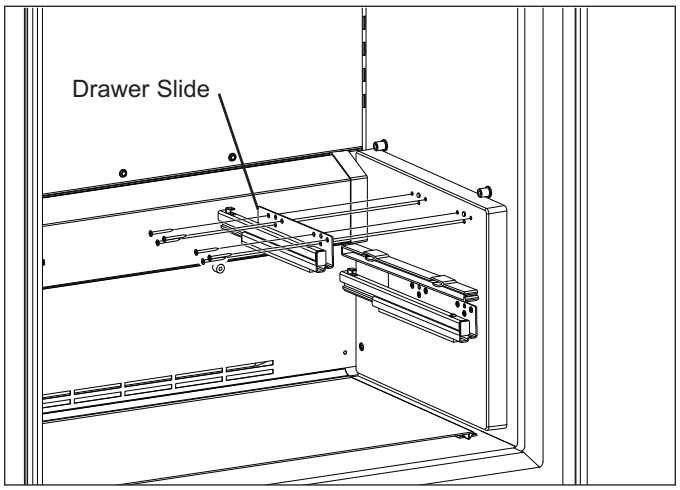


Figure 7-197. Drawer Slide Removal

Crisper Light Cover Assembly

The crisper light cover assembly is secured to the lower refrigerator duct by its upper flange and end caps engaging two crisper light cover supports that are part of the lower duct assembly.

To remove the lower light cover, first remove the crisper glass shelf and deli drawer assembly, then lift the light cover up at each end, disengaging it from the supports. (See Figure 7-198)

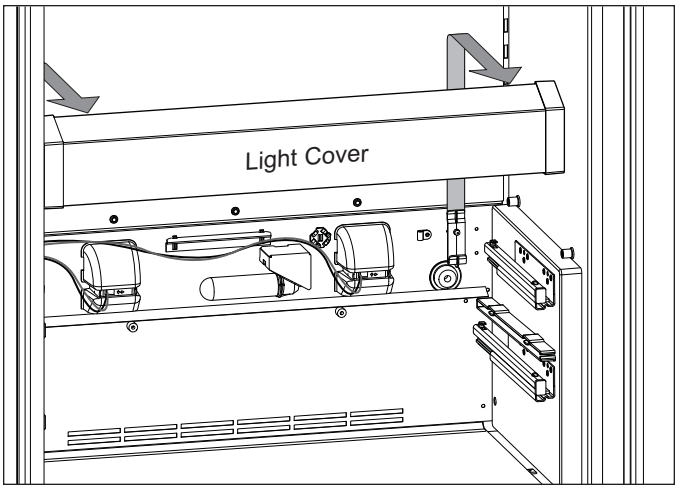


Figure 7-198. Crisper Light Cover Removal

Lower Light Bulb

The lower light assembly is located behind the crisper light cover.

To remove the lower light bulb, first remove the crisper glass shelf, deli drawer assembly and light cover, then turn the bulb counterclockwise to remove it from the light socket. (See Figure 7-199)

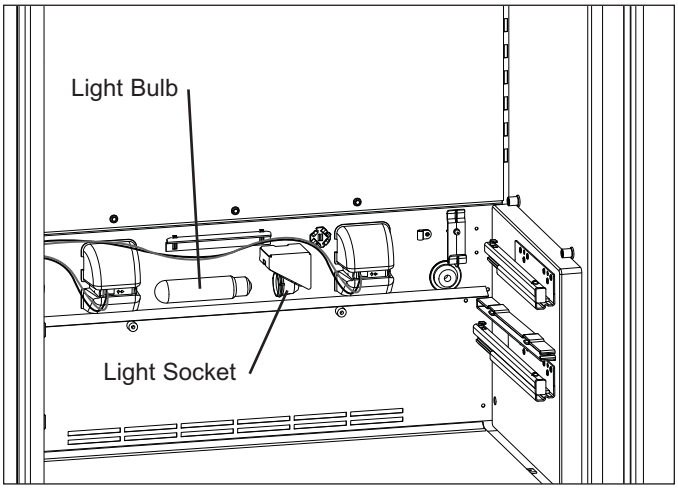


Figure 7-199. Lower Light Bulb Removal

Crisper Fan Assembly

A crisper fan assembly consist of a small fan motor and blade unit that is inserted into a notch in a small fan duct. This assembly is attached to the lower refrigerator duct by tabs at the side of the fan duct engaging the edges of the holes in the lower duct.

NOTE: *The model BI-36S has only one crisper fan assembly.*

To remove a crisper fan assembly, the crisper glass shelf, deli drawer assembly and light cover must be removed first, then (See Figure 7-200):

1. Disconnect fan motor electrical leads.
2. Pull the fan wires out from under the wire clamps.
3. Squeeze the fan duct on both sides at the middle to disengage the tabs, then pull the assembly from the lower duct assembly.

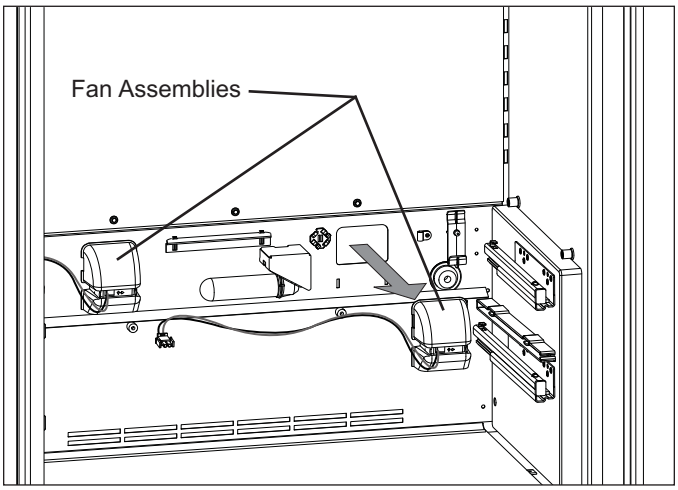


Figure 7-200. Crisper Fan Assembly Removal

Crisper Spacer Assembly

The crisper spacer assembly, which also holds the Consumer Use and Care Cards, is attached to the hinge side wall with screws.

To remove the crisper spacer assembly, first remove the crisper glass shelf, the drawer assemblies, the glass crisper cover, hinge-side drawer slides and the crisper light cover. Then, extract the crisper spacer mounting screws and pull the spacer assembly from the wall (See Figure 7-201)

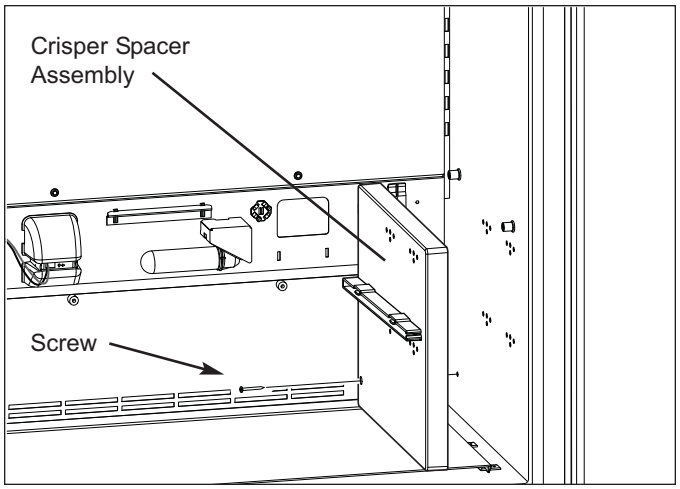


Figure 7-201. Crisper Spacer Assembly Removal

Air Purifier Cartridge

The air purification system is located behind a door on the upper refrigerator duct assembly.

To remove the air purifier cartridge (See Figure 7-202):

1. Pull bottom edge of door forward and up until it locks in the up position.
2. Grab top of inside flap and pull it forward and down (this will cause the cartridge to pop out of the socket).
3. Lift cartridge up from socket.

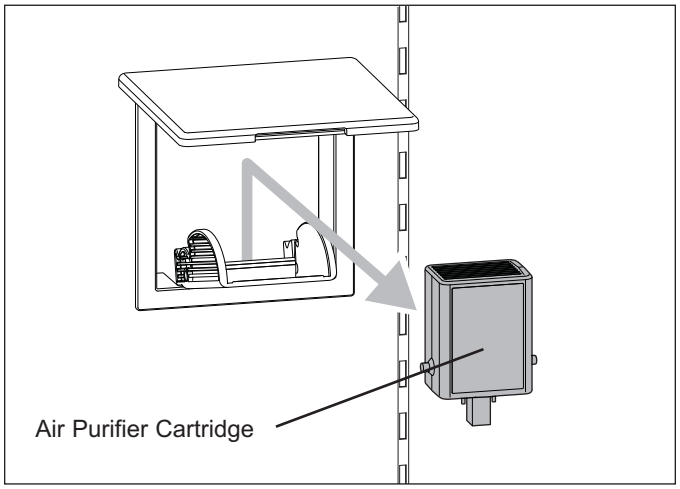


Figure 7-202. Air Purifier Cartridge Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the refrigerated compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the light diffuser (See Figure 7-203):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

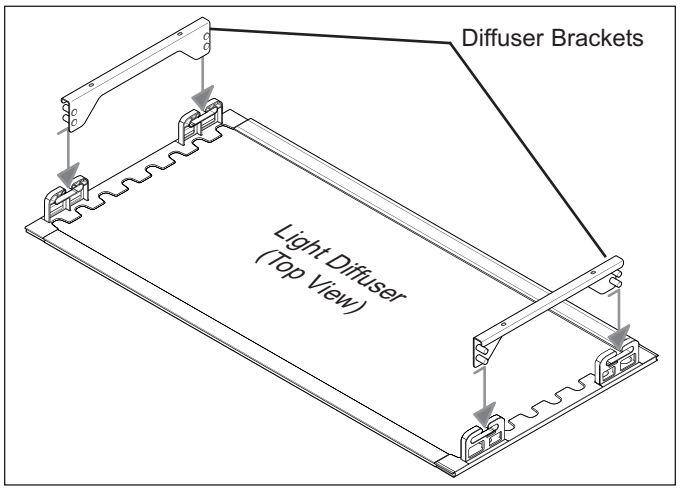


Figure 7-203. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The lighting assemblies are located behind the light diffuser at the top of the compartment.

To remove light bulbs, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-204)

Light bracket assemblies are secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser and light bulbs, then (See Figure 7-204):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

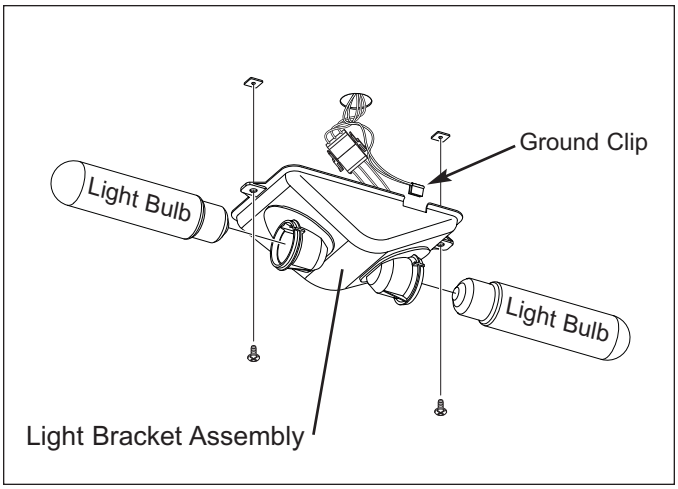


Figure 7-204. Upper Light Assembly

Control Panel Assembly (a.k.a. UIM - User Interface Module)

The control panel assembly (UIM) is located at the top front of the refrigerator compartment and is secured with tabs at each end fitting into slots in the display support.

To remove the control panel assembly, first remove the upper light diffuser, then (See Figure 7-205):

1. At each end of control panel assembly, reach behind the control panel and push the lower tabs upward while pulling the bottom edge away from the display support.
2. Once the lower tabs are disengaged, lower the assembly down and disconnect the electrical lead from the control panel assembly PC board.

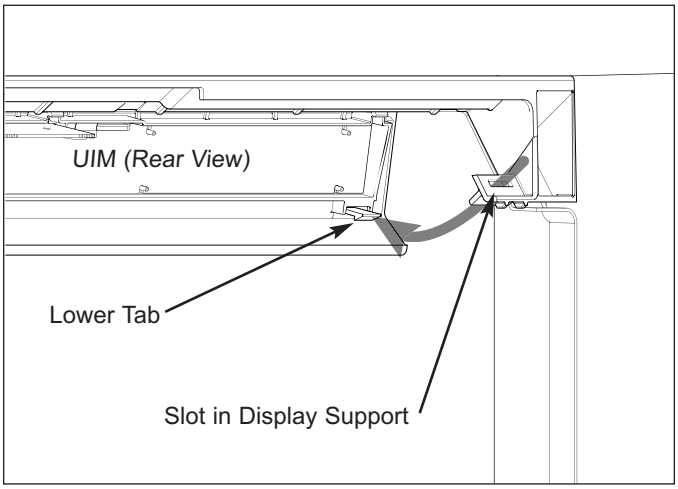


Figure 7-205. Control Panel Assembly Removal
(viewed from behind)

Upper Duct Assembly

The refrigerator upper duct assembly has notches at the bottom of each side flange that fit over locating pins on the shelf ladders; screws at the top of the duct secure it to the back wall of the compartment; at the bottom, plastic rivets hold it tight to the top flange of the lower duct assembly.

To remove the upper duct assembly, first remove all cantilever shelves, the crisper glass shelf and the upper light diffuser, then (See Figure 7-206):

1. At the bottom of duct, extract plastic rivet center posts using a fingernail, putty knife, or similar device, then pull rivets out.
2. Extract screws from top of upper duct.
3. Pull top of duct forward, about 45 degrees from vertical, then lift the duct up off of shelf ladder pins.

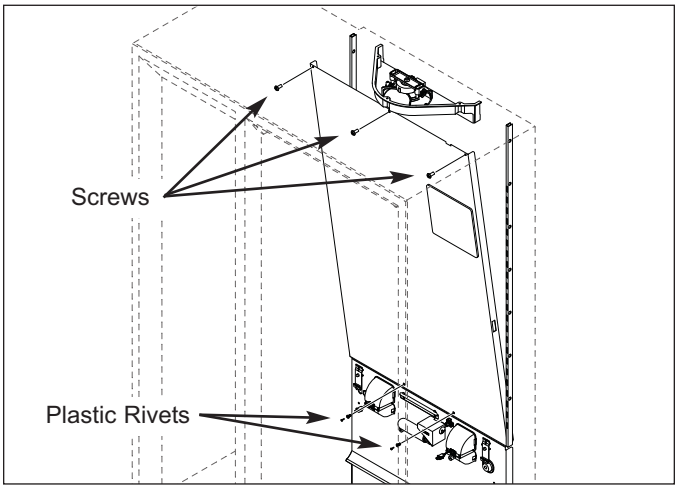


Figure 7-206. Upper Duct Assembly Removal

Shelf Ladder

Shelf ladders are held to the side walls with screws.

To remove a shelf ladder, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-207):

1. Extract shelf ladder mounting screws.
2. Pull shelf ladder from side wall.

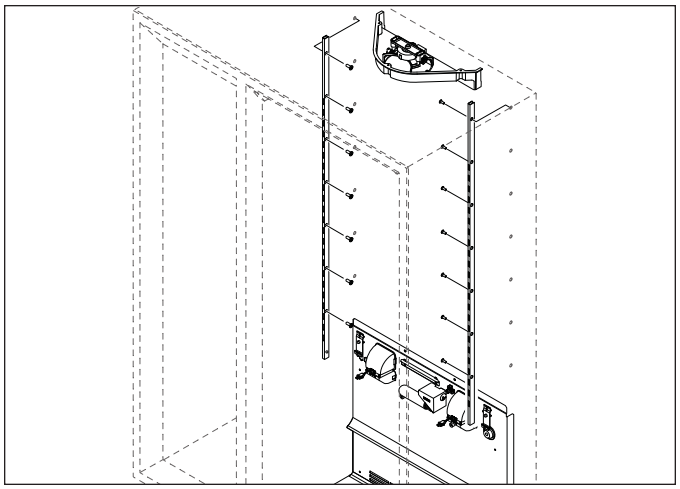


Figure 7-207. Shelf Ladder Removal

Evaporator Fan Shroud Assembly

The evaporator fan shroud is secured with screws to the compartment ceiling.

To remove the evaporator fan shroud assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-208):

1. Disconnect evaporator fan electrical leads.
2. Extract screws securing fan shroud to compartment ceiling and pull assembly from the compartment.

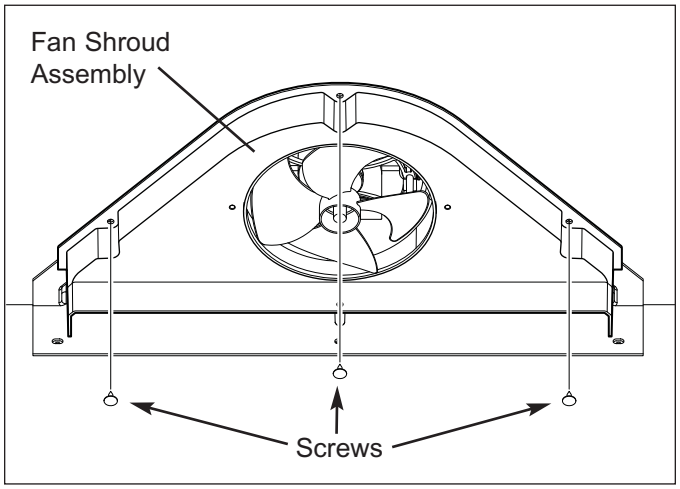


Figure 7-208. Evaporator Fan Shroud Assembly

Evaporator Fan Motor

The evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser, upper duct assembly and evaporator fan assembly, then (See Figure 7-209):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

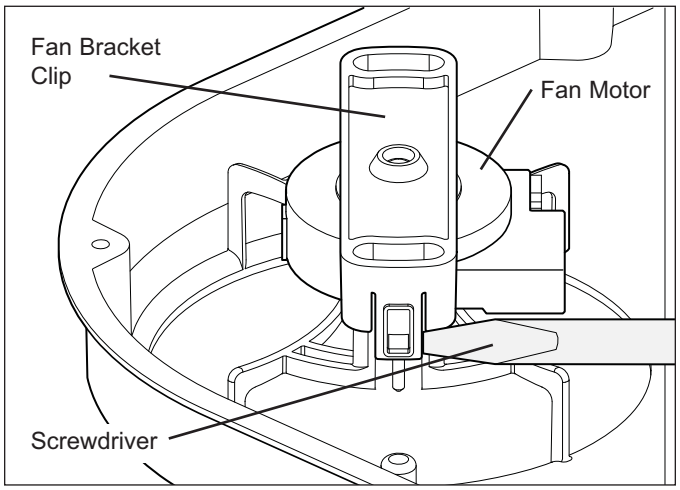


Figure 7-209. Fan Motor Removal

Air Purifier Pocket Assembly

The air purifier pocket assembly, consisting of the air purifier cartridge holder, a fan assembly and a transformer, is located behind the top evaporator cover, and is secured to the compartment back wall with screws.

To remove the air purifier pocket assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-210):

1. Disconnect fan motor wire leads and transformer wire leads from wire harness.
2. Extract air purifier pocket assembly mounting screws and remove assembly from unit.

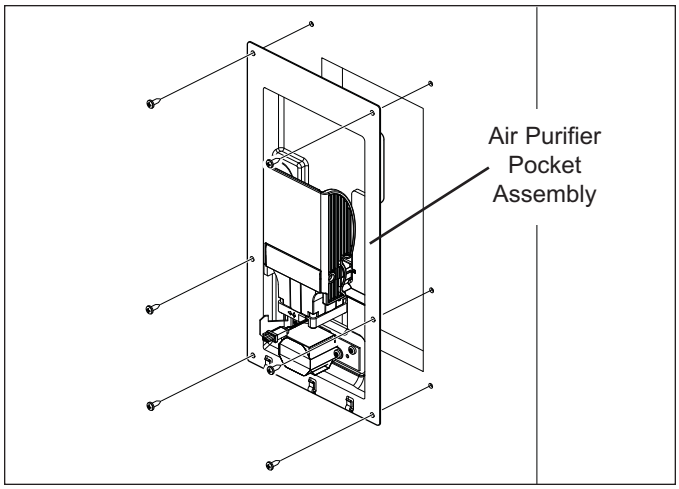


Figure 7-210. Air Purifier Pocket Removal

Refrigerator Compartment Thermistor

The refrigerator compartment thermistor is inserted into a thermistor clamp behind the upper duct assembly.

To remove the compartment thermistor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-211):

1. Pull thermistor from clamp.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

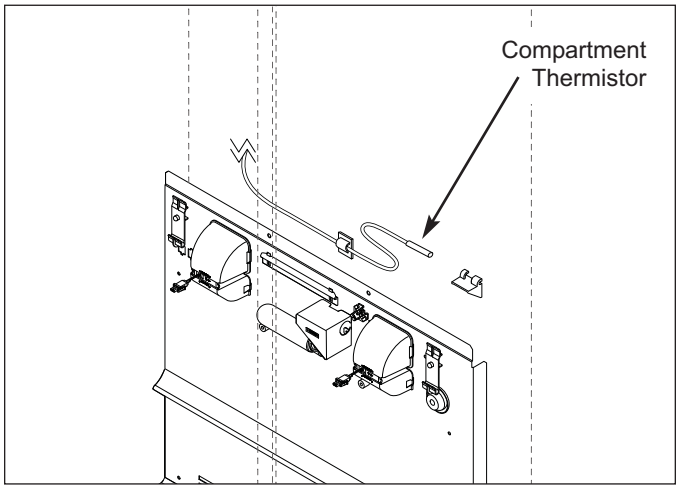


Figure 7-211. Compartment Thermistor Removal

Lower Duct Assembly

The lower duct assembly is positioned over the evaporator and held in place with screws passing through it into standoff screw grommets that are fastened to the compartment back wall.

To remove the lower duct assembly, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, and the crisper spacer, then (See Figure 7-212):

1. Disconnect crisper fan electrical leads from left side of lower duct assembly.
2. Extract lower duct mounting screws.
3. Lean top of duct forward and remove all panel mount electrical connections from duct, then remove duct from the unit.

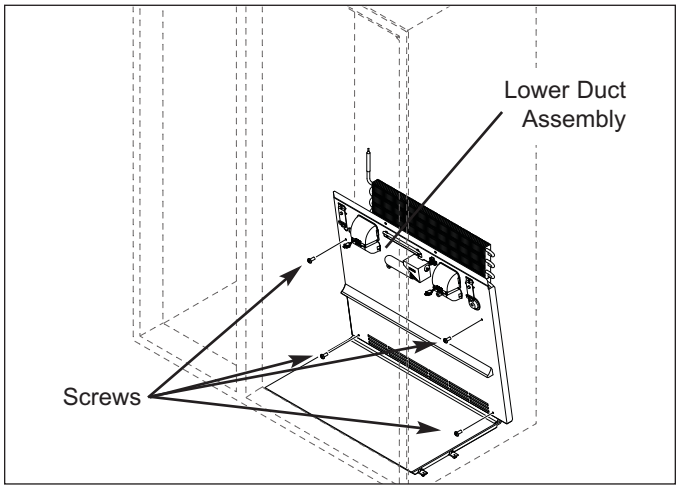


Figure 7-212. Lower Duct Assembly Removal

Refrigerator Evaporator Thermistor

The refrigerator evaporator thermistor is inserted six to ten inches into the opening below the third elbow on the left side of the evaporator.

To remove the evaporator thermistor, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, crisper spacer and lower duct assembly, then (See Figure 7-213):

1. Pull thermistor from evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

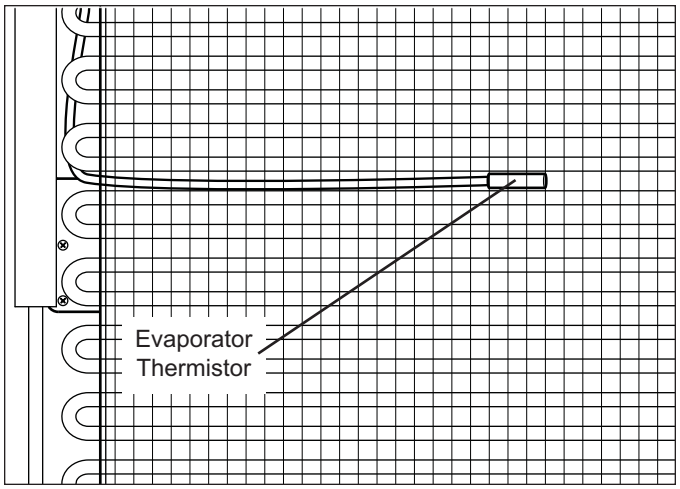


Figure 7-213. Evaporator Thermistor

Models BI-36S / BI-42S / BI-48S Freezer Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-214).

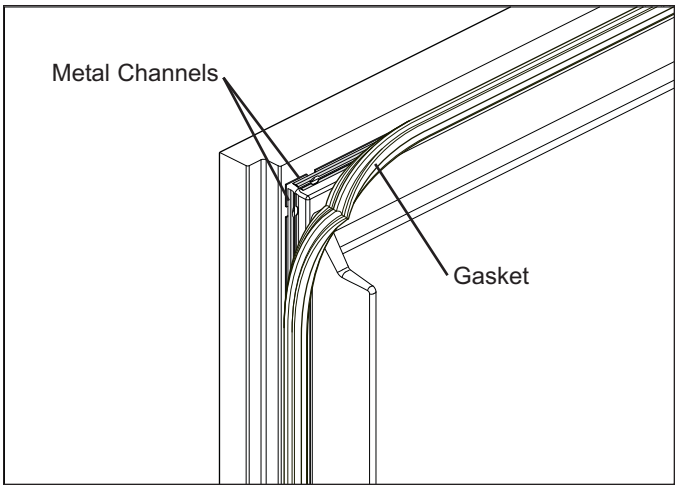


Figure 7-214. Door Gasket Removal

Adjustable Door Shelves

Removal and adjustment of the door shelves is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-215).

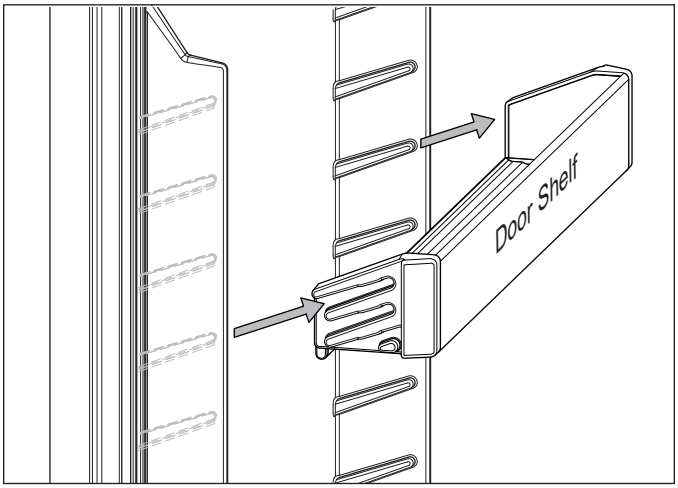


Figure 7-215. Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a freezer cantilever wire shelf assembly (See Figure 7-216):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

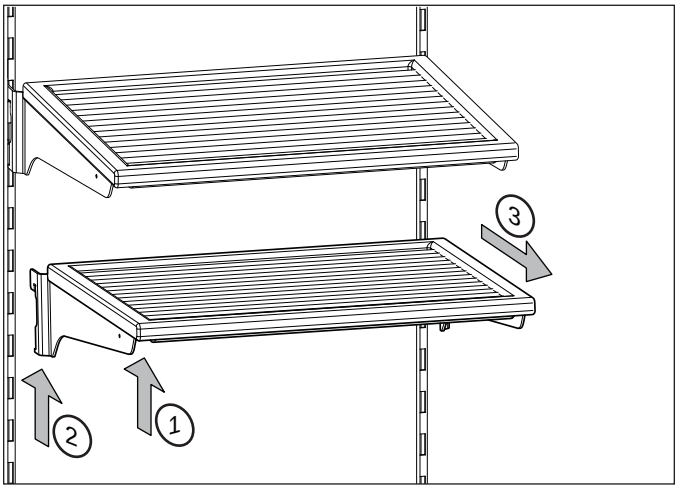


Figure 7-216. Cantilever Shelf Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the freezer compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the upper light diffuser assembly (See Figure 7-217):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

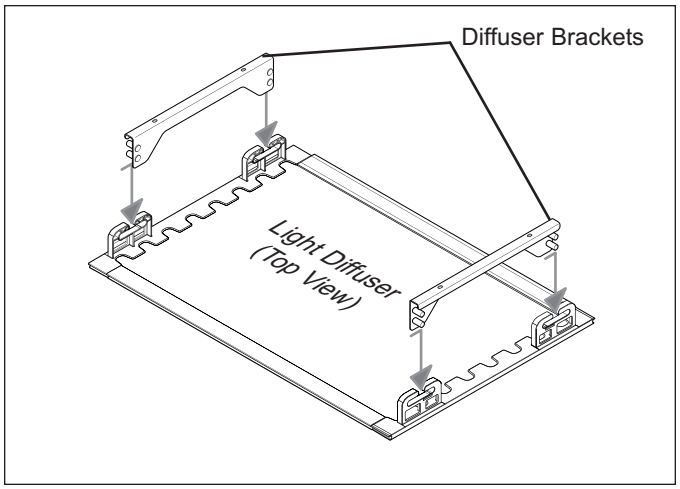


Figure 7-217. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The upper lighting assembly is located behind the light diffuser at the top of the compartment.

To remove the light bulb, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-218)

The light bracket assembly is secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser, then (See Figure 7-218):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

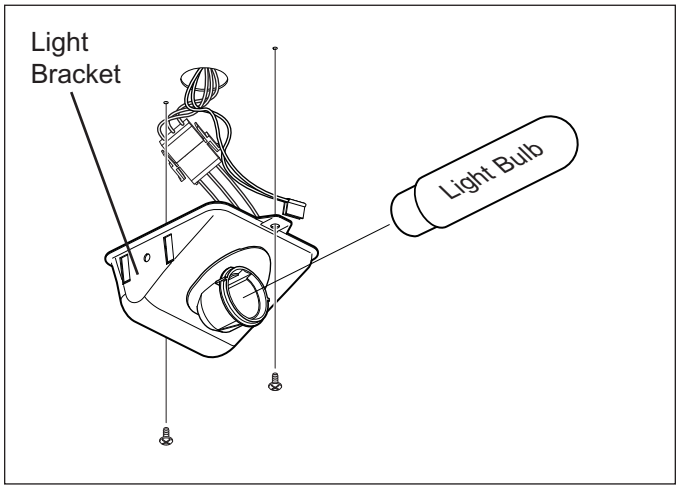


Figure 7-218. Freezer Light Assembly

Ice Bin Assembly

A flange at the back of the ice bin assembly hooks over the top edge of the ice bin carrier assembly bracket.

To remove the ice bin assembly (See Figure 7-219):

1. Pull ice bin open until it stops.
2. Lift bin up off of bracket, then pull bin forward and out of freezer compartment.

NOTE: *To reinstall ice bin, pull ice bin carrier assembly bracket all the way forward before attempting to hook flange at back of ice bin over top edge of carrier assembly bracket.*

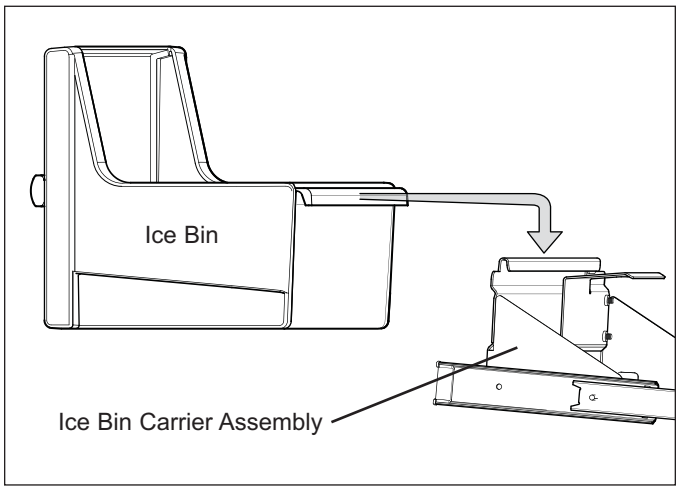


Figure 7-219. Ice Bin Assembly (Side View)

Lower Light Bulb

The lower light bulb is located just above the ice bin, behind the light shield.

To remove the lower light bulb, first remove the ice bin assembly, then reach behind the light shield and turn the bulb counterclockwise to remove it. (See Figure 7-220)

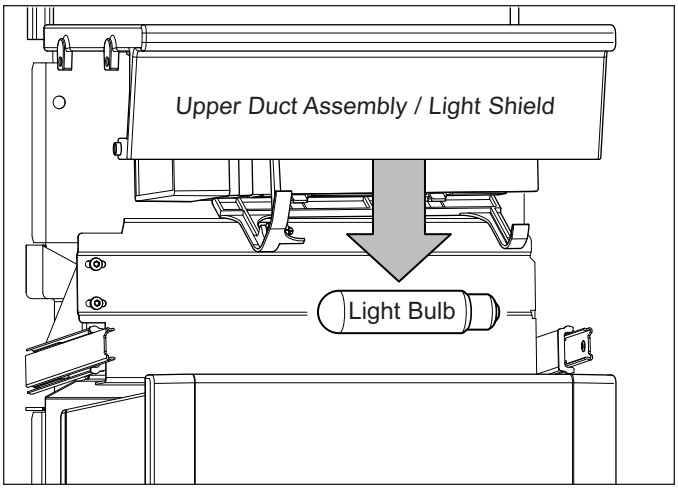


Figure 7-220. Lower Light Bulb Removal

Freezer Basket Assembly

To remove a freezer basket assembly (See Figure 7-221):

1. Pull basket open until it stops.
2. Remove basket contents.
3. Simultaneously depress both locking tabs under bottom front corners of basket assembly and lift up on basket front slightly.
4. Pull basket forward until until left front edge is in line with gap between door and face frame, then pivot right side of assembly out of compartment.

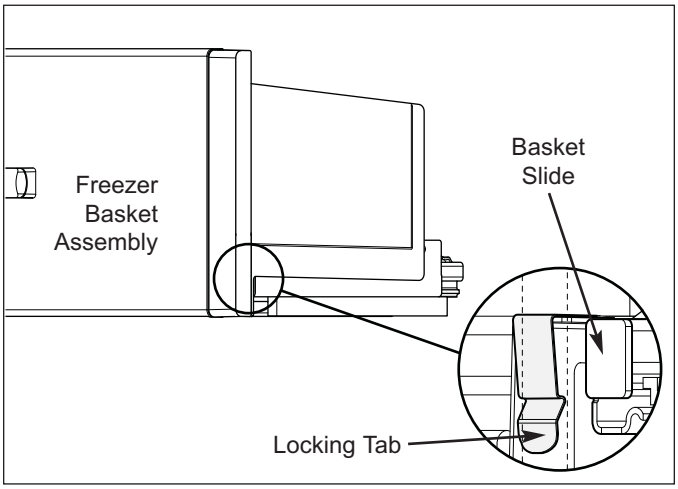


Figure 7-221. Freezer Basket Assembly Removal

Freezer Basket Slide

The basket slides are secured with screws to the compartment side walls. On the hinge side, there are basket slide spacers between the slides and the wall.

To remove a basket slide, first remove the basket assembly, then extract the slide's mounting screws and pull the slide from the side wall. (See Figure 7-222)

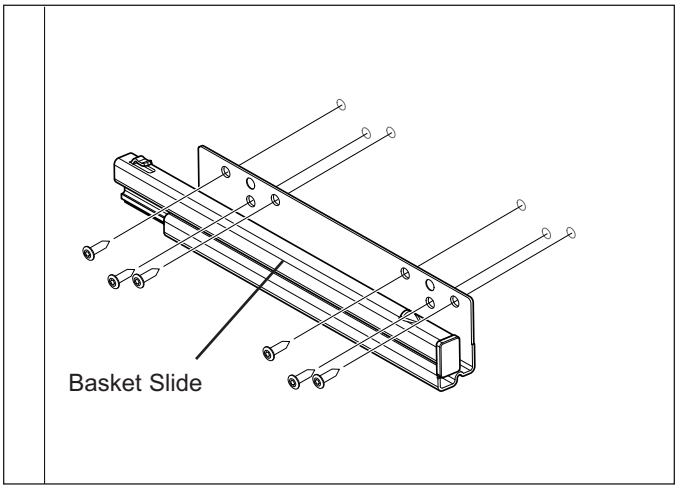


Figure 7-222. Freezer Basket Slide Removal

Icemaker Assembly

The icemaker assembly is attached to the middle duct assembly with screws.

To remove ice maker, first remove the ice bin, then (See Figure 7-223):

NOTE: *It is not necessary to remove the ice bin carrier assembly or the upper duct assembly.*

1. Use a small flat-blade screwdriver to pry latches of male electrical connector from tabs of female connector, then disconnect icemaker electrical leads.
2. Extract icemaker mounting screws (two at top, one at bottom), then pull icemaker assembly from compartment.

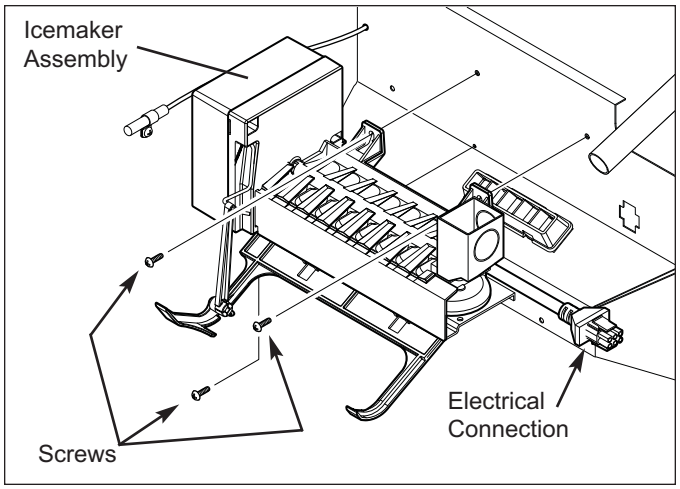


Figure 7-223. Icemaker Assembly Removal

Ice Bin Carrier Assembly

The ice bin carrier assembly is made up of two slide assemblies and two bracket assemblies. The two bracket assemblies are held together at the front with nuts and bolts, and these two bracket halves are attached to the slide assemblies with bolts. The slide assemblies are then attached to the freezer side walls with rivets.

To remove the ice bin carrier assembly bracket halves, first remove the ice bin, then (See Figure 7-224):

1. Remove nuts and bolts from front of bracket halves.
2. Extract bracket mounting bolts from slide assemblies.

To remove an ice bin carrier assembly slide, first remove the ice bin and bracket halves, then (See Figure 7-224):

3. Push slide all the way in, then drill out front mounting rivet.
4. Pull slide all the way out, then drill out mounting rivet at middle of the slide.

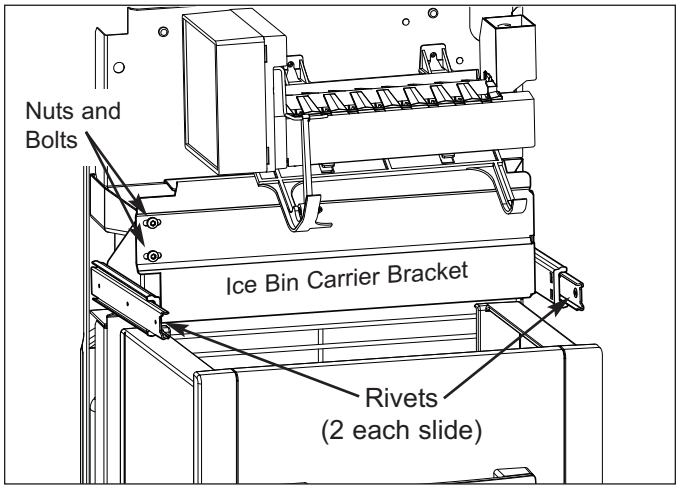


Figure 7-224. Ice Bin Carrier Assembly Removal

Upper Duct Assembly

The L-shaped upper duct assembly has notches at the top of each side flange that fit over locating pins at the top of each shelf ladder. The bottom of the duct assembly acts as a shelf over the icemaker and is secured with screws to the compartment side walls.

To remove the upper duct assembly, first remove all cantilever shelves and the ice bin, then (See Figure 7-225):

NOTE: *Removing the icemaker assembly first is not necessary, but will make this task easier.*

1. From underside of duct assembly, extract duct mounting screws (three each side).
2. Pull bottom of duct assembly forward slightly until lower light fixture electrical connections are visible behind icemaker assembly, then disconnect light's electrical leads.
3. Pull top of duct assembly down to disengage notches in side flanges from the locating pins
4. Pull ground clip from top flange of duct assembly, then remove duct assembly from compartment.

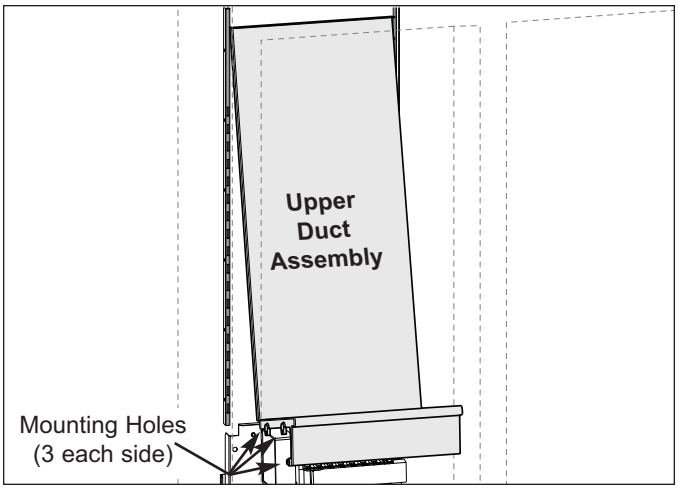


Figure 7-225. Icemaker Assembly Removal

Shelf Ladder

Shelf ladders are held to the freezer side walls with screws.

To remove a shelf ladder, first remove all cantilever shelves, upper light diffuser and upper duct assembly, then (See Figure 7-226):

1. Extract shelf ladder mounting screws.
2. Pull shelf ladder from side wall.

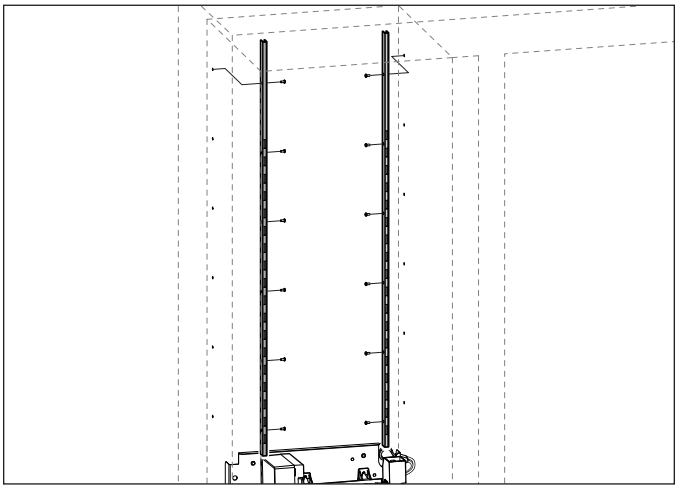


Figure 7-226. Shelf Ladder Removal

Freezer Compartment Thermistor Removal

The freezer compartment thermistor is mounted to the left-side wall of the freezer compartment next to the ice bin.

