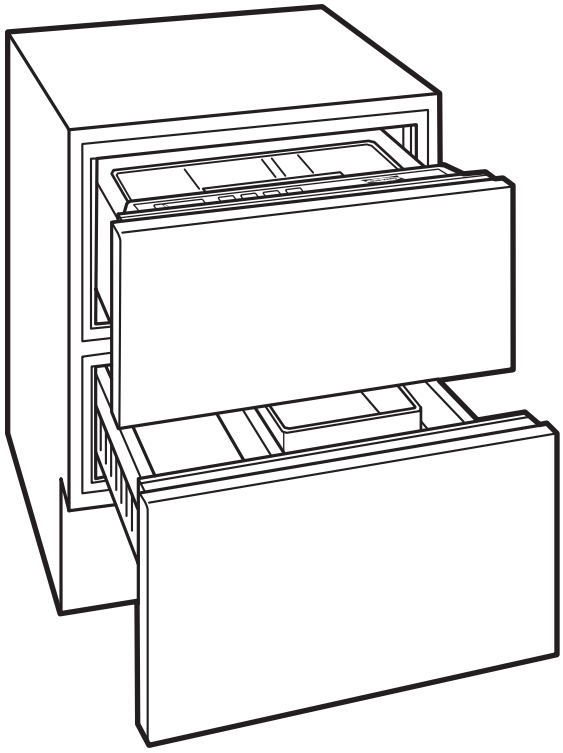
SUB-ZERO®

TECHNICAL SERVICE MANUAL

Integrated (700-3 BASE) Series



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SECTION 1

GENERAL INFORMATION

INTRODUCTION

This 700-3 Series Base Unit Technical Service Manual, Part #3758424, has been compiled to provide the most recent information on safety, installation, set-up, design, operation, features, troubleshooting, wiring diagrams, and repair procedures of the 700-3 Base units. This information will enable the service technician to troubleshoot and diagnose malfunctions, perform necessary repairs, and return a 700-3 Base unit to proper operational status.

The service technician should read the complete instructions contained in this training/service manual before initiating any repairs on a 700-3 Base unit.

IMPORTANT SAFETY INFORMATION

Below are the 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 below 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 or product 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 a 700-3 Base Unit and/or this manual, please contact:

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

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

Technical Assistance
Phone #: (800) 919 - 8324

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

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

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

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

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

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TABLE OF CONTENTS

WARRANTY INFORMATION

This page summarizes the *2, 5 & 12 Year Warranty* supplied with every unit, as well as the two special warranties: The *Non-Residential Warranty* which applies to units installed in non-residential applications, and the *Display/Model Home Warranty* which applies to distributor or dealer's display units and units in model homes, sold three years after date of manufacture. The last entries on this page are details and notes about the warranties.

TWO, FIVE & TWELVE YEAR Warranty Summary

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

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

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

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

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

Warranty Details:

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

  Electronic Control System Components, Fan & Light Switches, Fan Motors & Blades, Defrost & Drain Heaters, Defrost Terminators, Drain Pans, Drain Tubes, Wiring, Light sockets & bulbs, Icemakers, Water Valves, Door hinges, Door closers & Cams, Compressor Electricals, etc. . .

- *** Sealed System Parts include the following:*

  Compressors, Condensers, 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 the time of the unit's initial installation.*
- *All Warranty and Service information collected by Sub-Zero is arranged and stored under the unit serial number. This information is now also stored under the customer's last name.*

  ***NOTE:** Sub-Zero still requests that you have the model and serial number available whenever contacting the factory or parts distributor.*

- *The serial number tag is located on the left side wall of the upper drawer compartment.* (See Figures 1-1, for serial tag layout)

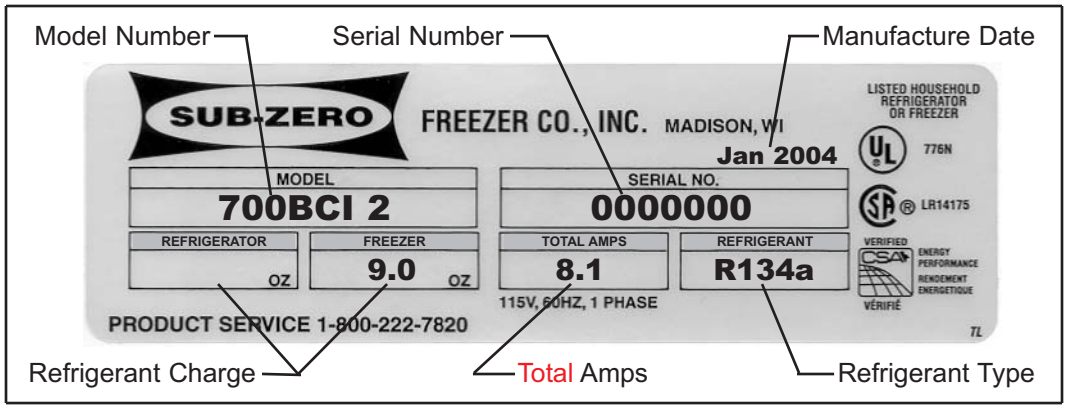


Figure 1-1. Serial Tag Layout

(The serial number tag is located on the left side wall of the upper drawer compartment.)

MODEL DESCRIPTIONS

This page briefly describes the *Models 700BC-3, 700BCI-3, 700BF-3, 700BFI-3 and 700BR-3.*

Model 700BC-3 (Figure 1-2)

700 Series, **B**ase **C**ombination, **3**rd Design Build

(Combination Refrigerator / Freezer with Two Temperature Zones - Upper Refrigerator over Freezer)

(Overall Dimensions = 34" H x 27" W x 24" D)

Model 700BCI-3 (Figure 1-7)

700 Series, **B**ase **C**ombination, **I**cemaker Incl.**, 3**rd Design Build

(Combination Refrigerator / Freezer with Two Temperature Zones - Upper Refrigerator over Freezer)

(Overall Dimensions = 34" H x 27" W x 24" D)

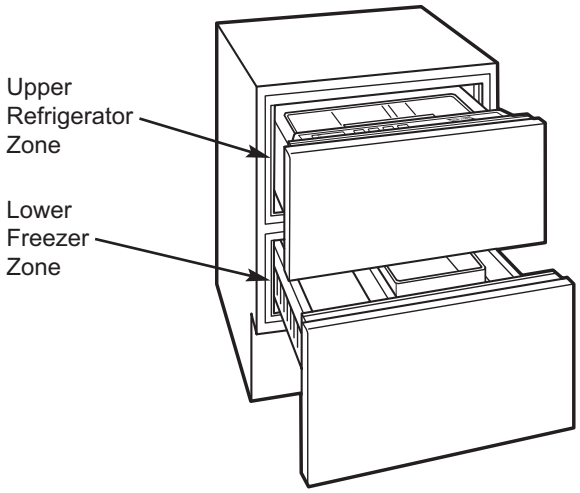


Figure 1-2. Model 700BC-3 & 700BCI-3

Model 700BR-3 (Figure 1-3)

700 Series, **B**ase **R**efrigerator, **3**rd Design Build

(Refrigerator with One Temperature Zone)

(Overall Dimensions = 34" H x 27" W x 24" D)

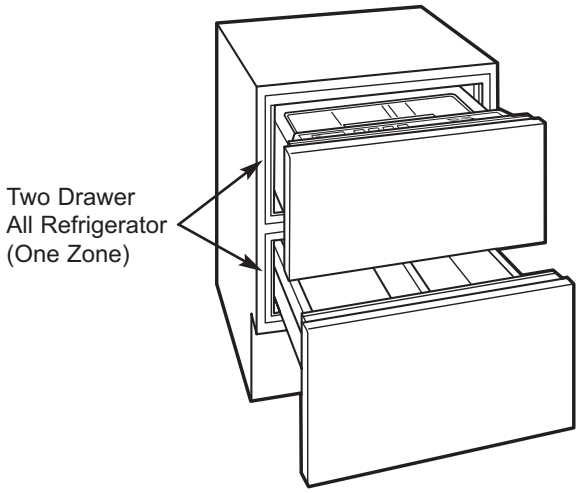


Figure 1-3. Model 700BR-3

Model 700BF-3 (Figure 1-4)

700 Series, **B**ase **F**reezer, **3**rd Design Build

(Freezer with One Temperature Zone)

(Overall Dimensions = 34" H x 27" W x 24" D)

Model 700BFI-3 (Figure 1-3)

700 Series, **B**ase **F**reezer, **I**cemaker Incl.**, 3**rd Design Build

(Freezer with One Temperature Zone)

(Overall Dimensions = 34" H x 27" W x 24" D)

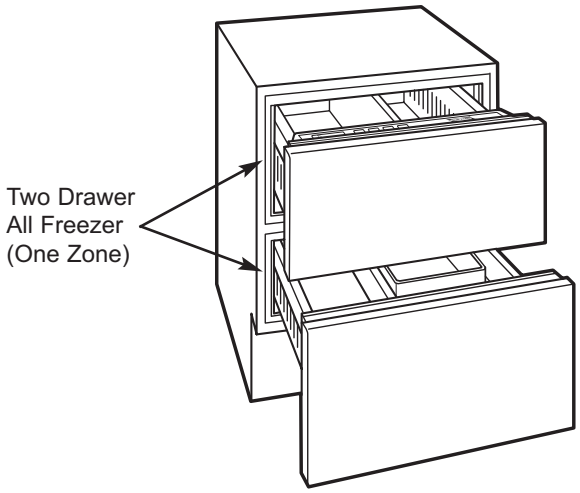


Figure 1-4. Model 700BF-3 & 700BFI-3

SECTION 2

INSTALLATION INFORMATION

INSTALLATION CONSIDERATIONS

This section covers some of the more common installation issues seen by a service technician. An improper installation, though not a valid service issue, has the potential to lead to a customer placing a call for service. Installation related customer complaints could include, but are not limited to: Unit leveling, unit movement, door misalignment, drawers not sealing, internal frost or condensation, warm compartment temperatures, exterior condensation, etc.. .

NOTE: *If additional installation information is needed, refer to the complete Installation Manual and/or installation video, or contact the Sub-Zero Technical Assistance Department.*

⚠ WARNING

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

Unit Leveling

NOTE: *The kickplate/grille must be removed before leveling (See Figure 2-1).*
If unit has been anchored to cabinets, side molding strips must be removed and anchor screws extracted from unit to cabinet brackets before leveling (See Figure 2-2).

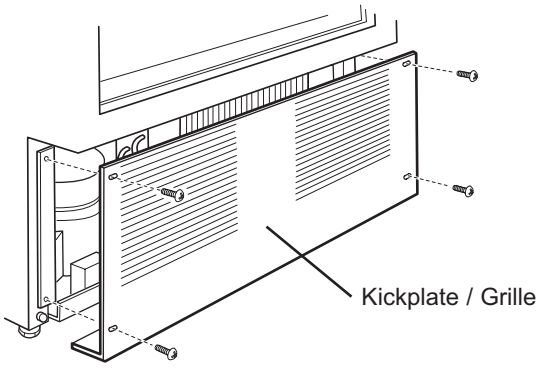


Figure 2-1. Kickplate/Grille Removal

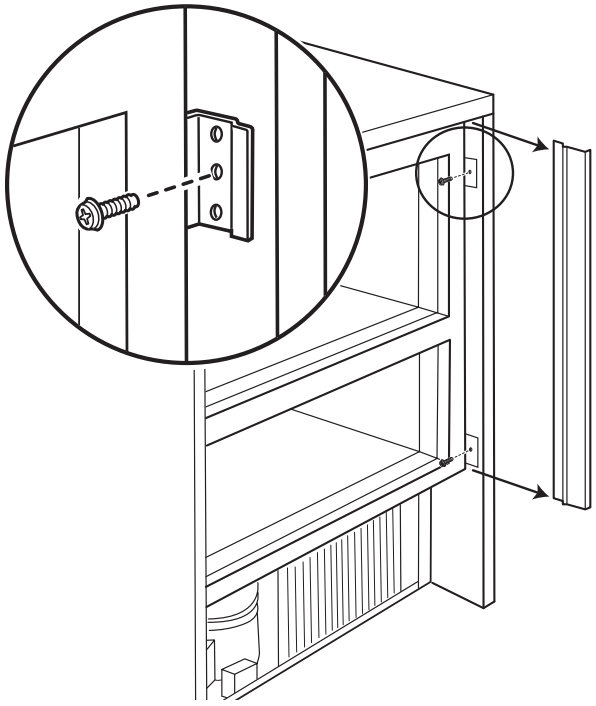


Figure 2-2. Side Molding & Bracket

To level unit, turn front leveling legs counterclockwise to raise front or clockwise to lower it. To assist in turning front leveling legs, use standard straight-blade screwdriver, placing it in foot of front leg, then rotate leveler foot (See Figure 2-3).

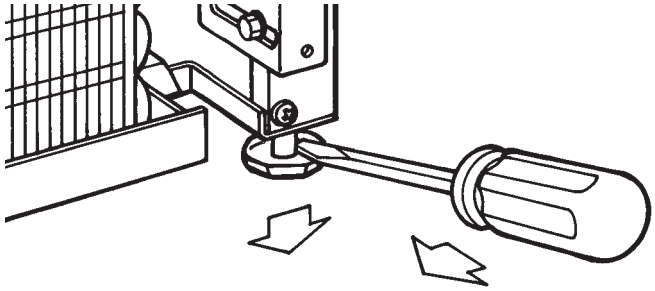


Figure 2-3. Adjusting Front Levelers

Rear levelers are adjusted at front of base by turning Phillips head adjusting rod, which engages rear leveler assembly. Turn rod clockwise to raise rear or counter-clockwise to lower it (See Figure 2-4).

NOTE: *Rear leveling legs will only move 1/16" for every 18 revolutions of Phillips head adjusting rod.*

⚠ CAUTION

Do not over torque. Use lowest torque setting on any power screwdriver. Do not turn rear leveling legs by hand, doing so will damage the assembly.

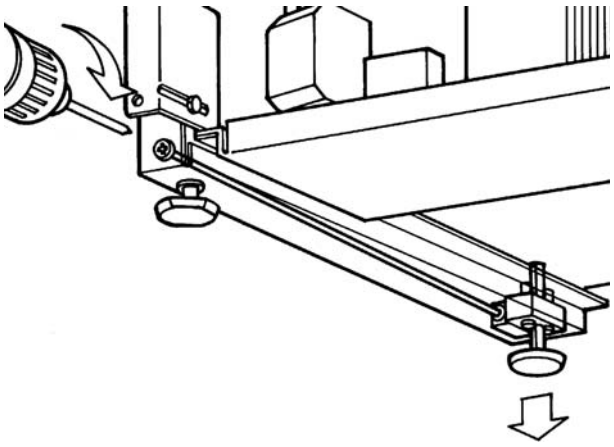


Figure 2-4. Adjusting Rear Levelers

Door and Drawer Adjustment

Doors and drawers on 700-3 Series units are non-adjustable. Instead, door and/or drawer panels must be adjusted if there are alignment problems. Refer to Installation Manual and/or installation video for panel installation and adjustment.

NOTE: *Unit must be level before attempting to adjust door and drawer panels.*

Dual Unit Installations

⚠ CAUTION

If two or more units are placed side by side and are 2" or less apart, a dual unit heater package must be applied to the left side of the right hand unit. Failure to install the dual unit heater package could result in exterior condensation between the units.