To remove the freezer compartment thermistor, first remove all cantilever shelves, upper light diffuser and upper duct assembly, then (See Figure 7-227):

1. Extract thermistor from mounting clamp.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

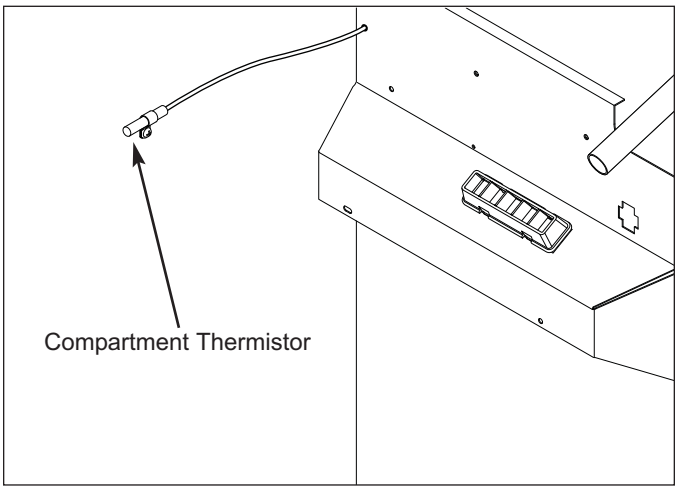


Figure 7-227. Freezer Compartment Thermistor

Middle Freezer Duct Assembly

The middle duct assembly is secured to the compartment back wall and top of the lower duct assembly with screws.

To remove the middle duct assembly, first remove all cantilever shelves, upper light diffuser, upper duct assembly and icemaker, then (See Figure 7-228):

1. Remove compartment thermistor from left-side wall of compartment, then push thermistor through grommet in middle duct assembly.
2. Using a small flat-bladed screwdriver, press in retaining tabs of icemaker wire harness female electrical connector and push connector back through hole in middle duct assembly.
3. Extract middle duct assembly mounting screws, then pull duct assembly from compartment.

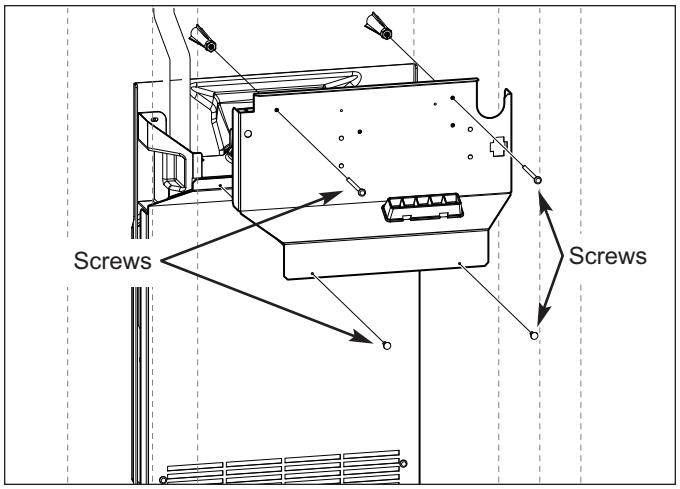


Figure 7-228. Middle Duct Assembly Removal

Icemaker Fill Tube Heater Removal.

To Remove the fill tube heater, first remove all cantilever shelves, upper light diffuser, upper duct assembly and icemaker, then unplug the heater and remove it from the compartment. (See Figure 7-229)

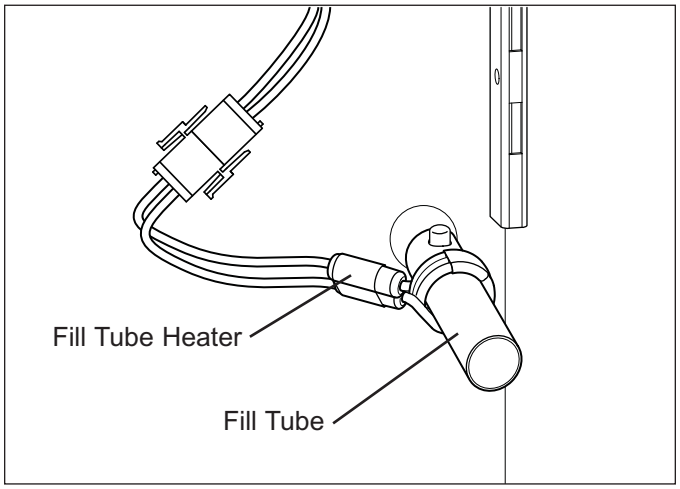


Figure 7-229. Fill Tube Heater Removal

Lower Freezer Duct Assembly

The lower duct assembly is secured with screws passing through the duct into stand-offs located at the bottom corners of the evaporator cover.

To remove the lower duct assembly, first remove all cantilever shelves, upper light diffuser, upper duct assembly, freezer baskets, basket slides, icemaker and middle duct assembly, then extract the screws from the bottom corners of the lower duct assembly and pull the assembly from the compartment. (See Figure 7-230)

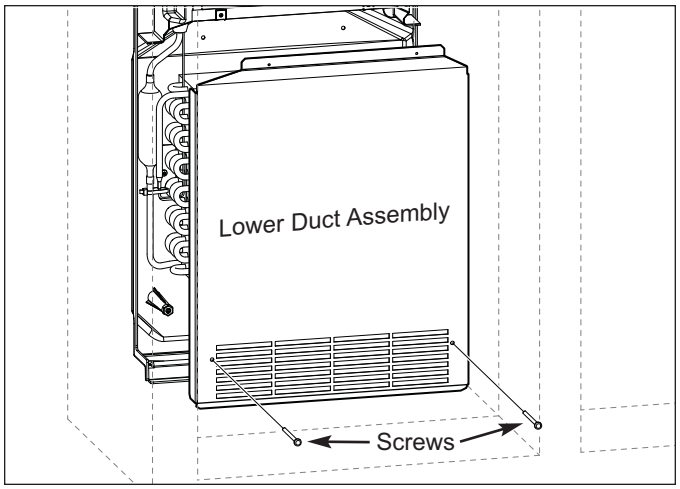


Figure 7-230. Lower Duct Assembly Removal

Evaporator Fan Motor

The freezer evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove all cantilever shelves, upper light diffuser, upper duct assembly, freezer baskets, basket slides, icemaker, middle duct assembly and lower duct assembly, then (See Figure 7-231):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

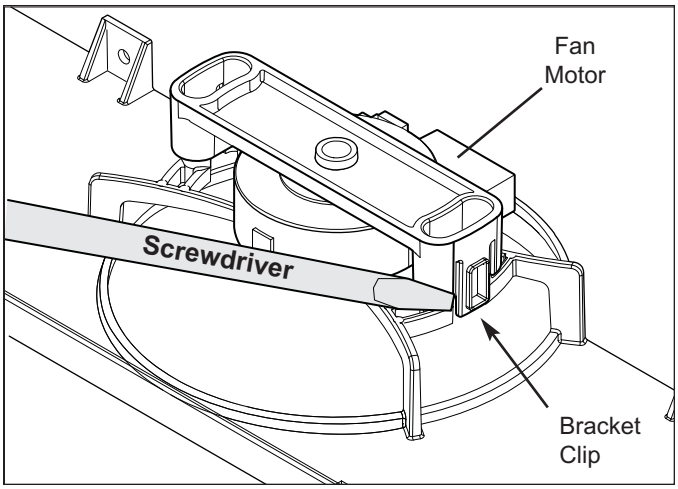


Figure 7-231. Evaporator Fan Removal

Evaporator Defrost Heater

The evaporator defrost heater is held in place at the bottom of the evaporator with defrost heater clips.

To remove the defrost heater, first remove all cantilever shelves, upper light diffuser, upper duct assembly, freezer baskets, basket slides, icemaker, middle duct assembly and lower duct assembly, then (See Figure 7-232):

1. Disconnect heater electrical leads.
2. Using a small needle-nose pliers, detach heater clips by pulling end tab of clips away from evaporator, then remove heater from compartment.

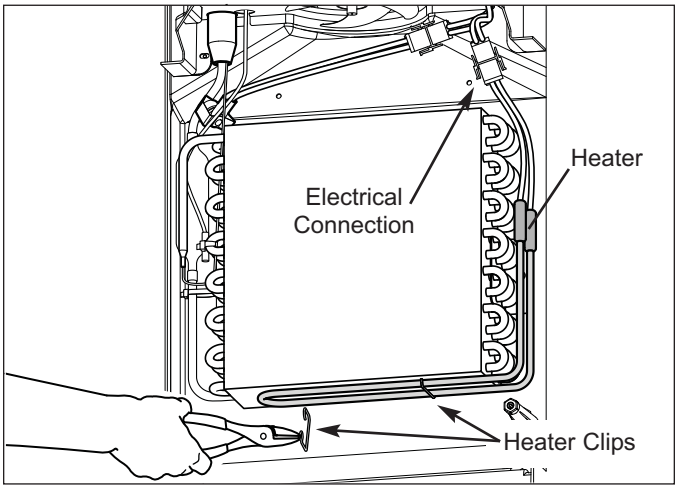


Figure 7-232. Defrost Heater Removal

Freezer Defrost Terminator

The freezer defrost terminator is attached to the accumulator outlet.

To remove the defrost terminator, first remove all cantilever shelves, upper light diffuser, upper duct assembly, freezer baskets, basket slides, icemaker, middle duct assembly and lower duct assembly, then (See Figure 7-233):

1. Extract the left wire cover mounting screws and pull wire cover from compartment.
2. Disconnect terminator electrical leads.
3. Pull terminator off of tubing.

NOTE: *When replacing the terminator be sure to attach the new terminator in the same location that the defective terminator was removed from.*

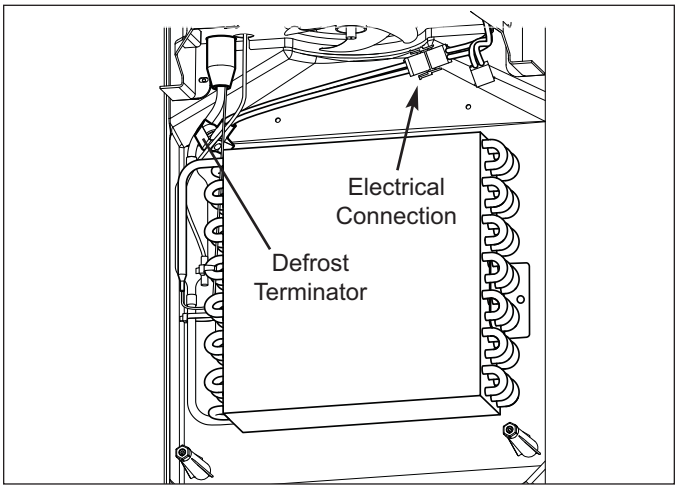


Figure 7-233. Defrost Terminator Removal

Freezer Evaporator Thermistor

The freezer evaporator thermistor is secured with a cable tie to an evaporator return bend on the left side of the evaporator.

To remove the evaporator thermistor, first remove all cantilever shelves, upper light diffuser, upper duct assembly, freezer baskets, basket slides, icemaker, middle duct assembly and lower duct assembly, then (See Figure 7-234):

1. Cut cable tie securing thermistor to evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

NOTE: *When replacing the thermistor be sure to attach the new thermistor to the same return elbow that the defective thermistor was removed from. At this writing, the thermistor is attached to the third elbow from the top in the front row of elbows on the left side.*

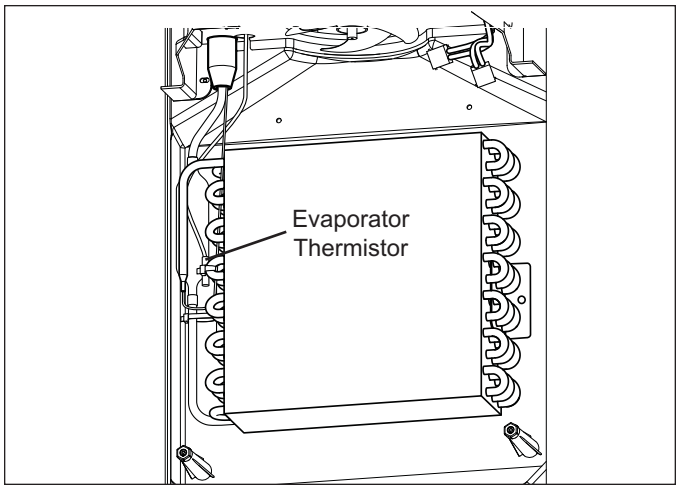


Figure 7-234. Freezer Evaporator Thermistor

Models BI-36S / BI-42S / BI-48S Compressor Area Mechanical Components

NOTE: *For water filter and filter manifold, see Exterior Cosmetic / Mechanical Components earlier in this section.*

Main Control Board

Screws hold the main control board inside a control housing that sits on a slide support bracket at the left side of the compressor area.

To remove the main control board assembly, the control grille and compressor shroud will need to be removed first, then (See Figure 7-235)

1. Grab front of control housing and pull it toward front of unit, off of the support bracket.
2. Disconnect wire leads from wire harness at right side of housing.
3. Disconnect communication cables from right side of control.
4. At top of control housing, lift the cover latches off of tabs along top of housing case, then separate the cover from the case.
5. Disconnect all wire leads from control board.
6. Extract control board mounting screws and lift board out of case.

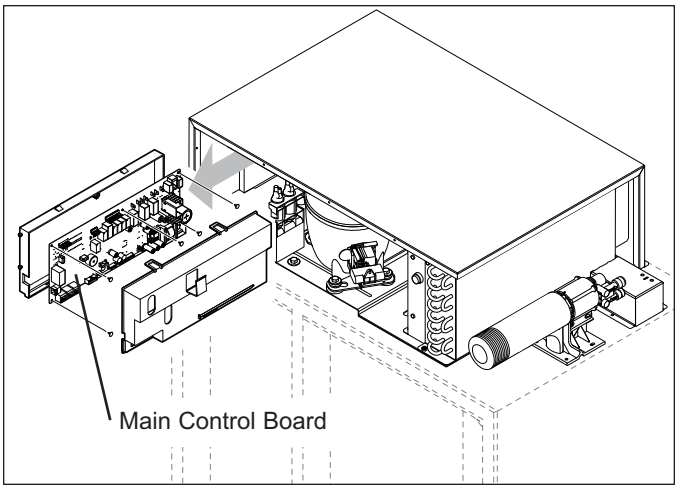


Figure 7-235. Control Board Assembly

Condenser Fan Shroud Assembly

Tabs at the back of the condenser fan shroud fit into grommets in the condenser's rear bracket. A hole in the bottom front flange of the condenser fan shroud fits down over a threaded stud, and a nut is then applied onto the stud. The front flange of the condenser fan shroud assembly is then secured to the front condenser bracket with screws.

To remove the condenser shroud assembly, first remove the top cabinet trim, top cabinet frame and compressor shroud, then (See Figure 7-236):

1. Extract condenser shroud mounting screws at front of condenser.
2. Extract nut from threaded stud at base of condenser fan shroud.
3. Pull assembly forward slightly, disconnect condenser fan electrical leads.
4. Disconnect filter reset switch electrical leads, then pull the assembly from the compressor area.

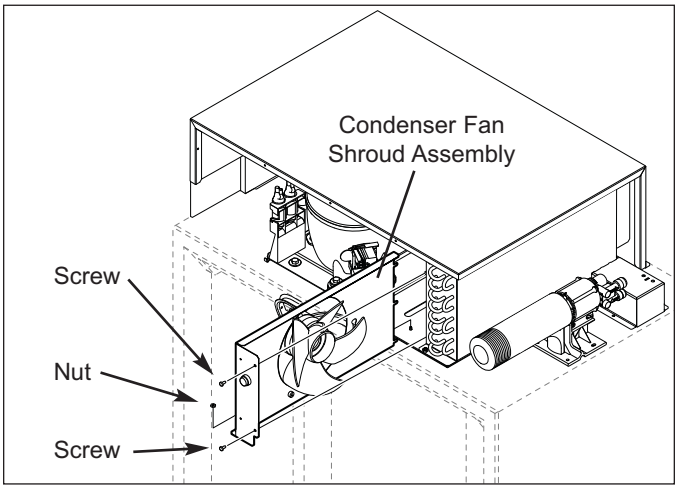


Figure 7-236. Condenser Fan Shroud Assembly

Condenser Fan Motor

The condenser fan is mounted to the condenser fan shroud with three fan mounting brackets that hook into grommets that are in the condenser fan shroud. At the back of the motor, screws pass through these brackets into the back of the fan motor. The condenser fan blade is held onto the fan motor shaft with a nut.

To remove the condenser fan motor, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-237):

1. Extract screws securing motor to brackets.
   NOTE: *The brackets will unhook from the grommets in the shroud after the screws are removed.*
2. To remove fan blade from fan motor:
   a. Grab blade and motor while turning nut counterclockwise.
   b. Then pull the blade from the motor shaft.

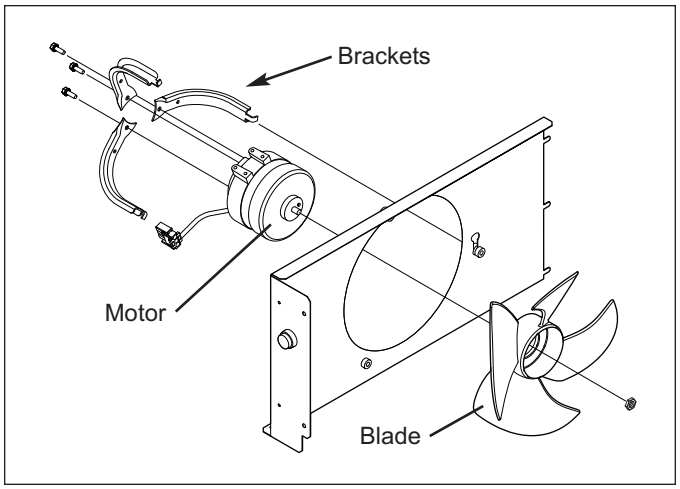


Figure 7-237. Condenser Fan Motor Removal

Water Filter Reset Switch

The water filter reset switch is secured to the inside of the condenser shroud front flange by retaining clips.

To remove the water filter reset switch, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-238):

1. Disconnect electrical leads from switch.
2. Using a needle-nose pliers, compress the retaining clips on switch body and push switch through condenser shroud flange.

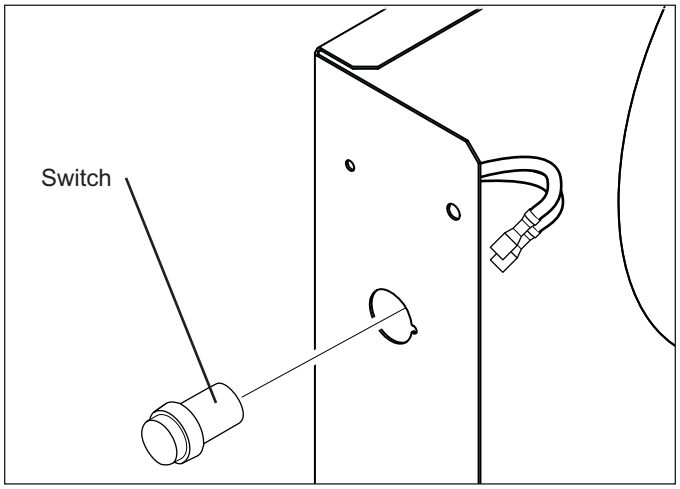


Figure 7-238. Filter Reset Switch Removal

Models BI-36S / BI-42S / BI-48S Sealed system Components

The sealed system components at the top of the appliance sit on a sliding unit tray. There is a slot in the unit tray running from front to back, with a bolt positioned in the middle of this slot and attached to the top of the appliance. This allows the tray to be pulled straight forward to aid in sealed system repairs. (See Figure 7-239) When not being moved for service, a bolt passing down through a hole at the front of the unit tray holds it in place.

⚠ WARNING

UNIT COULD TIP FORWARD! MAKE SURE THE ANTI-TIP BRACKETS ARE IN PLACE AND THE UNIT IS PROPERLY ANCHORED BEFORE ATTEMPTING TO SLIDE THE UNIT TRAY OUT.

NOTES:

- *Removing the condenser fan shroud assembly before sliding the unit tray out will allow greater access to sealed system components on the tray. See condenser Fan Shroud Assembly removal instructions earlier in this section.*
- *When tapping into the sealed system, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*
- *Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.*

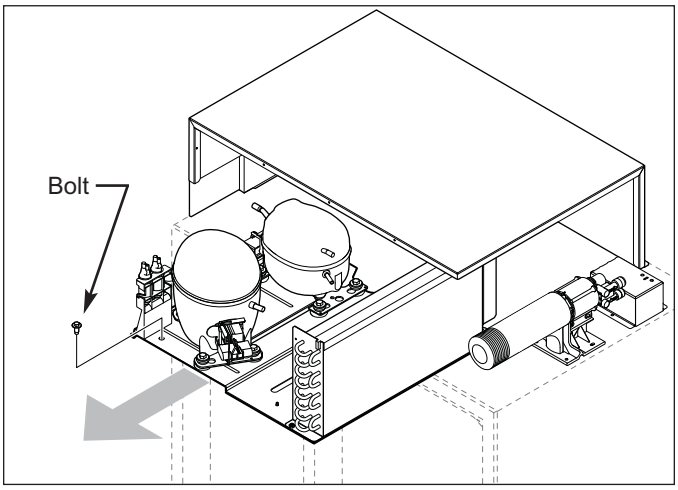


Figure 7-239. Sliding Out the Unit Tray

High-Side Filter-Drier

NOTE: *It is not necessary to slide the unit tray forward in order to replace a high-side filter-drier.*

To remove a high-side filter-drier, first capture the refrigerant from sealed system, then (See Figure 7-240):

1. With a file, score a line around capillary tube 1” or less from drier outlet, then fatigue capillary tube at this line until it separates.
2. With a tube-cutter, cut inlet tube 1” or less from drier inlet.

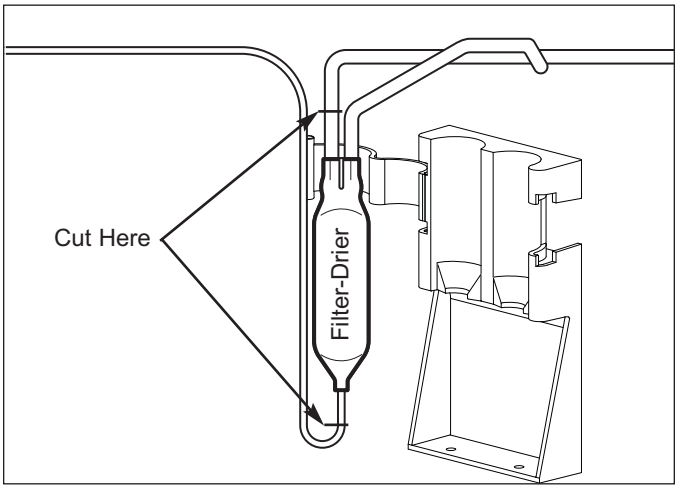


Figure 7-240. Filter-Drier Removal

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 1 above.*
- *When installing replacement filter-drier, insert capillary tube until it touches screen inside drier, then pull capillary tube away from screen approximately 3/8" before brazing.* (See Figure 7-241).
- *Filter-drier outlet must be facing downward in order to function properly.*

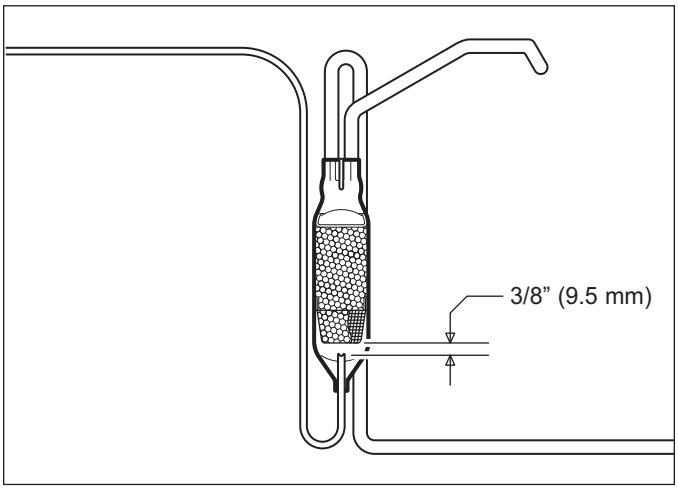


Figure 7-241. Capillary Tube Insertion Note

Compressor

Compressors are secured to the unit tray with three shoulder screws that pass down through rubber grommets in the compressor base and into holes in unit tray. A metal tab formed into the unit tray passes up through the fourth rubber grommet and the compressor base.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-33S / BI-42S / BI-48S Sealed System Components before continuing.*
- *The compressor at the front is the freezer compressor, at the rear is the refrigerator compressor.*

After capturing the refrigerant from the sealed system, (See Figure 7-242):

1. Disconnect wire leads from compressor electricals.
2. Using a tube cutter, cut suction and discharge tubes approximately 1” from compressor stubs.

   NOTE: *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
3. Extract compressor mounting shoulder screws, then lift compressor off of unit tray.

NOTE: *After replacing the compressor, take care to not kink tubing as the unit tray is slid back into position.*

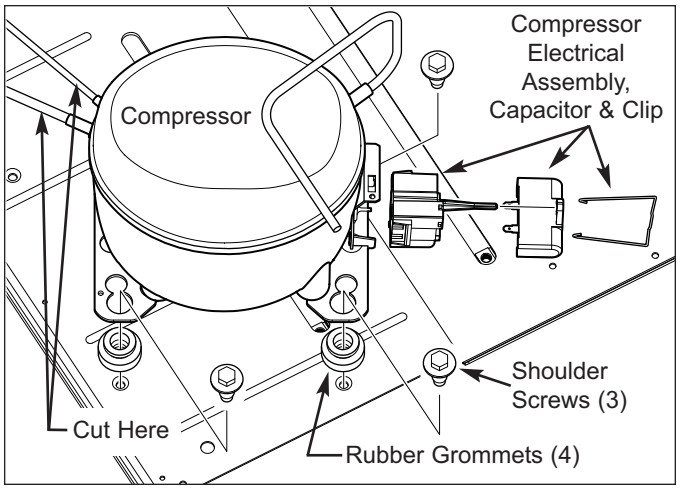


Figure 7-242. Compressor Removal

Condenser

Holes in the front and rear bottom flanges of the condenser fit over threaded studs in the unit tray, then a nut is applied to each threaded stud to hold the condenser in place.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-33S / 42S / 48S Sealed System Components before continuing.*
- *The condenser inlet and outlet stubs are at the rear of the condenser.*

After capturing the refrigerant from the sealed system, (See Figure 7-243):

1. Remove nuts from threaded studs at the front and rear of condenser, then lift condenser slightly to clear threaded studs and pull condenser forward.
2. Using a tube cutter, cut condenser inlet and outlet tubes approximately 1” from condenser stubs, then remove condenser fully from unit tray.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After replacing the condenser, take care to not kink tubing as the unit tray is slid back into position.*

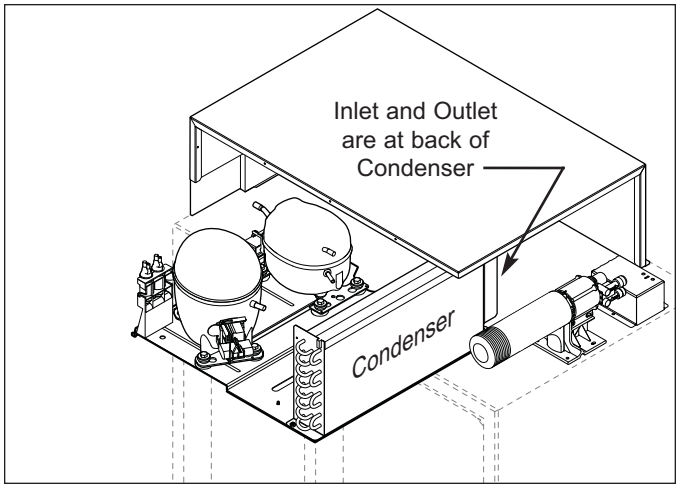


Figure 7-243. Condenser Removal

Refrigerator or Freezer Evaporator

The refrigerator and freezer evaporators are attached to the rear walls of their respective compartments with screws, behind the compartment duct assemblies. See Duct Assembly removal procedures earlier in this section.

NOTES:
- *The high-side filter-drier must also be replaced when replacing an evaporator.*
- *The electrical components on a freezer evaporator will be reused, so remove the defrost heater, defrost terminator and evaporator thermistor from the freezer evaporator.*

To remove an evaporator, first capture the refrigerant from the sealed system, then (See Figure 7-244 or 7-2-45):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 2 above.*

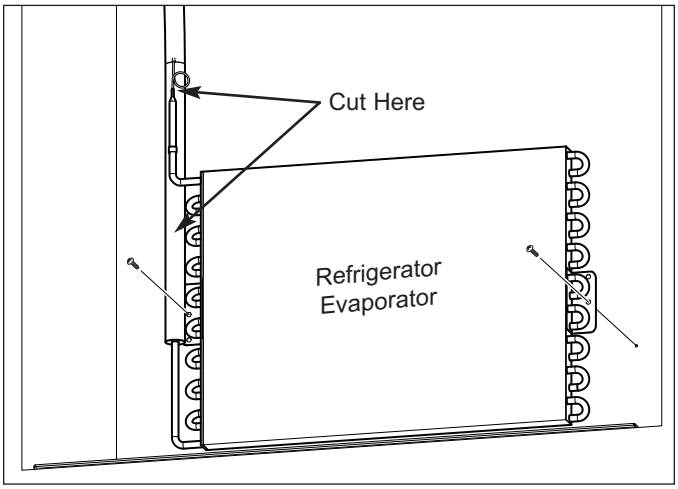


Figure 7-244. Refrigerator Evaporator Removal

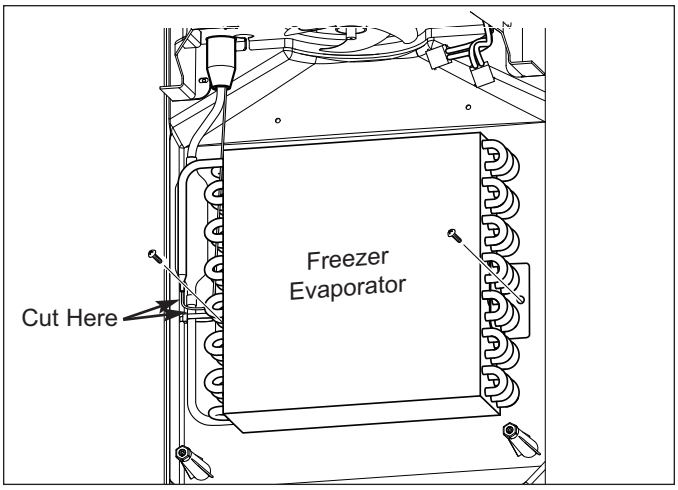


Figure 7-245. Freezer Evaporator Removal

Refrigerator or Freezer Heat Exchanger

The refrigerator and freezer heat exchangers passes through the ceiling of their respective compartments.

NOTES:

- *The high-side filter-drier must also be replaced when replacing a heat exchanger.*

To remove a heat exchanger, first capture the refrigerant from the sealed system, then (See Figure 7-246):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.
4. With a tin snips, or similar tool, cut heat exchanger in compartment as close as possible to ceiling where heat exchanger passes through.
5. Use a tube-cutter to cut drier from condenser outlet tube.
6. Using a tube cutter, cut suction line approximately 1” from compressor.
7. Pull remaining heat exchanger from unit.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *When replacing the heat exchanger, it is recommended to attach it at the evaporator end first, then feed the heat exchanger through hole, up to compressor area.*

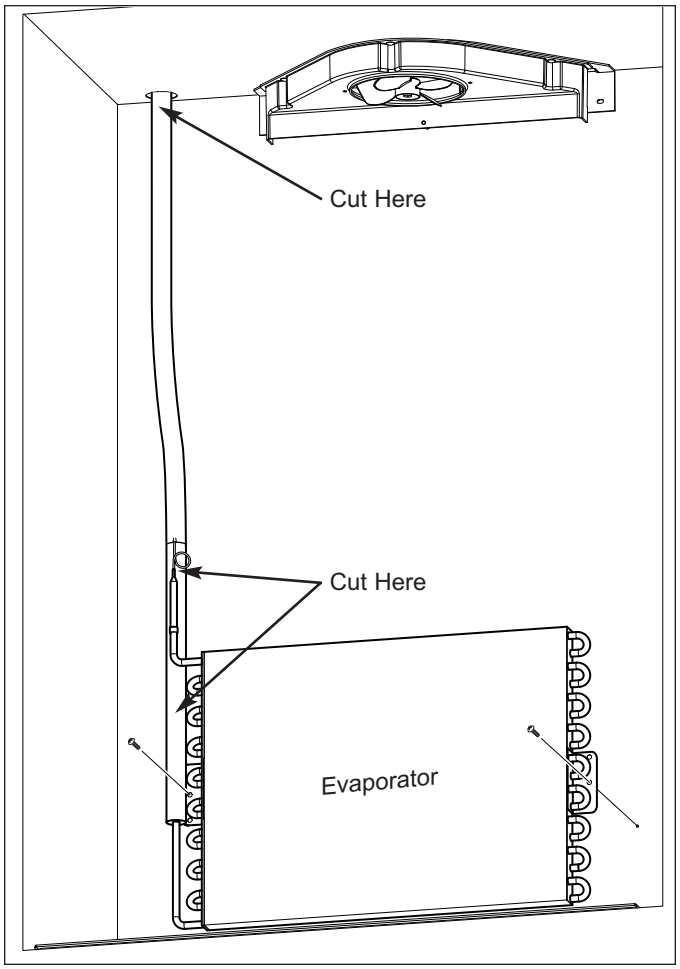


Figure 7-246. Refrigerator Heat Exchanger Removal
(Freezer Evaporator and Heat Exchanger not Shown)

Models BI-42SD / BI-48SD Exterior Cosmetic / Mechanical Components

Kickplate

To remove a kickplate, extract the screws from the left and right corners of the kickplate, then pull the kickplate forward. (See Figure 7-247).

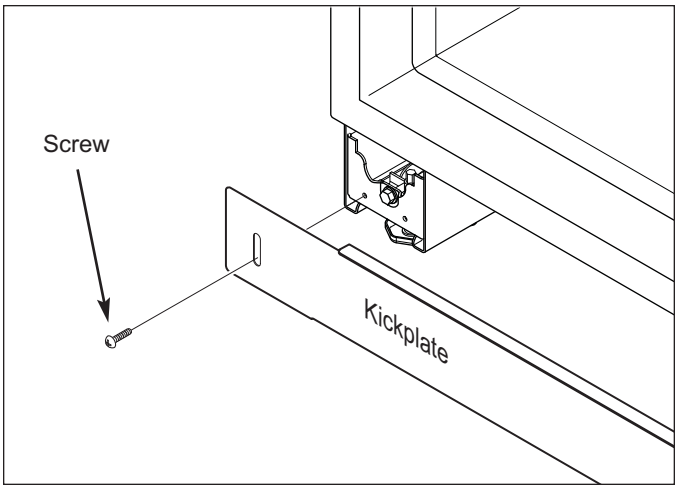


Figure 7-247. Kickplate Removal

Drain Pan

The drain pan slides in from the front of unit on two side brackets. A locating feature was built into the drain pan in the form of detentes at the bottom front that drop into notches at the front of the side brackets.

To remove the drain pan (See Figure 7-248):

1. Remove kickplate.
2. Push front of drain pan up slightly, then pull forward.

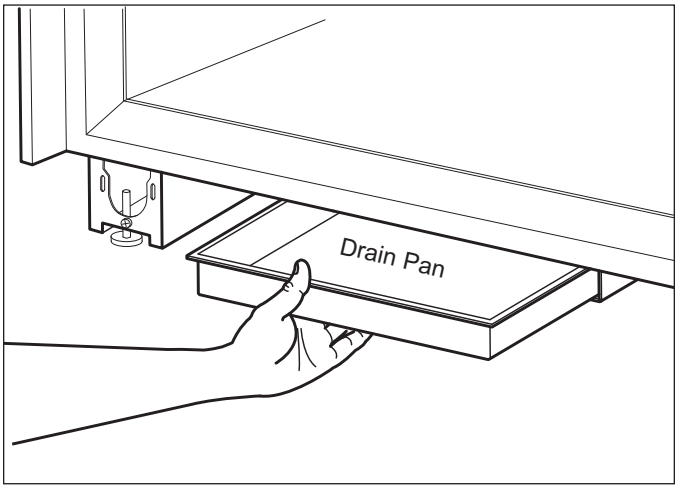


Figure 7-248. Drain Pan Removal

Dual Water Valve Assembly

The dual water valve is located to the right of the drain pan and is attached to the valve bracket with screws.

NOTE: *Before attempting to remove the dual water valve assembly, switch the water supply to the unit off.*

To remove the dual water valve assembly, first remove the kickplate, then (See Figure 7-249):

1. With a valve assembly mounting screws and pull valve forward.
2. Disconnect AC and DC electrical leads.

   NOTE: *It may be necessary to cut a cable tie that is securing the AC electrical leads to the valve assembly.*
3. Disconnect inlet and outlet water tubes from valves by pushing the collar around the tubes toward the valves, while pulling the tubes away from the valves.

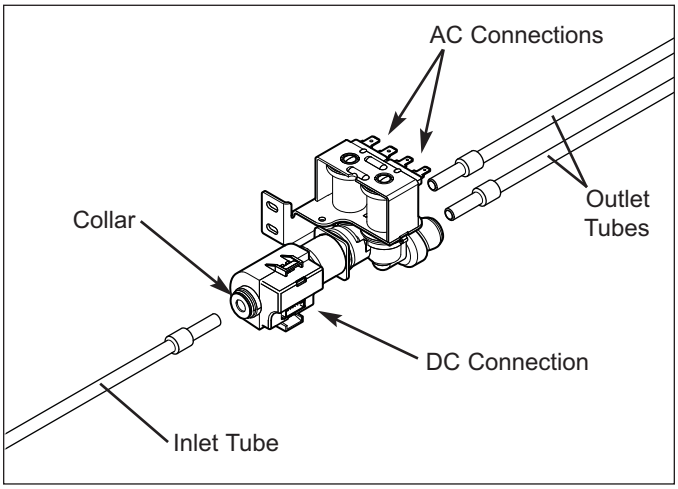


Figure 7-249. Water Valve Removal

Water Filter Cartridge

The water filter cartridge is located at the right hand top side of the unit behind grille assembly.

To remove the water filter cartridge, first lift open the front of the grille assembly, then (See Figure 7-250):

1. Push the cartridge in toward the water filter manifold to depress the spring and catch mechanism.
2. Then pull cartridge out of the manifold.

NOTE: *After a filter cartridge has been replaced, the reset button behind the unit grille must be pressed for five (5) seconds to clear the filter icon from the LCD and reset the water filter timer.*

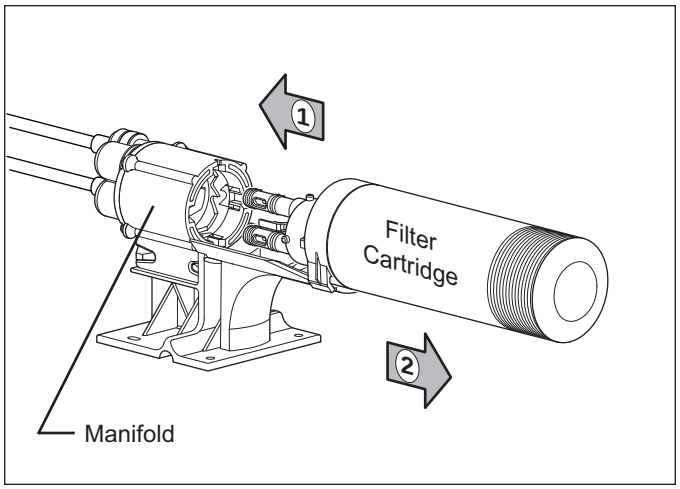


Figure 7-250. Water Filter Cartridge Removal

Water Filter Manifold

The water filter manifold is secured to the right hand top side of the unit with screws, behind grille assembly.

NOTE: *Before attempting to remove the water filter manifold, switch the water supply to the unit off.*

To remove the filter manifold, first lift open the front of the grille assembly and remove the water filter cartridge, then (See Figure 7-251):

1. Use a T-20, 6-lobe Torx type bit to extract the manifold mounting screws.
2. Pull the manifold forward and disconnect the water tubes by pushing the collar around the tubes toward the manifold, while pulling the tubes away from the manifold.

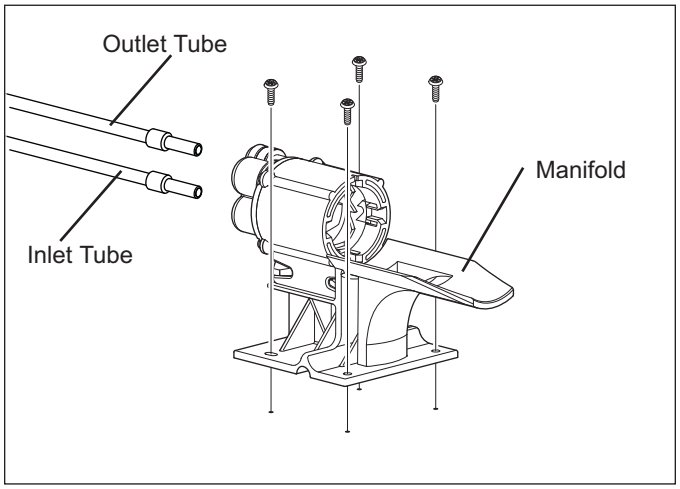


Figure 7-251. Water Filter Manifold Removal

Door Switches

The door switches are located at the top rear of the top cabinet frame, with their actuators protruding through holes in the front of the frame. A series of tabs and pegs hold the door switches in place.

To remove a door switch, first open the grill, then (See Figure 7-252):

1. Disconnect the switch electrical leads using a needle-nose pliers to pull the electrical lead housings away from the switch.
2. Use a small flat-blade screwdriver to pry the front retaining tab at each side of the switch back while lifting that side of the switch up. Repeat this step on each side of the switch.
3. Pull switch back and lift off of the top cabinet frame

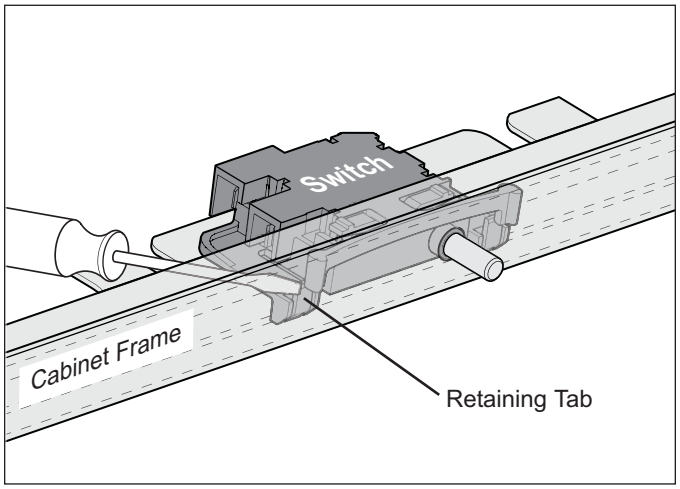


Figure 7-252. Door Switch Removal

Top Cabinet Trim

The top cabinet trim sits below the grille assembly. Screws pass through open ended slots in the trim to secure it to the top cabinet frame.

To remove the top cabinet trim first open the grill then, (See Figure 7-253):

1. Use a T-15, 6-lobe Torx type bit, to loosen, but not remove, the trim mounting screws.
2. Pull the trim forward. off of the unit.

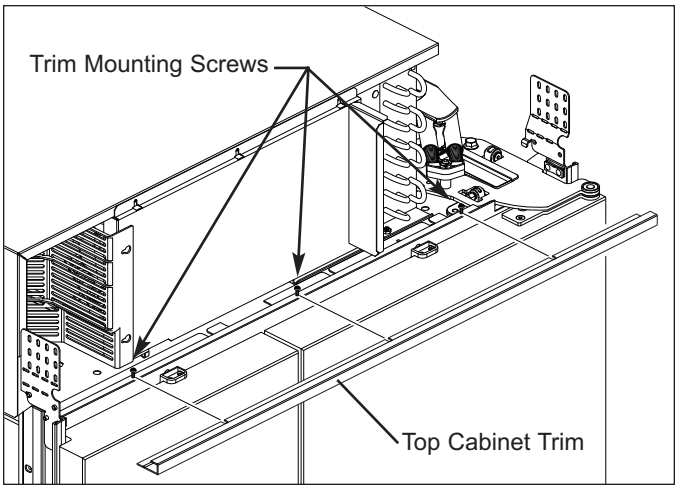


Figure 7-253. Top Cabinet Trim Removal

Grille Assembly

The grille assembly is attached at the top of the unit with screws passing through the grille's side frames into grille brackets.

To remove a grille assembly (See Figure 7-254):

1. Lift open the front of the grille assembly to access the mounting screws.
2. With a T-20, 6-lobe Torx type bit, extract the two front grille mounting screws, then loosen but do not remove the two rear mounting screws.
3. pull the grille assembly forward, off of the unit.

NOTE: *When reinstalling the grille assembly, line up the notches at back of grille side frames with the rear mounting screws, then push the grille assembly back.*

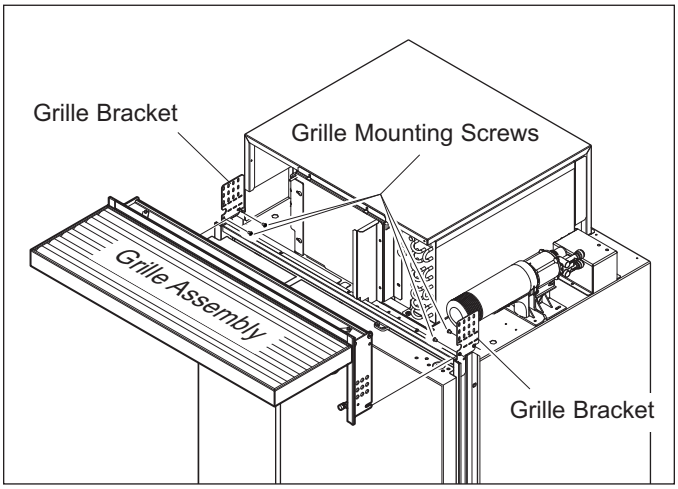


Figure 7-254. Grille Assembly Removal

Framed / Overlay Refrigerator Door Handle / Handle-Side Trim

The door handle on framed units and the handle-side trim on overlay units is attached to the door with screws. These screws are covered by a screw cover.

To remove a handle of handle-side trim, open the door then:

1. At the top of the door, insert a flat blade screwdriver into the channel of the screw cover and push the cover back, disengaging it from the handle or trim (See Figure 7-255).
2. With a T-20, 6-lobe Torx type bit, extract the handle-side trim mounting screws and pull the trim from the door (See Figure 7-256).

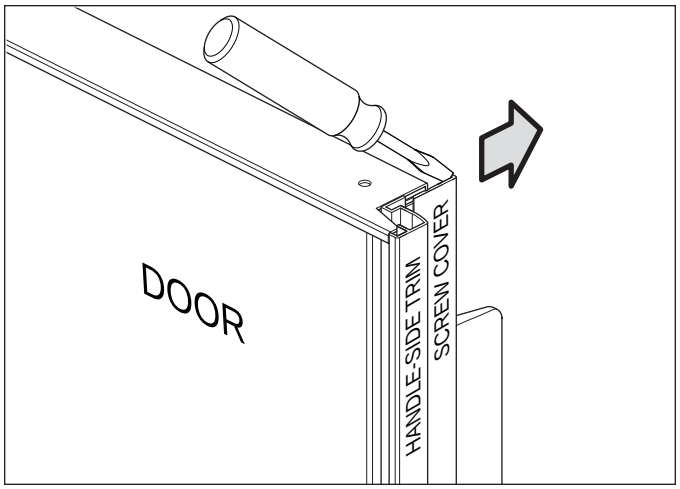


Figure 7-255. Screw Cover Removal

Stainless Steel Door Handle Assembly

A screw inserted through the stainless steel handle standoffs into the handle secures the handle to the standoffs. The standoffs are then slides over threaded studs that are attached to the door shell. A socket head set-screw inserted through the side of the standoff secures the standoff to the stud.

To remove a stainless steel handle assembly (See Figure 7-257):

1. Use a 3/32” Allen-wrench to loosen the set-screw in each handle standoff.
2. Pull handle assembly off of the threaded studs.

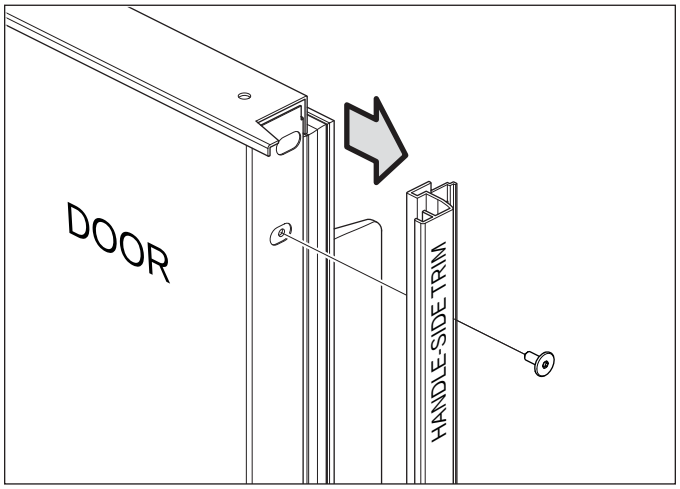


Figure 7-256. Handle / Handle-Side Trim Removal

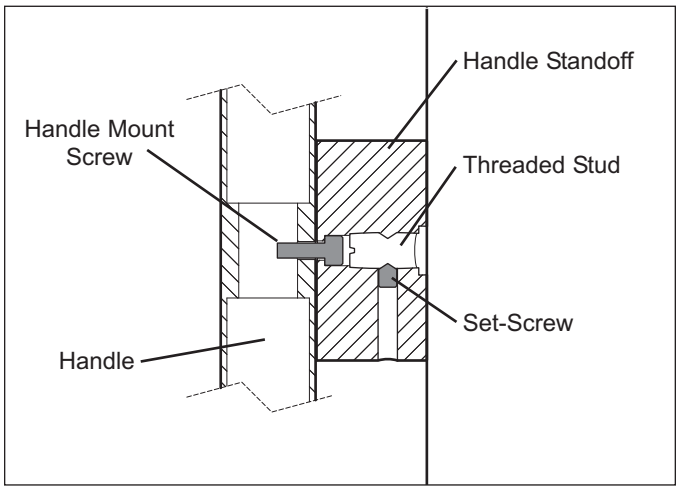


Figure 7-257. Cut-away View - SS Handle Assembly

Dispenser Control Panel

The dispenser control panel is held in place over the bezel and in front of the dispenser assembly by plastic rivets passing up through its bottom flange and into the dispenser assembly.

To remove the control panel (See Figures 7-258 and 7-259):

1. Extract plastic rivet center posts using a fingernail, putty knife, or similar device, then pull rivets out.
2. Pull panel down and disconnect communication cable.

NOTE: *When reassembling, make sure the blue side of the communication cable is up when connecting it to the dispenser control panel, and take care not to pinch or kink the cable.*

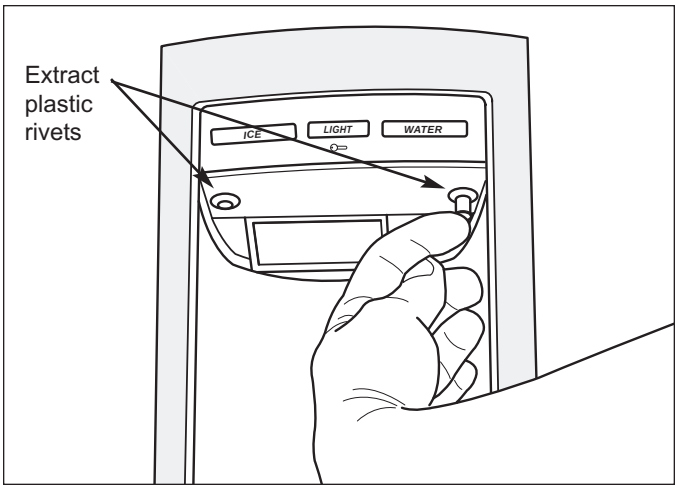


Figure 7-258. Dispenser Control Panel Removal

Dispenser Bezel

To remove the bezel, the control panel must be removed first, then (See Figure 7-260):

1. Lift out glasswell grille to access bottom screws.
2. Extract all four bezel mounting screws, one at each corner, then pull bezel forward.

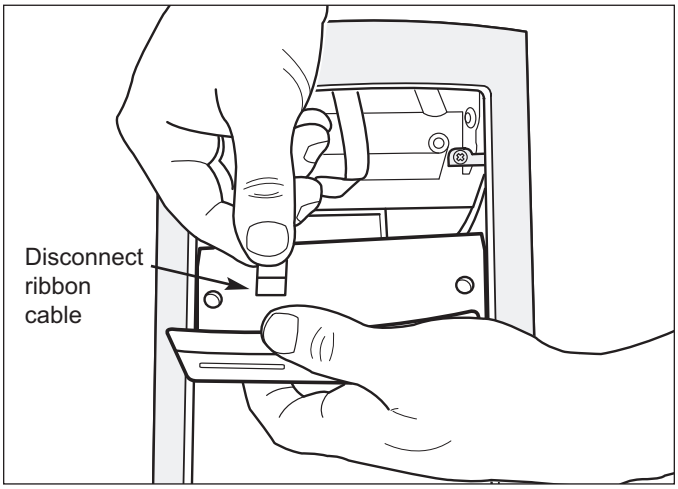


Figure 7-259. Dispenser Control Panel Removal

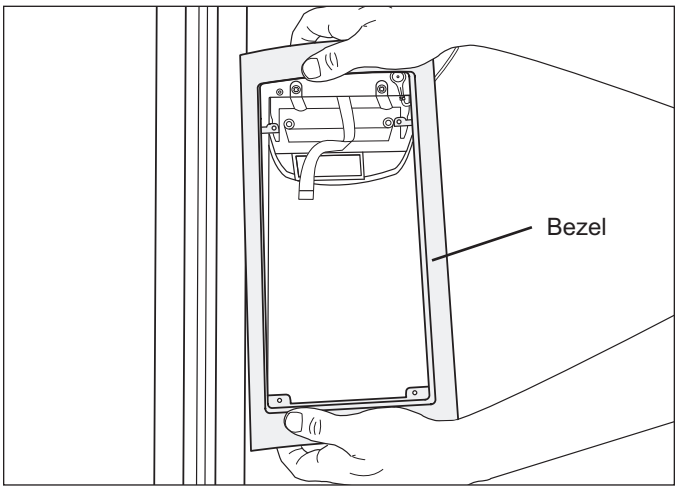


Figure 7-260. Bezel Removal

Glasswell Liner/Sump

The glasswell liner sets into a groove in the sump. These two components are then installed as an assembly, with the top of the liner fitting up into a groove at the bottom of the dispenser assembly, and two plastic rivets hold the liner to the dispenser assembly.

To remove the glasswell liner/sump assembly, the control panel and bezel must be removed first, then (See Figures 7-261 and 7-262):

1. Extract plastic rivet center posts using a fingernail, putty knife, or similar device, then pull rivets out.
2. Detach ground wire from glasswell liner at top right.
3. Pull bottom of assembly out while lifting up.

NOTE: *When reassembling, the top edge of the liner must fit into the groove at the bottom of the dispenser assembly.*

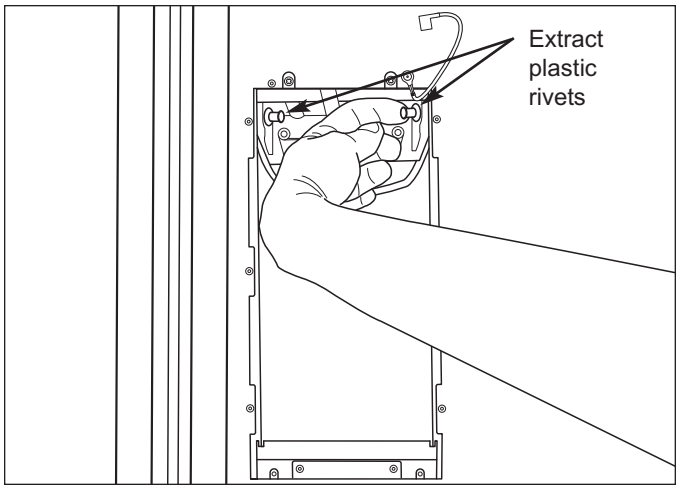


Figure 7-261. Glasswell Liner/Sump

Dispenser Assembly

The dispenser assembly sits above the glasswell liner and is held in position with four screws.

To remove the dispenser assembly, the control panel, bezel and glasswell liner/sump assembly must be removed first, then (See Figures 7-263):

1. Extract front and back dispenser assembly mounting screws.
2. Pull assembly down and disconnect wires.

NOTE: *When reassembling, take care not to pinch or kink communication cable, and be sure to test for proper control panel / dispenser assembly operation before leaving.*

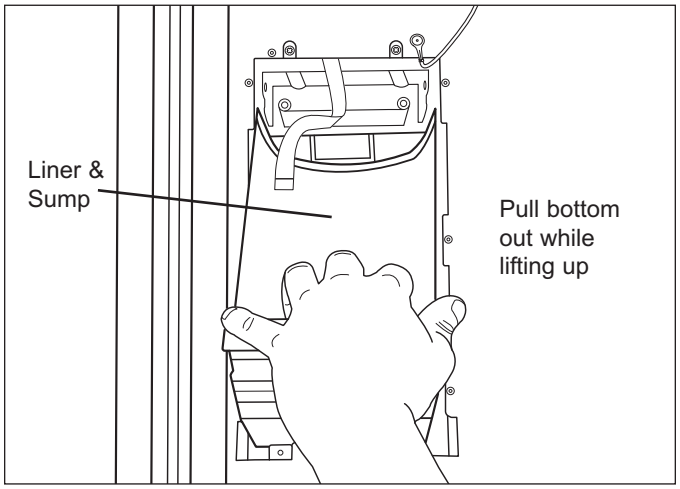


Figure 7-262. Dispenser Assembly

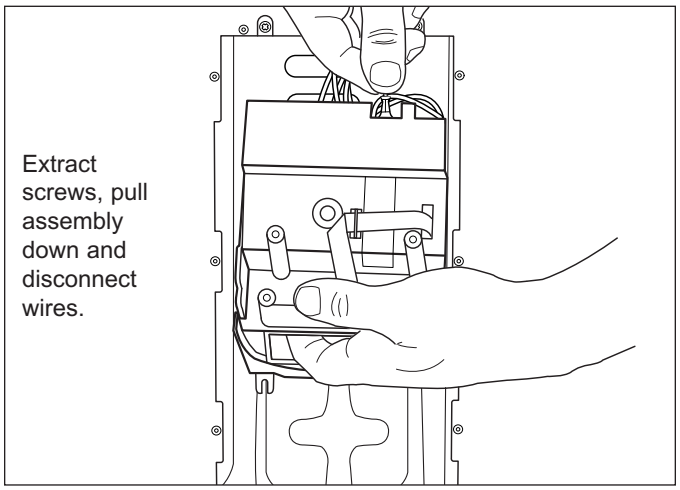


Figure 7-263. Dispenser Assembly

Top Door Hinge Assembly

The top hinge assembly is secured to the unit with bolts that pass down through the cabinet hinge plate into threaded inserts. Screws passing down through the door hinge secure the hinge assembly to the door.

NOTE: *A special tool package is available to assist in removing a top hinge assembly. This tool package is provided with replacement hinge and door assemblies. If needed, order part #7011097. The directions below were written to be used with this tool package.*

To remove a top hinge assembly, the grille assembly and top cabinet trim must first be removed. If removing the refrigerator door, remove the water filter cartridge from above the hinge assembly pull the communication flex cable out of the cable retainer at the side of the hinge assembly at this time, then:

1. With the door open, use a 5/32" Allen wrench or bit to extract the top door hinge mounting screw nearest to the hinge pivot point (See Figure 7-264).
2. Use a 1/8" Allen wrench or bit to replace the screw just removed with the 1/4-20X1/2" setscrew, included in the tool package, inserting the setscrew down until its top is flush with the top surface of the door hinge (See Figure 7-264).

   NOTE: *If the setscrew is not inserted far enough it will damage the hinge plate when closing the door; if it is inserted too far it will not hold the door hinge in the correct position when closing the door.*
3. Extract the inner door hinge mounting screws, leaving the outermost screw in place (See Figure 7-264).
4. insert the hinge spacer, included in the special tool package, between the door closer guide and the back of the door closer track, then close the door (See Figure 7-264).

   NOTE: *This spacer will keep the door closer mechanism at the proper spacing to facilitate hinge assembly removal and reinstallation.*
5. With the door closed, use a socket wrench with an extension and a ½" socket to extract the cabinet hinge mounting bolts (See Figure 7-265).
6. Extract the outermost door hinge mounting screw (See Figure 7-265).
7. Lift the hinge assembly up off of the top of the unit, allowing the door to shift toward the handle side and come to rest against the main frame (See Figure 7-266).

   NOTE: *It may be necessary to use a flat blade screwdriver to pry the post at the end of the door closer arm up out of the hole in the top of the door assembly.*

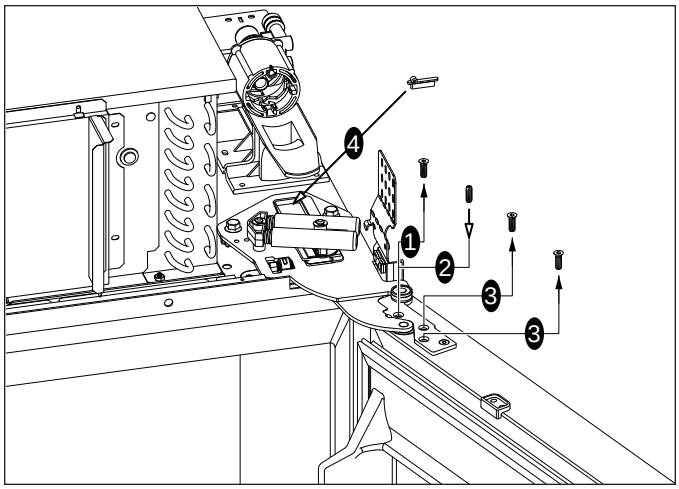


Figure 7-264. Top Door Hinge Screw Removal, Setscrew Installation and Spacer Installation

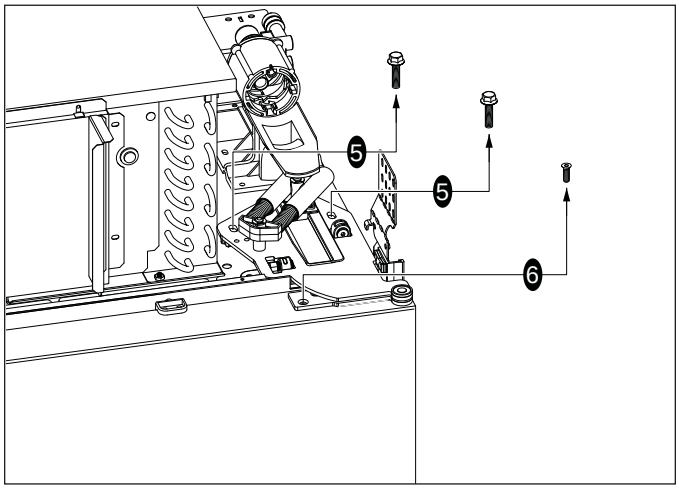


Figure 7-265. Cabinet Hinge Bolt Removal and Door Hinge Screw Removal

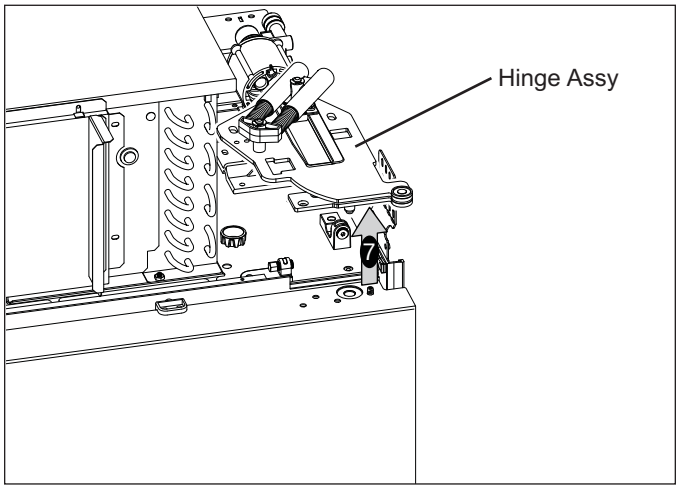


Figure 7-266. Top Door Hinge Assy Removal

Door Assembly

Door assemblies are secured to the top and bottom door hinges with screws. The bottom door hinges have a post that fits down into bearings in the bottom cabinet hinge assemblies door adjusters.

To remove a door assembly, the top hinge assembly must be removed first. Then, with one hand at each side of the door, open the door forty-five to ninety degrees and lift it off of the bottom cabinet hinge assembly. (See Figure 7-267)

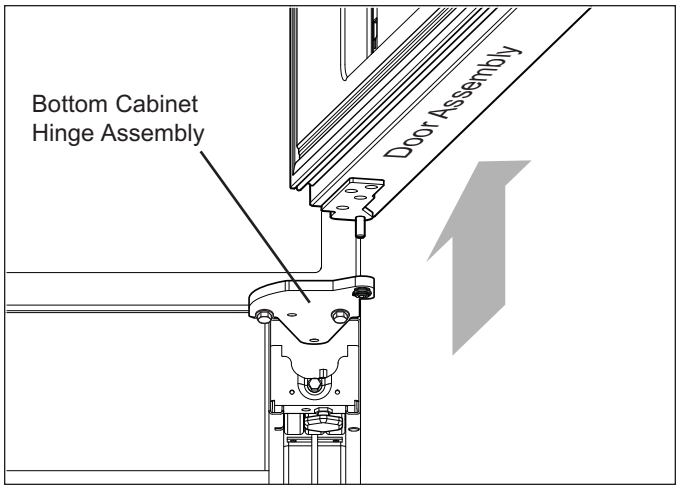


Figure 7-267. Door Assembly Removal

Bottom Cabinet Hinge Assembly

The bottom cabinet hinge assembly is attached to the bottom of the unit with bolts.

To remove the bottom cabinet hinge assembly, first remove the top hinge assembly and the door. Then, using a 1/2” wrench or socket, extract the cabinet hinge mounting bolts and pull the hinge assembly from the unit. (See Figure 7-268)

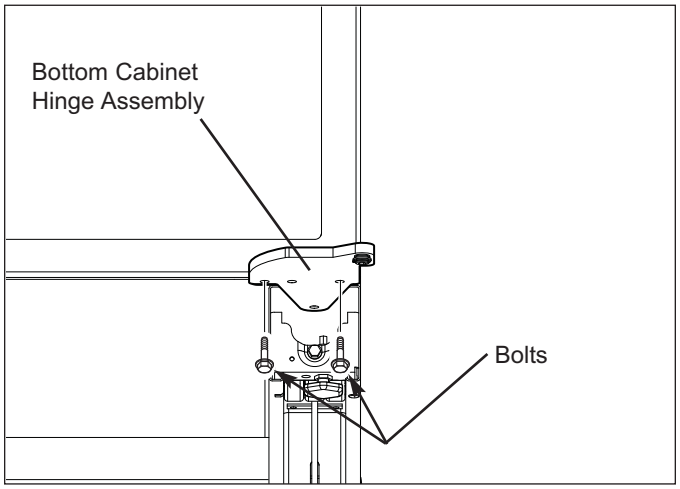


Figure 7-268. Cabinet Hinge Assembly Removal

Models BI-42SD / BI-48SD Refrigerator Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-269).

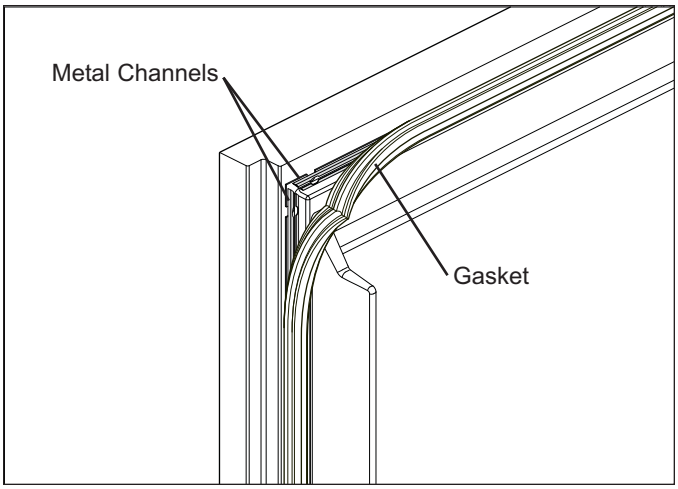


Figure 7-269. Door Gasket Removal

Adjustable Door Shelves and Dairy Compartment

Removal and adjustment of the upper door shelves and dairy compartment assembly is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-270).

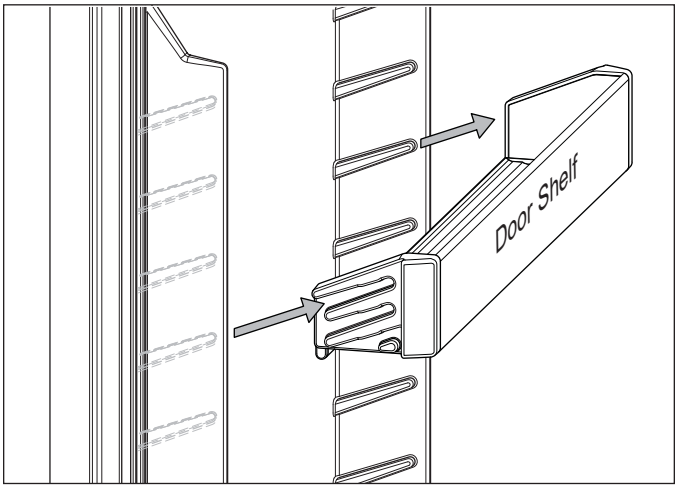


Figure 7-270. Adjustable Door Shelf

Non-adjustable Door Shelf

The lower non-adjustable door shelf has hooks at the back sides of its endcaps that fit into notches in the door liner.

To remove the non-Adjustable door shelf lift it up slightly then pull it from the notches in the door liner; to install it push in and down (See Figure 7-271)

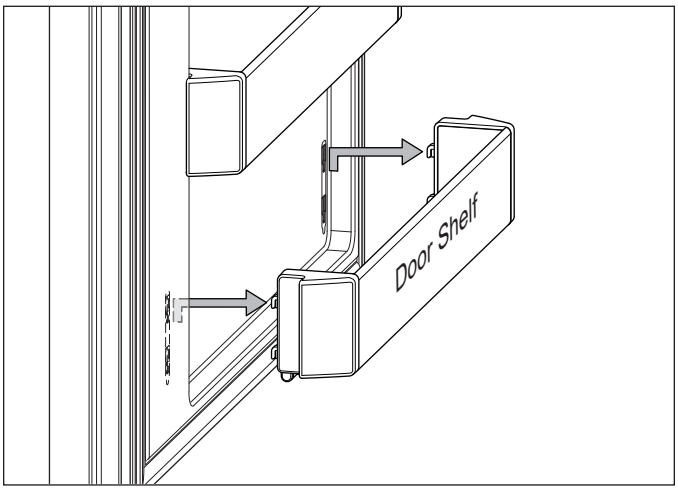


Figure 7-271. Non-Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a refrigerator cantilever shelf assembly (See Figure 7-272):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

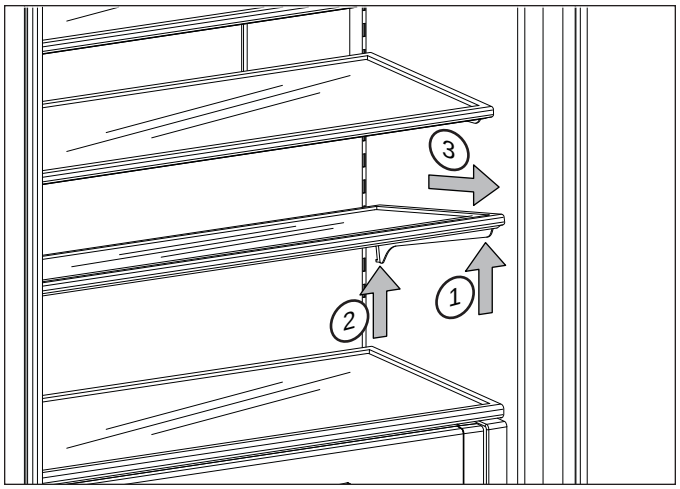


Figure 7-272. Cantilever Shelf Removal

Crisper Glass Shelf

The crisper glass shelf rests upon shelf standoffs that are mounted to the refrigerator side walls.

To remove the crisper glass shelf (See Figure 7-273):

1. Lift shelf straight up off of the standoffs.
2. Pull shelf forward, out of compartment.

Deli Drawer and/or Crisper Drawer Assembly

To remove a deli drawer assembly or crisper drawer assembly, open the drawer until it stops, then lift the front of the drawer up slightly off of the drawer slide while continuing to pull the assembly out of the compartment. (See Figure 7-274).

NOTE: *If the door is limited to a 90-degree opening, removing the non-adjustable door shelves will assist in this task.*

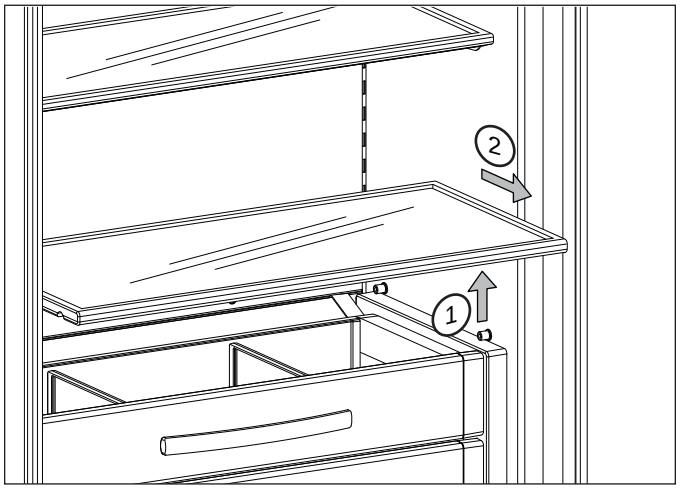


Figure 7-273. Crisper Shelf Removal

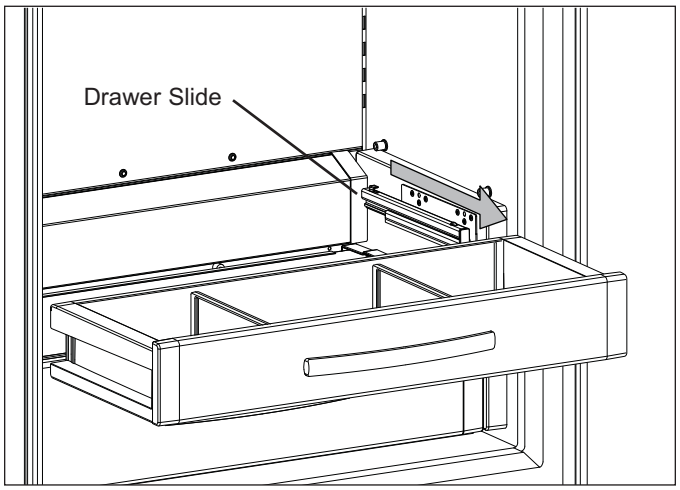


Figure 7-274. Refrigerator Drawer Removal

Glass Crisper Cover Assembly

The glass crisper cover assembly is located between the deli drawer and the top crisper drawer and is held in place by crisper cover supports attached to each side wall.

To remove the glass crisper cover assembly, first remove the deli drawer and the top crisper drawer, then (See Figure 7-275):

1. Grasp the assembly at the front edge toward each side.
2. Lift the front of the assembly upward and pull it forward to release it from the support retaining clips.

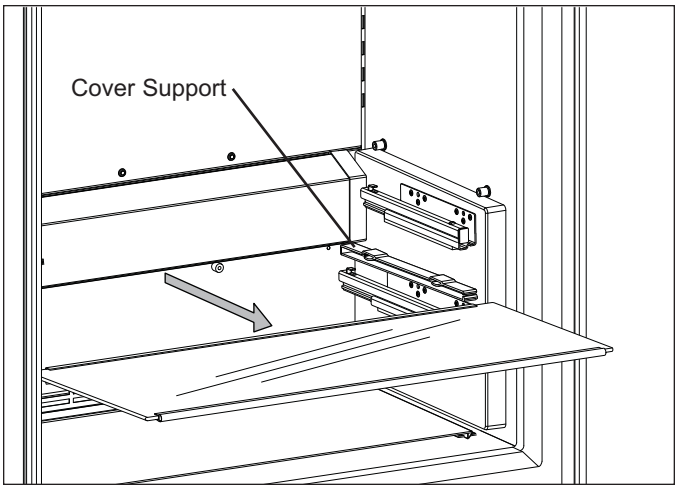


Figure 7-275. Crisper Cover Removal

Crisper Cover Support

The crisper cover supports are secured with screws to the compartment side wall and the crisper spacer assembly.

To remove a crisper cover support, the glass crisper cover must be removed first, then extract the support mounting screws and pull the support from the side wall or crisper spacer. (See Figure 7-276)

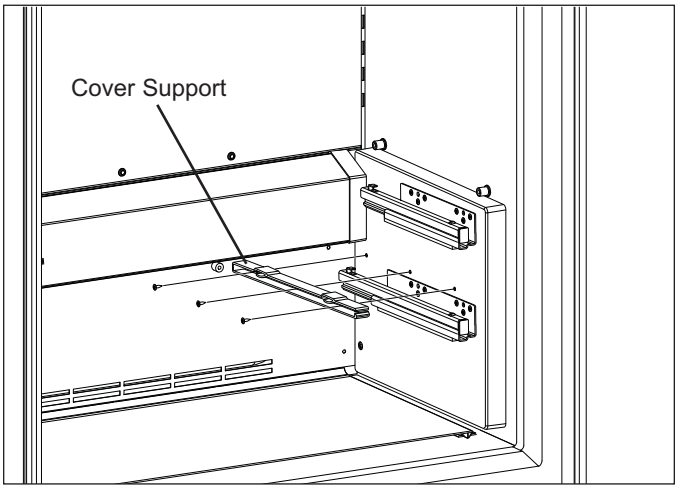


Figure 7-276. Crisper Cover Support Removal

Refrigerator Drawer Slide

The drawer slides are secured with screws to the compartment side walls and the crisper spacer assembly.

To remove a drawer slide, first remove the drawer assembly, then extract the slide's mounting screws and pull the slide from the side wall or crisper spacer. (See Figure 7-277)

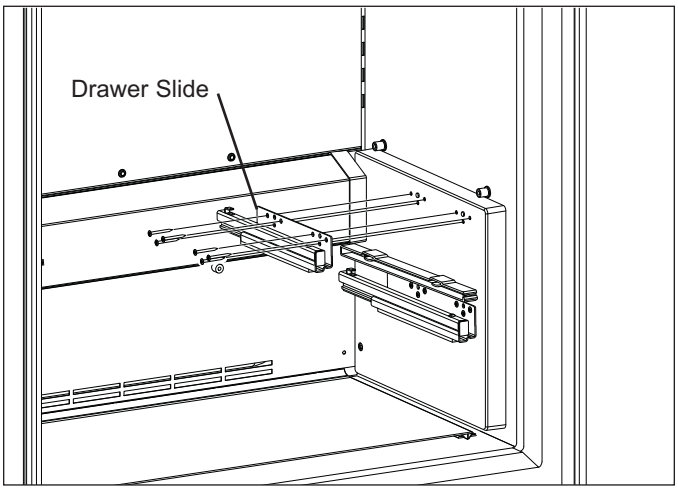


Figure 7-277. Drawer Slide Removal

Crisper Light Cover Assembly

The crisper light cover assembly is secured to the lower refrigerator duct by its upper flange and end caps engaging two crisper light cover supports that are part of the lower duct assembly.

To remove the lower light cover, first remove the crisper glass shelf and deli drawer assembly, then lift the light cover up at each end, disengaging it from the supports. (See Figure 7-278)

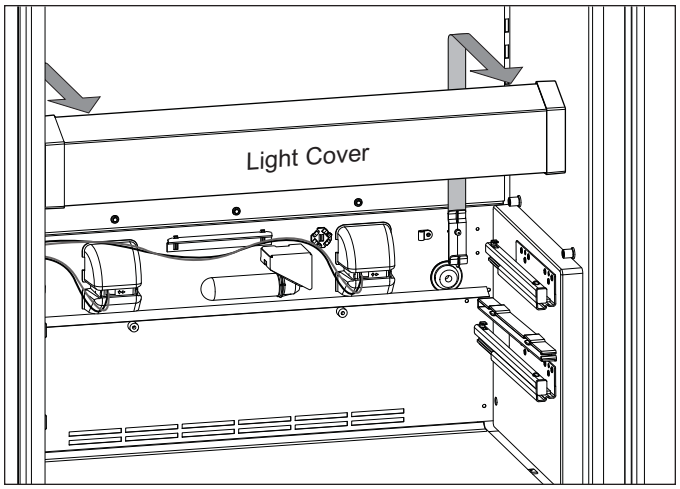


Figure 7-278. Crisper Light Cover Removal

Lower Light Bulb

The lower light assembly is located behind the crisper light cover.

To remove the lower light bulb, first remove the crisper glass shelf, deli drawer assembly and light cover, then turn the bulb counterclockwise to remove it from the light socket. (See Figure 7-279)

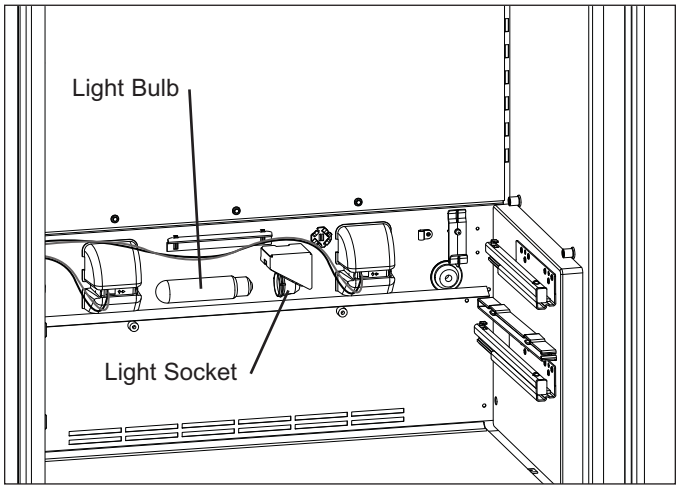


Figure 7-279. Lower Light Bulb Removal

Crisper Fan Assembly

A crisper fan assembly consist of a small fan motor and blade unit that is inserted into a notch in a small fan duct. This assembly is attached to the lower refrigerator duct by tabs at the side of the fan duct engaging the edges of the holes in the lower duct.

NOTE: *The model BI-36S has only one crisper fan assembly.*

To remove a crisper fan assembly, the crisper glass shelf, deli drawer assembly and light cover must be removed first, then (See Figure 7-280):

1. Disconnect fan motor electrical leads.
2. Pull the fan wires out from under the wire clamps.
3. Squeeze the fan duct on both sides at the middle to disengage the tabs, then pull the assembly from the lower duct assembly.

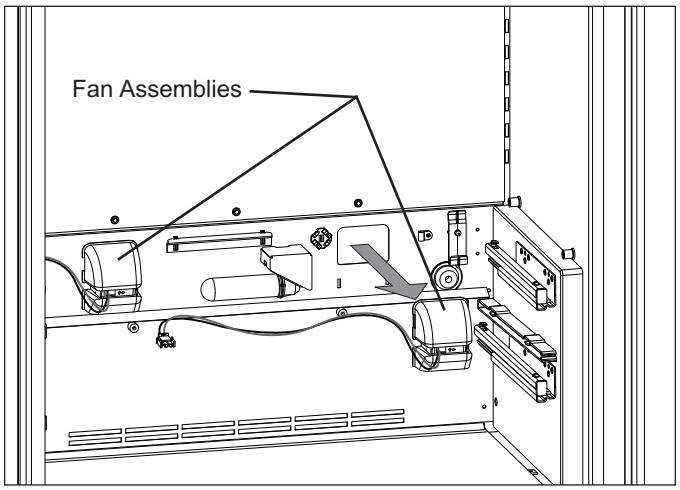


Figure 7-280. Crisper Fan Assembly Removal

Crisper Spacer Assembly

The crisper spacer assembly, which also holds the Consumer Use and Care Cards, is attached to the hinge side wall with screws.

To remove the crisper spacer assembly, first remove the crisper glass shelf, the drawer assemblies, the glass crisper cover, hinge-side drawer slides and the crisper light cover. Then, extract the crisper spacer mounting screws and pull the spacer assembly from the wall (See Figure 7-281)

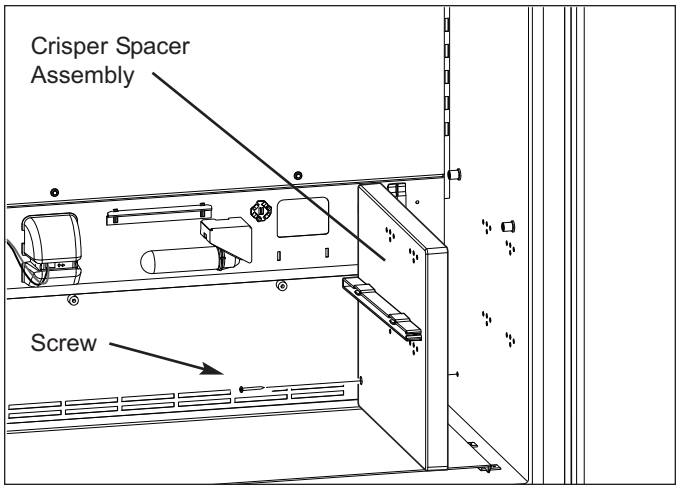


Figure 7-281. Crisper Spacer Assembly Removal

Air Purifier Cartridge

The air purification system is located behind a door on the upper refrigerator duct assembly.