- If two Base units are installed side by side and are 2" or less apart, use part #BBDUAL.
- If a Tall unit is installed next to a Base unit and they are 2" or less apart, use part #BBDUAL.

NOTE: Complete installation instructions are supplied with #BBDUAL and #TTDUAL packages.

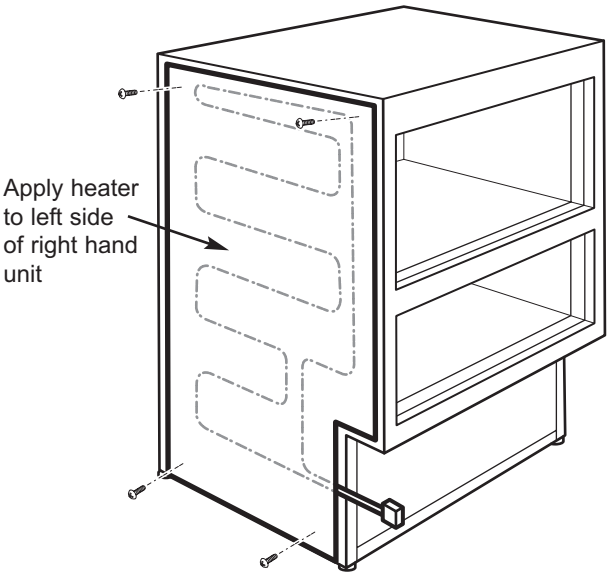


Figure 2-5. Dual Unit Heater Installation

SECTION 3

ELECTRONIC CONTROL SYSTEM INFORMATION

ELECTRONIC CONTROL TERMINOLOGY & COMPONENT DESCRIPTIONS

All 700-3 Series units utilize 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 ..…….....……	The printed-circuit board (PC Board) which contains a microprocessor, relays, triacs 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 triacs 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 the relay, the triac is a three terminal semiconductor for controlling current in either direction.
Control Panel Assembly ….....…	(Also referred to as the Control Keypad Interface), is that part of the electronic control system where all input operations are performed.
Membrane Switch ……..……....	Part of the control panel assembly, which consists of the function keys.
Keys (Function Keys) …….....	The “buttons” on the Membrane Switch used for input operations: “POWER”, “ALARM”, “ICE MAKER”, “WARMER” and “COLDER”
LCD (Liquid Crystal Display)	A semi-liquid substance sandwiched between glass in the display of 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.
Indicators ....……..…….....	The words, numbers and icons that appear on the display of the control panel assembly through the use of LCD’s.
Error Codes ……..……....	The code numbers that may appear on the display of the control panel assembly when accessing Error Code History. Error Codes are logged if the unit experienced specific problems related to electrical signals supplied by electrical components.
Temperature Units of Measure....	Temperature observed on the display of the control panel assembly 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 measures the resistance, then displays it as a temperature reading.
Variable Speed Compressor …...	A compressor that runs at varying speeds depending on the temperature detected in the corresponding zone(s) of the appliance.

ELECTRONIC CONTROL SYSTEM OVERVIEW

This page contains the wiring schematic of the model 700BCI-3. Input operations for the electronic control system are performed at the control panel (located inside the upper drawer), with monitoring, regulating and controlling functions taking place at the main control board. Temperatures and possible problems with the unit are shown in the control panel display. 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 unit.*

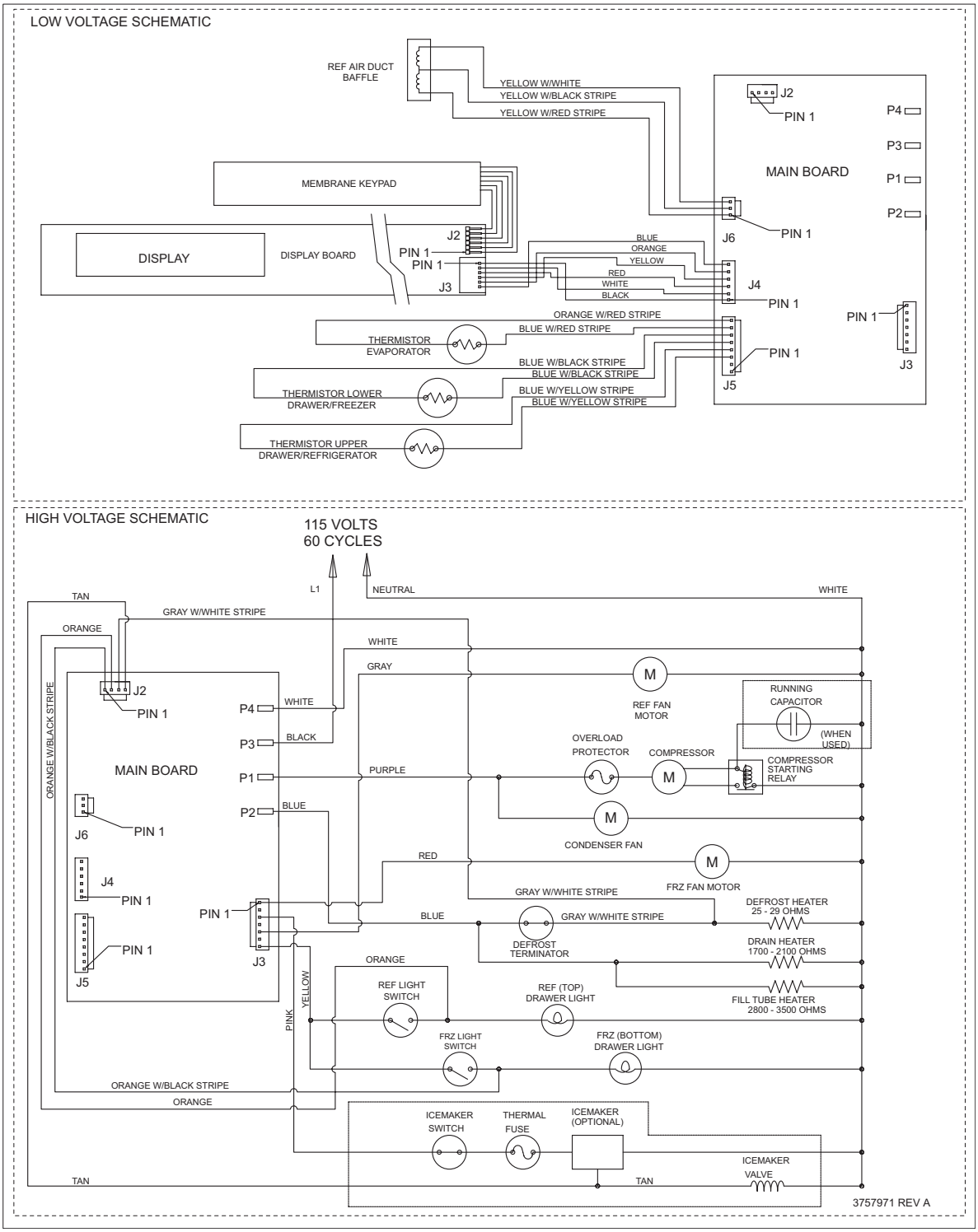


Figure 3-1. 700BCI-3 Wireing Schematic

MAIN CONTROL BOARD LAYOUT AND SUMMARY TABLE

Electrical connection points on the main control board are labeled alphanumerically. These labels correspond with the alphanumeric summary table, located on the wiring diagram. By referencing the summary table, it is possible to identify which components are connected at which points on the main control board. Below is a layout diagram of the main control board, and a copy of a model 700BCI-3 summary table. (See Figures 3-2 & 3-3)

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

NOTE: *There is also a small control board in the control panel assembly (Not Shown). All components in the control panel assembly are non-replaceable. If a problemwith the control panel is identified, the complete control panel assembly must be replaced.*