To remove the air purifier cartridge (See Figure 7-282):

1. Pull bottom edge of door forward and up until it locks in the up position.
2. Grab top of inside flap and pull it forward and down (this will cause the cartridge to pop out of the socket).
3. Lift cartridge up from socket.

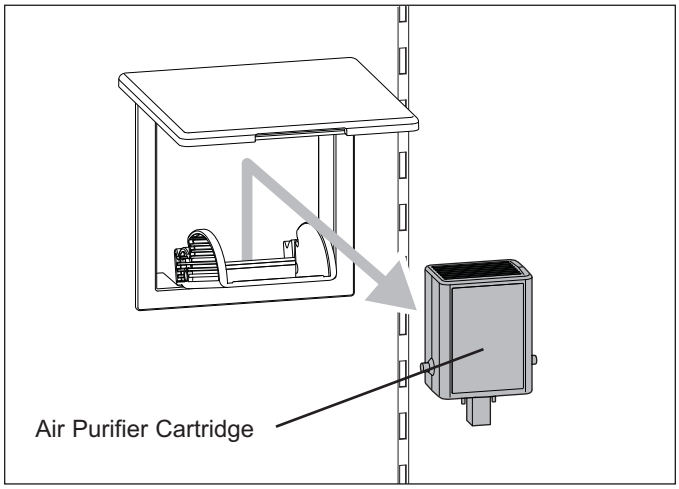


Figure 7-282. Air Purifier Cartridge Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the refrigerated compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the light diffuser (See Figure 7-283):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

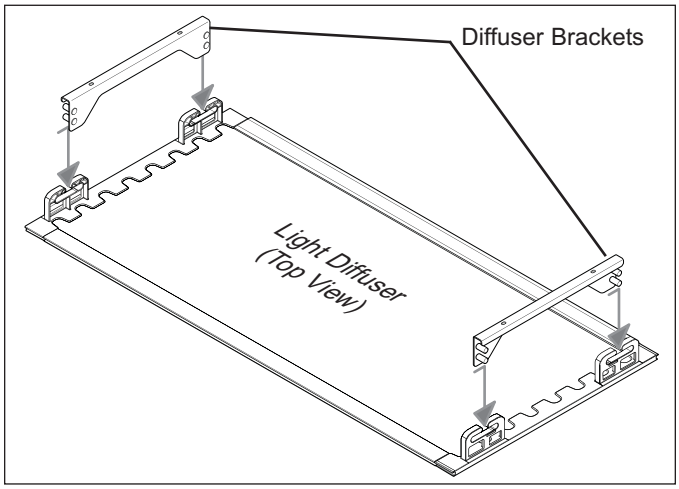


Figure 7-283. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The lighting assemblies are located behind the light diffuser at the top of the compartment.

To remove light bulbs, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-284)

Light bracket assemblies are secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser and light bulbs, then (See Figure 7-284):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

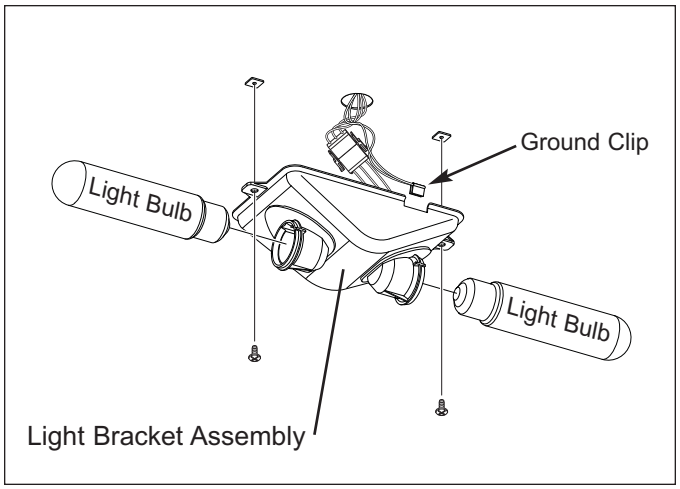


Figure 7-284. Upper Light Assembly

Control Panel Assembly (a.k.a. UIM - User Interface Module)

The control panel assembly (UIM) is located at top front of the refrigerator compartment and is secured with tabs at each end fitting into slots in the display support.

To remove the control panel assembly, first remove the upper light diffuser, then (See Figure 7-285):

1. At each end of control panel assembly, reach behind the control panel and push the lower tabs upward while pulling the bottom edge away from the display support.
2. Once the lower tabs are disengaged, lower the assembly down and disconnect the electrical lead from the control panel assembly PC board.

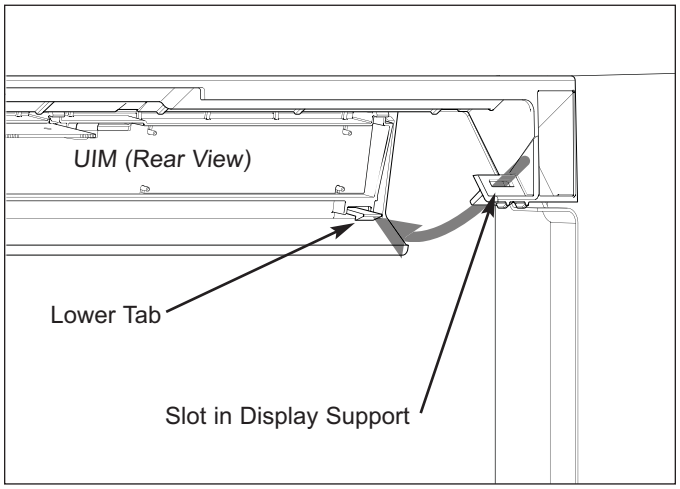


Figure 7-285. Control Panel Assembly Removal
(viewed from behind)

Upper Duct Assembly

The refrigerator upper duct assembly has notches at the bottom of each side flange that fit over locating pins on the shelf ladders; screws at the top of the duct secure it to the back wall of the compartment; at the bottom, plastic rivets hold it tight to the top flange of the lower duct assembly.

To remove the upper duct assembly, first remove all cantilever shelves, the crisper glass shelf and the upper light diffuser, then (See Figure 7-286):

1. At the bottom of duct, extract plastic rivet center posts using a fingernail, putty knife, or similar device, then pull rivets out.
2. Extract screws from top of duct, below reservoir tank cover.
3. Pull top of duct forward, about 45 degrees from vertical, then lift the duct up off of shelf ladder pins.

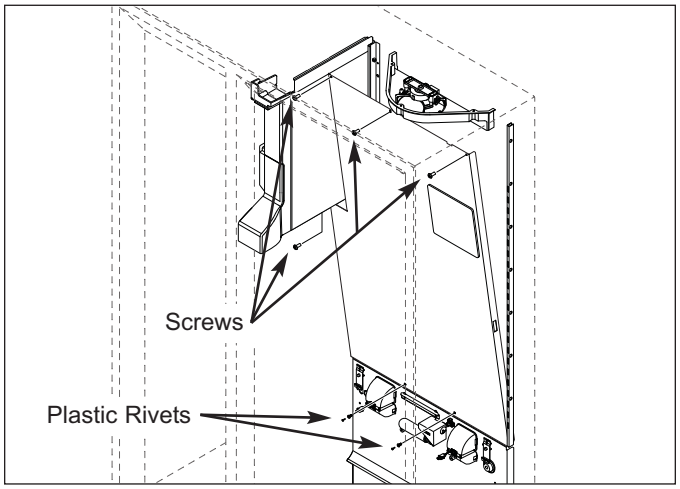


Figure 7-286. Upper Duct Assembly Removal

Shelf Ladder

The right and lower left shelf ladders are held to the side walls with screws, and the upper left shelf ladder assembly is held to the back wall of the compartment with screws.

To remove a shelf ladder or shelf ladder assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-287):

1. Extract shelf ladder mounting screws.
2. Pull shelf ladder or shelf ladder assembly from compartment

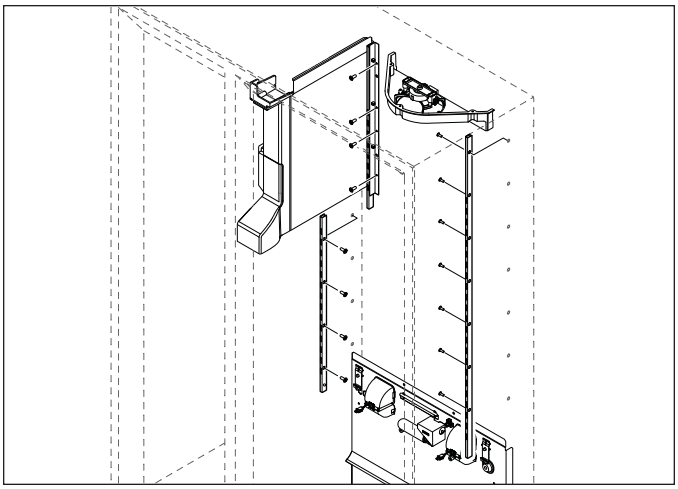


Figure 7-287. Shelf Ladder Removal

Evaporator Fan Shroud Assembly

The evaporator fan shroud is secured with screws to the compartment ceiling.

To remove the evaporator fan shroud assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-288):

1. Disconnect evaporator fan electrical leads.
2. Extract screws securing fan shroud to compartment ceiling and pull assembly from the compartment.

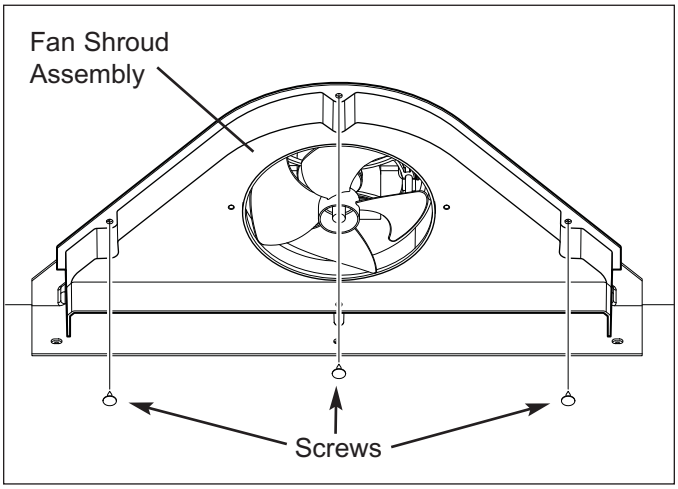


Figure 7-288. Evaporator Fan Shroud Assembly

Evaporator Fan Motor

The evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser, upper duct assembly and evaporator fan assembly, then (See Figure 7-289):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

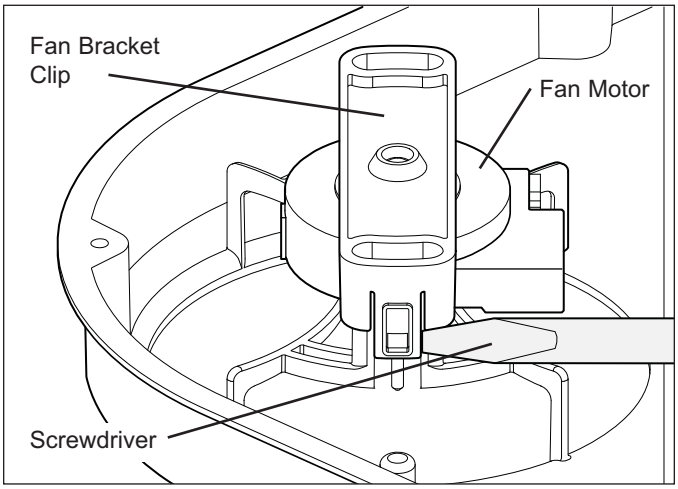


Figure 7-289. Fan Motor Removal

Air Purifier Pocket Assembly

The air purifier pocket assembly, consisting of the air purifier cartridge holder, a fan assembly and a transformer, is located behind the top evaporator cover, and is secured to the compartment back wall with screws.

To remove the air purifier pocket assembly, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-290):

1. Disconnect fan motor wire leads and transformer wire leads from wire harness.
2. Extract air purifier pocket assembly mounting screws and remove assembly from unit.

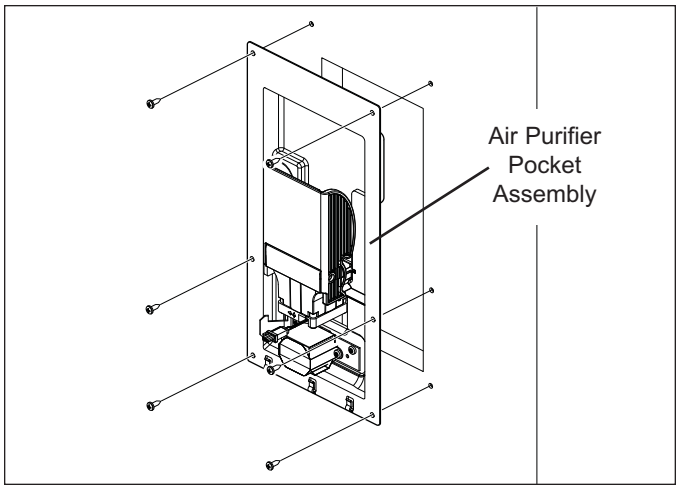


Figure 7-290. Air Purifier Pocket Removal

Refrigerator Compartment Thermistor

The refrigerator compartment thermistor is inserted into a thermistor clamp behind the upper duct assembly.

To remove the compartment thermistor, first remove all cantilever shelves, the crisper glass shelf, upper light diffuser and upper duct assembly, then (See Figure 7-291):

1. Pull thermistor from clamp.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

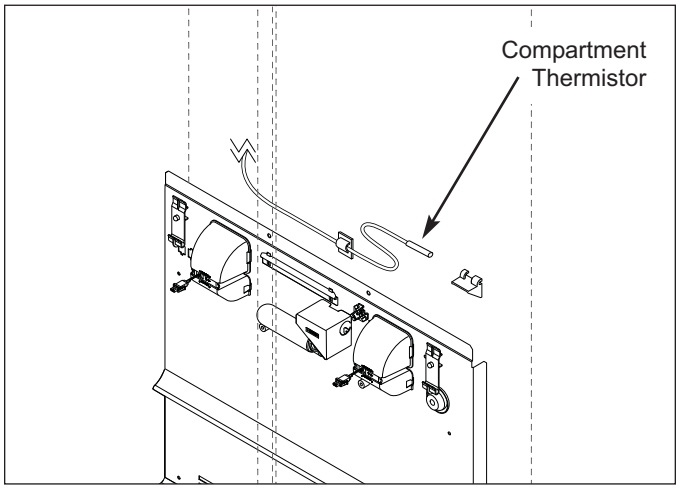


Figure 7-291. Compartment Thermistor Removal

Lower Duct Assembly

The lower duct assembly is positioned over the evaporator and held in place with screws passing through it into standoff screw grommets that are fastened to the compartment back wall.

To remove the lower duct assembly, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, and the crisper spacer, then (See Figure 7-292):

1. Disconnect crisper fan electrical leads from left side of lower duct assembly.
2. Extract lower duct mounting screws.
3. Lean top of duct forward and remove all panel mount electrical connections from duct, then remove duct from the unit.

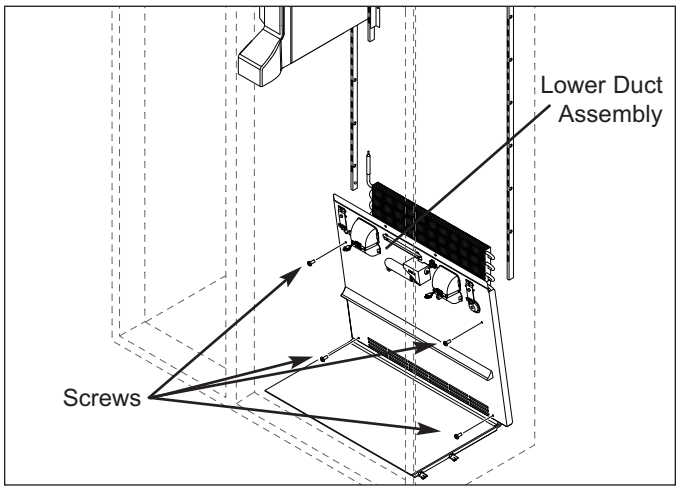


Figure 7-292. Lower Duct Assembly Removal

Refrigerator Evaporator Thermistor

The refrigerator evaporator thermistor is inserted six to ten inches into the opening below the third elbow on the left side of the evaporator.

To remove the evaporator thermistor, first remove all cantilever shelves, the upper light diffuser, crisper glass shelf, upper duct assembly, drawer assemblies, glass crisper cover, hinge-side drawer slides, crisper light cover, crisper spacer and lower duct assembly, then (See Figure 7-293):

1. Pull thermistor from evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

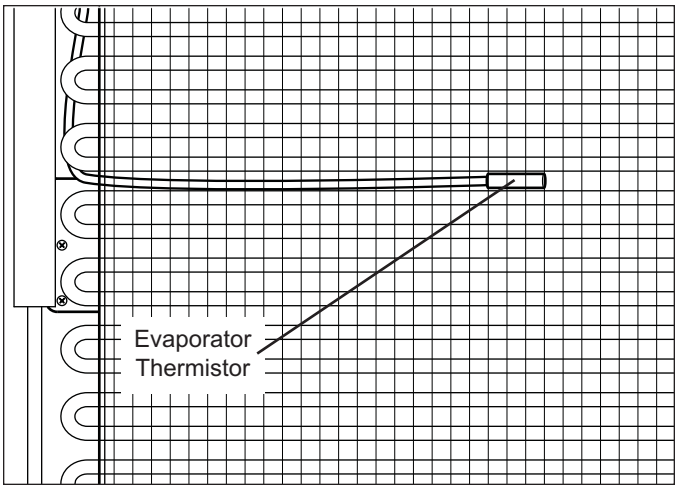


Figure 7-293. Evaporator Thermistor

Water Reservoir Tank Access Panel

The water reservoir tank access panel is installed by sliding it back between a retainer bracket and the upper left shelf ladder assembly, then one screw at the top center and two along the bottom of the panel hold it in place.

To remove the access panel, the light diffuser must be removed first, then (See Figure 7-294):

1. Extract access panel mounting screws.
2. Grasp bottom of panel and slide it back, then pull down while swinging front edge out.

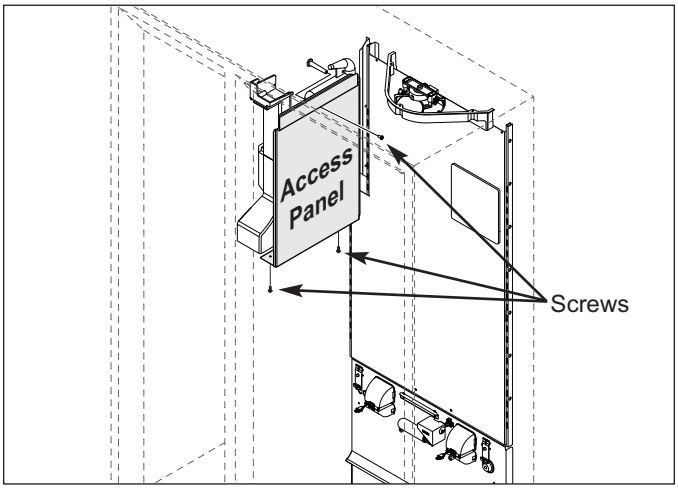


Figure 7-294. Water Tank Access Panel

Water Reservoir Tank

The water reservoir tank is concealed behind the water tank access panel and is held to the mullion wall with screws fitting into stand-off screw grommets.

NOTE: *Before removing the water tank, turn the water supply to the unit off and drain the water from the tank.*

To remove the water reservoir tank, the light diffuser and water tank access panel must be removed first, then (See Figure 7-295):

1. Disconnect compression fittings at inlet and outlet of water reservoir tank.
2. Remove mounting screws and lift out.

NOTE: *After reinstalling a water reservoir tank, the WATER button at the door dispenser must be pressed for approximately two minutes to refill the tank.*

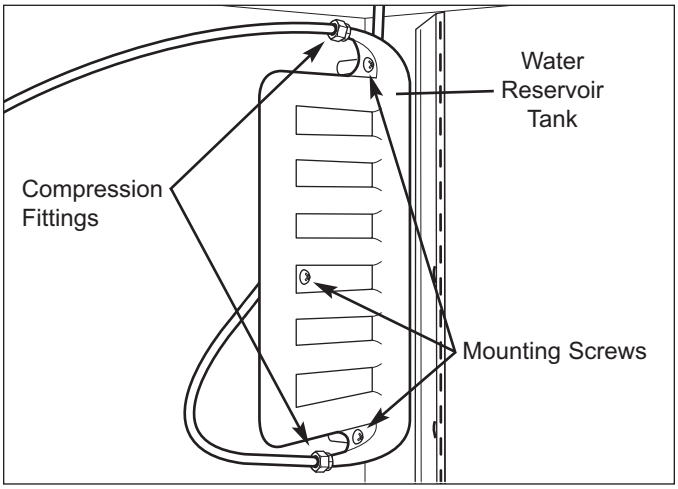


Figure 7-295. Water Reservoir Tank Removal

Escutcheon Panel Assembly

The escutcheon panel assembly holds the bulk ice dispenser switch and covers the ice chute assembly. a flange at the bottom left side of the assembly fits behind a metal retainer clip that is attached to the mullion wall. Screws passing through the back and upper flanges hold the assembly to the wall. A screw passing through the bottom flange holds the bottom tight to the water tank cover bracket.

To remove the escutcheon panel assembly, first remove the upper cantilever shelves, light diffuser and water reservoir tank access panel, then (See Figure 7-296):

1. Disconnect bulk ice dispenser switch electrical leads.
2. Extract screw from bottom flange and screws along back and upper flange.
3. Pull bottom of assembly forward, then lower assembly down and out of the compartment.

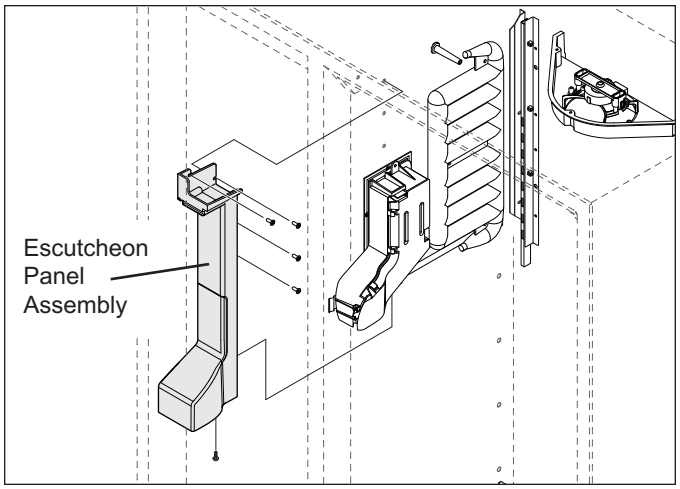


Figure 7-296. Escutcheon Panel Assembly Removal

Mullion Chute Heater Assembly

The mullion chute heater assembly, consisting of the chute heater, chute door and door rod, fits inside the mullion chute and is covered by the ice chute assembly.

To remove the mullion chute heater assembly, first remove the upper cantilever shelves, light diffuser, water reservoir tank access panel and escutcheon panel assembly, then (See Figure 7-297 and 7-297A):

1. Disconnect heater electrical leads.
2. Depress ice chute cover retaining tabs and pull cover off of ice chute.
3. Extract ice chute mounting screws.
4. With a small flat blade screwdriver, pry bottom tab of mullion chute heater from the groove in the bottom of the mullion chute.
5. Pull mullion chute heater out of the mullion chute while working it;s electrical leads out through the slot in the top of the mullion chute.

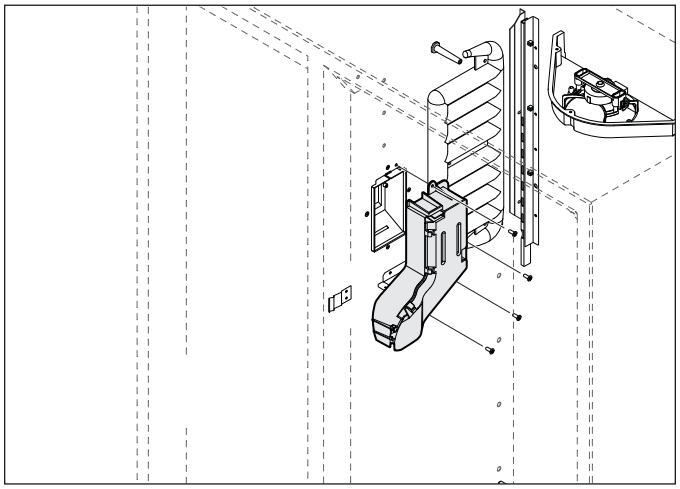


Figure 7-297. Ice Chute Removal

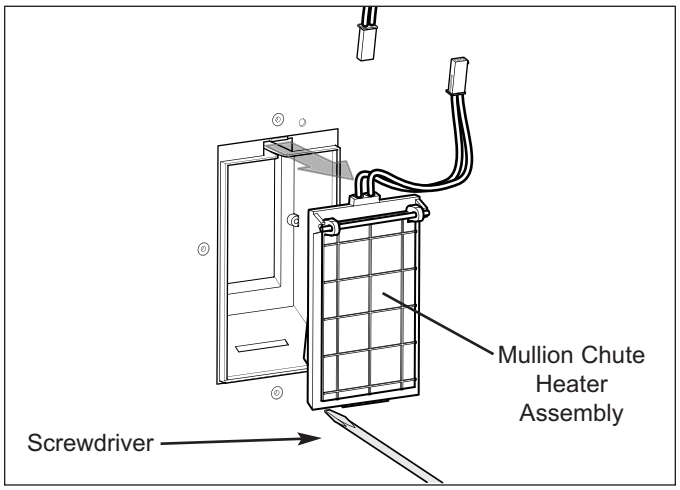


Figure 7-297A. Mullion Chute Heater Removal

Models BI-42SD / BI-48SD Freezer Interior Cosmetic / Mechanical Components

Door Gasket

A dart at the back of the door gasket fits into metal channels attached to the inside perimeter of the door.

To remove a door gasket, starting at one corner, pull the gasket dart from the metal channels. (See Figure 7-298).

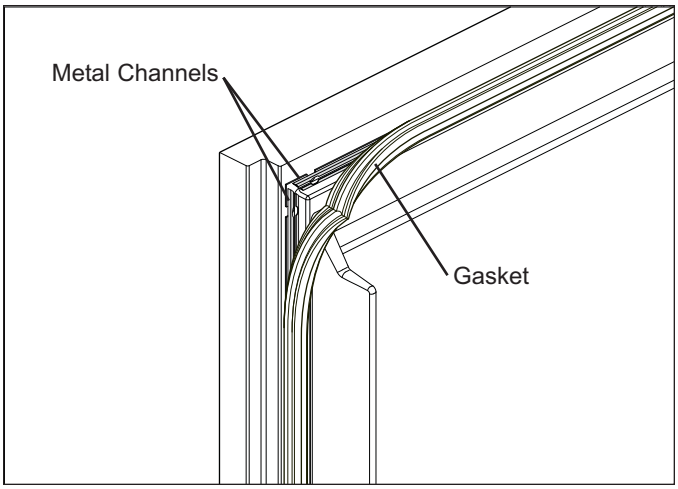


Figure 7-298. Door Gasket Removal

Adjustable Door Shelves

Removal and adjustment of the door shelves is achieved by sliding the grooves in the shelving endcaps over the molded retaining ribs of the door liner.

Lift out and up to remove, push in and down to install. (See Figure 7-299).

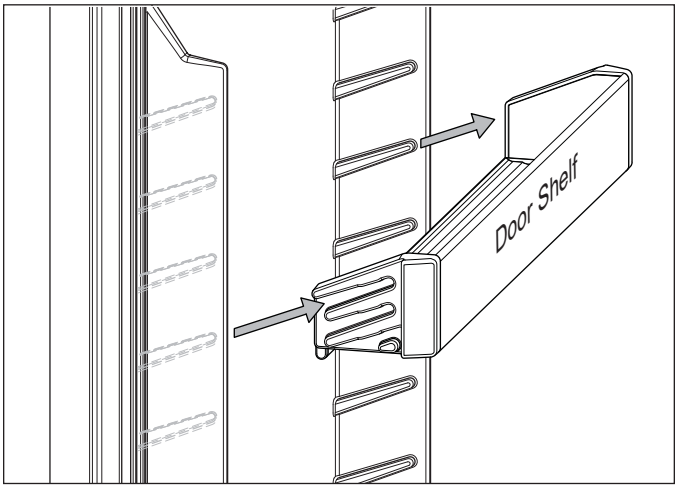


Figure 7-299. Adjustable Door Shelf

Cantilever Shelf Assembly

To adjust and/or remove a freezer cantilever wire shelf assembly (See Figure 7-300):

1. Lift front of shelf up slightly.
2. Lift back of shelf up to disengage the shelf ladder hooks from the shelf ladders.
3. Pull shelf forward and out of the shelf ladders.

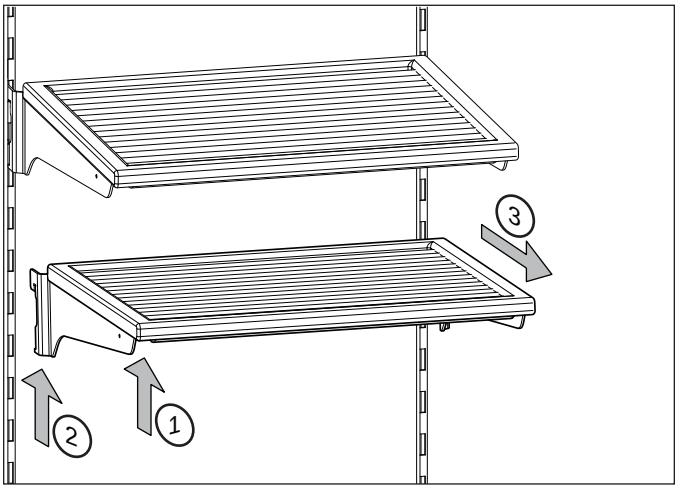


Figure 7-300. Cantilever Shelf Removal

Upper Light Diffuser Assembly

The upper light diffuser assembly, located at the top of the freezer compartment, is held in place by inverted T-shaped slots at its sides fitting over pegs on the light diffuser brackets.

To remove the upper light diffuser assembly (See Figure 7-301):

1. Push diffuser toward rear of unit until center of inverted T-shaped slots line up with diffuser bracket pegs.
2. Lower diffuser down and pull it from the compartment.

NOTE: *When reinstalling the light diffuser, be sure to pull it forward fully so that the tabs inside the inverted T-shaped slots engage the pegs in the diffuser brackets. Failure to do so will allow the diffuser to fall out easily.*

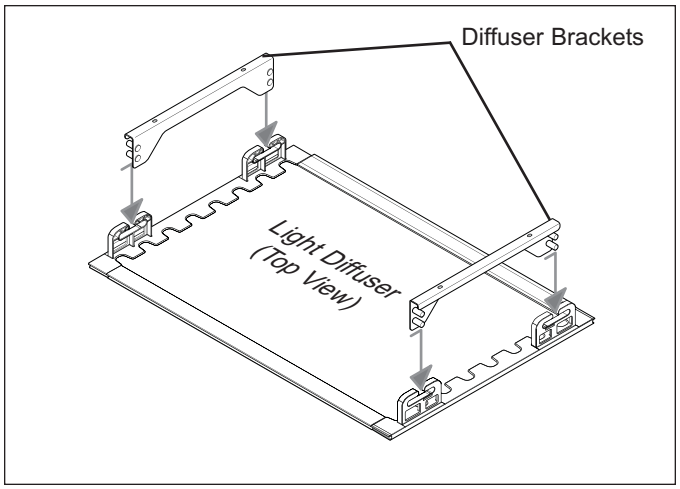


Figure 7-.301. Upper Light Diffuser Removal

Upper Light Bulb and Light Bracket Assembly

The upper lighting assembly is located behind the light diffuser at the top of the compartment.

To remove the light bulb, first remove the light diffuser, then turn the bulb counterclockwise to remove it. (See Figure 7-302)

The light bracket assembly is secured with screws to the compartment ceiling.

To remove a light bracket assembly, first remove the light diffuser, then (See Figure 7-302):

1. Extract bracket mounting screws.
2. Lower assembly down and disconnect the lighting wire harness.
3. pull ground clip from side of bracket.

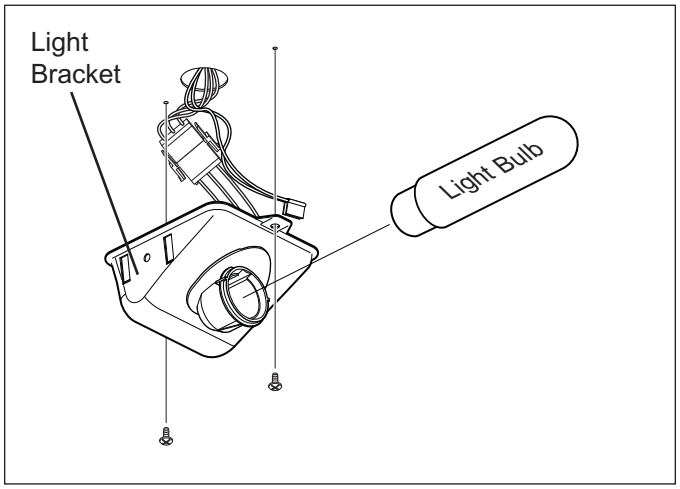


Figure 7-302. Freezer Light Assembly

Middle Light Diffuser and Light Bulb

The middle light fixture is inside the dispenser light enclosure, directly below the ice bucket.

To remove the middle light diffuser glass, press the tab to the right of the diffuser glass, then slide the glass to the right (See Figure 7-303).

To remove the light bulb, turn it counterclockwise. (See Figure 7-303)

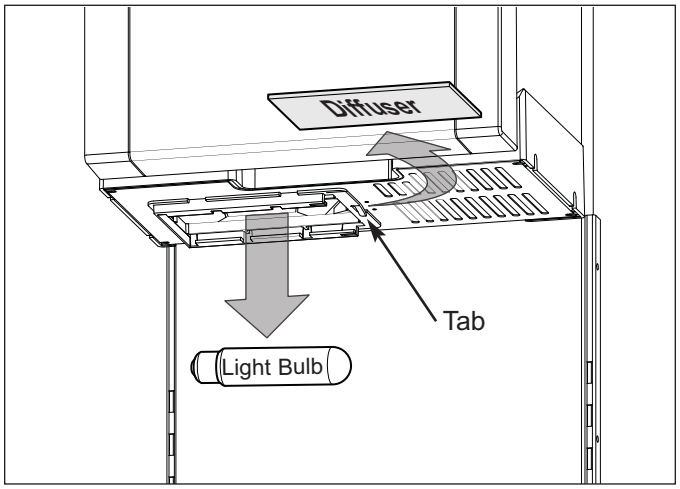


Figure 7-303. Middle Light Diffuser/Bulb Removal

Ice Bucket Assembly

The ice bucket assembly is located at the top of the freezer compartment, resting on top of ice bin supports, with a magnet behind the ice bucket front cover that holds the assembly in place against a metal ice bucket stop bracket.

To remove the ice bucket assembly (See Figure 7-304).:

1. Grab base of ice bucket assembly front cover.
2. Pull assembly out of freezer until left front edge is in line with gap between door and face frame, then pivot right side of assembly out of compartment.

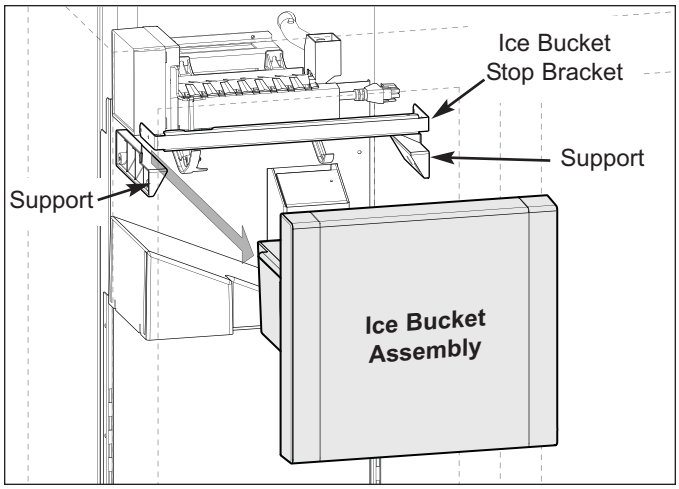


Figure 7-304. Ice Bucket Assembly

Freezer Basket Assembly

To remove a freezer basket assembly (See Figure 7-305):

1. Pull basket open until it stops.
2. Remove basket contents.
3. Simultaneously depress both locking tabs under bottom front corners of basket assembly and lift up on basket front slightly.
4. Pull basket forward until until left front edge is in line with gap between door and face frame, then pivot right side of assembly out of compartment.

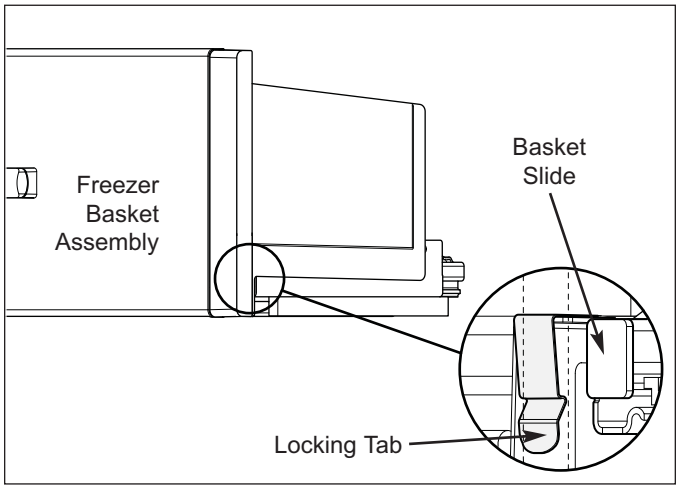


Figure 7-305. Freezer Basket Assembly Removal

Lower Light Diffuser and Light Bulb

The lower light diffuser is a flexible plastic material and is held in place at the the back of the compartment with diffuser retainers that are attached to the middle duct assembly.

To remove the light diffuser, the top freezer basket must be removed first, then squeeze the diffuser at the middle so that its edges disengage from the diffuser retainers, and pull the diffuser from the compartment. (See Figures 7-306)

To remove the light bulb, turn it counterclockwise. (See Figure 7-306)

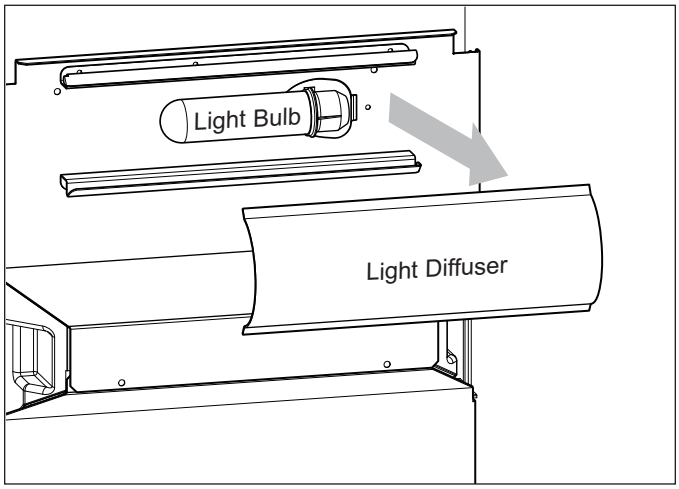


Figure 7-306. Lower Light Diffuser/Bulb Removal

Freezer Basket Slide

The basket slides are secured with screws to the compartment side walls. On the hinge side, there are basket slide spacers between the slides and the wall.

To remove a basket slide, first remove the basket assembly, then extract the slide's mounting screws and pull the slide from the side wall. (See Figure 7-307)

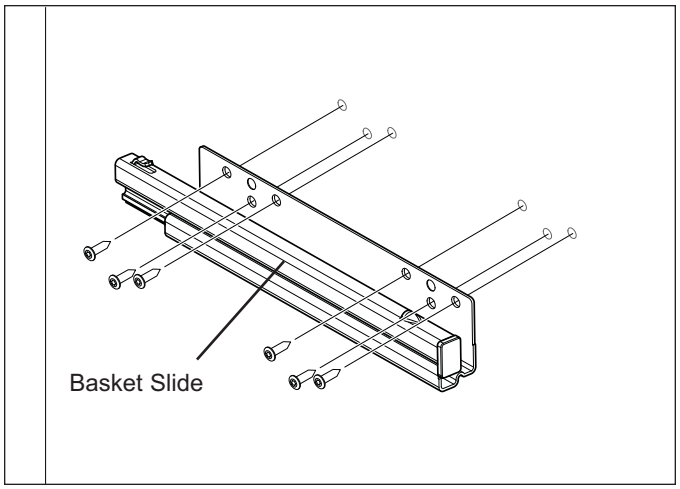


Figure 7-307. Freezer Basket Slide Removal

Middle Freezer Duct Assembly

The middle duct assembly is secured to the compartment back wall and top of the lower duct assembly with screws.

To remove the middle duct assembly, first remove the freezer baskets and lower light diffuser, then (See Figure 7-308):

1. Extract middle duct assembly mounting screws.
2. Pull duct assembly forward until light fixture wiring is accessible, then unplug lower light wires and pull duct assembly from compartment.

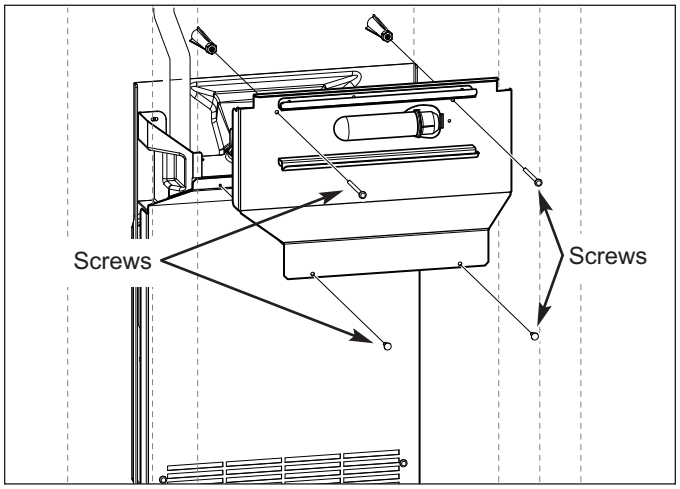


Figure 7-308. Middle Duct Assembly Removal

Lower Freezer Duct Assembly

The lower duct assembly is secured with screws passing through the duct into stand-offs located at the bottom corners of the evaporator cover.