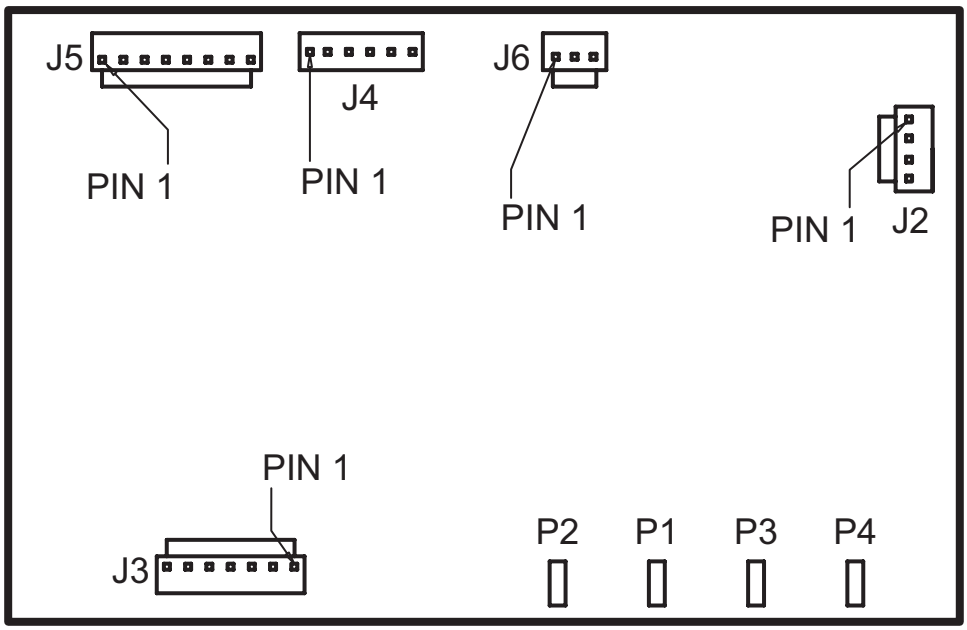


Figure 3-2. Main Control Board Layout

MAIN CONTROL BOARD SUMMARY				
TERMINAL	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
120 VOLT CIRCUITS				
P4	LN	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P3	L1	POWER IN	POWER INTO BOARD	BLACK
P1	COMPRESSOR	COMPRESSOR	POWERS COMPRESSOR AND CONDENSER FAN	PURPLE
P2	DEFROST	DEFROST HEATER	POWERS DEFROST CIRCUIT AND FILL TUBE HEATER	BLUE
J3-1	FAN 1	EVAPORATOR FAN	POWERS EVAPORATOR FAN	RED
J3-2		NOT USED		
J3-3	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J3-4		NOT USED		
J3-5	FAN 2	REFRIGERATOR FAN	POWERS FFAN IN REFRIGERATOR	GRAY
J3-6		NOT USED		
J3-7	LIGHTS	LIGHTS	POWERS LIGHTS	YELLOW
J2-1	LWR	FRZ DRAWER LIGHT SENSE	SENSES IF FREEZER DRAWER OPEN	ORANGE/BLACK
J2-2	UPR	REF DRAWER LIGHT SENSE	SENSES IF REFRIGERATOR DRAWER OPEN	ORANGE
J2-3	DEF	DEFROST SENSOR	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE
J2-4	ICE	ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J5-1,2		NOT USED		
J5-3,4	UPPER	REFRIGERATOR COMPARTMENT	SENSES REFRIGERATOR CABINET TEMPERATURE	BLUE/YELLOW
J5-5,6	LOWER	FREEZER COMPARMENT	SENSES FREEZER CABINET TEMPERATURE	BLUE/BLACK
J5-7	EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	BLUE/RED
J5-8	EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	ORANGE/RED
J6-1	N	BAFFLE NEUTRAL	BAFFLE NEUTRAL	YELLOW/RED
J6-2	C	BAFFLE CLOSE	PULSED TO CLOSE BAFFLE	YELLOW/BLACK
J6-3	O	BAFFLE OPEN	PULSED TO OPEN BAFFLE	YELLOW/WHITE
J4-1	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	BLACK
J4-2	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	WHITE
J4-3	DISPLAY	DISPLAY WIRING	SERIAL DATA RECEIVE	RED
J4-4	DISPLAY	DISPLAY WIRING	SERIAL DATE TRANSMIT	YELLOW
J4-5	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	ORANGE
J4-6	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	BLUE

Figure 3-3. Main Control Board Summary Table

CONTROL PANEL LAYOUT

NOTE: *The LCD on the base units is not back lit. It will appear darker than the LCD on tall units.*