To remove the lower freezer duct assembly, first remove the freezer baskets, lower light diffuser, basket slides and middle duct assembly, then extract the screws from the bottom corners of the lower duct assembly and pull the assembly from the compartment. (See Figure 7-309)

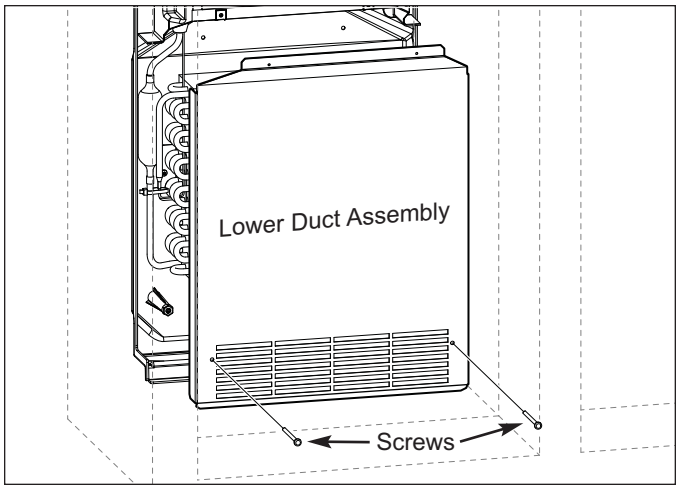


Figure 7-309. Lower Duct Assembly Removal

Evaporator Fan Motor

The freezer evaporator fan motor sits on top of the evaporator fan shroud bracing with its shaft passing through a hole in the brace; the motor is then held in place by a fan bracket snapping together with the bracing over the back side of the motor.

To remove the evaporator fan motor, first remove the freezer baskets, lower light diffuser, basket slides, middle duct assembly and lower duct assembly, then (See Figure 7-310):

1. Pull fan blade from fan motor shaft.
2. Using a flat-bladed screwdriver, pry fan bracket clips off of the tabs at each side of shroud bracing.
3. Lift fan motor off of fan shroud.

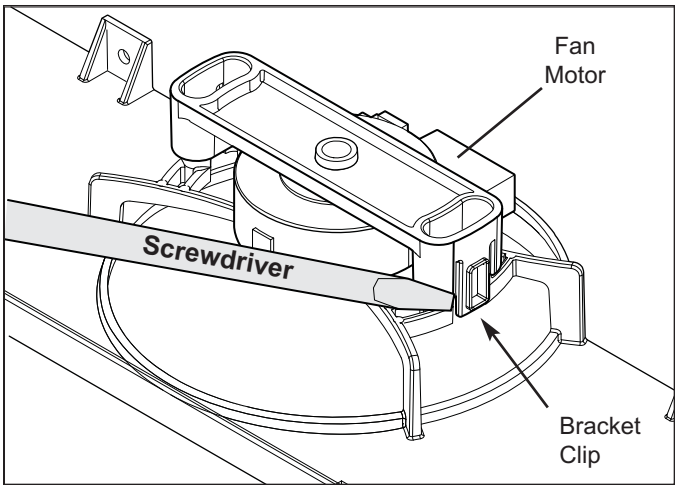


Figure 7-310. Evaporator Fan Removal

Evaporator Defrost Heater

The evaporator defrost heater is held in place at the bottom of the evaporator with defrost heater clips.

To remove the defrost heater, first remove the freezer baskets, lower light diffuser, basket slides, middle duct assembly and lower duct assembly, then (See Figure 7-311):

1. Disconnect heater electrical leads.
2. Using a small needle-nose pliers, detach heater clips by pulling end tab of clips away from evaporator, then remove heater from compartment.

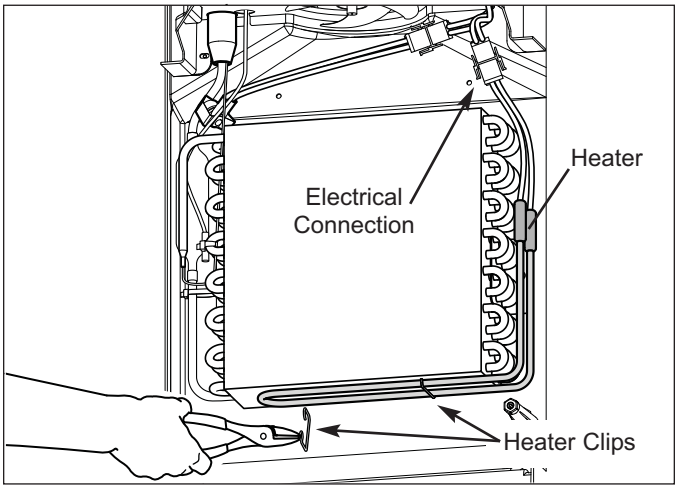


Figure 7-311. Defrost Heater Removal

Freezer Defrost Terminator

The freezer defrost terminator is attached to the accumulator outlet.

To remove the defrost terminator, first remove the freezer baskets, lower light diffuser, basket slides, middle duct assembly and lower duct assembly, then (See Figure 7-312):

1. Extract the left wire cover mounting screws and pull wire cover from compartment.
2. Disconnect terminator electrical leads.
3. Pull terminator off of tubing.

NOTE: *When replacing the terminator be sure to attach the new terminator in the same location that the defective terminator was removed from.*

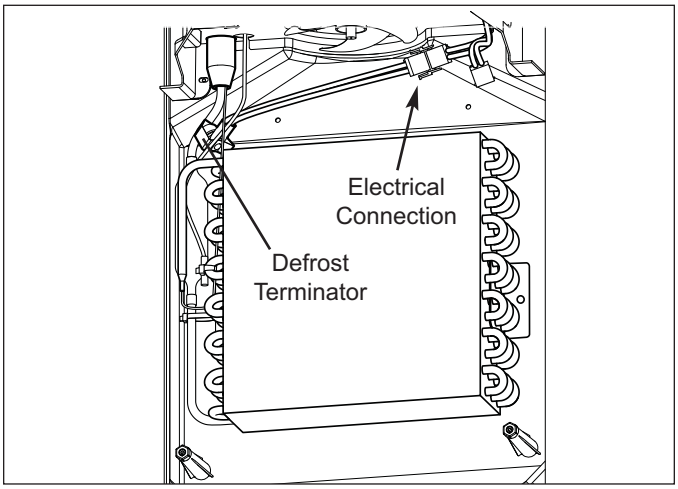


Figure 7-312. Defrost Terminator Removal

Freezer Evaporator Thermistor

The freezer evaporator thermistor is secured with a cable tie to an evaporator return bend on the left side of the evaporator.

To remove the evaporator thermistor, first remove the freezer baskets, lower light diffuser, basket slides, middle duct assembly and lower duct assembly, then (See Figure 7-313):

1. Cut cable tie securing thermistor to evaporator.
2. Cut thermistor's wire leads six (6) to twelve (12) inches from the back wall, then pull thermistor from compartment.

NOTE: *When replacing the thermistor be sure to attach the new thermistor to the same return elbow that the defective thermistor was removed from. At this writing, the thermistor is attached to the third elbow from the top in the front row of elbows on the left side.*

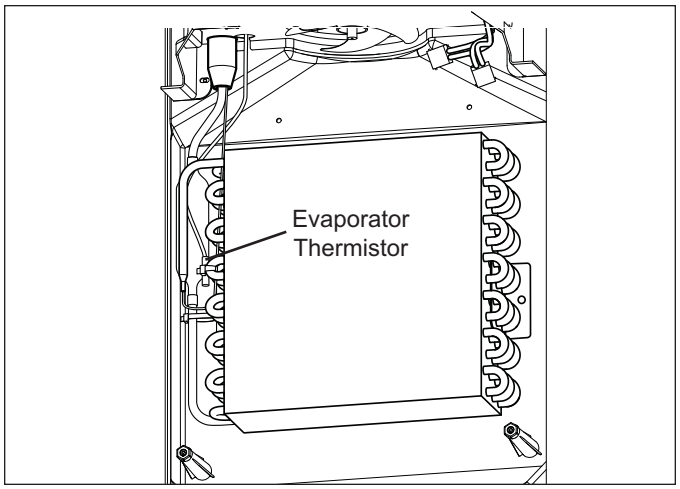


Figure 7-313. Freezer Evaporator Thermistor

Dispenser Light Enclosure Assembly

The dispenser light enclosure assembly is located below the ice bucket assembly, resting on screw spacers that are attached to the side walls.

To remove the dispenser light enclosure assembly, first remove the ice bucket assembly, then (See Figure 7-314):

1. Extract screws that pass up through each corner of light panel into enclosure.
2. Lower light panel assembly down, disconnect light socket wiring, then pull light panel assembly out of compartment.
3. Pull compartment thermistor from tube clamp, located up on inner right wall of enclosure.
4. Lift enclosure up off of screw spacers and out of compartment.

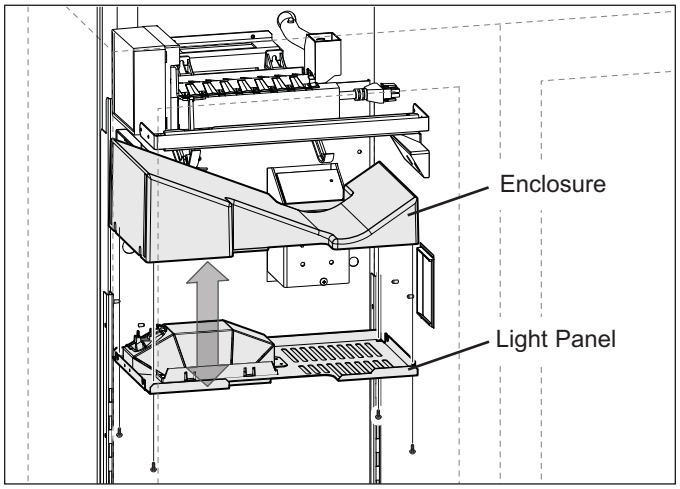


Figure 7-314. Dispenser Light Enclosure Assembly

Freezer Compartment Thermistor

The compartment thermistor is located up on the inner right wall of the dispenser light enclosure.

To remove the compartment thermistor, first remove the dispenser light enclosure assembly, then cut the thermistor's wire leads six (6) to twelve (12) inches from the back wall and pull the thermistor from the compartment. (See Figure 7-315)

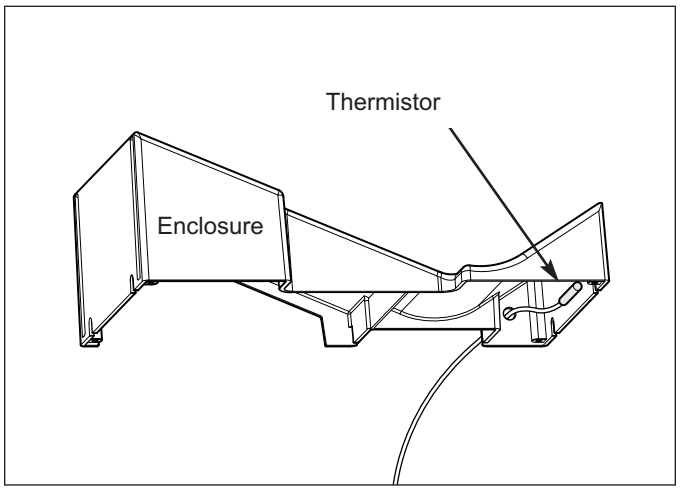


Figure 7-315. Compartment Thermistor

Upper Freezer Duct Assembly

The upper freezer duct assembly is secured to each side wall with screws at the bottom and two screws at the top that pass through the duct into stand-offs.

To remove the upper duct assembly, first remove the ice bucket assembly, cantilever shelves and dispenser light enclosure assembly, then (See Figure 7-316):

1. From the underside, extract screws securing duct assembly to side walls.
2. Extract the screws from top of duct assembly.
3. Pull bottom of duct assembly forward and push lighting wire harness through hole in duct assembly, then pull duct assembly from the compartment.

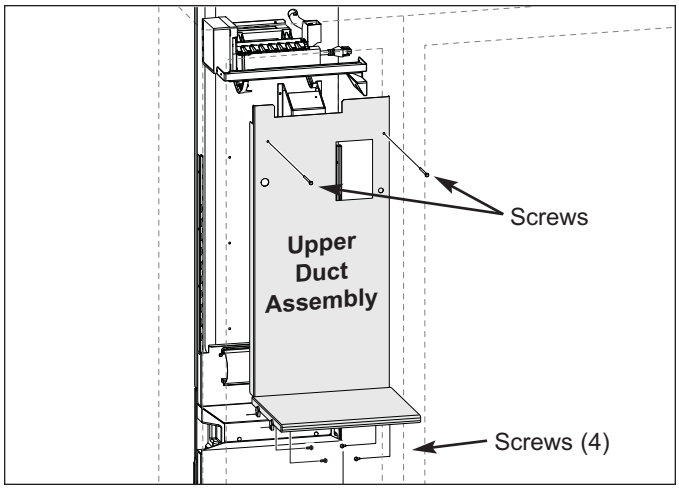


Figure 7-316. Upper Freezer Duct Assembly

Ice Auger Motor Assembly

The ice auger motor assembly is mounted with screws to the back wall of the freezer compartment.

To remove the ice auger motor assembly, first remove the ice bucket assembly, cantilever shelves, dispenser light enclosure assembly and upper duct assembly, then (See Figure 7-317):

1. Extract auger motor assembly mounting screws.
2. Rotate ice auger motor assembly until wire leads are accessible, then disconnect wire leads from motor terminals and remove ice auger motor assembly from unit.

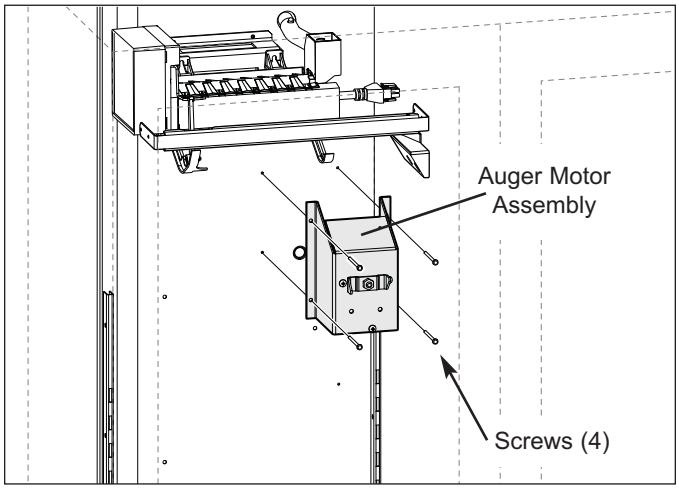


Figure 7-317. Auger Motor Assembly Removal

Icemaker Assembly

The icemaker is secured with screws to the icemaker mounting bracket on the upper back wall of the freezer compartment.

To remove the ice maker assembly, first remove the ice bucket assembly, cantilever shelves, dispenser light enclosure assembly and upper duct assembly, then (See Figure 7-318):

1. Use a small flat-blade screwdriver to pry latches of male electrical connector from tabs of female connector, then disconnect icemaker electrical leads.
2. Extract icemaker mounting screws (two at top, one at bottom), then pull icemaker assembly from compartment.

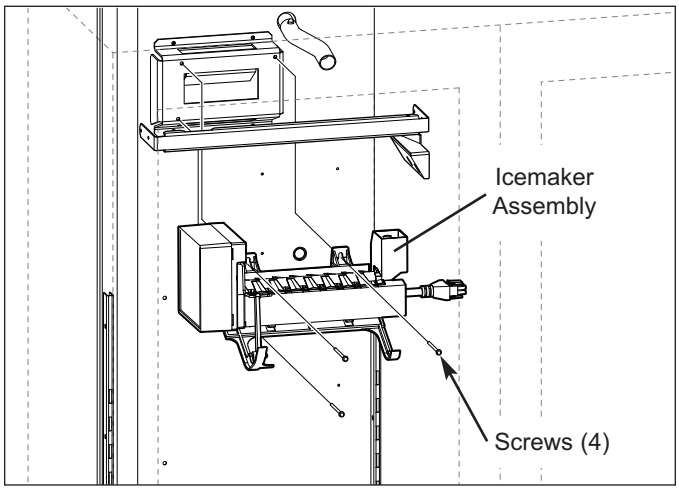


Figure 7-318. Icemaker Assembly Removal

Icemaker Fill Tube Heater Removal.

To Remove the fill tube heater, first remove all cantilever shelves, upper light diffuser, upper duct assembly and icemaker, then unplug the heater and remove it from the compartment. (See Figure 7-319)

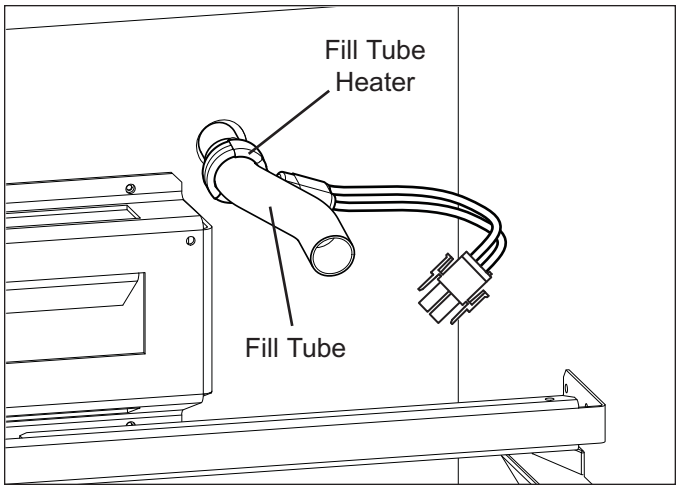


Figure 7-319. Fill Tube Heater Removal

Models BI-42SD / BI-48SD Compressor Area Mechanical Components

NOTE: *For water filter and filter manifold, see Exterior Cosmetic / Mechanical Components earlier in this section.*

Main Control Board

Screws hold the main control board inside a control housing that sits on a slide support bracket at the left side of the compressor area.

To remove the main control board assembly, the control grille and compressor shroud will need to be removed first, then (See Figure 7-320)

1. Grab front of control housing and pull it toward front of unit, off of the support bracket.
2. Disconnect wire leads from wire harness at right side of housing.
3. Disconnect communication cables from right side of control.
4. At top of control housing, lift the cover latches off of tabs along top of housing case, then separate the cover from the case.
5. Disconnect all wire leads from control board.
6. Extract control board mounting screws and lift board out of case.

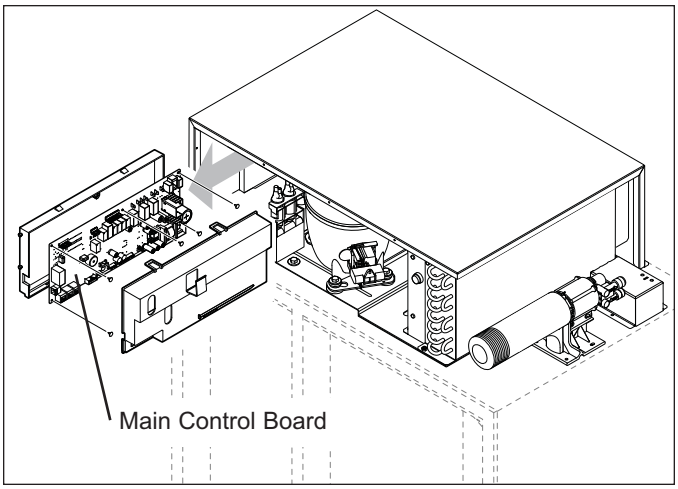


Figure 7-320. Control Board Assembly

Condenser Fan Shroud Assembly

Tabs at the back of the condenser fan shroud fit into grommets in the condenser's rear bracket. A hole in the bottom front flange of the condenser fan shroud fits down over a threaded stud, and a nut is then applied onto the stud. The front flange of the condenser fan shroud assembly is then secured to the front condenser bracket with screws.

To remove the condenser shroud assembly, first remove the top cabinet trim, top cabinet frame and compressor shroud, then (See Figure 7-321):

1. Extract condenser shroud mounting screws at front of condenser.
2. Extract nut from threaded stud at base of condenser fan shroud.
3. Pull assembly forward slightly, disconnect condenser fan electrical leads.
4. Disconnect filter reset switch electrical leads, then pull the assembly from the compressor area.

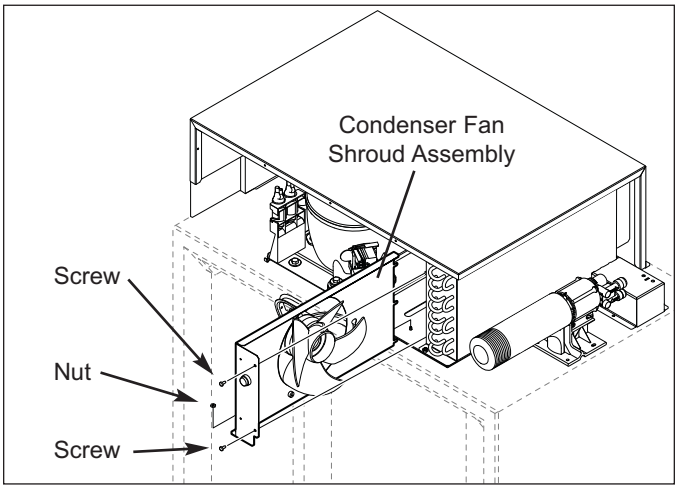


Figure 7-221. Condenser Fan Shroud Assembly

Condenser Fan Motor

The condenser fan is mounted to the condenser fan shroud with three fan mounting brackets that hook into grommets that are in the condenser fan shroud. At the back of the motor, screws pass through these brackets into the back of the fan motor. The condenser fan blade is held onto the fan motor shaft with a nut.

To remove the condenser fan motor, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-322):

1. Extract screws securing motor to brackets.
   NOTE: *The brackets will unhook from the grommets in the shroud after the screws are removed.*
2. To remove fan blade from fan motor:
   a. Grab blade and motor while turning nut counterclockwise.
   b. Then pull the blade from the motor shaft.

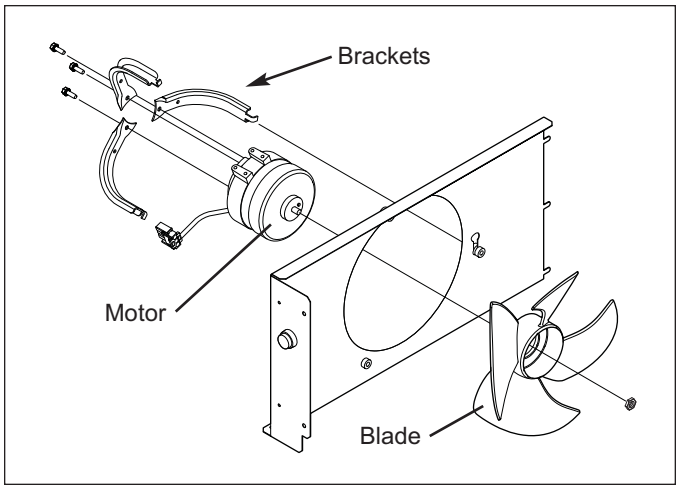


Figure 7-322. Condenser Fan Motor Removal

Water Filter Reset Switch

The water filter reset switch is secured to the inside of the condenser shroud front flange by retaining clips.

To remove the water filter reset switch, first pull the condenser fan shroud assembly from the compressor area, then (See Figure 7-323):

1. Disconnect electrical leads from switch.
2. Using a needle-nose pliers, compress the retaining clips on switch body and push switch through condenser shroud flange.

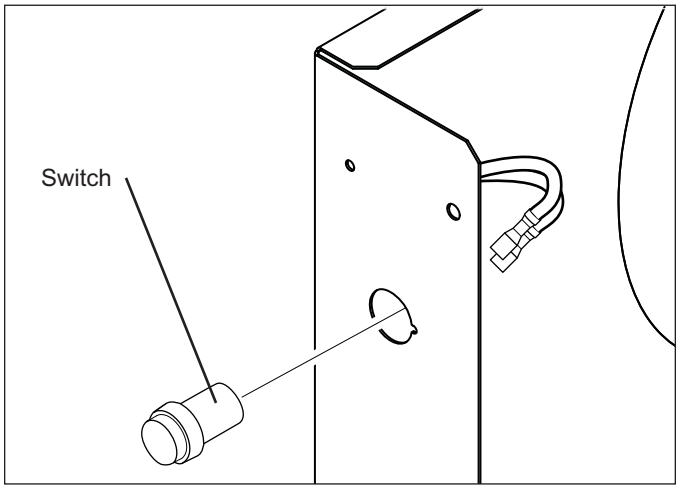


Figure 7-323. Filter Reset Switch Removal

Models BI-42SD / BI-48SD Sealed system Components

The sealed system components at the top of the appliance sit on a sliding unit tray. There is a slot in the unit tray running from front to back, with a bolt positioned in the middle of this slot and attached to the top of the appliance. This allows the tray to be pulled straight forward to aid in sealed system repairs. (See Figure 7-324) When not being moved for service, a bolt passing down through a hole at the front of the unit tray holds it in place.

⚠ WARNING

UNIT COULD TIP FORWARD! MAKE SURE THE ANTI-TIP BRACKETS ARE IN PLACE AND THE UNIT IS PROPERLY ANCHORED BEFORE ATTEMPTING TO SLIDE THE UNIT TRAY OUT.

NOTES:

- *Removing the condenser fan shroud assembly before sliding the unit tray out will allow greater access to sealed system components on the tray. See condenser Fan Shroud Assembly removal instructions earlier in this section.*
- *When tapping into the sealed system, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*
- *Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.*

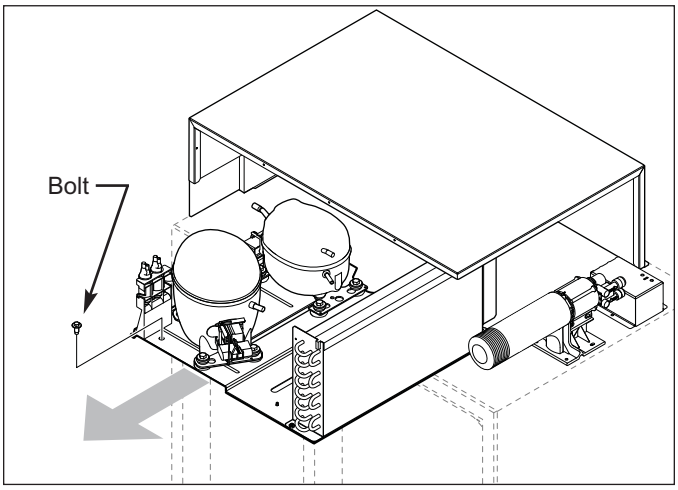


Figure 7-324. Sliding Out the Unit Tray

High-Side Filter-Drier

NOTE: *It is not necessary to slide the unit tray forward in order to replace a high-side filter-drier.*

To remove a high-side filter-drier, first capture the refrigerant from sealed system, then (See Figure 7-325):

1. With a file, score a line around capillary tube 1” or less from drier outlet, then fatigue capillary tube at this line until it separates.
2. With a tube-cutter, cut inlet tube 1” or less from drier inlet.

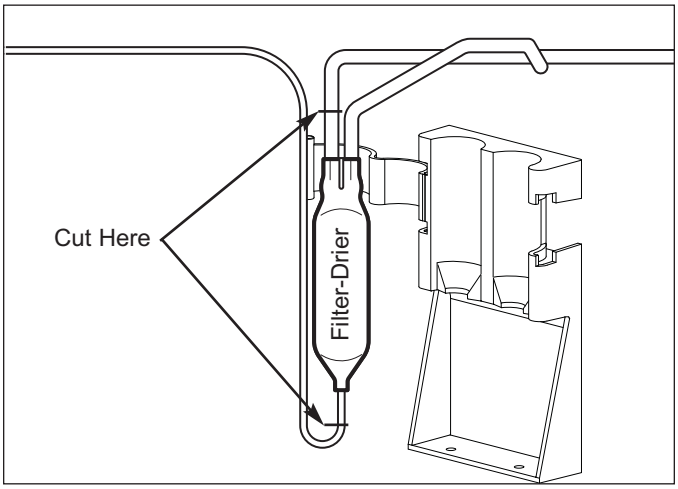


Figure 7-325. Filter-Drier Removal

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 1 above.*
- *When installing replacement filter-drier, insert capillary tube until it touches screen inside drier, then pull capillary tube away from screen approximately 3/8" before brazing.* (See Figure 7-326).
- *Filter-drier outlet must be facing downward in order to function properly.*

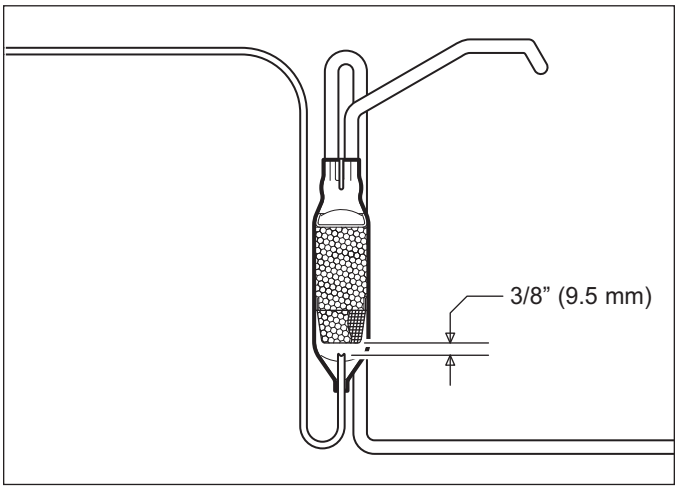


Figure 7-326. Capillary Tube Insertion Note

Compressor

Compressors are secured to the unit tray with three shoulder screws that pass down through rubber grommets in the compressor base and into holes in unit tray. A metal tab formed into the unit tray passes up through the fourth rubber grommet and the compressor base.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-42SD / BI-48SD Sealed System Components before continuing.*
- *The compressor at the front is the freezer compressor, at the rear is the refrigerator compressor.*

After capturing the refrigerant from the sealed system, (See Figure 7-327):

1. Disconnect wire leads from compressor electricals.
2. Using a tube cutter, cut suction and discharge tubes approximately 1” from compressor stubs.

   NOTE: *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
3. Extract compressor mounting shoulder screws, then lift compressor off of unit tray.

NOTE: *After replacing the compressor, take care to not kink tubing as the unit tray is slid back into position.*

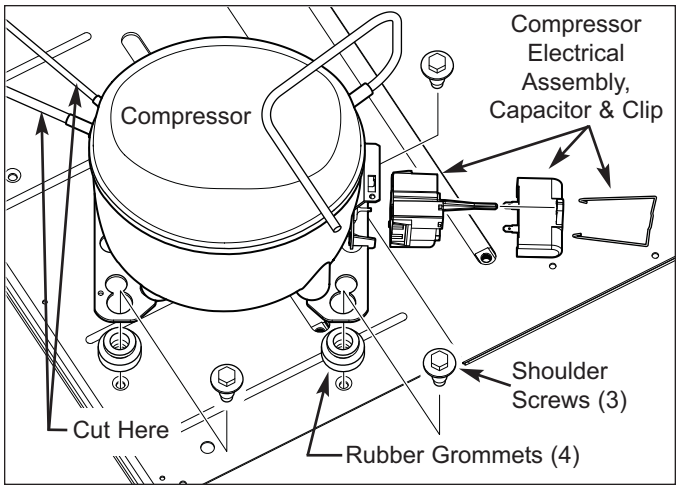


Figure 7-327. Compressor Removal

Condenser

Holes in the front and rear bottom flanges of the condenser fit over threaded studs in the unit tray, then a nut is applied to each threaded stud to hold the condenser in place.

NOTES:
- *See information, WARNING and NOTES under the heading of Models BI-42SD / BI-48SD Sealed System Components before continuing.*
- *The condenser inlet and outlet stubs are at the rear of the condenser.*

After capturing the refrigerant from the sealed system, (See Figure 7-328):

1. Remove nuts from threaded studs at the front and rear of condenser, then lift condenser slightly to clear threaded studs and pull condenser forward.
2. Using a tube cutter, cut condenser inlet and outlet tubes approximately 1” from condenser stubs, then remove condenser fully from unit tray.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After replacing the condenser, take care to not kink tubing as the unit tray is slid back into position.*

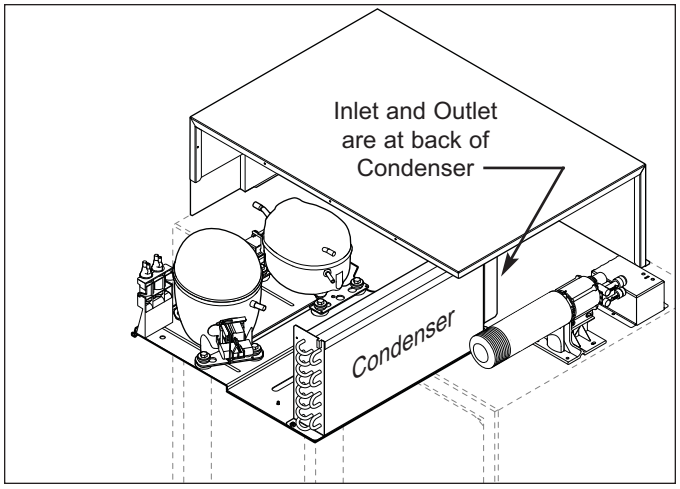


Figure 7-328. Condenser Removal

Refrigerator or Freezer Evaporator

The refrigerator and freezer evaporators are attached to the rear walls of their respective compartments with screws, behind the compartment duct assemblies. See Duct Assembly removal procedures earlier in this section.

NOTES:
- *The high-side filter-drier must also be replaced when replacing an evaporator.*
- *The electrical components on a freezer evaporator will be reused, so remove the defrost heater, defrost terminator and evaporator thermistor from the freezer evaporator.*

To remove an evaporator, first capture the refrigerant from the sealed system, then (See Figure 7-329 or 7-330):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.

NOTES:
- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *After capillary tube separates, check tubing for internal burrs. If burrs exist, repeat step 2 above.*

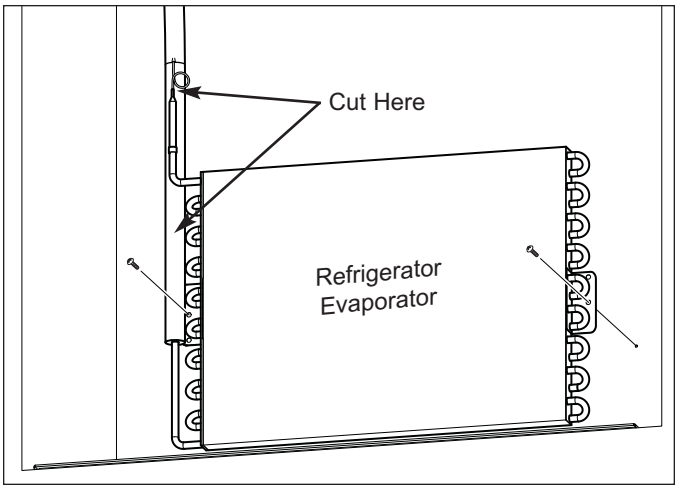


Figure 7-329. Refrigerator Evaporator Removal

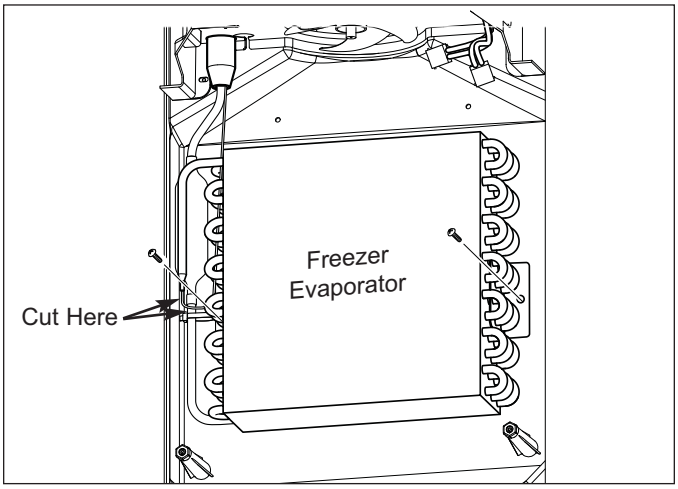


Figure 7-330. Freezer Evaporator Removal

Refrigerator or Freezer Heat Exchanger

The refrigerator and freezer heat exchangers passes through the ceiling of their respective compartments.

NOTES:

- *The high-side filter-drier must also be replaced when replacing a heat exchanger.*

To remove a heat exchanger, first capture the refrigerant from the sealed system, then (See Figure 7-331):

1. Extract evaporator mounting screws, then pull and rotate evaporator so heat exchanger is accessible.
2. With a file, score a line around capillary tube, 1” or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
3. With a tube-cutter, cut suction tube 1” or less from evaporator outlet stub, then remove evaporator from compartment.
4. With a tin snips, or similar tool, cut heat exchanger in compartment as close as possible to ceiling where heat exchanger passes through.
5. Use a tube-cutter to cut drier from condenser outlet tube.
6. Using a tube cutter, cut suction line approximately 1” from compressor.
7. Pull remaining heat exchanger from unit.

NOTES:

- *Do not sweat tubing apart. Doing so will induce moisture into the sealed system.*
- *When replacing the heat exchanger, it is recommended to attach it at the evaporator end first, then feed the heat exchanger through hole, up to compressor area.*

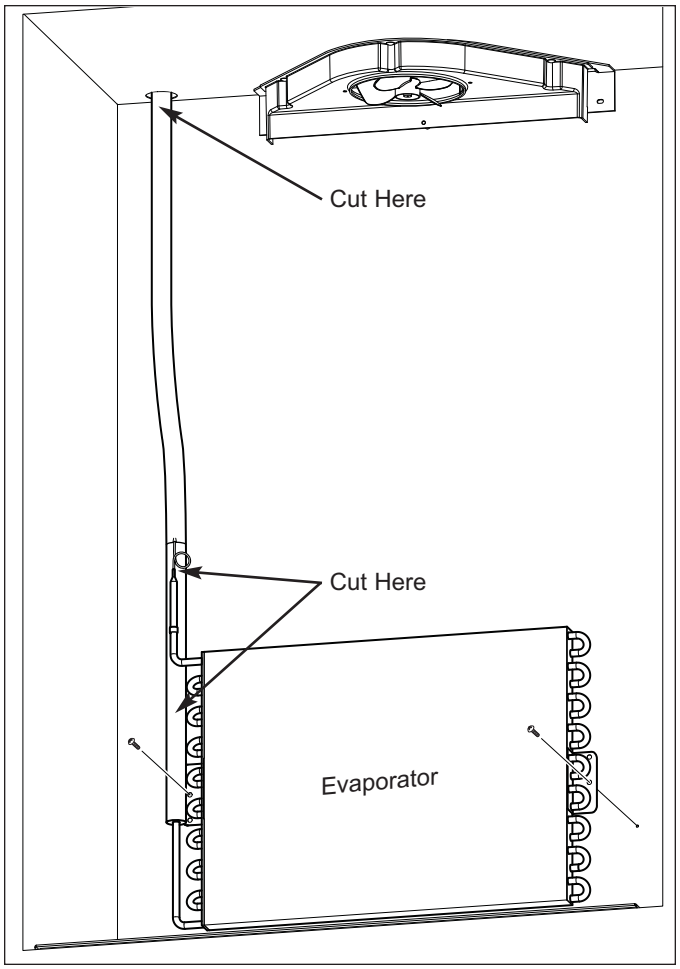


Figure 7-331. Refrigerator Heat Exchanger Removal
(Freezer Evaporator and Heat Exchanger not Shown)

SECTION 8

TROUBLESHOOTING GUIDES

TROUBLESHOOTING GUIDES

This section of the manual contains:

- The Fault Code Table with LCD Correlation Diagram
- The Fault Codes Troubleshooting Guide
- The General Troubleshooting Guide.
- The Sealed System Diagnostic Tables

USING THE FAULT CODE TABLE / LCD DIAGRAM & FAULT CODE TROUBLESHOOTING GUIDE

1. Initiate Diagnostic Mode - With the unit ON, press and a COLDER key, and press the POWER key, then release both keys (See Figure 8-1).
   NOTE: *If Fault Codes have already been logged the control will enter Fault Code Recall Mode instead of Diagnostic Mode. If this happens press the ALARM key to shift the control into Diagnostic Mode. Do* ***NOT*** *skip step 2 below if Fault Codes are already present.*
2. Initiate Self Test Mode - With the unit ON and in Diagnostic Mode, press and hold COLDER and WARMER keys, then the POWER key, then release all three keys (See Figure 8-2). Self Test Mode will last for five (5) seconds.
3. Initiate Fault Code Recall Mode - With the unit ON, press and a COLDER key, and press the POWER key, then release both keys (See Figure 8-3). (See the Fault Code Table with LCD Correlation Diagram on pages 8-3 and 8-4)
   NOTE: *Press a WARMER or COLDER key to toggle through the Fault Codes.*
4. Locate the matching code(s) in the left column of the Fault Code Troubleshooting Guide (starting on page 8-5).
5. Follow the Test/Actions as listed in the right column next to the code.
6. If Fault Codes are not present but the appliance is having problems, move onto the General Troubleshooting Guide.