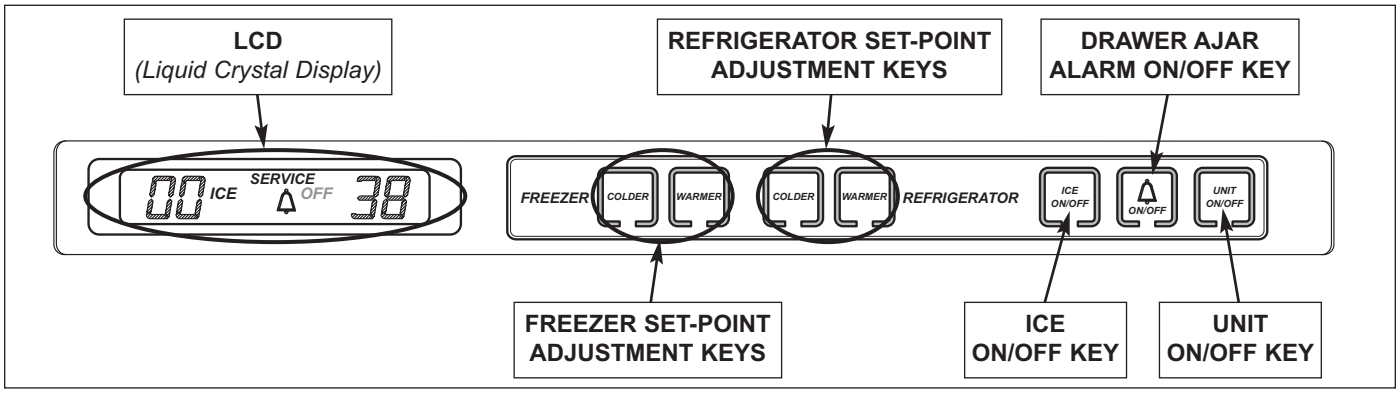


Figure 3-4. 700BCI-3 Control Panel Layout

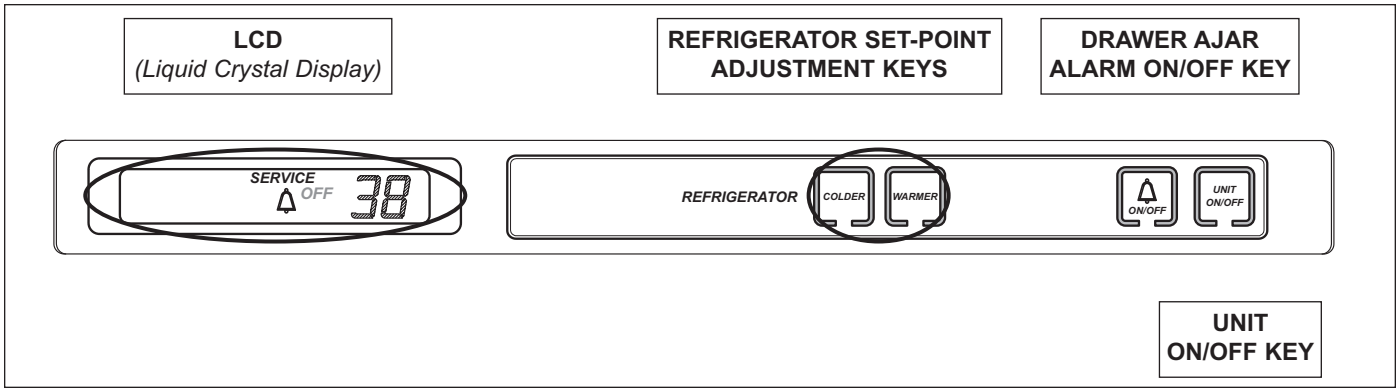


Figure 3-5. 700BR-3 Control Panel Layout

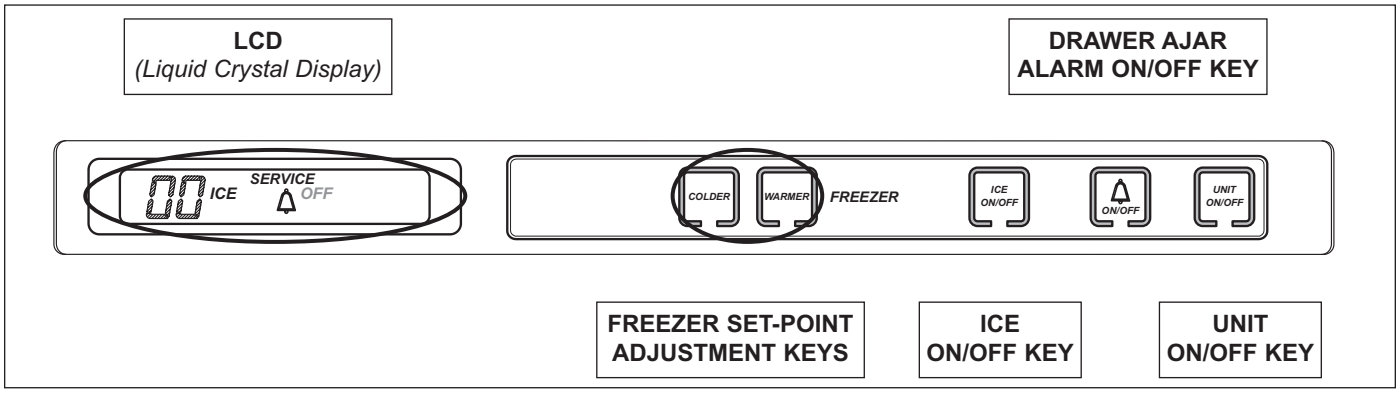


Figure 3-6. 700BFI-3 Control Panel Layout

BASIC ELECTRONIC CONTROL INPUT OPERATIONS

The following pages describe the basic input operations performed at A 700BCI-3 control panel (switching unit ON and OFF; adjusting set-point (temperature adjustment); switching ice maker system ON and OFF and enabling and disabling door ajar alarm feature. Please note that though possible to display temperatures in Fahrenheit or Celsius, in most cases Fahrenheit readings are shown.

Unit ON/OFF

All units are shipped in Off Mode. When power is supplied to the unit, a trace of the word "OFF" is visible on the LCD. By pressing the UNIT ON/OFF key (See Figure 3-7), power is allowed past the control board to the rest of the unit. This will be indicated by the unit lights illuminating and the LCD energizing.

NOTE: *Whenever the unit is switched OFF using the UNIT ON/OFF key, a trace of the word "OFF" will be visible on the LCD as long as power is supplied to the unit. This differs in Sabbath Mode, which will be covered later.*

⚠ WARNING

WHEN IN OFF MODE, 115 VOLTS AC IS STILL PRESENT AT CONTROL BOARD.

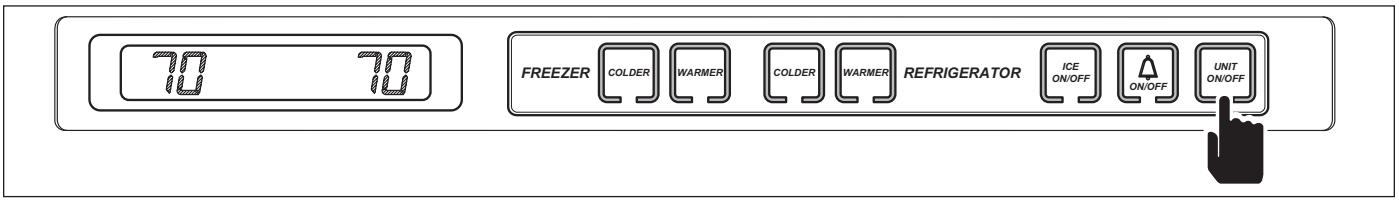


Figure 3-7. Unit ON/OFF - Press UNIT ON/OFF Key

Adjusting Set-Point (Temperature Adjustments)

To adjust set-points, press WARMER or COLDER keys on control panel in multiple key strokes until the desired set-point is achieved. One key stroke equals one degree change (Fahrenheit or Celsius). (See Figure 3-8)

NOTE: *Temperature ranges are -5°F (-21°C) to +5°F (-15°C) in freezer zones, +34°F (+1°C) to +45°F (+7°C) in refrigerator zones, with initial set-points of 0°F (-18°C) and +38°F (+3°C), respectively.*

NOTE: *The initial stroke of the WARMER or COLDER keys will change previous set-point by one degree.*

NOTE: *The set-point will be displayed on the LCD for 10 seconds after the last WARMER or COLDER key stroke. After the 10 second delay, the zone temperature will be displayed. As the zone temperature changes, the temperature displayed on the LCD will change by no more than one degree per minute.*

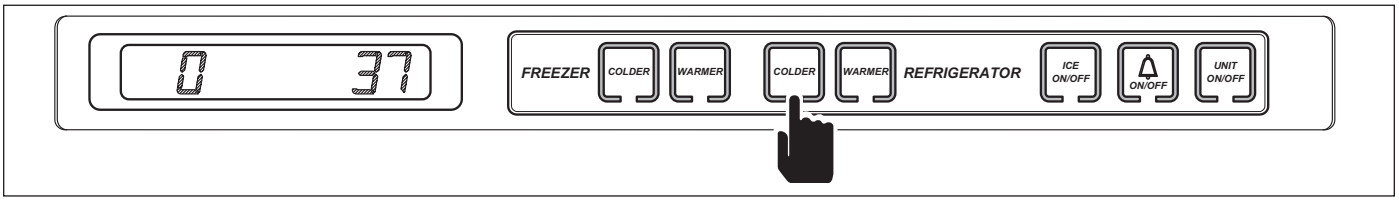


Figure 3-8. Adjusting Set-Point - Press WARMER or COLDER Key In Multiple Key Strokes

Icemaker System ON/OFF

All units with icemakers are shipped with the icemaker system switched OFF. By pressing the ICE ON/OFF key on the control panel, power is allowed to the icemaker system, and "ICE" appears on the LCD (See Figure 3-9). To disable the icemaker system, press the ICE ON/OFF key again and "ICE" will disappear from the LCD indicating the icemaker system is OFF.

NOTE: *When unit is in "Sabbath Mode," icemaker system is disabled. Sabbath Mode will be covered later.*

NOTE: *To allow ice to freeze fully and reduce effects of low water pressure, power to the icemaker system is interrupted for 45 minutes after each ice harvest. This can be bypassed for service purposes by pressing the ICE ON/OFF key to switch the icemaker system OFF, then back ON.*

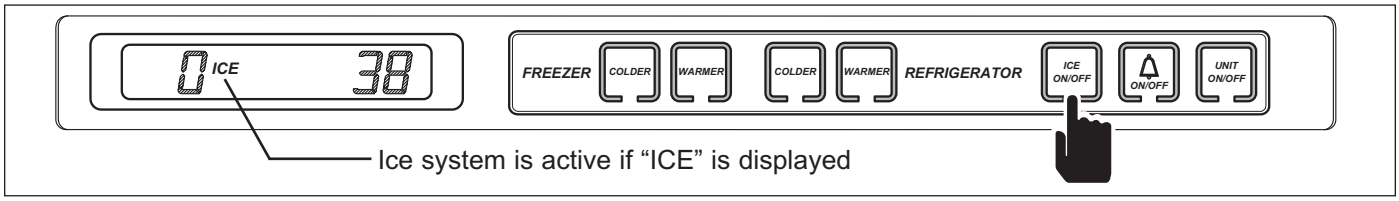


Figure 3-9. Icemaker System ON/OFF - Press ICE ON/OFF Key

Drawer Ajar Alarm ON/OFF

All units are equipped with a drawer ajar alarm feature. When activated, the alarm will alert a customer if a drawer is stuck open or accidentally left open. To enable the drawer ajar alarm feature, press the drawer ajar alarm bell ON/OFF key on the control panel. A bell icon will appear on the LCD indicating that the alarm feature is active. (See Figure 3-10) Now, if a drawer is open for 30 seconds, the bell icon will blink and the audible alarm will beep. To disable the drawer ajar alarm, simply press the drawer ajar alarm bell ON/OFF key and the bell icon on the LCD will disappear, indicating the alarm feature is OFF.