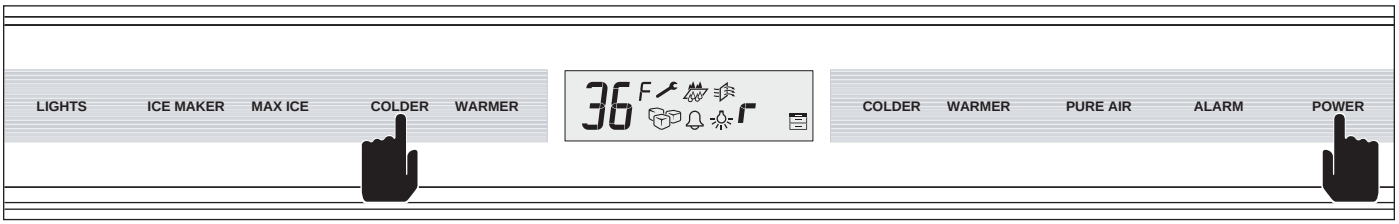


Figure 8-1. Initiate Diagnostic Mode - Press and Hold a COLDER Key, Then the POWER Key

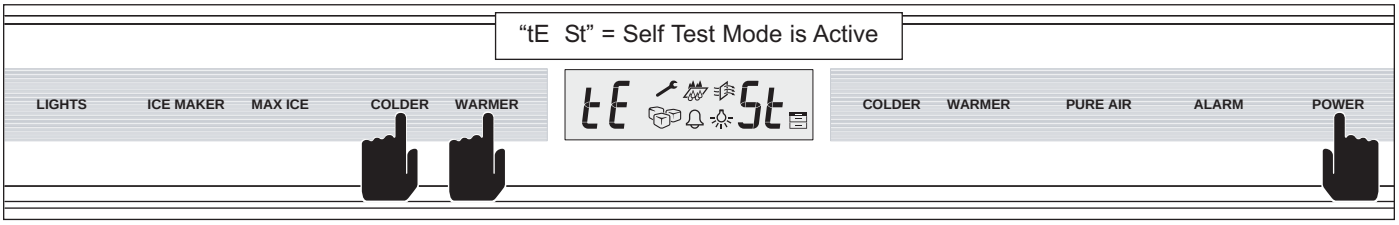


Figure 8-2. Initiate Self-Test Mode - While in Diagnostic Mode, Press COLDER, WARMER and POWER Keys

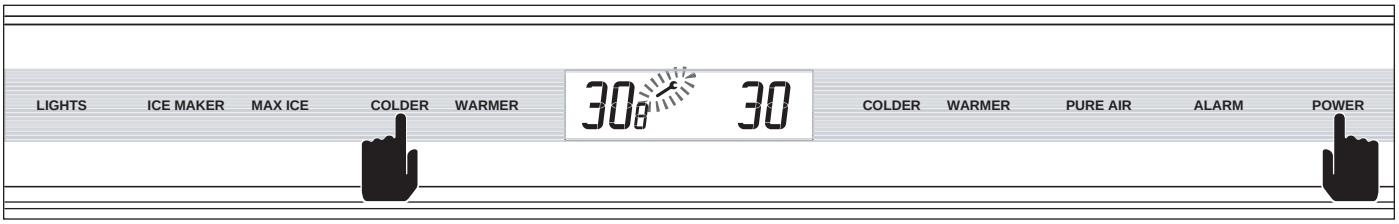
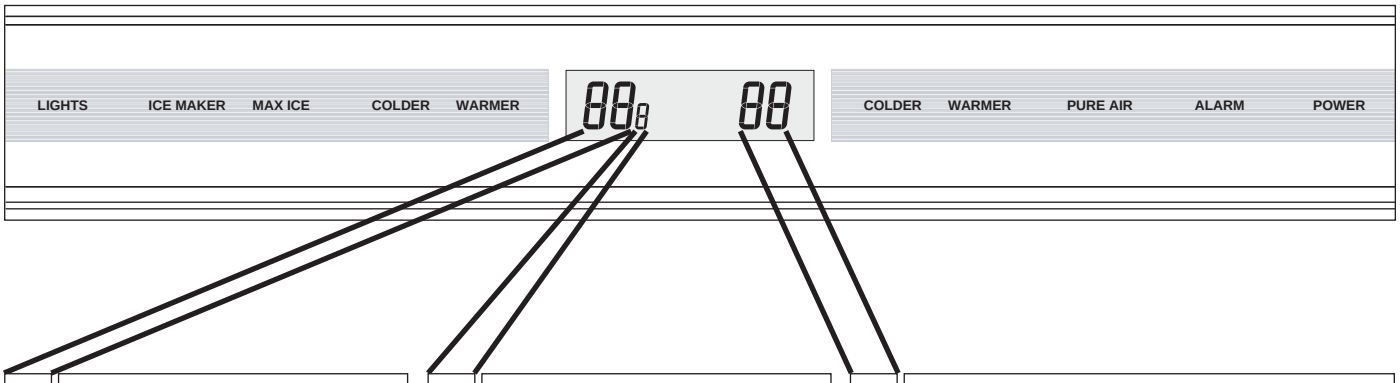


Figure 8-3. Initiate Fault Code Mode - Press and Hold a COLDER Key, Then the POWER Key

FAULT CODE TABLE WITH LCD CORRELATION DIAGRAM (PAGE 1 of 2)



10	Thermistor Faults
15	Relay Faults
20	Defrost Heater Faults
30	Ice/Water/Accessory Faults
35	Fan Faults
40	Runtime Faults
44	Glass Heater Faults
45	Lighting Faults
50	Flow Meter
60	Load/Component Faults
90	Control Faults
95	Diagnostics
98	Power Faults

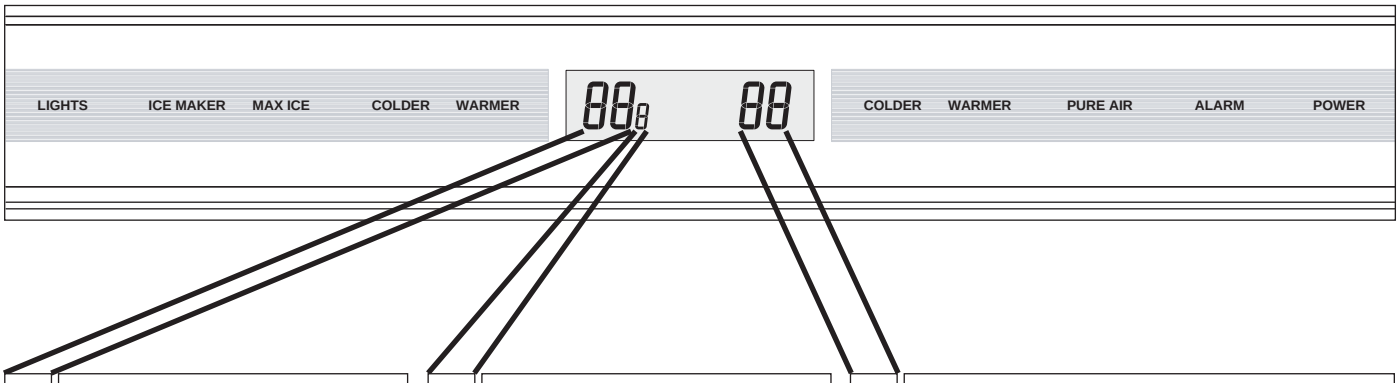
0	Misc
1	Refrigerator
2	Freezer
3	Condenser
4	Defrost System
5	Control System
6	Compressors
7	Ambient
8	Icemaker
9	Dispenser
A	Air Purifier
d	TC Drawer
F	Freezer Evaporator
H	High Voltage System
L	Lighting
r	Refrigerator Evaporator
U	Water Systems

00	Open
01	Short/Closed
02	Unstable
05	Miswire normal temps
06	Miswire overheat
07	Bad Ohms
09	Too Warm/Large Temp Differential
10	Second Device Open
11	Second Device Short/Closed
12	Second Device Unstable
20	Third Device Open
21	Third Device Short/Closed
22	Third Device Unstable
25	Diagnostics Failure
30	Valve Enabled Too Long
33	Speed Setting too Low
34	Speed Setting too High
35	Fan speed error
36	Fan current too low
37	Fan current too high
38	Fan Power Output Fault
39	DC Fan Output Fault
40	Excessive runtime
42	Primary Heater Fault
43	Secondary Heater Fault
44	Door Heater Output Fault
45	Burned out Light
46	No Position/State Detect

NOTE: These Columns are repeated on next page

NOTE: This Column is continued on next page

FAULT CODE TABLE WITH LCD CORRELATION DIAGRAM (PAGE 2 of 2)



10	Thermistor Faults
15	Relay Faults
20	Defrost Heater Faults
30	Ice/Water/Accessory Faults
35	Fan Faults
40	Runtime Faults
44	Glass Heater Faults
45	Lighting Faults
50	Flow Meter
60	Load/Component Faults
90	Control Faults
95	Diagnostics
98	Power Faults

0	Misc
1	Refrigerator
2	Freezer
3	Condenser
4	Defrost System
5	Control System
6	Compressors
7	Ambient
8	Icemaker
9	Dispenser
A	Air Purifier
d	TC Drawer
F	Freezer Evaporator
H	High Voltage System
L	Lighting
r	Refrigerator Evaporator
U	Water Systems

NOTE: These Columns are repeated from last page

50	Open Heater
55	Triac Open
56	Triac Short
60	No Load/Load Open
65	Stuck at Dispenser Water Valve Out
66	Stuck at Ice Water Valve Out
70	Bad Flash Write
71	Flash Initialized
72	Flash Memory Bad
73	Invalid Log Fault Checksum
74	Invalid E2 Checksum
75	Invalid Model E2 Checksum
80	No Communication
81	Communications Time-out
82	Partial Communications
83	Bad Micro Communication
84	Micro Initialization
85	Display Failure
86	Too Slow
87	No Flow
90	Framing Errors
92	Excessive Collisions
93	Data Overrun
95	FMEA Error
96	Calibration or Low Signal Error
97	Quantum SPI
98	Brownout
99	Other

NOTE: This Column is <u>continued</u> from last page

NOTE: *After repairs, clear Fault Codes by pressing the ALARM key for fifteen (15) seconds. Failure to clear Fault Codes will result in the highest priority fault indicator reappearing on the LCD when the unit is switched back ON.*

Fault Code Troubleshooting Table		
CODE	**SERVICE ICON STATE**	**TEST / ACTION**
10 1 00	ON	Refrigerator Cabinet Thermistor Open. Check ohms and verify temperature readings.
10 1 01	ON	Refrigerator Cabinet Thermistor Shorted. Check ohms and verify temp. readings.
10 1 02	ON	Refrig. Cabinet Thermistor Unstable. Check for bad connections / damaged wires.
10 2 00	ON	Freezer Cabinet Thermistor Open. Check ohms and verify temperature readings.
10 2 01	ON	Freezer Cabinet Thermistor Shorted. Check ohms and verify temperature readings.
10 2 02	ON	Freezer Cabinet Thermistor Unstable. Check for bad connections / damaged wires.
10 3 00		This code is currently inactive. Please Ignore.
10 3 01		This code is currently inactive. Please Ignore.
10 3 02		This code is currently inactive. Please Ignore.
10 3 10		This code is currently inactive. Please Ignore.
10 3 11		This code is currently inactive. Please Ignore.
10 3 12		This code is currently inactive. Please Ignore.
10 7 00		Ambient Thermistor on Control Board is open.
10 7 01		Ambient Thermistor on Control Board is shorted.
10 7 02		Ambient Thermistor on Control Board is unstable.
10 d 00		This code is currently inactive. Please Ignore.
10 d 01		This code is currently inactive. Please Ignore.
10 d 02		This code is currently inactive. Please Ignore.
10 F 00	ON	Freezer Evaporator Thermistor Open. Check Ohms and verify temperature Readings.
10 F 01	ON	Freezer Evaporator Thermistor Shorted. Check Ohms and verify temp. Readings.
10 F 02	ON	Freezer Evaporator Thermistor Unstable. Check for bad connections / damaged wires.
10 r 00	ON	Refrigerator Evaporator Thermistor Open. Check Ohms and verify temp. Readings.
10 r 01	ON	Refrigerator Evaporator Thermistor Shorted Check Ohms and verify temp. Readings.
10 r 02	ON	Refrig. Evaporator Thermistor Unstable. Check for bad connections / damaged wires.
10 r 09		Refrig. Evaporator thermistor read higher than cabinet thermistor by at least ten (10) degrees. Error may indicate problem with thermistor or a unique evap related problem.

Fault Code Troubleshooting Table		
CODE	**SERVICE ICON STATE**	**TEST / ACTION**
15 1 00	FLASH W/CHIME	Refrigerator Compressor Relay stuck open. No power to Compressor. Verify, replace control board.
15 2 00	FLASH W/CHIME	Freezer Compressor Relay stuck open. No power to Compressor. Verify, replace control board.
15 1 01	FLASH W/CHIME	Refrigerator Compressor Relay is stuck closed. Power to compressor at all times. Verify, replace control board.
15 2 01	FLASH W/CHIME	Freezer Compressor Relay is stuck closed. Power to compressor at all times. Verify, replace control board.
15 4 00	ON	Defrost Relay is stuck open. No power to defrost heater. Verify, replace control board.
15 4 01	FLASH	Defrost Relay stuck closed. Power to defrost heater at all times. Verify, replace control board.
15 8 00		Icemaker Relay is stuck open. No power to icemaker. Verify, replace control board.
15 8 01		Ice Maker Relay stuck closed. Power to icemaker at all times. Verify, replace control board.
15 8 10		Ice Accessories Relay is stuck open. No power to ice accessories (fill tube heater, mullion heater). Verify, replace control board.
15 8 11		Ice Accessories Relay is stuck closed. Power to ice accessories (fill tube heater, mullion heater) at all times. Verify, replace control board.
15 9 00		Auger Relay is stuck open. No power to auger. Verify, replace control board.
15 9 01	ON	Auger Relay is stuck closed. Power to auger at all times. Verify, replace control board.
15 9 65		Water Valve Selecting Relay stuck at Dispenser water position. Ice making system disabled. Replace control board.
15 9 66		Water Valve Selecting Relay stuck at Icemaker water position. Replace control board.
15 L 00		Main Lights Relay stuck open. Power to lights at all times. Verify, replace control board.
15 L 01		Main Lights Relay is stuck closed. No voltage to lights. Verify, replace control board.
15 L 55		Accent lights triac open. Verify no power to accent lights. Verify, replace control board.
15 L 56		Accent lights triac shorted. Verify constant power to accent lights regardless of activation. Verify, replace control board.
15 U 00		Water Valve Relay is stuck open. No power to water valve. Verify, replace control board.

Fault Code Troubleshooting Table		
CODE	**SERVICE ICON STATE**	**TEST / ACTION**
15 U 01	FLASH W/CHIME	Water Valve Relay is stuck closed. Power to water valve at all times. Verify, replace control board.
20 2 00	ON	Defrost Bi-metal stuck open. Verify the bi-metal is open circuit below 40°F (4°C). Replace if necessary.
20 2 01	ON	Defrost Bi-metal stuck closed. Verify the bi-metal is closed above 70°F (21°C). Replace if necessary.
20 2 05		Mis-wired Bi-metal. Normal temps during defrost, but inappropriate response from bi-metal. Check wiring and bi-metal mounting.
20 2 06	ON	Mis-wired Bi-metal. High temps during defrost, and inappropriate response from bi-metal. Check wiring and bi-metal mounting.
20 2 07		Defrost Heater Error - Check heater ohms. Replace heater if necessary.
20 2 50	ON	Defrost Heater Open. Verify wiring and heater. Check heater ohms. Replace heater if necessary.
30 8 00		Ice accessories open circuit. Check wiring for fill tube heater (and mullion chute heater, if equipped).
30 8 05		No signal from icemaker for fill. Check wiring and power to ice maker.
30 8 10		Icemaker open circuit. Check power and wiring to icemaker.
30 8 30	Flash w/Chime	Water valve not opened but water observed passing through.
30 9 10		Dispenser auger open. Check wiring and power to auger motor. Check auger ohms.
30 9 80		Check communications cable to dispenser.
30 9 86		Chute motor timed out. Chute motor failed to reach open or closed position. Verify motor and chute are moving freely and not jammed or blocked. Replace dispenser assembly if necessary.
30 U 00		Water valve open. Check wiring and power to water valve. Check solenoid ohms.
30 U 10		Dispenser water valve open. Check wiring and power to water valve. Check solenoid ohms.
35 3 00		Condenser fan open. Check wiring and power to condenser fan. Check fan ohms.
35 3 35		This code is currently inactive. Please Ignore.
35 A 36		Check air filter fan is connected properly and functioning.
35 A 37		Check air filter fan is connected and no shorts are evident.

Fault Code Troubleshooting Table		
CODE	**SERVICE ICON STATE**	**TEST / ACTION**
35 d 35		This code is currently inactive. Please Ignore.
35 d 36		Drawer Fan current is too low. Verify wiring & check for open circuits or damaged fans.
35 d 37		Drawer Fan current is too high. Verify wiring and check for stalled fan or shorts.
35 F 33		Verify Freezer evaporator fan not shorted - the fan is running faster than its setting.
35 F 34		Check Freezer evap. fan for obstructions that cause inability to achieve full speed.
35 r 33		Verify Refrig. evaporator fan not shorted - the fan is running faster than its setting.
35 r 34		Check Refrigerator evap. fan for obstructions that cause inability to achieve full speed.
40 1 40	ON	Excessive Refrigerator run time. Verify performance of unit and check for door leaks, door ajar, proper charge in system, and icing of evap.
40 2 40	ON	Excessive Freezer run time. Verify performance of unit and check for door leaks, door ajar, proper charge in system, and icing of evap.
40 8 40		Icemaker ran for maximum fill time without achieving necessary volume. Check for water system blockages, kinked water lines, proper water pressure to unit.
40 9 40		Dispenser active for maximum fill time. Water was dispensed for 150 seconds. Verify no stuck keys or flooding.
44 0 00		Glass door heater open circuit. Check wiring and power to heater. Check heater ohms.
44 0 01		Glass door heater short circuit. Check wiring and power to heater. Check heater ohms.
44 9 42		1 watt glasswell heater not detected. Check wiring and power to heater. Check heater ohms.
44 9 43		4 watt glasswell heater not detected. Check wiring and power to heater. Check heater ohms.
45 1 00		Main Refrigerator lights open circuit. Check lights and wiring.
45 2 00		Main Freezer lights open circuit. Check lights and wiring.
45 1 01		Main Refrigerator lights short circuit. Check lights and wiring.
45 2 01		Main Refrigerator lights short circuit. Check lights and wiring.
45 A 45	FLASH AIR FILTER ICON	Air filter light burned out. Replace air filter cartridge.
45 L 00		Accent lights open circuit. Check lights and wiring.
45 L 01		Accent lights short circuit. Check lights and wiring.

Fault Code Troubleshooting Table		
CODE	**SERVICE ICON STATE**	**TEST / ACTION**
50 U 80		Water Flow meter not detected. Verify power and wiring to flow meter assembly. If power and wiring are OK, replace flow meter assembly.
50 U 86		Water Flow meter detected low flow. Verify water pressure and check for any water system obstructions.
50 U 87		Water Flow meter did not detect flow. Verify water pressure, water flow, and that meter is not blocked or dirty.
60 1 60	ON	No Refrigerator compressor load detected. Check compressor electricals and wiring.
60 2 60	ON	No Freezer compressor load detected. Check compressor electricals and wiring.
90 0 70		Flash Failure. Reconfigure control board. Replace control board if reconfigure fails.
90 0 71		Flash Failure. Reconfigure control board. Replace control board if reconfigure fails.
90 0 72		Flash Failure. Reconfigure control board. Replace control board if reconfigure fails.
90 0 73		Flash Failure. Reconfigure control board. Replace control board if reconfigure fails.
90 0 74		Flash Failure. Reconfigure control board. Replace control board if reconfigure fails.
90 0 75		Flash Failure. Reconfigure control board. Replace control board if reconfigure fails.
90 0 81		Microcontroller fault. Replace control board if fault is active.
90 0 90		Microcontroller fault. Replace control board if fault is active.
90 0 92		Microcontroller fault. Replace control board if fault is active.
90 0 93		Microcontroller fault. Replace control board if fault is active.
90 3 38		Condenser fan triac is faulted. Verify condenser fan operation. Replace control board if fault is active.
90 3 55		Condenser fan triac Open. Verify condenser fan operation. Replace control board if fault is active.
90 3 56		Condenser fan triac shorted. Verify condenser fan operation. Replace control board if fault is active.
90 5 01		Key shorted or damaged on Control Panel. Verify key performance. Replace Control Panel.
90 5 38	ON	12V Fan power output fault. Verify constant 12V DC to evaporator and drawer fans. Replace control board if fault is active.
90 5 39		DC Fan output faults. Verify proper evaporator and drawer fan operation

Fault Code Troubleshooting Table		
CODE	**SERVICE ICON STATE**	**TEST / ACTION**
90 5 44		Glass door heater output fault. Check wiring and power to heater. Replace control board if fault is active.
90 5 80		No keypad communications. Check wiring and key performance of Control Panel.
90 5 85		User display failure. Replace Control Panel.
90 5 95		Key shorted or damaged on Control Panel. Verify key performance. Replace Control Panel.
90 5 96		Key shorted or damaged on Control Panel. Verify key performance. Replace Control Panel.
90 5 97		Control Panel microcontroller problem. Verify key performance. Replace Control Panel.
90 5 99		Control Panel error. Verify key performance. Replace Control Panel.
90 9 80		No communications with door dispenser. Check proper model configuration. Check wiring to dispenser.
90 A 38		Air filter fan output fault on control board. Replace control board if fault is active.
90 d 38		Drawer fan output fault on control board. Replace control board if fault is active.
90 d 80		This code is currently inactive. Please Ignore.
90 F 38	ON	Freezer evap fan output output fault on control board. Verify if fan is working. Replace control board if fault is active.
90 H 80	ON	Communications problems on main board. Replace control board.
90 H 82		Intermittent communications on main board. Replace control board.
90 H 83		Communications problems on main board. Replace control board.
90 H 84		Initialization fault. Power unit OFF, then ON, and verify if code remains active. Replace control board if fault is active.
90 L 38		Check if accent lights are working. Replace control board if fault is active.
90 r 38	ON	Refrigerator evaporator fan output faulted. Verify fan operation. Replace control board if fault is active.
95 1 25		Verify Refrigerator evaporator is cooling properly when compressor is on. Check sealed system charge if not.
95 2 25		Verify Freezer evaporator is cooling properly when compressor is on. Check sealed system charge if not.
98 0 98		Brownout conditions were detected.

GENERAL TROUBLESHOOTING GUIDE TABLE OF CONTENTS

The General Troubleshooting Guide Table of Contents indicates how the General Trouble Shooting Guide is arranged. To use the General Troubleshooting Guide:

1. Match the description of the problem the unit is experiencing with those in the table of contents.
2. To the left of the problem description is a letter.
3. Locate that letter in the left column of the Troubleshooting Guide.
4. The information in the center column of the Troubleshooting Guide identifies possible causes for the problem.
5. The information in the right column explains the tests to perform and/or what action to take to correct the problem.

NOTE: *After repairs, clear Fault Codes by pressing the ALARM key for fifteen (15) seconds. Failure to clear Fault Codes will result in the highest priority fault indicator reappearing on the LCD when the unit is switched back ON.*

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
A. Warm or Erratic Temperatures without Service Icon Illuminated or Flashing on LCD	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for “O FF” displayed at LCD. If off, press POWER key.
	Unit in Showroom Mode	Press POWER key to OFF, then press and hold WARMER & COLDER keys, and press POWER key.
	Control Set-Point Too High	Check set-point. If high, adjust.
	Warm Food Load	Check for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Control Board Configured for Wrong Model	Check model configuration; reconfigure if needed.
B. Service Icon Illuminated Steady, or Flashing, or Flashing with Alarm Chiming	**Unit Needs Attention**	See Fault Code Troubleshooting Guide
C. Ice Cube Icon Flashing without Service Icon	**Unit and/or Water Supply Needs Attention**	See Fault Code Troubleshooting Guide
D. “EE” Displayed in Place of Freezer Temperature	**Freezer Compartment Thermistor Disconnected, Shorted, or Misread**	Check wiring from thermistor to control board. Reconnect/repair connections. Resistance of thermistor = 30,000-33,000 ohms at 32°F/0°C. Replace if defective.
E. “EE” Displayed in place of Refrigerator Temperature	**Refrigerator Compartment Thermistor Disconnected, Shorted, or Misread**	Check wiring from thermistor to control board. Reconnect/repair connections. Resistance of thermistor = 30,000-33,000 ohms at 32°F/0°C. Replace if defective.
F. 1. “Extremely” Cold Temperatures Displayed ***(1° to 7° in Refrigerator; -21° to -15° in Freezer)*** **2. If outside US - “Extremely” Warm Temperatures Displayed** ***(34° to 45° in Refrigerator; -5° to 5° in Freezer)***	**1. Control Set to Display Celsius but Customer Thought it Was Fahrenheit** **2. If Outside US - Control Set to Display Fahrenheit but Customer Thought it Was Celsius**	1. Switch unit OFF, then ON, then press & hold Bell key and POWER key for 10 seconds. 2. Switch unit OFF, then ON, then press & hold Bell key and POWER key for 10 seconds.
G. Water Filter Icon Illuminated on LCD	Water filter has reached capacity or time limit; must be replaced	Replace water filter, then press reset button behind unit grille for five (5) seconds to clear filter icon from LCD and reset counters to zero.
H Air Purifier Icon Flashing on LCD	Air Purifier cartridge has reached time limit; must be replaced	Replace air purifier cartridge, then press PURE AIR key for five (5) seconds to clear flashing icon from LCD and reset counter to zero.
I. “SA” and “b” displayed on LCD	**Unit is Sabbath Mode**	Press POWER key to force unit out of Sabbath Mode.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
J. Double Dashes "- -" in Place of Temperature Readings on LCD	**Zone Disabled**	Re-enable Zone: Switch unit off, then press WARMER key for that zone and POWER key, then release all keys.
K. LCD is Blank with Warm or Erratic or Normal Temperatures	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Electrical Outlet Polarity is Reversed	Check polarity at outlet; if incorrect, instruct customer to contact Electrical Contractor.
	Broken/disconnected communication wire between control board & control panel	Check communication wiring between control board and control panel. Reconnect/repair connections. Replace control panel if defective.
L. Ice and/or Water Dispenser Inoperative, but no Fault Code (BI-42SD & BI48SD ONLY)	Defective or disconnected dispenser assembly or defective main control board	Press ICE and WATER keys on dispenser assembly; 1. If dispenser cylinder valve does not open and water and ice do not dispense, check wiring connections between dispenser and main control board; repair bad connections, if good, replace dispenser assembly. 2. If dispenser cylinder valve does not open, but water or ice do dispense, replace dispenser assembly. 3. If dispenser cylinder valve opens, but water or ice do not dispense, replace main control boars.

SEALED SYSTEM DIAGNOSTICS TABLES

NORMAL OPERATING PRESSURES TABLE NOTES:

- *Only enter the sealed system to check pressures if the Fault Code Troubleshooting Guide and General Troubleshooting Guide could not pinpoint the cause of the temperature problem.*
- *Always use solder-on process valves when entering the sealed system. Do NOT use bolt-on process valves as they are prone to leak.*
- *Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.*
- *Pressures listed below are not indicative of initial pull down, but rather of a steadily running and properly functioning appliance.*
- *Pressures listed are for reference only, as actual pressure readings may vary because of one or more of the following reasons:*
  1. *Ambient temperatures (Pressures are based on a 70°F / 21°C Ambient).*
  2. *Temperature set-points (Pressures listed below are based on set-points of 0°F / -18°C in freezers and 38°F / 3°C in refrigerators)*
  3. *Food load quantity and temperature.*
  4. *Condenser cleanliness.*
  5. *Whether or not one or both refrigeration systems are operating.*
  6. *Gauge calibration.*

NORMAL OPERATING PRESSURES

Model		Low-Side	High-Side
BI-36R	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
BI-36RG	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
BI-36F	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-30U	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-30UG	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-36S	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-36U	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-36UG	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-42S	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-42SD	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-48S	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi
BI-48SD	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5” Vac - 1 psi to 6 - 15 psi	75 psi to 120 psi

PRESSURE INDICATIONS		
If low-side pressure is	**& high-side pressure is**	**possible problem is**
NORMAL	NORMAL	MECHANICAL (see General Troubleshooting Guide)
LOW	LOW	LEAK
LOW	HIGH	RESTRICTION
HIGH	LOW	INEFFICIENT COMPRESSOR
HIGH	HIGH	OVER CHARGE

EVAPORATOR TEMPERATURE / SEALED SYSTEM LOW-SIDE PRESSURE CORRELATION

NOTE: *The temperature/pressure table at right is for reference only. A unit's temperature/pressure correlation may differ from those listed due to: variations in evaporator thermistor location, set-points, where the sealed system is in the refrigeration cycle, ambient temperature, etc.*
If a unit is experiencing temperature problems, it is recommended that you reference the Fault Code Troubleshooting Guide before accessing the sealed system. After all mechanical and electrical components have been ruled out, sealed system pressures can be checked by applying solder-on process valves and referencing the preceding page. Do NOT use bolt-on process valves as they are prone to leak.
This table should only be used as a last quick check before entering the sealed system.

Temperature	Pressure
-30°F (-34°C)	10” Vac
-25°F (-32°C)	7” Vac
-20°F (-29°C)	4” Vac
-15°F (-26°C)	0” Vac
-10°F (-23°C)	2 Psi
-5°F (-21°C)	4 Psi
0°F (-18°C)	7 Psi
5°F (-15°C)	9 Psi
10°F (-12°C)	12 Psi
15°F (-9°C)	15 Psi
20°F (-7°C)	18 Psi
25°F (-4°C)	22 Psi
30°F (-1°C)	26 Psi
35°F (2°C)	30 Psi
40°F (4°C)	35 Psi
45°F (7°C)	40 Psi
50°F (10°C)	45 Psi
55°F (13°C)	51 Psi
60°F (16°C)	57 Psi
65°F (18°C)	64 Psi
70°F (21°C)	71 Psi
75°F (24°C)	78 Psi

SECTION 9

TECHNICAL DATA

Model BI-30U

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.5 oz.	6.5 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5" vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original / Service Compressor Amps Original / Service Compressor BTU's	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.	"Adaptive Defrost" Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 450 4.0 27 - 33
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evaporator & Compartment) Ohms at 32°F (0°C)	30000 - 33000	30000 - 33000

Model BI-30UG

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.5 oz.	6.5 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5” vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original / Service Compressor Amps Original / Service Compressor BTU’s	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	“Fan Assisted, Off Cycle Defrost” Evap > 38°F before Compressor ON.	“Adaptive Defrost” Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 450 4.0 27 - 33
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evaporator & Compartment) Ohms at 32°F (0°C)	30000 - 33000	30000 - 33000
DOOR HEATER - (12 VDC) Watts Amps Ohms	 5 0.4 25 - 32	 ---- ---- ----

Model BI-36F

	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	9.0 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 5" vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original / Service Compressor Amps Original / Service Compressor BTU's	 ~1.2 / ~1.2 950 / 950
DEFROST METHOD	"Adaptive Defrost" Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 30°F (-1°C) 45°F / 7°C
DEFROST HEATER Watts Amps Ohms	 800 7.0 15 - 19
FILL TUBE HEATER Watts Amps Ohms	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 50 0.4 160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	 30000 - 33000

Model BI-36R

	REFRIGERATOR
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	6.0 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi
COMPRESSOR Original Compressor / Service Compressor Amps Original Compressor / Service Compressor BTU's	 ~ 0.9 / ~ 0.9 330 / 330
DEFROST METHOD	"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	 30000 - 33000

Model BI-36RG

		REFRIGERATOR
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*		6.0 oz.
NORMAL OPERATING PRESSURES		
	Low Side	0-12 psi to 30-42 psi
	High Side	75 psi to 110 psi
COMPRESSOR		
	Original / Service Compressor Amps	~ 0.9 / ~ 0.9
	Original / Service Compressor BTU's	330 / 330
DEFROST METHOD		"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.
THERMISTORS (Evap & Compartment)	Ohms at 32°F / 0°C	30000 - 33000
DOOR HEATER - (12 VDC)		
	Watts	5
	Amps	0.4
	Ohms	25 - 32

Model BI-36S

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	4.75 oz.	4.5 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5” vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original / Service Compressor Amps Original / Service Compressor BTU’s	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	“Fan Assisted, Off Cycle Defrost” Evap > 38°F before Compressor ON.	“Adaptive Defrost” Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 380 3.5 31 - 39
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	30000 - 33000	30000 - 33000

Model BI-36U

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.0 oz.	5.5 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5" vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original / Service Compressor Amps Original / Service Compressor BTU's	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.	"Adaptive Defrost" Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 450 4.0 27 - 33
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	 30000 - 33000	 30000 - 33000

Model BI-36UG

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.0 oz.	5.5 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5” vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original / Service Compressor Amps Original / Service Compressor BTU’s	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	“Fan Assisted, Off Cycle Defrost” Evap > 38°F before Compressor ON.	“Adaptive Defrost” Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 450 4.0 27 - 33
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	 30000 - 33000	 30000 - 33000
DOOR HEATER - (12 VDC) Watts Amps Ohms	 5 0.4 25 - 32	 ---- ---- ----

Model BI-42S

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.0 oz.	6.0 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5” vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original Compressor / Service Compressor Amps Original Compressor / Service Compressor BTU’s	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	“Fan Assisted, Off Cycle Defrost” Evap > 38°F before Compressor ON.	“Adaptive Defrost” Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 380 3.5 31 - 39
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	 30000 - 33000	 30000 - 33000

Model BI-42SD

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.0 oz.	5.0 oz
NORMAL OPERATING PRESSURES		
Low Side	0-12 psi to 30-42 psi	5" vac-1 psi to 6-15 psi
High Side	75 psi to 110 psi	75 psi to 120 psi
COMPRESSOR		
Original Compressor/Service Compressor Amps	~ 0.8 / ~ 0.8	~1.1 / ~1.1
Original Compressor/Service Compressor BTU's	215 / 215	610 / 610
DEFROST METHOD	"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.	"Adaptive Defrost" Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR		
Cut-In Temp.	----	30°F (-1°C)
Cut-Out Temp.	----	55°F (13°C)
DEFROST HEATER		
Watts	----	380
Amps	----	3.5
Ohms	----	31 - 39
FILL TUBE HEATER		
Watts	----	6.5
Amps	----	0.06
Ohms	----	1830 - 2240
WATER VALVE		
Watts	20	50
Amps	0.2	0.4
Ohms (Inductive)	260	160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	30000 - 33000	30000 - 33000
MULLION CHUTE HEATER		
Watts	15	----
Amps	0.13	----
Ohms	790 - 970	----
GLASS WELL HEATER - (12 VDC)		
Heater #1 Watts / Heater #2 Watts	2 / 1	----
Heater #1 Amps / Heater #2 Amps	0.17 / 0.09	----
(Heater #1) Ohms	64 - 80	----
(Heater #2) Ohms	129 - 159	----

Model BI-48S

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.0 oz.	6.0 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 0-12 psi to 30-42 psi 75 psi to 110 psi	 5" vac-1 psi to 6-15 psi 75 psi to 120 psi
COMPRESSOR Original Compressor / Service Compressor Amps Original Compressor / Service Compressor BTU's	 ~ 0.8 / ~ 0.8 215 / 215	 ~1.1 / ~1.1 610 / 610
DEFROST METHOD	"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.	"Adaptive Defrost" Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR Cut-In Temp. Cut-Out Temp.	 ---- ----	 30°F (-1°C) 55°F (13°C)
DEFROST HEATER Watts Amps Ohms	 ---- ---- ----	 450 4.0 27 - 33
FILL TUBE HEATER Watts Amps Ohms	 ---- ---- ----	 6.5 0.06 1830 - 2240
WATER VALVE Watts Amps Ohms (Inductive)	 ---- ---- ----	 50 0.4 160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	 30000 - 33000	 30000 - 33000

Model BI-48SD

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Amount may change, always check serial tag on unit.*	5.0 oz.	5.0 oz
NORMAL OPERATING PRESSURES		
Low Side	0-12 psi to 30-42 psi	5" vac-1 psi to 6-15 psi
High Side	75 psi to 110 psi	75 psi to 120 psi
COMPRESSOR		
Original Compressor/Service Compressor Amps	~ 0.8 / ~ 0.8	~1.1 / ~1.1
Original Compressor/Service Compressor BTU's	215 / 215	610 / 610
DEFROST METHOD	"Fan Assisted, Off Cycle Defrost" Evap > 38°F before Compressor ON.	"Adaptive Defrost" Intervals and duration varies. Followed by 5 min. compressor delay.
DEFROST TERMINATOR		
Cut-In Temp.	----	30°F (-1°C)
Cut-Out Temp.	----	55°F (13°C)
DEFROST HEATER		
Watts	----	450
Amps	----	4.0
Ohms	----	27 - 33
FILL TUBE HEATER		
Watts	----	6.5
Amps	----	0.06
Ohms	----	1830 - 2240
WATER VALVE		
Watts	20	50
Amps	0.2	0.4
Ohms (Inductive)	260	160
THERMISTORS (Evap & Compartment) Ohms at 32°F / 0°C	30000 - 33000	30000 - 33000
MULLION CHUTE HEATER		
Watts	15	----
Amps	0.13	----
Ohms	790 - 970	----
GLASS WELL HEATER - (12 VDC)		
Heater #1 Watts / Heater #2 Watts	2 / 1	----
Heater #1 Amps / Heater #2 Amps	0.17 / 0.09	----
(Heater #1) Ohms	64 - 80	----
(Heater #2) Ohms	129 - 159	----

SECTION 10

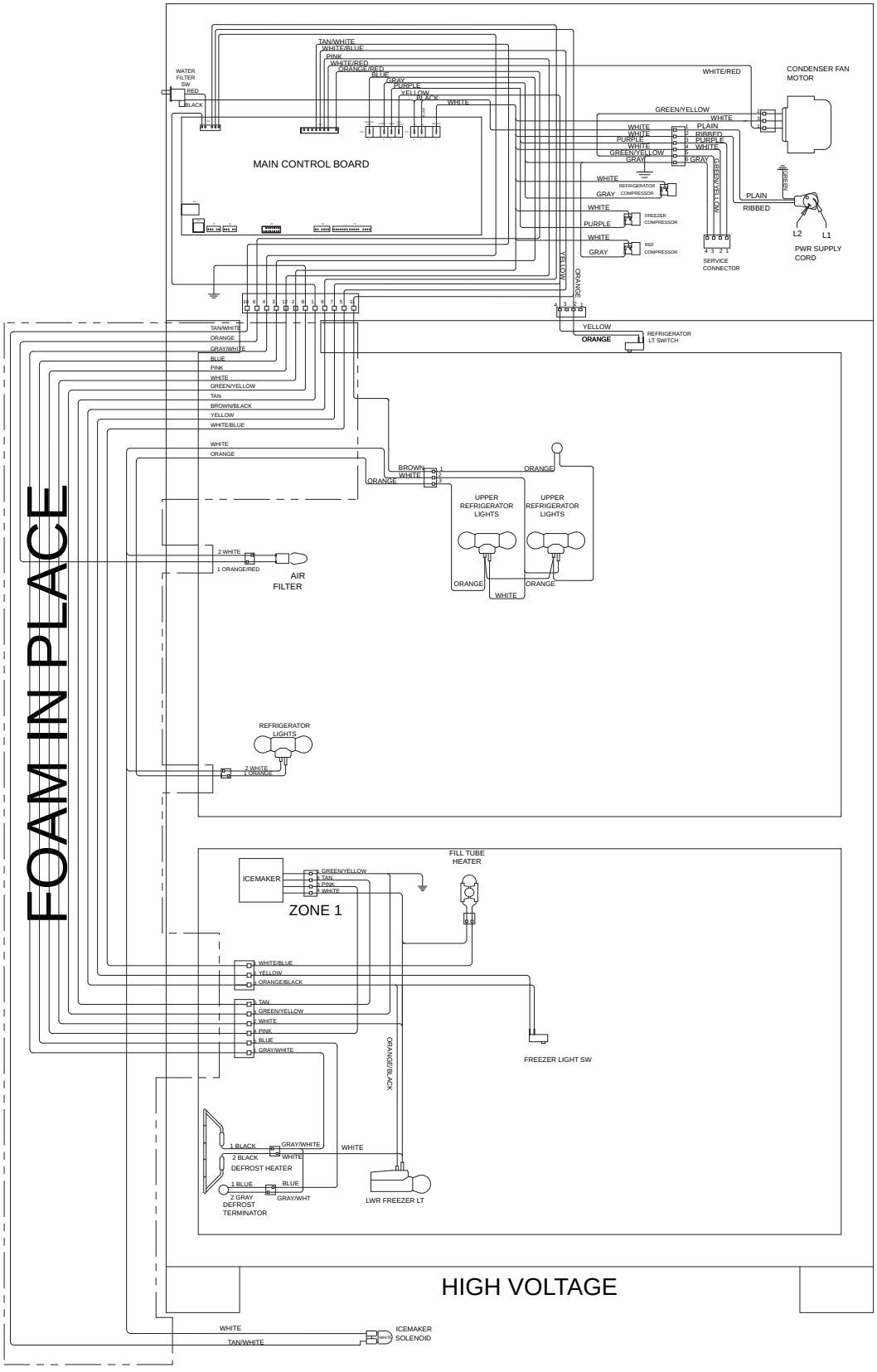
WIRING DIAGRAMS AND SCHEMATICS

P/N 7000632, REV. E

WIRING DIAGRAM - HIGH VOLTAGE
MODELS: BI-30U, BI036U

WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



P/N 7000632, REV. E

WIRING DIAGRAM - LOW VOLTAGE
MODELS: BI-30U, BI036U

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
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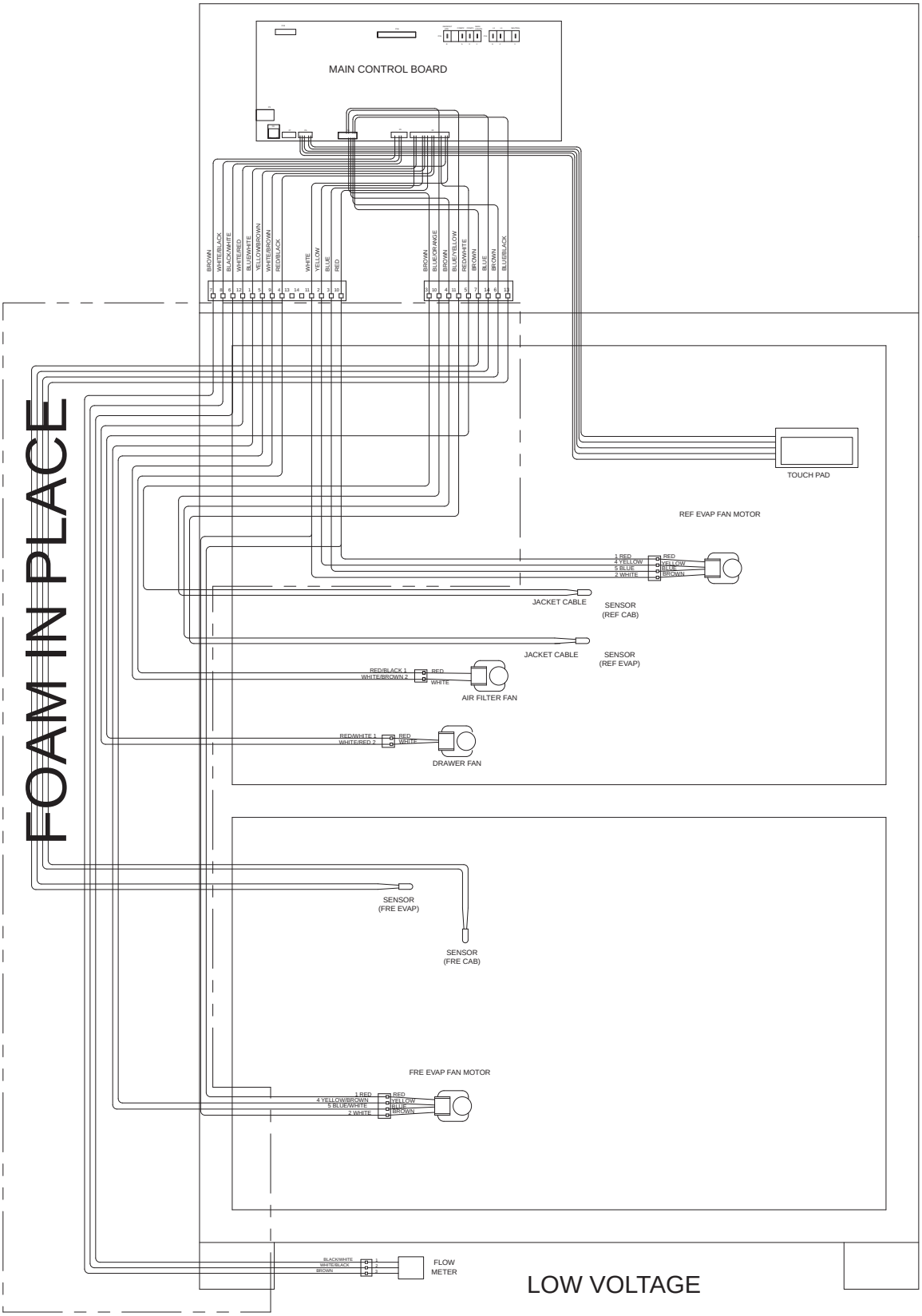
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