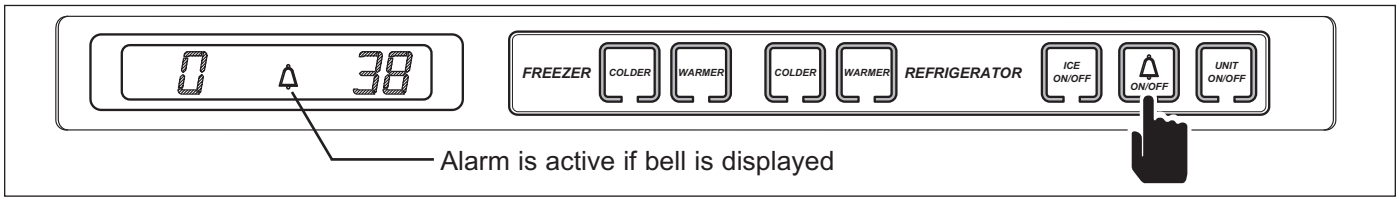


Figure 3-10. Drawer Ajar Alarm ON/OFF - Press Alarm Bell ON/OFF Key

UNIQUE ELECTRONIC CONTROL INPUT OPERATIONS

The following pages describe unique electronic control input operations performed at the control panel that you would not expect a customer to perform every day. The following input operations described are Temperature Unit Selection Mode, Sabbath Mode, Showroom Mode, and Manual Freezer Evaporator Defrost.

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

The electronic control is initially set to display temperature in Fahrenheit (°F) units of measure. Units of measure can be converted from °F to °C (Celsius), and/or back again. This operation is called Temperature Units Selection.

NOTE: *Temperature Units Selection must be performed within the first minute after switching the unit ON.*

To convert the temperature units of measure from Fahrenheit readings to a Celsius readings, press and hold the door ajar alarm bell ON/OFF key and the UNIT ON/OFF key simultaneously for 5 seconds, then release the keys. " °C " will appear on the LCD indicating temperatures will now be displayed in Celsius units of measure. (See Figure 3-11) To convert back to Fahrenheit units of measure, repeat the steps above.

NOTE: *Bottom Drawer must be closed. If not closed, unit will enter Model Configuration Mode.*

NOTE: *Temperature Units Selection Mode will end 10 seconds after the last key stroke.*

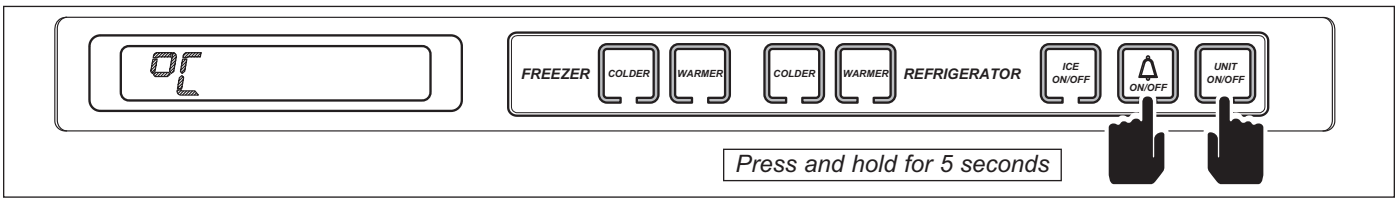


Figure 3-11. Converting Temperature Units of Measure *(within first minute after switching unit ON)* Press and Hold the Bell ON/OFF Key and UNIT ON/OFF Key for 5 Seconds

Sabbath Mode

Sabbath Mode was incorporated into the electronic control system for the observance of certain religious days. Initiating Sabbath Mode disables the LCD, lighting system, icemaker systems and the door ajar alarm feature.

To initiate Sabbath Mode, the unit must first be switched OFF using the UNIT ON/OFF key (See Figure 3-12), then press and hold the UNIT ON/OFF key for approximately 10 seconds, until the LCD and lights switch OFF (See Figure 3-13). To return to normal operation, press and release the UNIT ON/OFF key.

NOTE: *During Sabbath Mode, the refrigerator fan and evaporator fan may function when drawers are open.*

NOTE: *During Sabbath Mode, the LCD is disabled and set-points cannot be changed.*

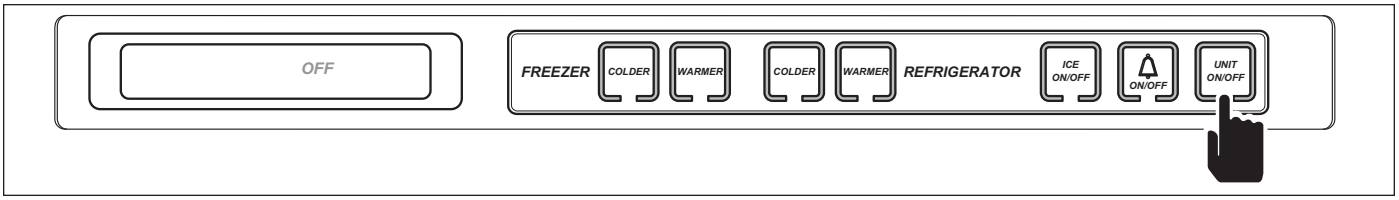


Figure 3-12. To Enter Sabbath Mode, Switch Unit OFF First

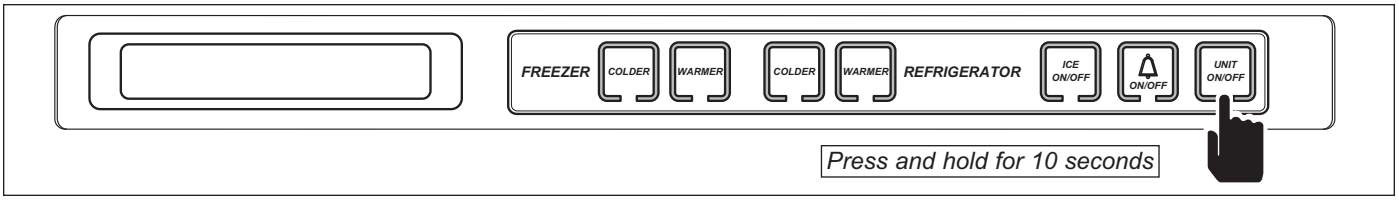


Figure 3-13. After Unit is Switched OFF, Press and Hold UNIT ON/OFF Key for 10 Seconds

Showroom Mode

Showroom Mode was incorporated into the electronic control system so that units could be displayed in a showroom setting. When in Showroom Mode, all cooling functions are disabled, but the lighting system and LCD remain active.

To initiate Showroom Mode, the unit must first be switched OFF using the UNIT ON/OFF key (See Figure 3-14). With the unit switched OFF, press and hold either pair of WARMER and COLDER keys, then press the UNIT ON/OFF key, then release all three keys (See Figure 3-15).

To return unit to normal operating condition, repeat the steps above.