P/N 7000632, REV. E

CONTROL BOARD DETAIL & SUMMARY TABLE
MODELS: BI-30U, BI-36U

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
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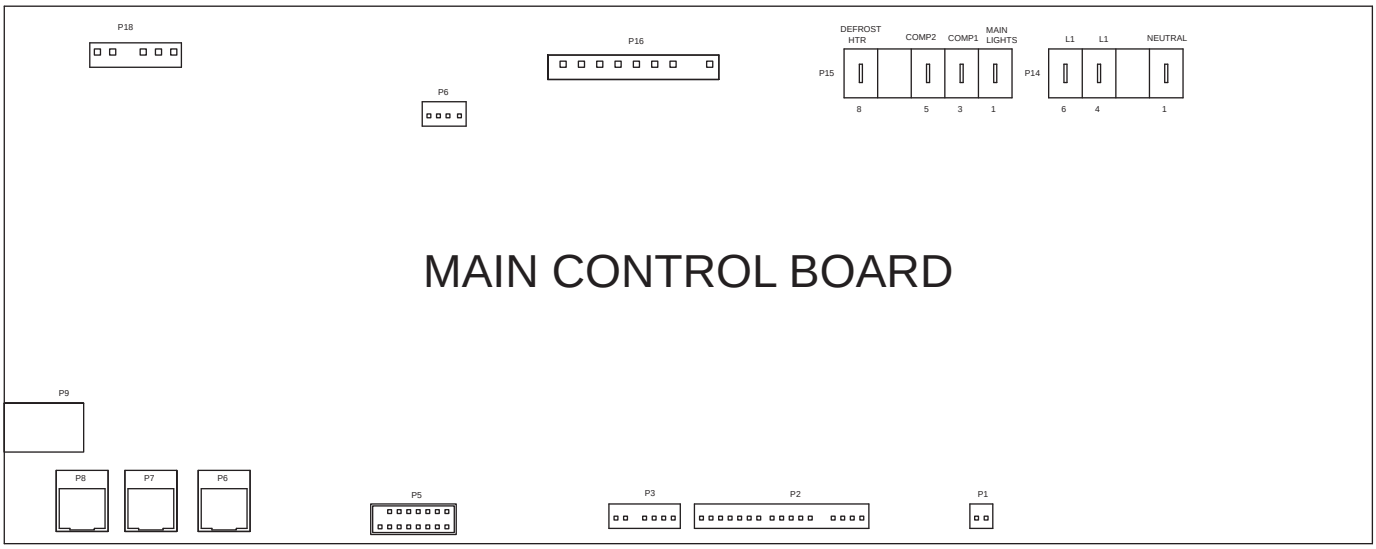


O/U CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
P14-1	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P14-2	UNUSED	UNUSED	-
P14-3	UNUSED	UNUSED	-
P14-4	POWER IN (L1)	POWER INTO BOARD	BLACK
P14-5	UNUSED	UNUSED	-
P14-6	POWER IN (L1)	POWER INTO BOARD	BLACK
P15-1	MAIN LIGHTS	POWERS MAIN LIGHTS	YELLOW
P15-2	UNUSED	UNUSED	-
P15-3	COMPRESSOR #1	POWERS COMPRESSOR	PURPLE
P15-4	UNUSED	UNUSED	-
P15-5	COMPRESSOR #2	POWERS REF COMPRESSOR	GRAY
P15-6	UNUSED	UNUSED	-
P15-7	UNUSED	UNUSED	-
P15-8	DEFROST HEATER	POWERS OFF HEATER	BLUE
P16-1	UNUSED	---	---
P16-2	UNUSED	---	--
P16-3	WATER VALVE	POWERS WATER VALVE	-
P16-4	ICE MAKER WATER VALVE	POWERS IM WATER VALVE	TAN/WHITE
P16-5	ICE MAKER ACCESSORIES	POWERS FILL TUBE AND ACCESSORIES	WHITE/BLUE
P16-6	ICE MAKER	POWERS ICE MAKER	PINK
P16-7	CONDENSER FAN	CONDENSER FAN	WHITE/RED
P16-8	UNUSED	UNUSED	-
P16-9	AIR FILTER LIGHT	AIR FILTER LIGHT	ORANGE/RED
P18-1	WATER VALVE INPUT	SENSES WATER VALVE ACTIVATION	TAN
P18-2	WATER FILTER RESET SWITCH	SENSES WATER FILTER	RED
P18-3	UNUSED	UNUSED	-
P18-4	FREEZER DOOR INPUT	SENSES IF FREEZER DOOR IS OPEN	ORANGE/BLACK
P18-5	REFRIGERATOR DOOR INPUT	SENSES IF REF DOOR IS OPEN	ORANGE
P18-6	REF BI-METAL	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE

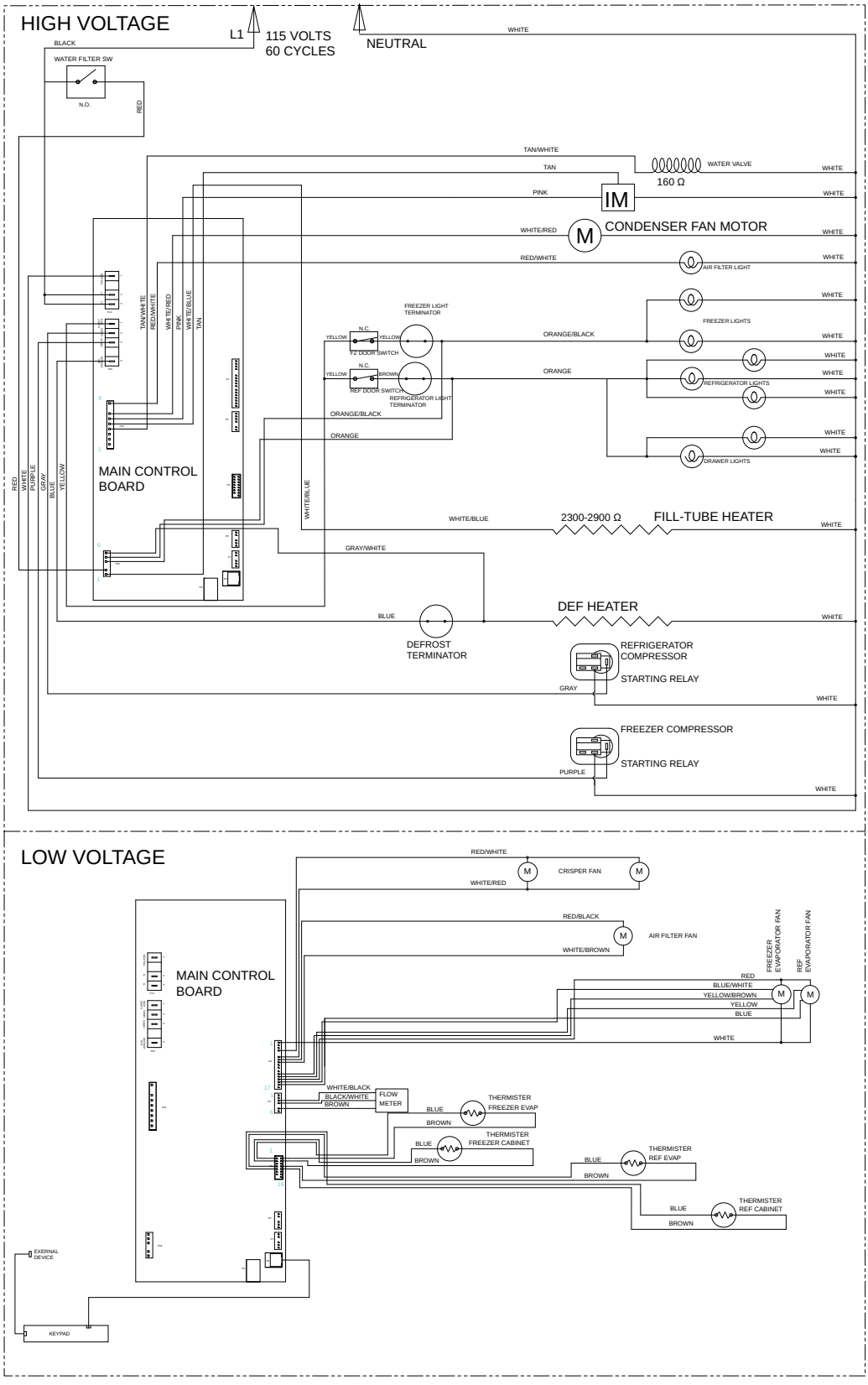
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	LOW VOLTAGE CIRCUITS		
P2-1	EVAPORATOR FAN GROUND RETURN	EVAPORATOR FAN RETURN	WHITE
P2-2	CRISPER LIGHT 12 VDC POWER	CRISPER LIGHT POWER	-
P2-3	CRISPER LIGHT GROUND RETURN	CRISPER LIGHT RETURN	-
P2-4	DRAWER FAN	PWM DRIVE OUTPUT	RED/WHITE
P2-5	UNUSED	UNUSED	-
P2-6	DRAWER FAN	PWM DRIVE RETURN	WHITE/BLACK
P2-7	AIR FILTER FAN	AIR FILTER FAN OUTPUT	RED/BLACK
P2-8	AIR FILTER FAN	AIR FILTER FAN RETURN	WHITE/BROWN
P2-9	AIR FILTER LIGHT	AIR FILTER LIGHT OUTPUT	-
P2-10	AIR FILTER LIGHT	AIR FILTER LIGHT RETURN	-
P2-11	UNUSED	UNUSED	-
P2-12	FREEZER EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW/BROWN
P2-13	REF EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW
P2-14	EVAPORATOR FAN 12 VDC POWER	EVAPORATOR FAN POWER	RED
P2-15	FREEZER EVAPORATOR FAN	TACHOMETER INPUT	BLUE/WHITE
P2-16	REF EVAPORATOR FAN	TACHOMETER INPUT	BLUE
P2-17	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
P3-1	UNUSED	---	---
P3-2	UNUSED	---	---
P3-3	FLOW METER	FLOW METER RETURN	WHITE/BLACK
P3-4	FLOW METER 12V DC POWER	FLOW METER POWER	BLACK/WHITE
P3-5	UNUSED	UNUSED	-
P3-6	FLOW METER	WATER FLOW SENSOR INPUT	BROWN
P3-7	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	THERMISTER CIRCUITS		
P5-1	FREEZER EVAPORATOR	SENSES TEMPERATURE	BLUE/BLACK
P5-2	FREEZER EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-3	FREEZER CABINET	SENSES TEMPERATURE	BLUE
P5-4	FREEZER CABINET	SENSES TEMPERATURE	BROWN
P5-5	UNUSED	UNUSED	---
P5-6	UNUSED	UNUSED	---
P5-7	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BLUE/YELLOW
P5-8	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-9	REF CABINET	SENSES TEMPERATURE	BLUE/ORANGE
P5-10	REF CABINET	SENSES TEMPERATURE	BROWN
P5-11	UNUSED	UNUSED	---
P5-12	UNUSED	UNUSED	---
P5-13	UNUSED	UNUSED	---
P5-14	UNUSED	UNUSED	----
P5-15	UNUSED	UNUSED	----
P5-16	UNUSED	UNUSED	----

P/N 7000632, REV. E

WIRING SCHEMATIC
MODELS: BI-30U, BI-36U

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

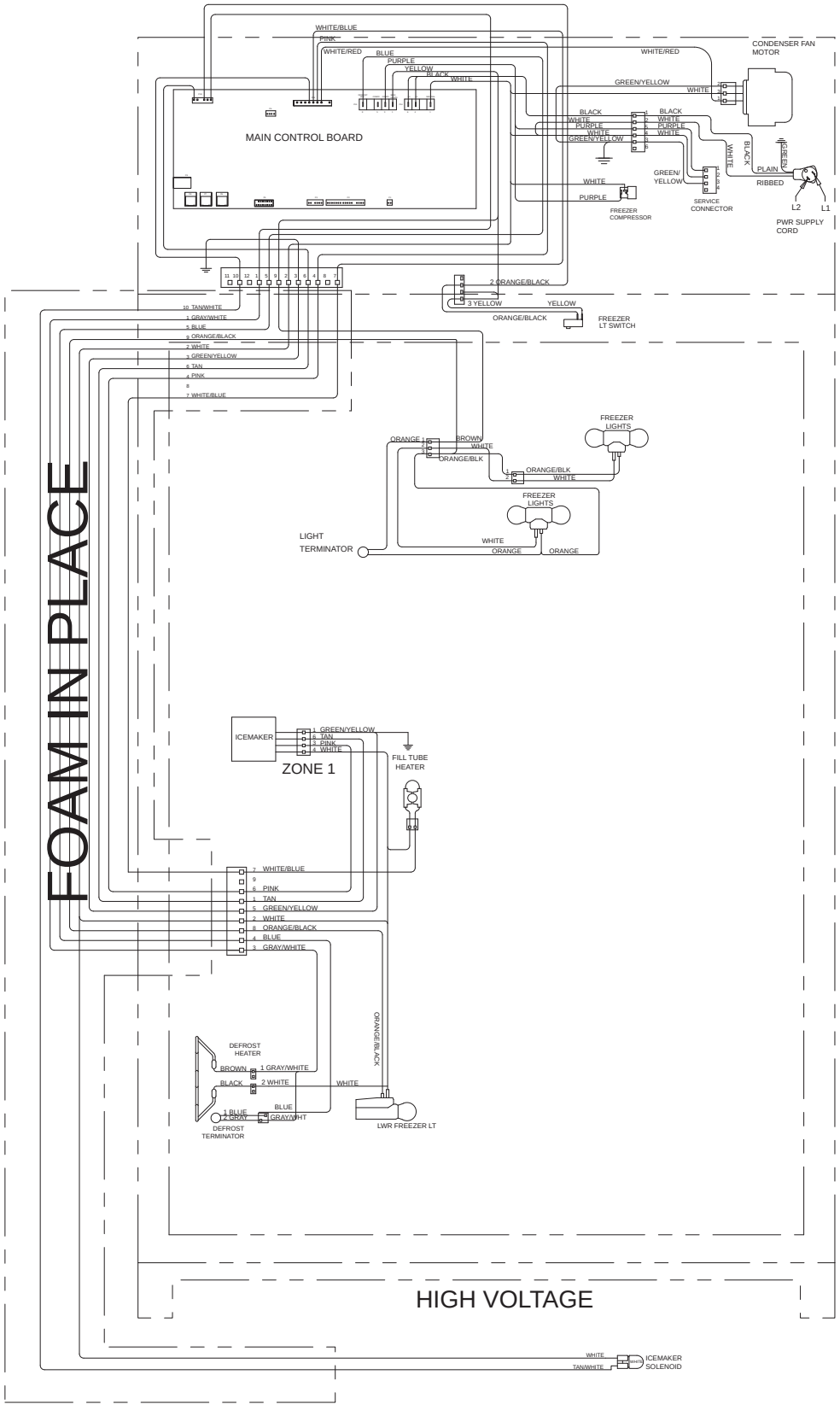


P/N 7000631, REV. E

WIRING DIAGRAM - HIGH VOLTAGE
MODELS: BI-36F

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

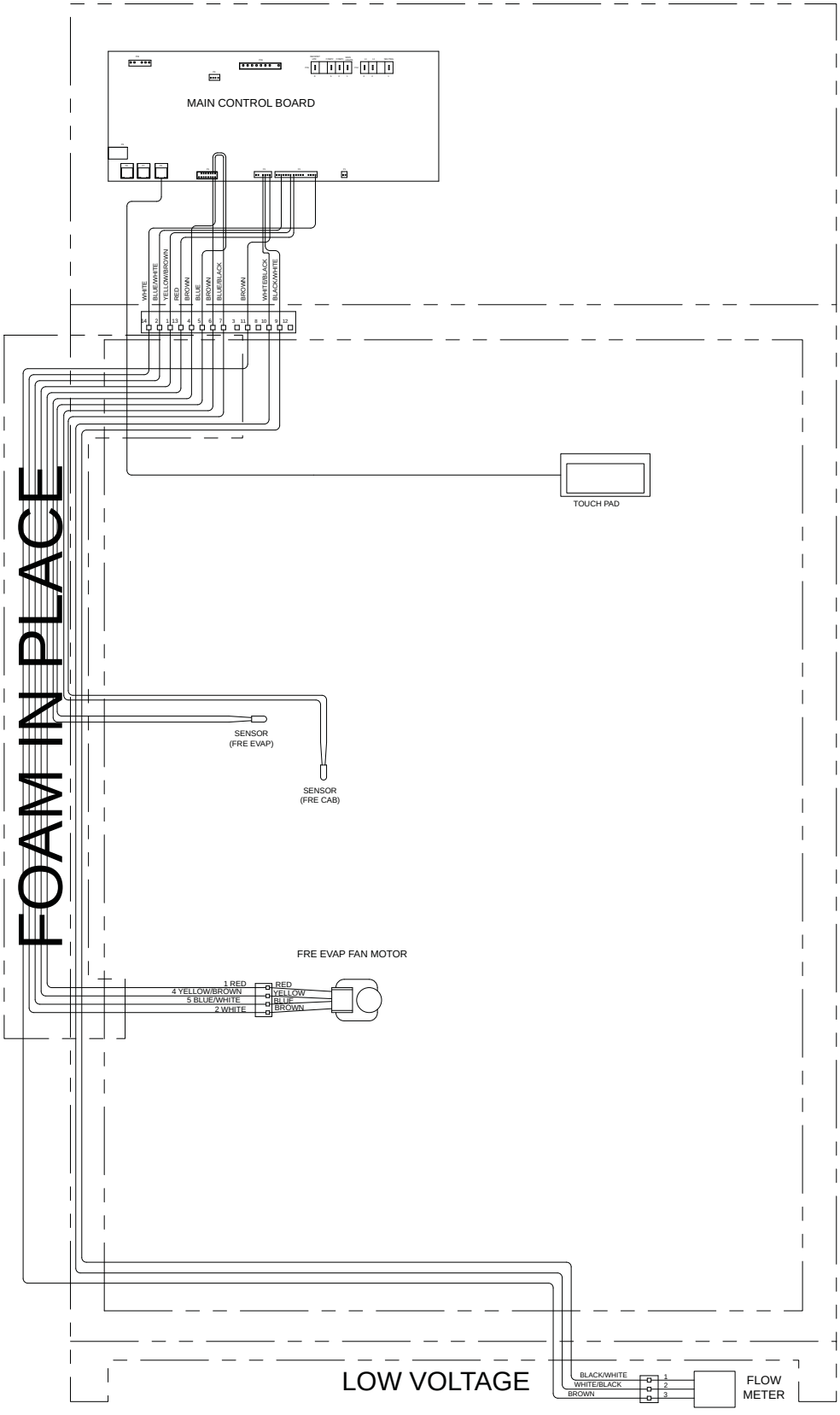


P/N 7000631, REV. E

WIRING DIAGRAM - LOW VOLTAGE
MODELS: BI-36F

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

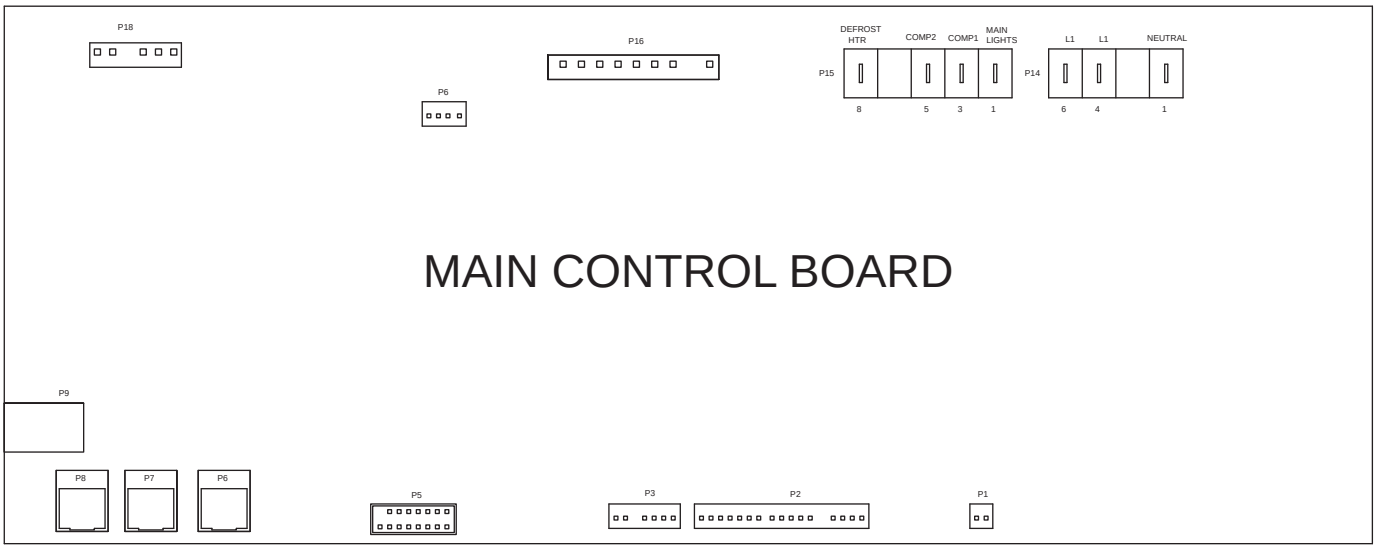


P/N 7000631, REV. E

CONTROL BOARD DETAIL & SUMMARY TABLE
MODELS: BI-36F

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



SINGLE ZONE FREEZER CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
P14-1	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P14-2	UNUSED	UNUSED	-
P14-3	UNUSED	UNUSED	-
P14-4	POWER IN (L1)	POWER INTO BOARD	BLACK
P14-5	UNUSED	UNUSED	-
P14-6	POWER IN (L1)	POWER INTO BOARD	BLACK
P15-1	MAIN LIGHTS	POWERS MAIN LIGHTS	YELLOW
P15-2	UNUSED	UNUSED	-
P15-3	COMPRESSOR #1	POWERS COMPRESSOR	PURPLE
P15-4	UNUSED	UNUSED	-
P15-5	UNUSED	UNUSED	-
P15-6	UNUSED	UNUSED	-
P15-7	UNUSED	UNUSED	-
P15-8	DEFROST HEATER	POWERS OFF HEATER	BLUE
P16-1	UNUSED	---	---
P16-2	UNUSED	---	--
P16-3	WATER VALVE	POWERS WATER VALVE	-
P16-4	ICE MAKER WATER VALVE	POWERS IM WATER VALVE	TAN/WHITE
P16-5	ICE MAKER ACCESSORIES	POWERS FILL TUBE AND ACCESSORIES	WHITE/BLUE
P16-6	ICE MAKER	POWERS ICE MAKER	PINK
P16-7	CONDENSER FAN	CONDENSER FAN	WHITE/RED
P16-8	UNUSED	UNUSED	-
P16-9	UNUSED	UNUSED	UNUSED
P18-1	WATER VALVE INPUT	SENSES WATER VALVE ACTIVATION	TAN
P18-2	WATER FILTER RESET SWITCH	SENSES WATER FILTER	RED
P18-3	UNUSED	UNUSED	-
P18-4	FREEZER DOOR INPUT	SENSES IF FREEZER DOOR IS OPEN	ORANGE/BLACK
P18-5	UNUSED	UNUSED	-
P18-6	DEF BI-METAL	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE

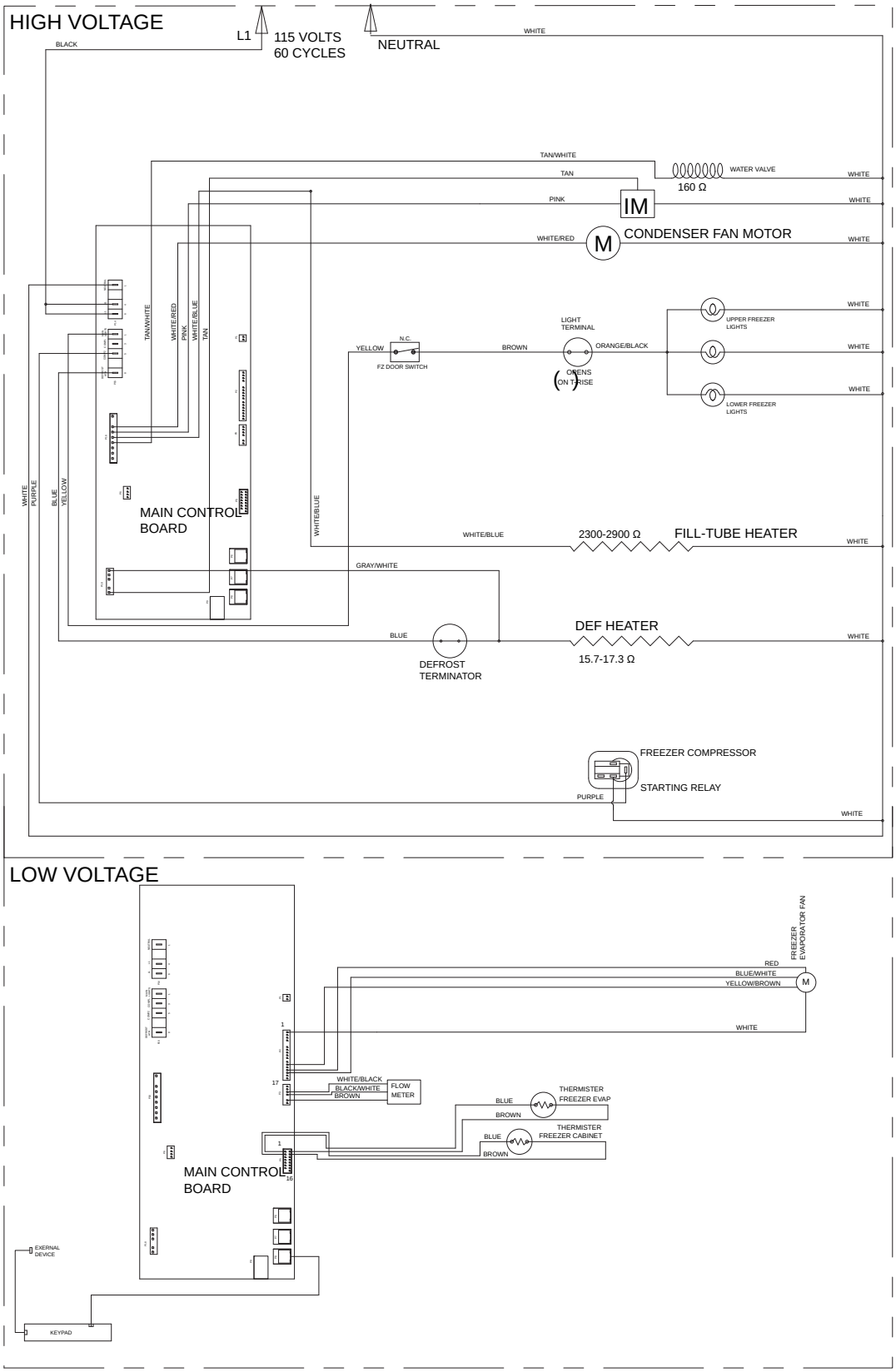
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	LOW VOLTAGE CIRCUITS		
P2-1	EVAPORATOR FAN GROUND RETURN	EVAPORATOR FAN RETURN	WHITE
P2-2	UNUSED	UNUSED	-
P2-3	UNUSED	UNUSED	-
P2-4	UNUSED	UNUSED	RED/WHITE
P2-5	UNUSED	UNUSED	-
P2-6	UNUSED	UNUSED	-
P2-7	UNUSED	UNUSED	-
P2-8	UNUSED	UNUSED	-
P2-9	UNUSED	UNUSED	-
P2-10	UNUSED	UNUSED	-
P2-11	UNUSED	UNUSED	-
P2-12	FREEZER EVAPORATOR FAN	PWM DRIVE OUTPUT	
P2-13	UNUSED	UNUSED	-
P2-14	EVAPORATOR FAN 12 VDC POWER	EVAPORATOR FAN POWER	RED
P2-15	FREEZER EVAPORATOR FAN	TACHOMETER INPUT	BLUE/WHITE
P2-16	UNUSED	UNUSED	-
P2-17	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
P3-1	UNUSED	---	-
P3-2	UNUSED	---	-
P3-3	FLOW METER	FLOW METER RETURN	WHITE/BLACK
P3-4	FLOW METER 12V DC POWER	FLOW METER POWER	BLACK/WHITE
P3-5	UNUSED	UNUSED	-
P3-6	FLOW METER	WATER FLOW SENSOR INPUT	BROWN
P3-7	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	THERMISTER CIRCUITS		
P5-1	FREEZER EVAPORATOR	SENSES TEMPERATURE	BLUE/BLACK
P5-2	FREEZER EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-3	FREEZER CABINET	SENSES TEMPERATURE	BLUE
P5-4	FREEZER CABINET	SENSES TEMPERATURE	BROWN
P5-5	UNUSED	SENSES TEMPERATURE	-
P5-6	UNUSED	SENSES TEMPERATURE	-
P5-7	UNUSED	SENSES TEMPERATURE	-
P5-8	UNUSED	SENSES TEMPERATURE	-
P5-9	UNUSED	SENSES TEMPERATURE	-
P5-10	UNUSED	SENSES TEMPERATURE	-
P5-11	UNUSED	SENSES TEMPERATURE	-
P5-12	UNUSED	SENSES TEMPERATURE	-
P5-13	UNUSED	SENSES TEMPERATURE	-
P5-14	UNUSED	SENSES TEMPERATURE	-
P5-15	UNUSED	SENSES TEMPERATURE	-
P5-16	UNUSED	SENSES TEMPERATURE	-

P/N 7000631, REV. E

WIRING SCHEMATIC
MODELS: BI-36F

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



P/N 7003218, REV. F

WIRING DIAGRAM - HIGH VOLTAGE
MODELS: BI-36R

⚠ WARNING

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-Disconnect appliance from electrical supply before beginning service.
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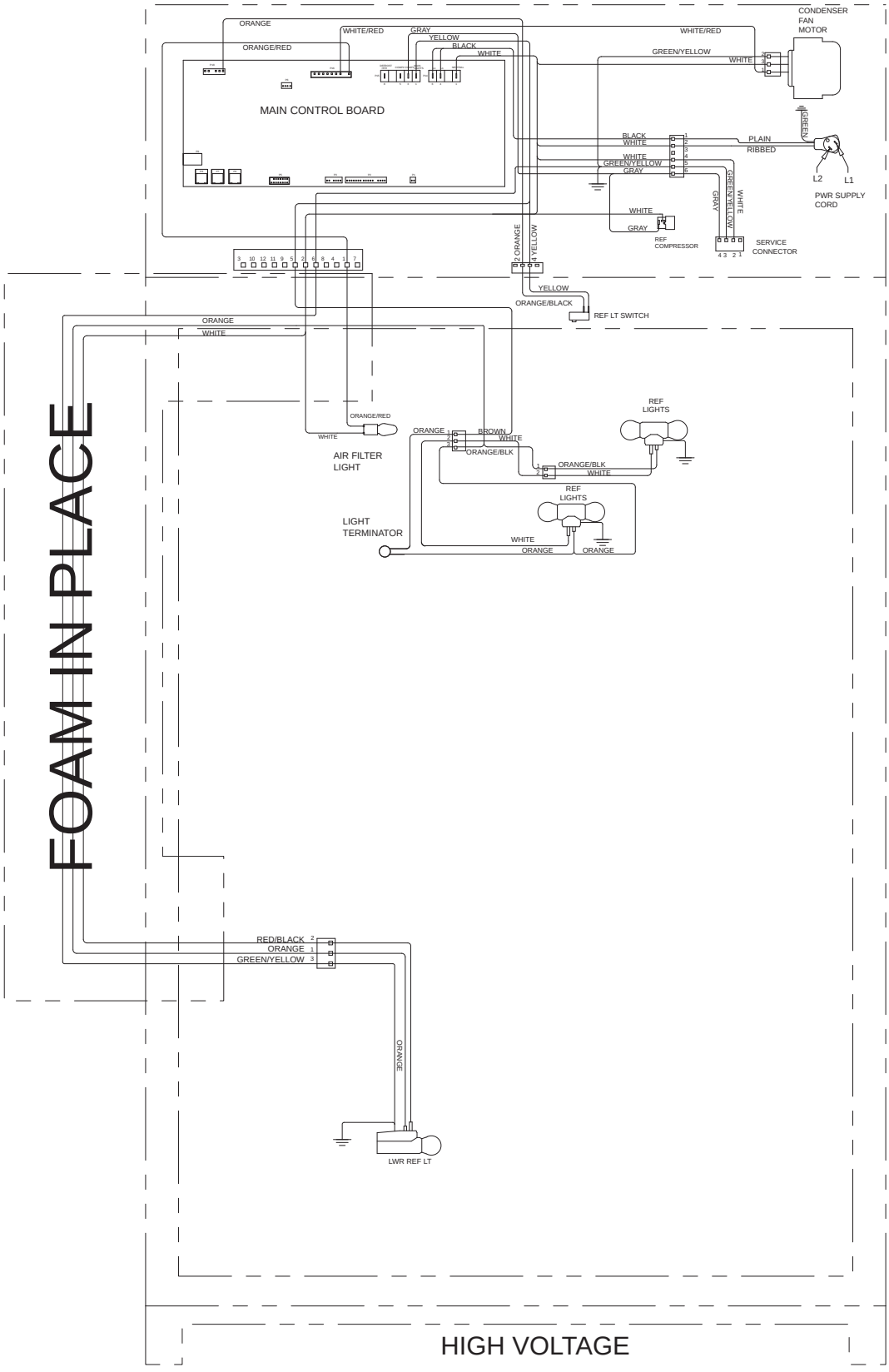
-Failure to observe the above warnings may result in severe electrical shock.

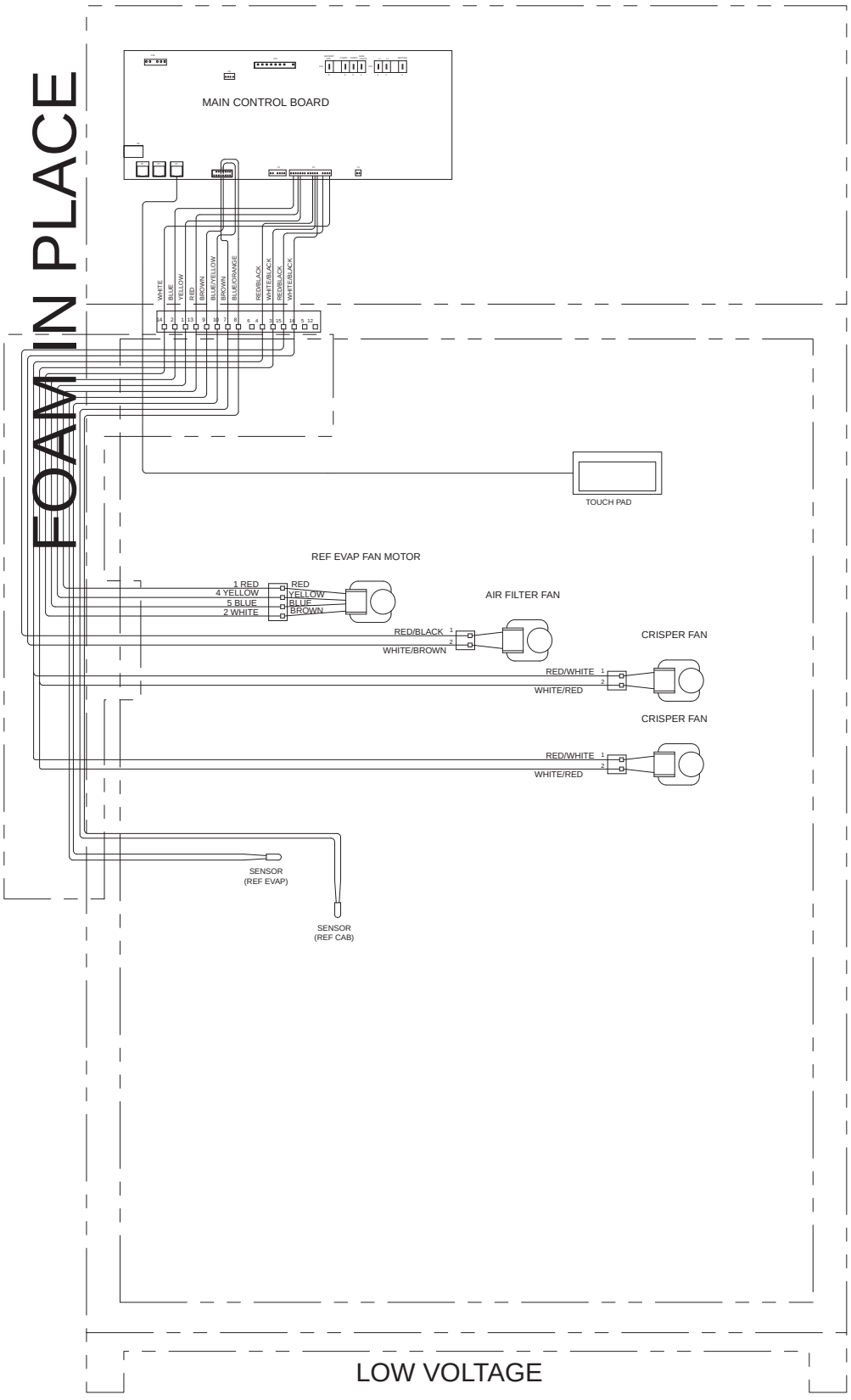


P/N 7003218, REV. F

WIRING DIAGRAM - LOW VOLTAGE
MODELS: BI-36R

WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



P/N 7003218, REV. F

CONTROL BOARD DETAIL & SUMMARY TABLE
MODELS: BI-36R

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
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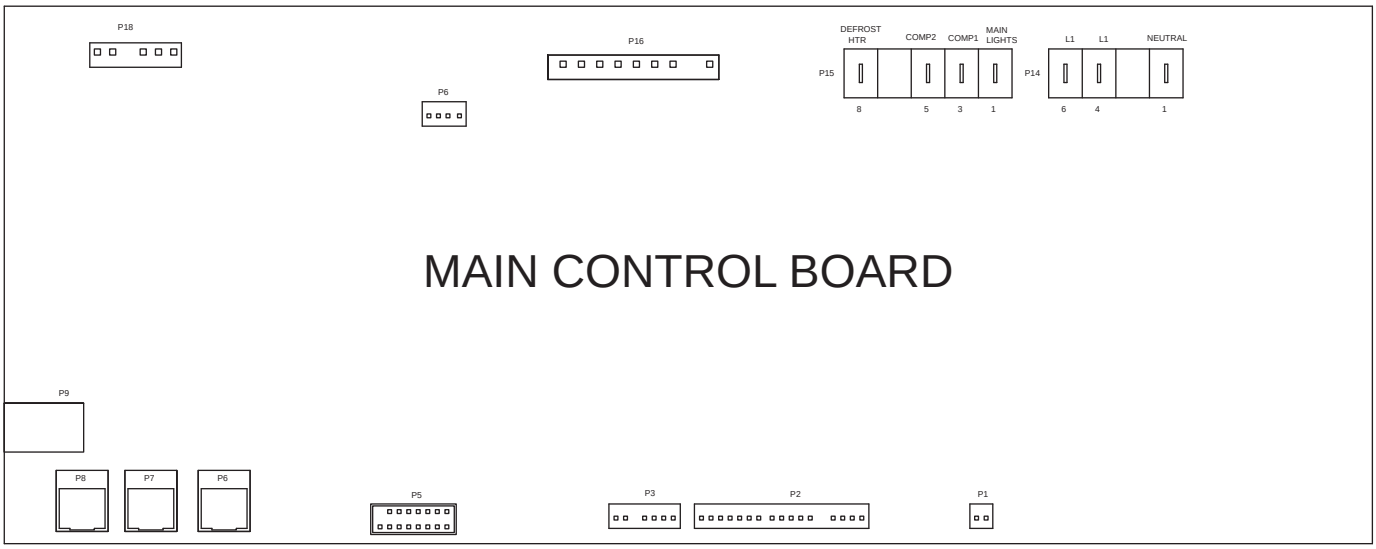
-Failure to observe the above warnings may result in severe electrical shock.