NOTE: *Always recheck set-points after returning unit to normal operating condition.*

NOTE: *It is possible to determine if a unit is in Showroom Mode by initiating Diagnostic Mode. If "Sr" is observed in the left temperature display area during Diagnostic Mode, the unit is in Showroom mode. Initiating Diagnostic Mode is covered later in this section.*

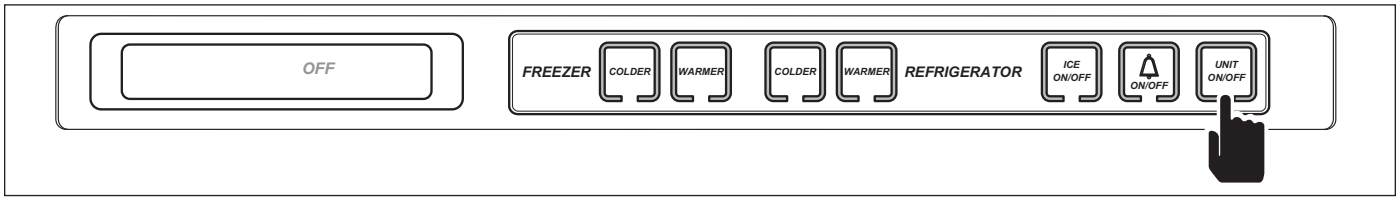


Figure 3-14. To Enter (or Exit) Showroom Mode, Switch Unit OFF First

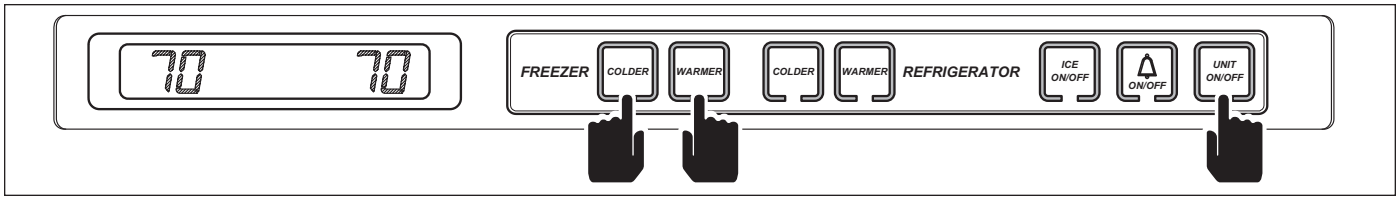


Figure 3-15. After Unit is Switched OFF, Press and Hold the WARMER and COLDER Keys, Then Press the UNIT ON/OFF Key

Manual Freezer Evaporator Defrost

Manual Freezer Evaporator Defrost was incorporated into the electronic control to assist in servicing the appliance.

To manually defrost the freezer evaporator, press and hold the ICE ON/OFF key for 5 seconds (See Figure 3-16).

NOTE: *Manual Freezer Evaporator Defrost will not operate if unit is in Sabbath Mode.*

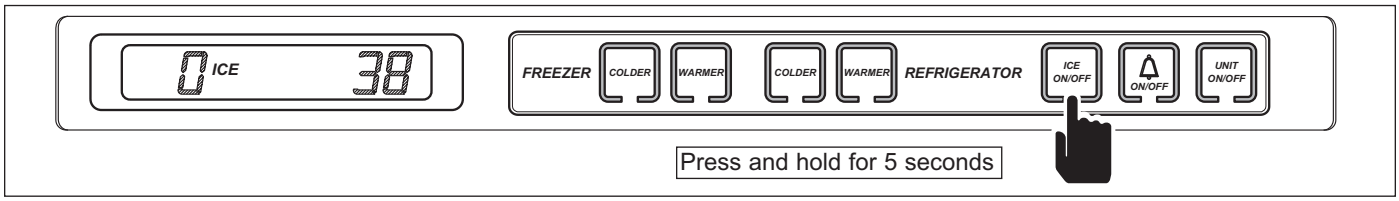


Figure 3-16. Initiate Manual Freezer Evaporator Defrost - Press and Hold the ICE key for 5 Seconds

FUNCTIONS OF ELECTRONIC CONTROL SYSTEM

The following few pages explain monitoring, regulating and controlling functions of the electronic control system.

Display Zone Temperatures

The temperature signals from the thermistors in the refrigerator and freezer compartments are monitored by the microprocessor and then displayed on the LCD. Though the compartment air temperature does fluctuate, the LCD displays the average temperature (See Figure 3-17).

NOTE: *If zone temperature changes, temperature display will change by one degree per minute.*

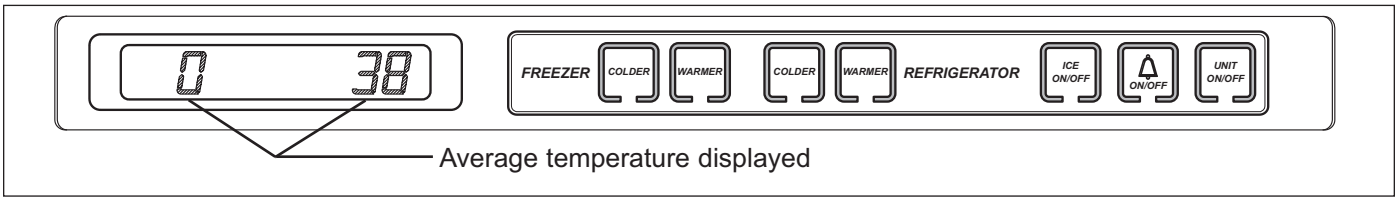


Figure 3-17. Display Zone Temperatures

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 UNIT ON/OFF key. With a drawer open, the light switch allows power to the light. (See Figure 3-18).

NOTE: *Power to the lights is monitored by the microprocessor to control the door ajar alarm feature and to help control the operation of the evaporator fan and/or refrigerator compartment fan.*

NOTE: *When in Sabbath Mode, lighting system is disabled. Sabbath Mode will be covered later.*