SINGLE ZONE REFRIGERATOR CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
P14-1	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P14-2	UNUSED	UNUSED	-
P14-3	UNUSED	UNUSED	-
P14-4	POWER IN (L1)	POWER INTO BOARD	BLACK
P14-5	UNUSED	UNUSED	-
P14-6	POWER IN (L1)	POWER INTO BOARD	BLACK
P15-1	MAIN LIGHTS	POWERS MAIN LIGHTS	YELLOW
P15-2	UNUSED	UNUSED	-
P15-3	UNUSED	UNUSED	-
P15-4	UNUSED	UNUSED	-
P15-5	COMPRESSOR #2	POWERS REF COMPRESSOR	GRAY
P15-6	UNUSED	UNUSED	-
P15-7	UNUSED	UNUSED	-
P15-8	UNUSED	UNUSED	-
P16-1	UNUSED	---	---
P16-2	UNUSED	---	--
P16-3	UNUSED	UNUSED	-
P16-4	UNUSED	UNUSED	-
P16-5	UNUSED	UNUSED	-
P16-6	UNUSED	UNUSED	-
P16-7	CONDENSER FAN	CONDENSER FAN	WHITE/RED
P16-8	UNUSED	UNUSED	-
P16-9	AIR FILTER LIGHT	POWERS AIR FILTER LT	ORANGE/RED
P18-1	UNUSED	UNUSED	-
P18-2	UNUSED	UNUSED	-
P18-3	UNUSED	UNUSED	-
P18-4	UNUSED	UNUSED	-
P18-5	REF DOOR INPUT	SENSES IF REFRIGERATOR DOOR IS OPEN	ORANGE
P18-6	UNUSED	UNUSED	-

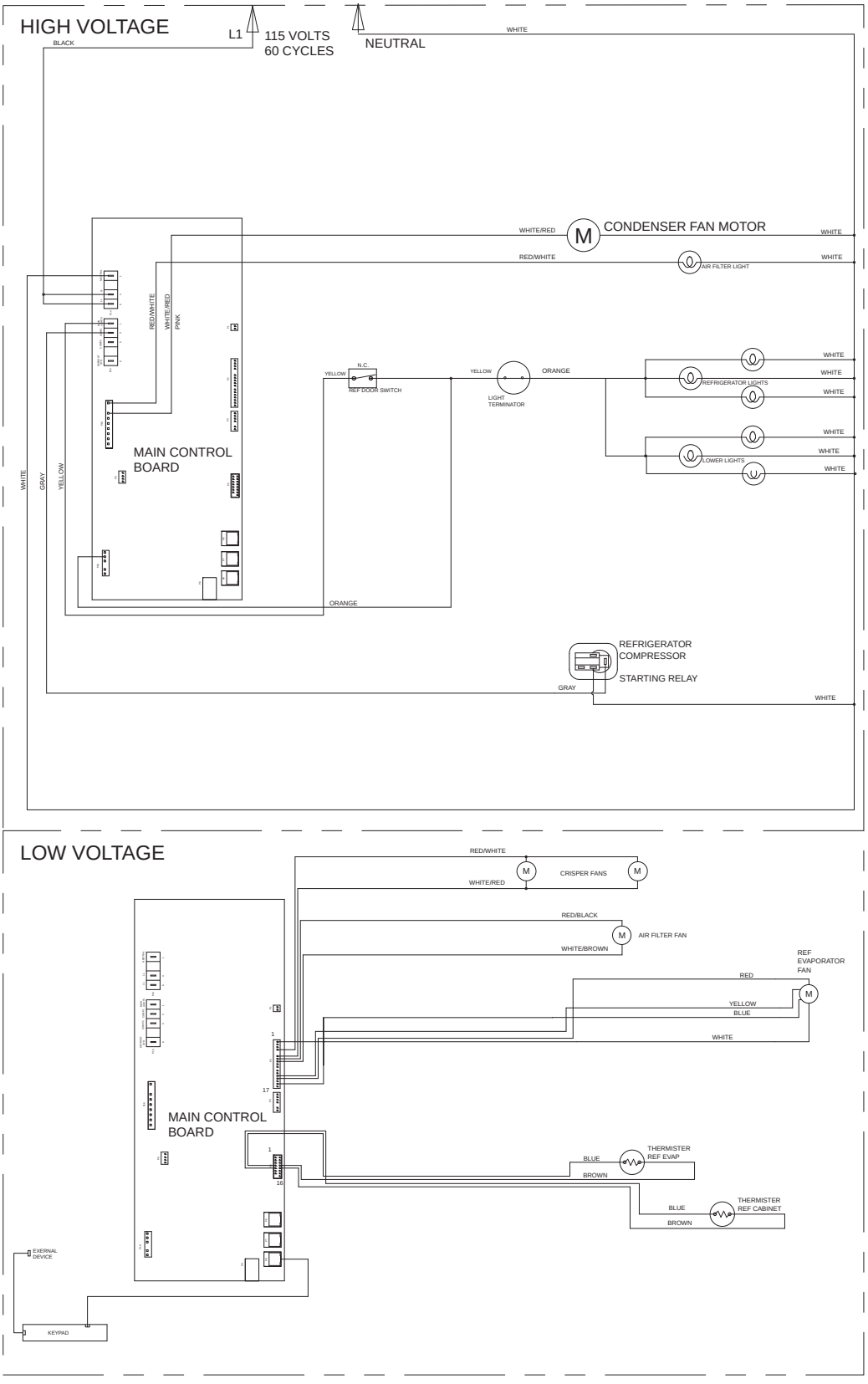
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	LOW VOLTAGE CIRCUITS		
P2-1	EVAPORATOR FAN GROUND RETURN	EVAPORATOR FAN RETURN	WHITE
P2-2	UNUSED	UNUSED	-
P2-3	UNUSED	UNUSED	-
P2-4	DRAWER FAN	PWM DRIVE OUTPUT	RED/WHITE
P2-5	UNUSED	UNUSED	-
P2-6	DRAWER FAN	PWM DRIVE RETURN	WHITE/BLACK
P2-7	AIR FILTER FAN	AIR FILTER FAN OUTPUT	RED/BLACK
P2-8	AIR FILTER FAN	AIR FILTER FAN RETURN	WHITE/BROWN
P2-9	UNUSED	UNUSED	-
P2-10	UNUSED	UNUSED	-
P2-11	UNUSED	UNUSED	-
P2-12	UNUSED	UNUSED	-
P2-13	RETURN EVAP FAN	PWM DRIVE OUTPUT	YELLOW
P2-14	EVAPORATOR FAN 12 VDC POWER	EVAPORATOR FAN POWER	RED
P2-15	UNUSED	UNUSED	-
P2-16	REF EVAP FAN	TACHOMETER INPUT	BLUE
P2-17	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	THERMISTER CIRCUITS		
P5-1	UNUSED	UNUSED	-
P5-2	UNUSED	UNUSED	-
P5-3	UNUSED	UNUSED	-
P5-4	UNUSED	UNUSED	-
P5-5	UNUSED	UNUSED	-
P5-6	UNUSED	UNUSED	-
P5-7	REF EVAP	SENSES TEMPERATURE	BLUE/YELLOW
P5-8	REF EVAP	SENSES TEMPERATURE	BROWN
P5-9	REF CABINET	SENSES TEMPERATURE	BLUE/ORANGE
P5-10	REF CABINET	SENSES TEMPERATURE	BROWN
P5-11	REF CONDENSER	SENSES TEMPERATURE	-
P5-12	REF CONDENSER	SENSES TEMPERATURE	-
P5-13	UNUSED	SENSES TEMPERATURE	-
P5-14	UNUSED	SENSES TEMPERATURE	-
P5-15	UNUSED	SENSES TEMPERATURE	-
P5-16	UNUSED	SENSES TEMPERATURE	-

P/N 7003218, REV. F

WIRING SCHEMATIC
MODELS: BI-36R

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

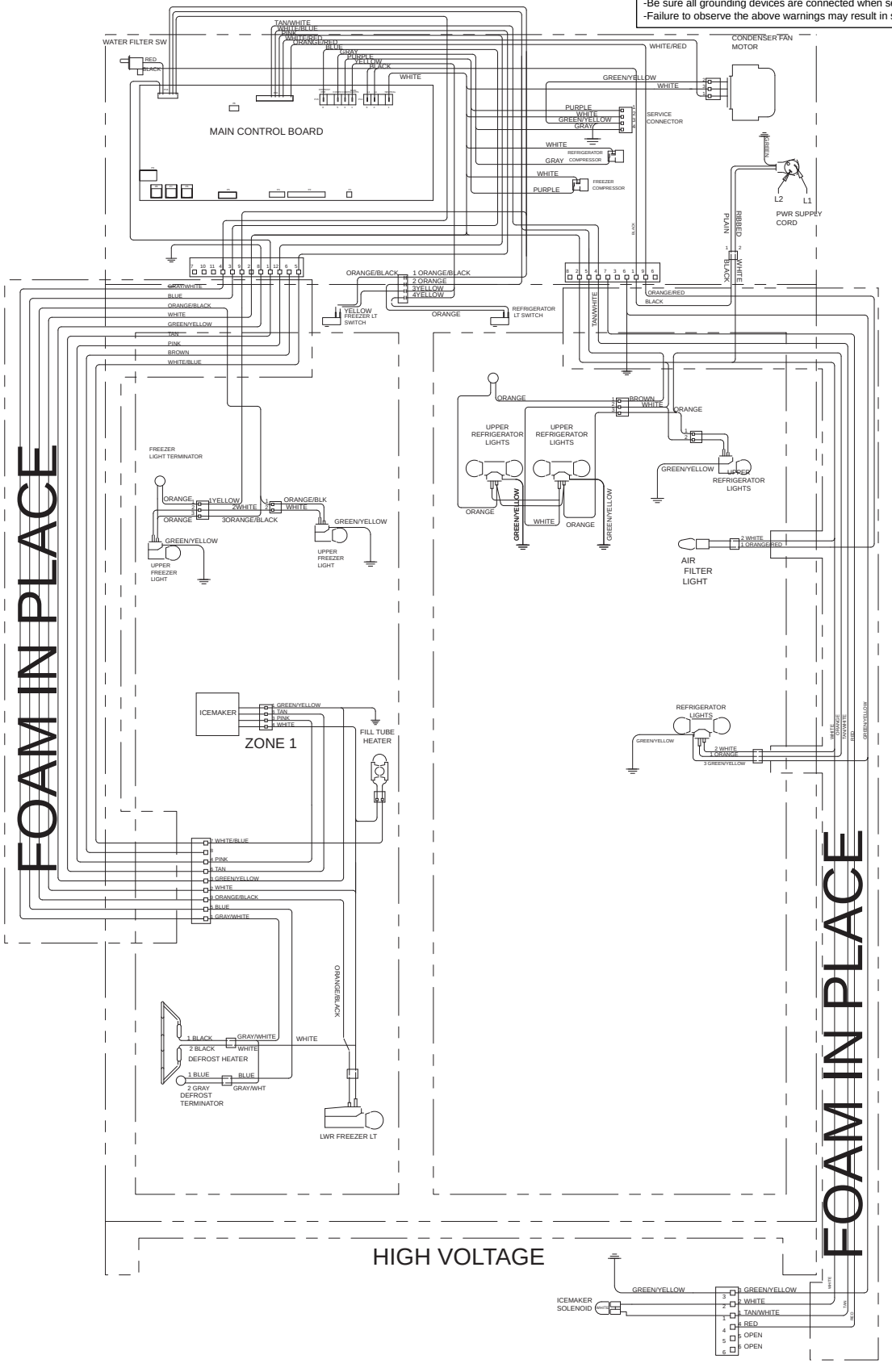


P/N 7000630, REV. D

WIRING DIAGRAM - HIGH VOLTAGE
MODELS: BI-36S, BI-42S, BI-48S

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

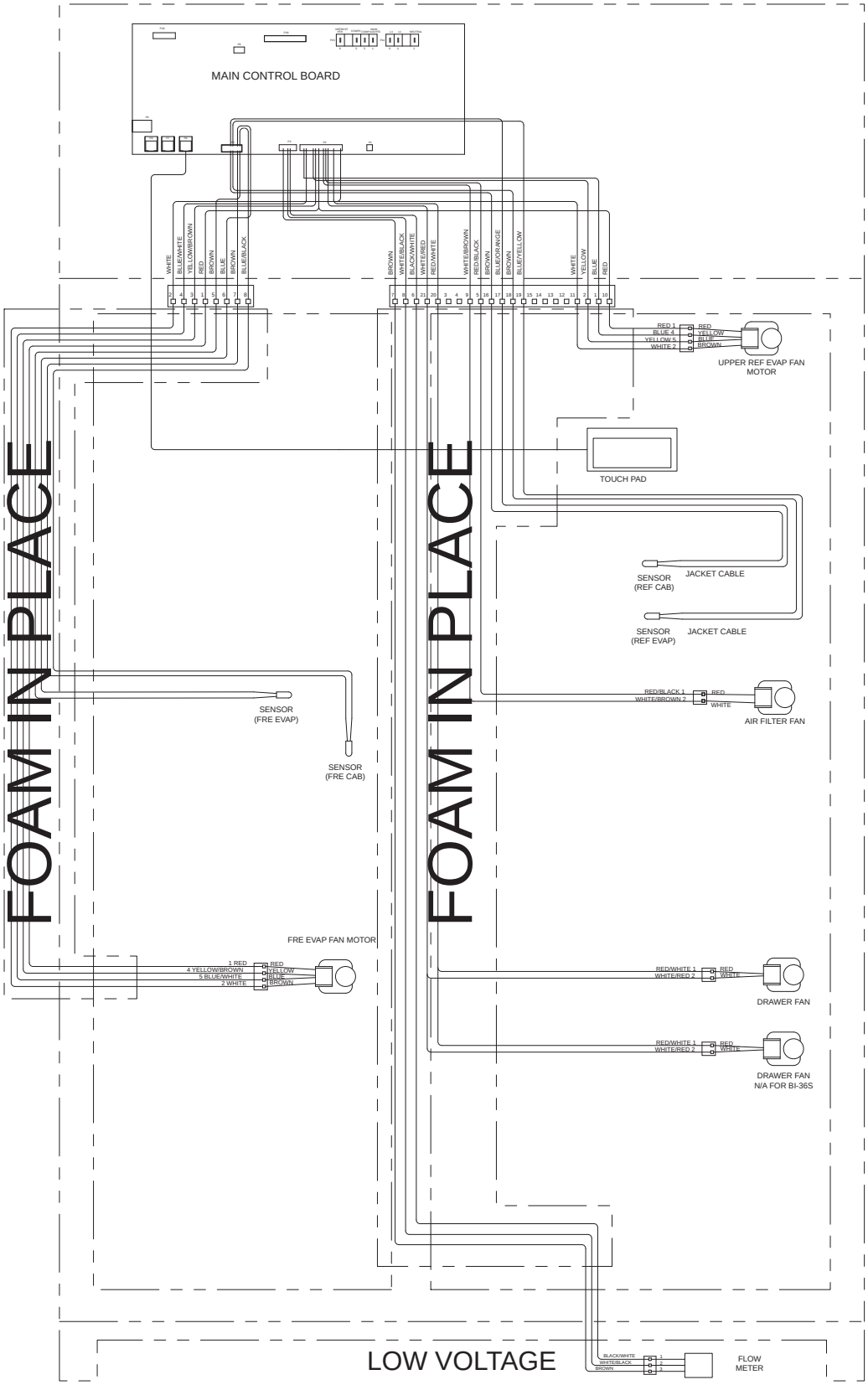


P/N 7000630, REV. D

WIRING DIAGRAM - LOW VOLTAGE
MODELS: BI-36S, BI-42S, BI-48S

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

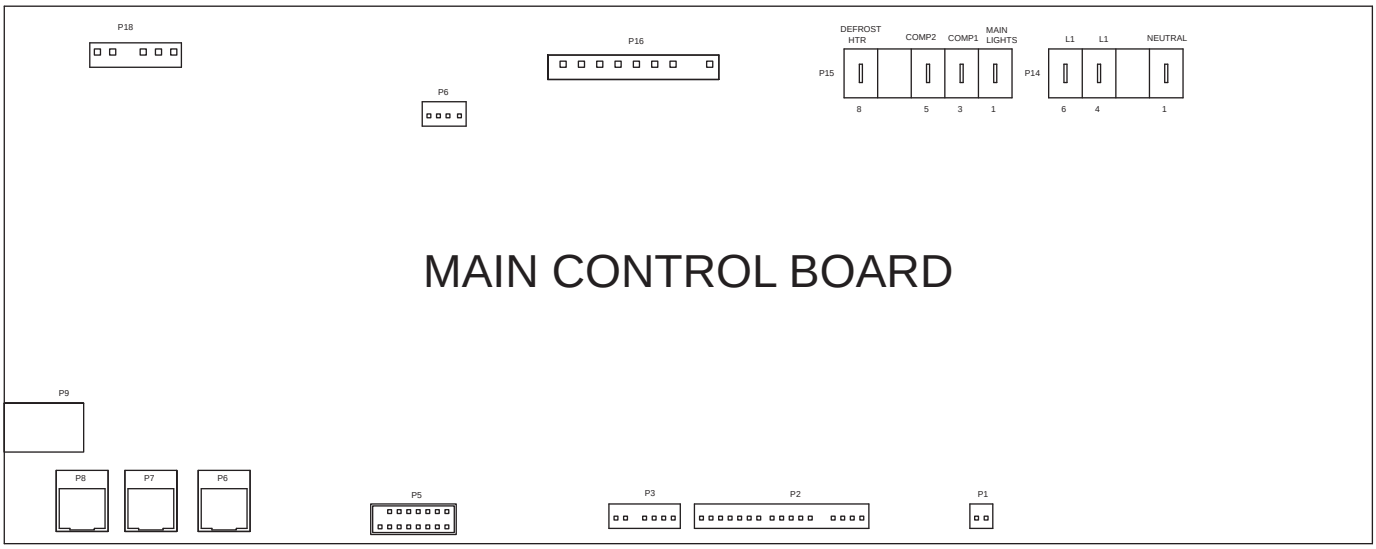


P/N 7000630, REV. D

CONTROL BOARD DETAIL & SUMMARY TABLE
MODELS: BI-36S, BI-42S, BI-48S

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



S x S CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
P14-1	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P14-2	UNUSED	UNUSED	-
P14-3	UNUSED	UNUSED	-
P14-4	POWER IN (L1)	POWER INTO BOARD	BLACK
P14-5	UNUSED	UNUSED	-
P14-6	POWER IN (L1)	POWER INTO BOARD	BLACK
P15-1	MAIN LIGHTS	POWERS MAIN LIGHTS	YELLOW
P15-2	UNUSED	UNUSED	-
P15-3	COMPRESSOR #1	POWERS COMPRESSOR	PURPLE
P15-4	UNUSED	UNUSED	-
P15-5	COMPRESSOR #2	POWERS REF COMPRESSOR	GRAY
P15-6	UNUSED	UNUSED	-
P15-7	UNUSED	UNUSED	-
P15-8	DEFROST HEATER	POWERS OFF HEATER	BLUE
P16-1	UNUSED	---	---
P16-2	UNUSED	---	--
P16-3	WATER VALVE	POWERS WATER VALVE	-
P16-4	ICE MAKER WATER VALVE	POWERS IM WATER VALVE	TAN/WHITE
P16-5	ICE MAKER ACCESSORIES	POWERS FILL TUBE AND ACCESSORIES	WHITE/BLUE
P16-6	ICE MAKER	POWERS ICE MAKER	PINK
P16-7	CONDENSER FAN	CONDENSER FAN	WHITE/RED
P16-8	UNUSED	UNUSED	-
P16-9	AIR FILTER LIGHT	AIR FILTER LIGHT	ORANGE/RED
P18-1	WATER VALVE INPUT	SENSES WATER VALVE ACTIVATION	TAN
P18-2	WATER FILTER RESET SWITCH	SENSES WATER FILTER	RED
P18-3	UNUSED	UNUSED	-
P18-4	FREEZER DOOR INPUT	SENSES IF FREEZER DOOR IS OPEN	ORANGE/BLACK
P18-5	REFRIGERATOR DOOR INPUT	SENSES IF REF DOOR IS OPEN	ORANGE
P18-6	REF BI-METAL	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE

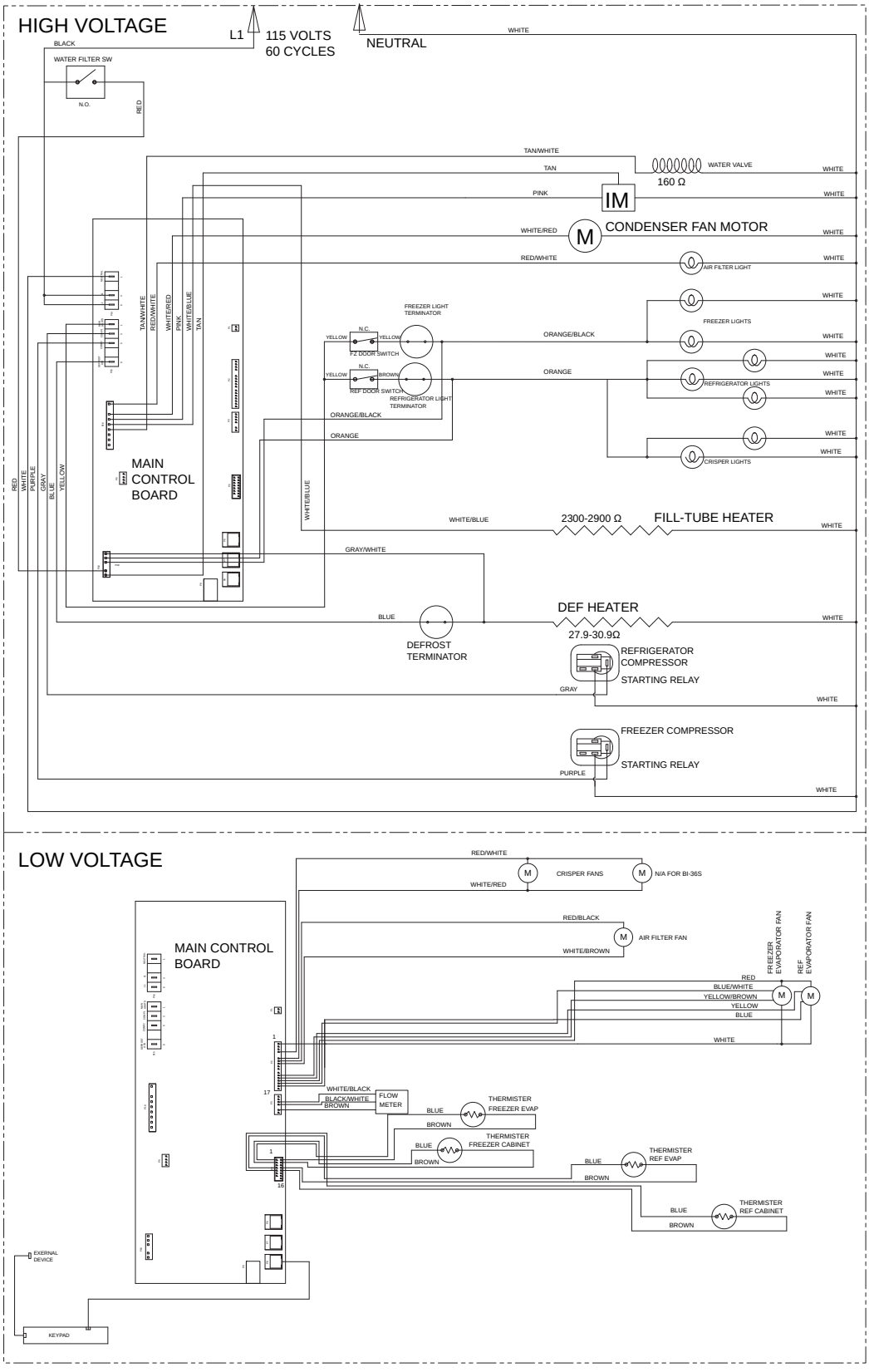
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	LOW VOLTAGE CIRCUITS		
P2-1	EVAPORATOR FAN GROUND RETURN	EVAPORATOR FAN RETURN	WHITE
P2-2	CRISPER LIGHT 12 VDC POWER	CRISPER LIGHT POWER	-
P2-3	CRISPER LIGHT GROUND RETURN	CRISPER LIGHT RETURN	-
P2-4	DRAWER FAN	PWM DRIVE OUTPUT	RED/WHITE
P2-5	UNUSED	UNUSED	-
P2-6	DRAWER FAN	PWM DRIVE RETURN	WHITE/BLACK
P2-7	AIR FILTER FAN	AIR FILTER FAN OUTPUT	RED/BLACK
P2-8	AIR FILTER FAN	AIR FILTER FAN RETURN	WHITE/BROWN
P2-9	AIR FILTER LIGHT	AIR FILTER LIGHT OUTPUT	-
P2-10	AIR FILTER LIGHT	AIR FILTER LIGHT RETURN	-
P2-11	UNUSED	UNUSED	-
P2-12	FREEZER EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW/BROWN
P2-13	REF EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW
P2-14	EVAPORATOR FAN 12 VDC POWER	EVAPORATOR FAN POWER	RED
P2-15	FREEZER EVAPORATOR FAN	TACHOMETER INPUT	BLUE/WHITE
P2-16	REF EVAPORATOR FAN	TACHOMETER INPUT	BLUE
P2-17	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
P3-1	UNUSED	---	---
P3-2	UNUSED	---	---
P3-3	FLOW METER	FLOW METER RETURN	WHITE/BLACK
P3-4	FLOW METER 12V DC POWER	FLOW METER POWER	BLACK/WHITE
P3-5	UNUSED	UNUSED	-
P3-6	FLOW METER	WATER FLOW SENSOR INPUT	BROWN
P3-7	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	THERMISTER CIRCUITS		
P5-1	FREEZER EVAPORATOR	SENSES TEMPERATURE	BLUE/BLACK
P5-2	FREEZER EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-3	FREEZER CABINET	SENSES TEMPERATURE	BLUE
P5-4	FREEZER CABINET	SENSES TEMPERATURE	BROWN
P5-5	UNUSED	---	BLUE/WHITE
P5-6	UNUSED	---	BROWN
P5-7	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BLUE/YELLOW
P5-8	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-9	REF CABINET	SENSES TEMPERATURE	BLUE/ORANGE
P5-10	REF CABINET	SENSES TEMPERATURE	BROWN
P5-11	UNUSED	---	BLUE/RED
P5-12	UNUSED	---	BROWN
P5-13	UNUSED	---	---
P5-14	UNUSED	---	----
P5-15	UNUSED	---	----
P5-16	UNUSED	---	----

P/N 7000630, REV. D

WIRING SCHEMATIC
MODELS: BI-36S, BI-42S, BI-48S

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



P/N 7002952, REV. C

WIRING DIAGRAM - HIGH VOLTAGE
MODELS: BI-42SD, BI-48SD

WARNING

-This wiring information is provided for use by qualified service personnel only.
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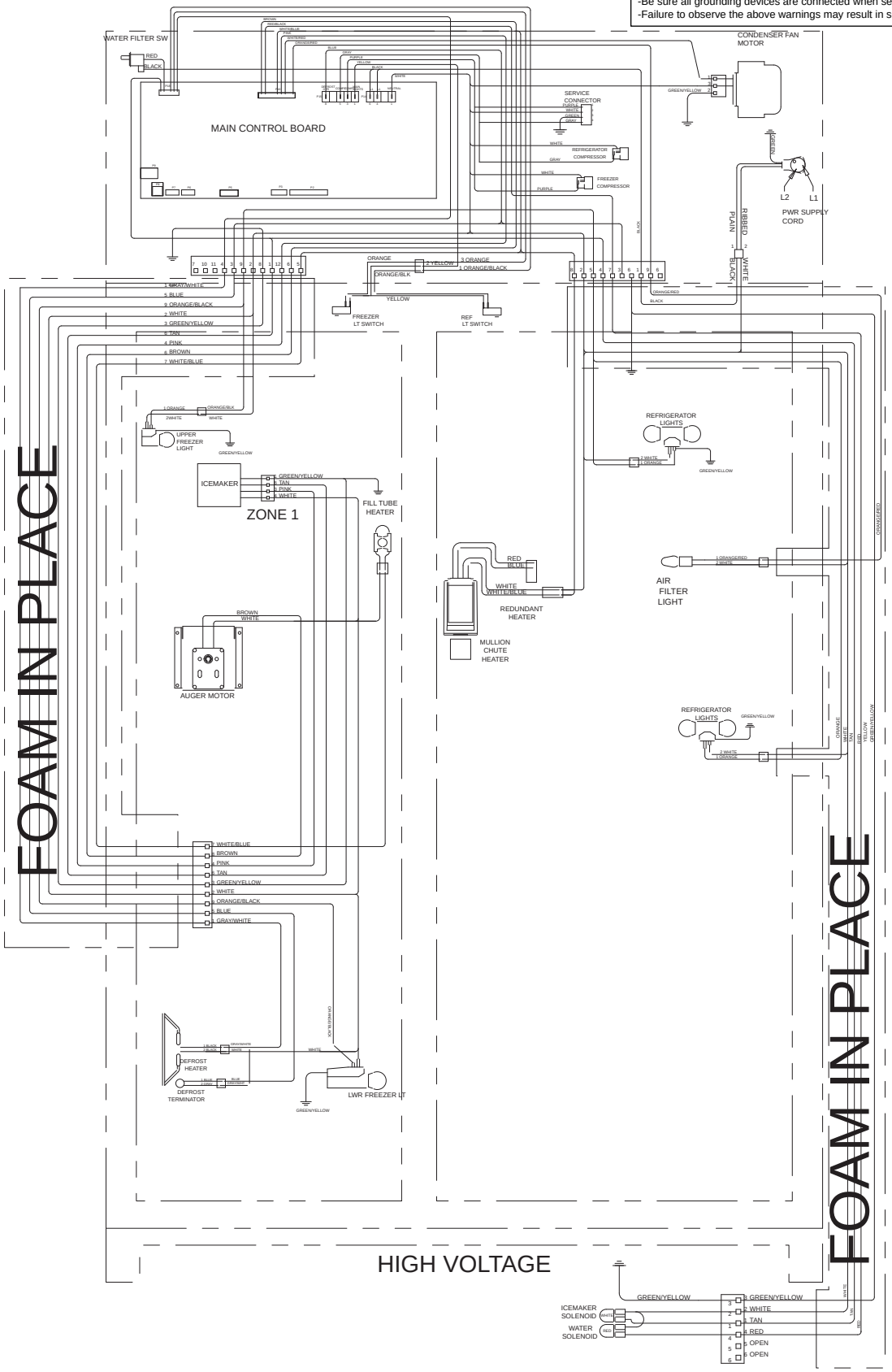
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



P/N 7002952, REV. C

WIRING DIAGRAM - LOW VOLTAGE
MODELS: BI-42SD, BI-48SD

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
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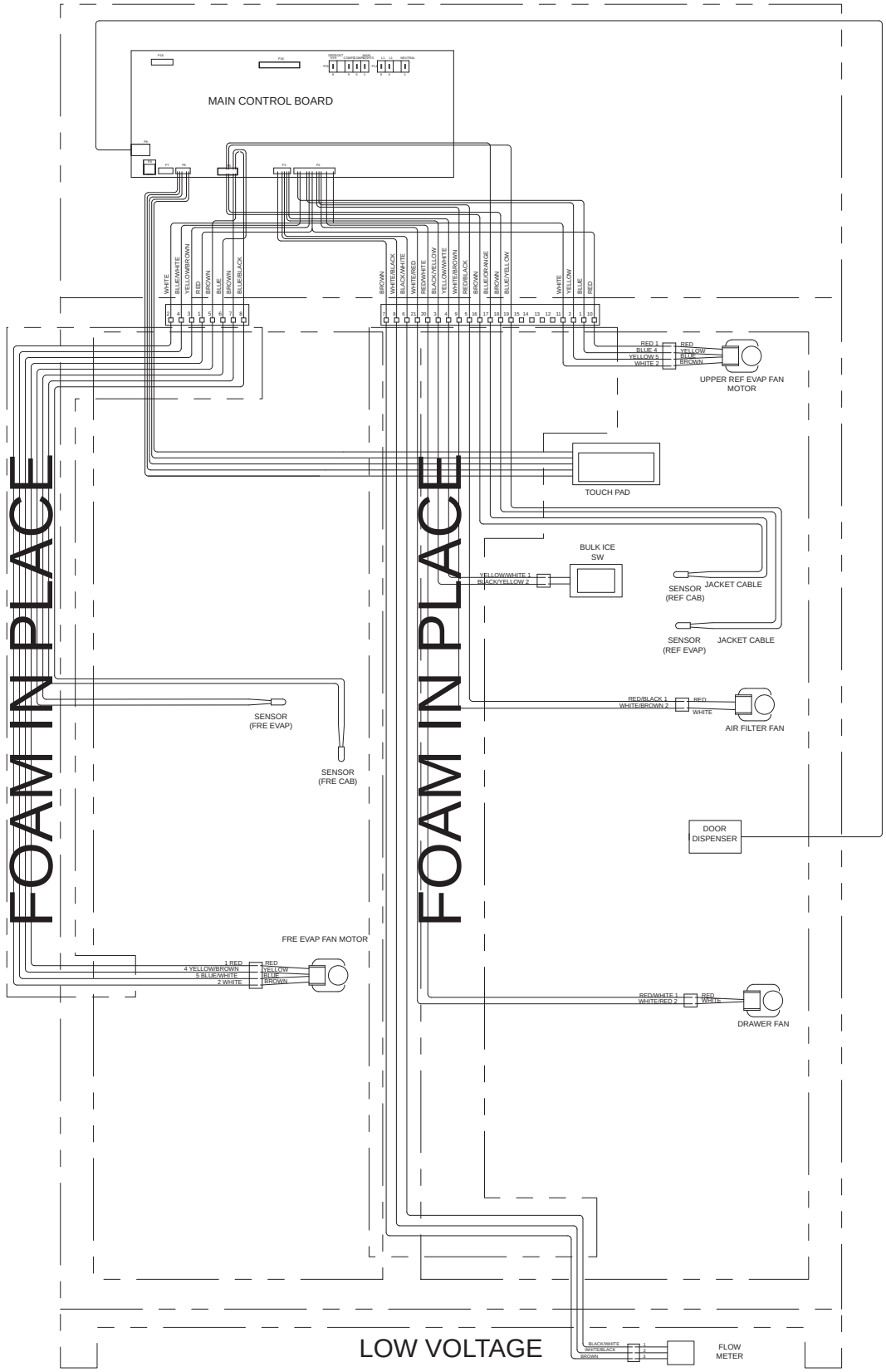
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

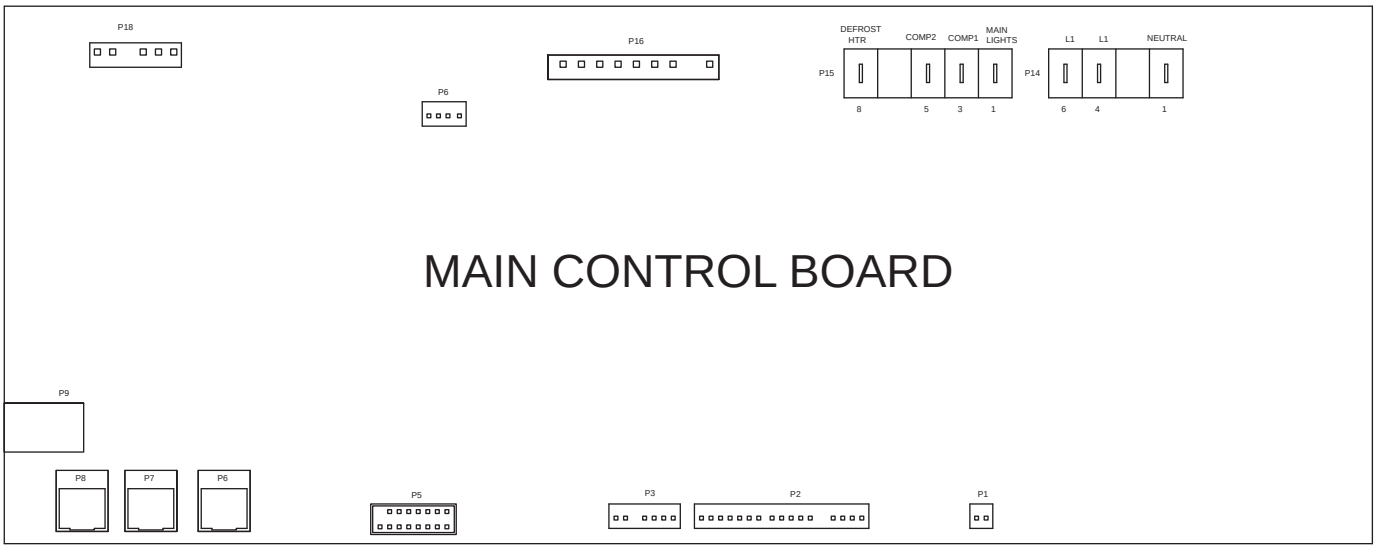


P/N 7002952, REV. C

CONTROL BOARD DETAIL & SUMMARY TABLE
MODELS: BI-42SD, BI-48SD

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



S x S DISPENSER CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
P14-1	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P14-2	UNUSED	UNUSED	-
P14-3	UNUSED	UNUSED	-
P14-4	POWER IN (L1)	POWER INTO BOARD	BLACK
P14-5	UNUSED	UNUSED	-
P14-6	POWER IN (L1)	POWER INTO BOARD	BLACK
P15-1	MAIN LIGHTS	POWERS MAIN LIGHTS	YELLOW
P15-2	UNUSED	UNUSED	-
P15-3	COMPRESSOR #1	POWERS COMPRESSOR	PURPLE
P15-4	UNUSED	UNUSED	-
P15-5	COMPRESSOR #2	POWERS REF COMPRESSOR	GRAY
P15-6	UNUSED	UNUSED	-
P15-7	UNUSED	UNUSED	-
P15-8	DEFROST HEATER	POWERS OFF HEATER	BLUE
P16-1	DISPENSER ICE AUGER	POWERS DISPENSER ICE AUGER	BROWN
P16-2	DISPENSER WATER VALVE	POWERS DISPENSER WATER VALVE	RED
P16-3	WATER VALVE	POWERS WATER VALVE	-
P16-4	ICE MAKER WATER VALVE	POWERS IM WATER VALVE	TAN/WHITE
P16-5	ICE MAKER ACCESSORIES	POWERS FILL TUBE AND ACCESSORIES	WHITE/BLUE
P16-6	ICE MAKER	POWERS ICE MAKER	PINK
P16-7	CONDENSER FAN	CONDENSER FAN	WHITE/RED
P16-8	UNUSED	UNUSED	-
P16-9	AIR FILTER LIGHT	AIR FILTER LIGHT	ORANGE/RED
P18-1	WATER VALVE INPUT	SENSES WATER VALVE ACTIVATION	TAN
P18-2	WATER FILTER RESET SWITCH	SENSES WATER FILTER	RED
P18-3	UNUSED	UNUSED	-
P18-4	FREEZER DOOR INPUT	SENSES IF FREEZER DOOR IS OPEN	ORANGE/BLACK
P18-5	REFRIGERATOR DOOR INPUT	SENSES IF REF DOOR IS OPEN	ORANGE
P18-6	REF BI-METAL	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	LOW VOLTAGE CIRCUITS		
P2-1	EVAPORATOR FAN GROUND RETURN	EVAPORATOR FAN RETURN	WHITE
P2-2	CRISPER LIGHT 12 VDC POWER	CRISPER LIGHT POWER	-
P2-3	CRISPER LIGHT GROUND RETURN	CRISPER LIGHT RETURN	-
P2-4	DRAWER FAN	PWM DRIVE OUTPUT	RED/WHITE
P2-5	UNUSED	UNUSED	-
P2-6	DRAWER FAN	PWM DRIVE RETURN	WHITE/BLACK
P2-7	AIR FILTER FAN	AIR FILTER FAN OUTPUT	RED/BLACK
P2-8	AIR FILTER FAN	AIR FILTER FAN RETURN	WHITE/BROWN
P2-9	AIR FILTER LIGHT	AIR FILTER LIGHT OUTPUT	-
P2-10	AIR FILTER LIGHT	AIR FILTER LIGHT RETURN	-
P2-11	UNUSED	UNUSED	-
P2-12	FREEZER EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW/BROWN
P2-13	REF EVAPORATOR FAN	PWM DRIVE OUTPUT	YELLOW
P2-14	EVAPORATOR FAN 12 VDC POWER	EVAPORATOR FAN POWER	RED
P2-15	FREEZER EVAPORATOR FAN	TACHOMETER INPUT	BLUE/WHITE
P2-16	REF EVAPORATOR FAN	TACHOMETER INPUT	BLUE
P2-17	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
P3-1	BULK ICE SWITCH	BULK ICE SWITCH INPUT	BLACK/YELLOW
P3-2	BULK ICE SWITCH	BULK ICE SWITCH RETURN	WHITE/RED
P3-3	FLOW METER	FLOW METER RETURN	WHITE/BLACK
P3-4	FLOW METER 12V DC POWER	FLOW METER POWER	BLACK/WHITE
P3-5	UNUSED	UNUSED	-
P3-6	FLOW METER	WATER FLOW SENSOR INPUT	BROWN
P3-7	UNUSED	UNUSED	-
CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	THERMISTER CIRCUITS		
P5-1	FREEZER EVAPORATOR	SENSES TEMPERATURE	BLUE/BLACK
P5-2	FREEZER EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-3	FREEZER CABINET	SENSES TEMPERATURE	BLUE
P5-4	FREEZER CABINET	SENSES TEMPERATURE	BROWN
P5-5	UNUSED	SENSES TEMPERATURE	---
P5-6	UNUSED	SENSES TEMPERATURE	---
P5-7	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BLUE/YELLOW
P5-8	REFRIGERATOR EVAPORATOR	SENSES TEMPERATURE	BROWN
P5-9	REF CABINET	SENSES TEMPERATURE	BLUE/ORANGE
P5-10	REF CABINET	SENSES TEMPERATURE	BROWN
P5-11	UNUSED	SENSES TEMPERATURE	---
P5-12	UNUSED	SENSES TEMPERATURE	---
P5-13	UNUSED	SENSES TEMPERATURE	---
P5-14	UNUSED	SENSES TEMPERATURE	----
P5-15	UNUSED	SENSES TEMPERATURE	----
P5-16	UNUSED	SENSES TEMPERATURE	----

P/N 7002952, REV. C

WIRING SCHEMATIC
MODELS: BI-42SD, BI-48SD

⚠ WARNING

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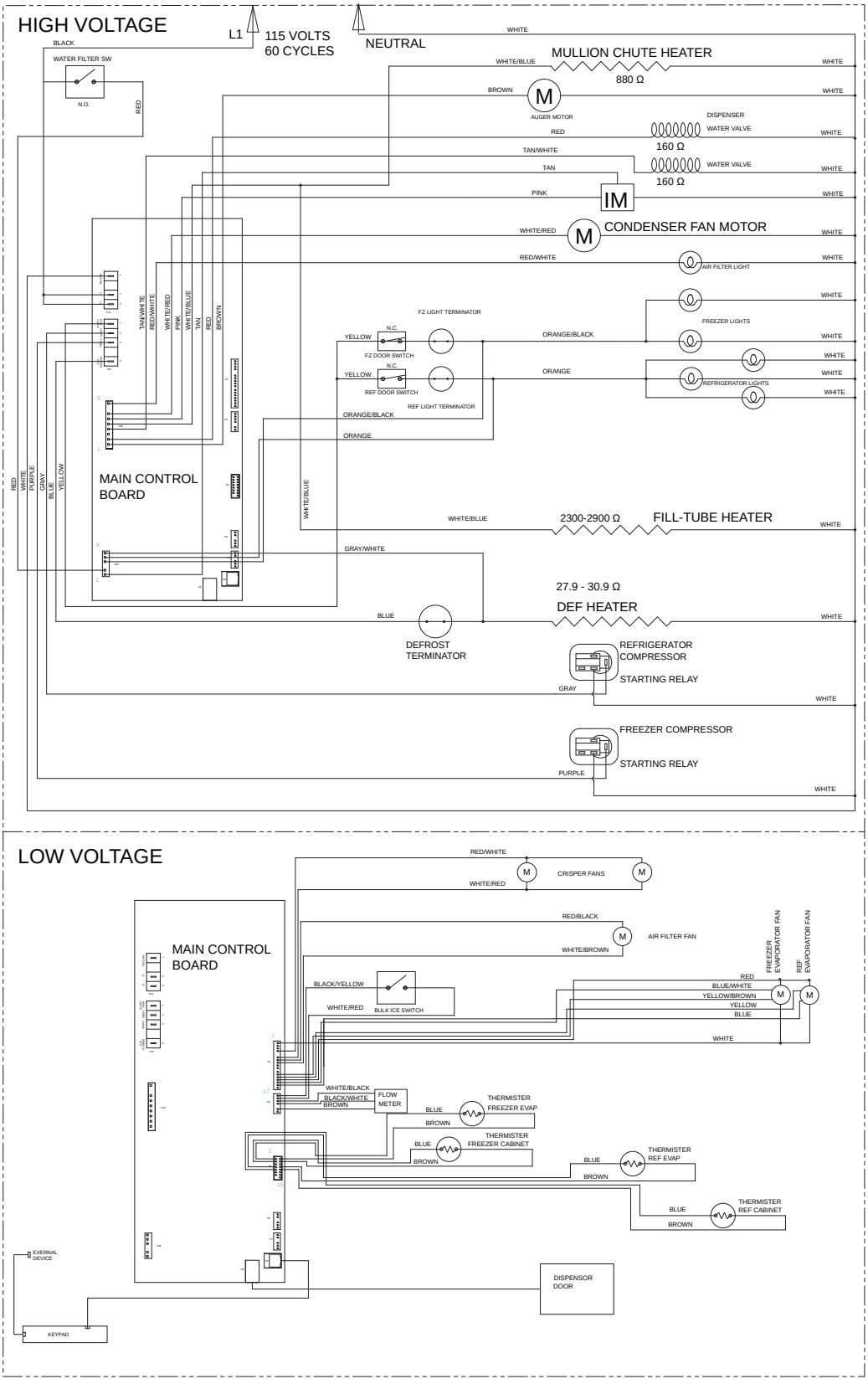


SUB-ZERO