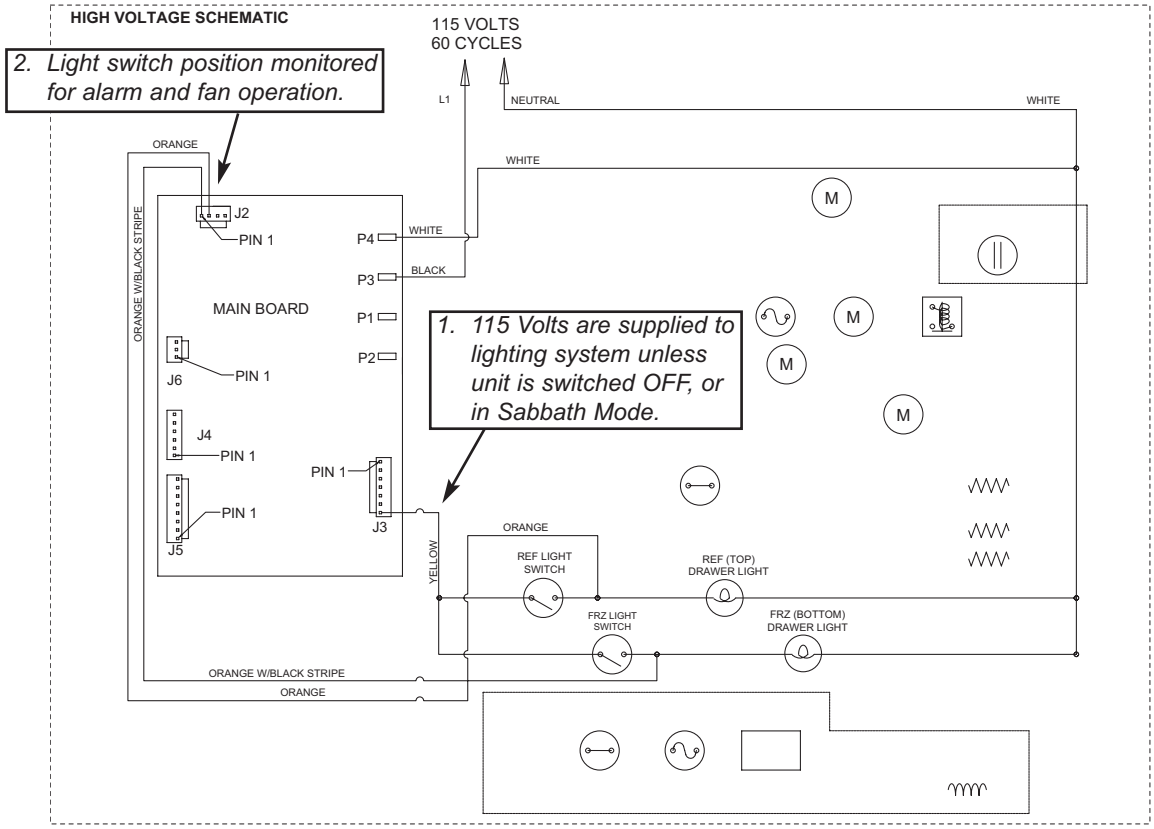


Figure 3-18. 700BCI-3 Signal Trace Schematic (High Voltage) of Lighting System

Regulate Freezer Zone Temperature (700BCI-3, 700BFI-3)

When the thermistor in the freezer compartment reaches high off-set temperature, calling for cooling, the compressor and condenser fan are energized, but the evaporator fan is not allowed to run until the thermistor on the evaporator reaches 35°F (2°C). (See Figure 3-19)

If either drawer is opened while the evaporator fan is operating, the microprocessor will detect the power signal to the lights and cut power to the fan.

Though compartment air temperatures will fluctuate, LCD displays average temperature.

NOTE: *If compartment temperature exceeds either high or low offset (Ex: drawer is left open), temperature display will change by one degree per minute.*

NOTE: *If freezer compartment thermistor is faulty, compressor operation defaults to 20 minutes ON, 20 minutes OFF cycling, EE appears in left of LCD, SERVICE will flash and Error Code 07 will be logged.*

NOTE: *If evaporator thermistor is faulty, the compressor will be energized after the dwell time and the evaporator fan will be energized 3 minutes later. SERVICE will flash and Error Code 08 will be logged.*

NOTE: *When in Sabbath Mode, the freezer compartment thermistor still controls compressor operation, except there is a random 15 to 25 second delay before the compressor is energized.*

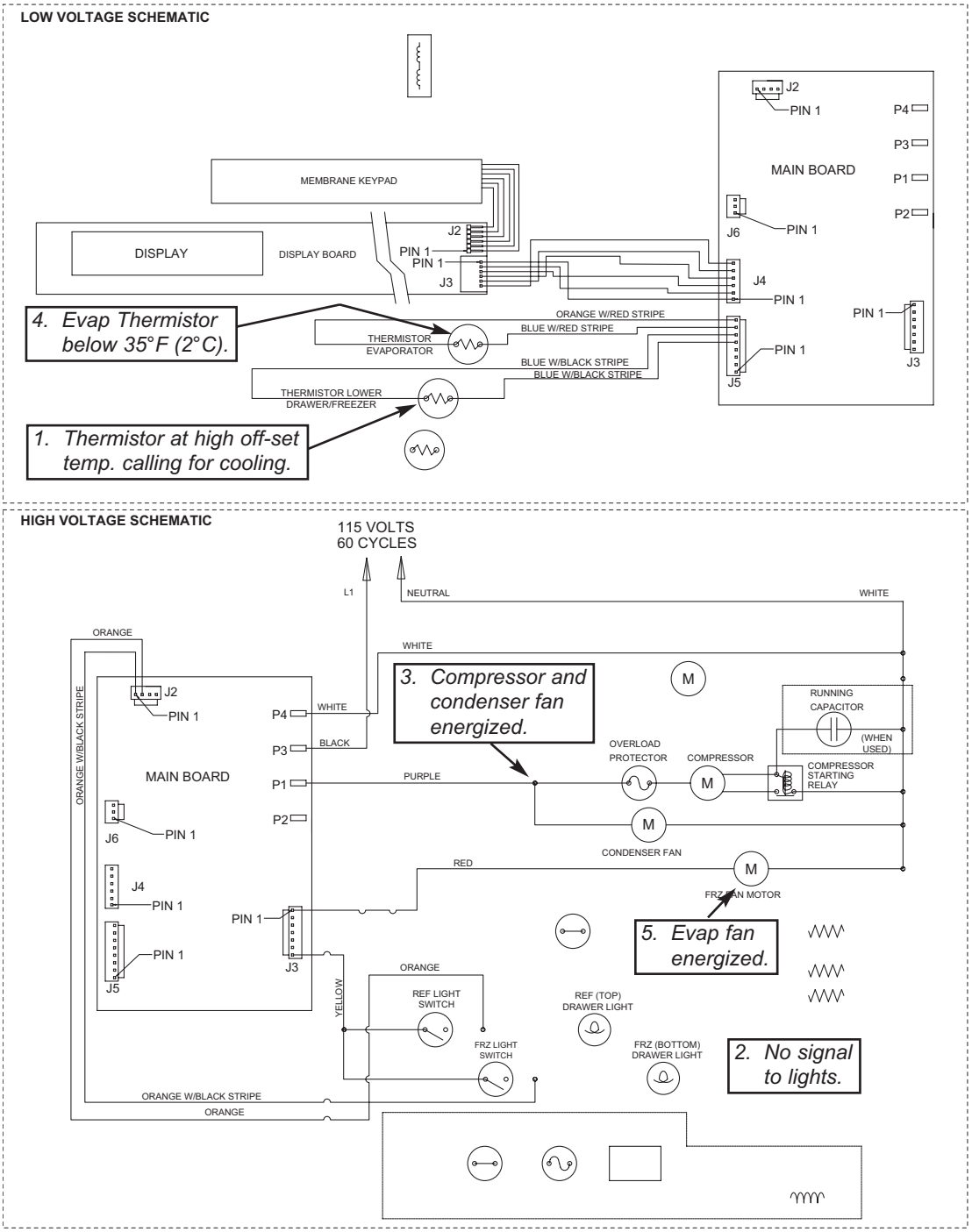


Figure 3-19. 700BCI-3 Signal Trace - Regulate Freezer Zone

Regulate Refrigerator Zone Temperature (700BCI-3)

When the thermistor in refrigerator compartment reaches high off-set temperature, calling for cooling, the refrigerator compartment fan is energized and microprocessor sends an 18 Volt pulse signal to the air baffle control to open, regardless of operational state of the compressor. Whenever the fan is energized, the microprocessor repeats sending a pulse signal every 5 minutes to the air baffle control to open. (See Figure 3-20)

If either drawer is opened while the refrigerator compartment fan is operating, the microprocessor will detect power to the lights and cut power to the fan.

When thermistor in refrigerator compartment reaches low off-set temperature, power to refrigerator compartment fan is cut and microprocessor sends an 18 Volt pulse signal to the air baffle control to close. When refrigerator compartment fan is off, microprocessor repeats sending a pulse signal every 5 minutes to the air baffle control to close.

Though compartment air temperatures fluctuates, the LCD displays average temperature.

NOTE: *If compartment temperature exceeds either high or low offset (Ex: drawer is left open), temperature display will change by one degree per minute.*

NOTE: *If refrigerator compartment thermistor is faulty, compartment fan defaults to 20 minutes ON, 40 minutes OFF cycling, EE appears in right of LCD, SERVICE will flash and Error Code 05 will be logged.*

NOTE: *When in Sabbath Mode, refrigerator compartment thermistor still controls fan operation except there is a random 15 to 25 second delay before the fan is energized.*

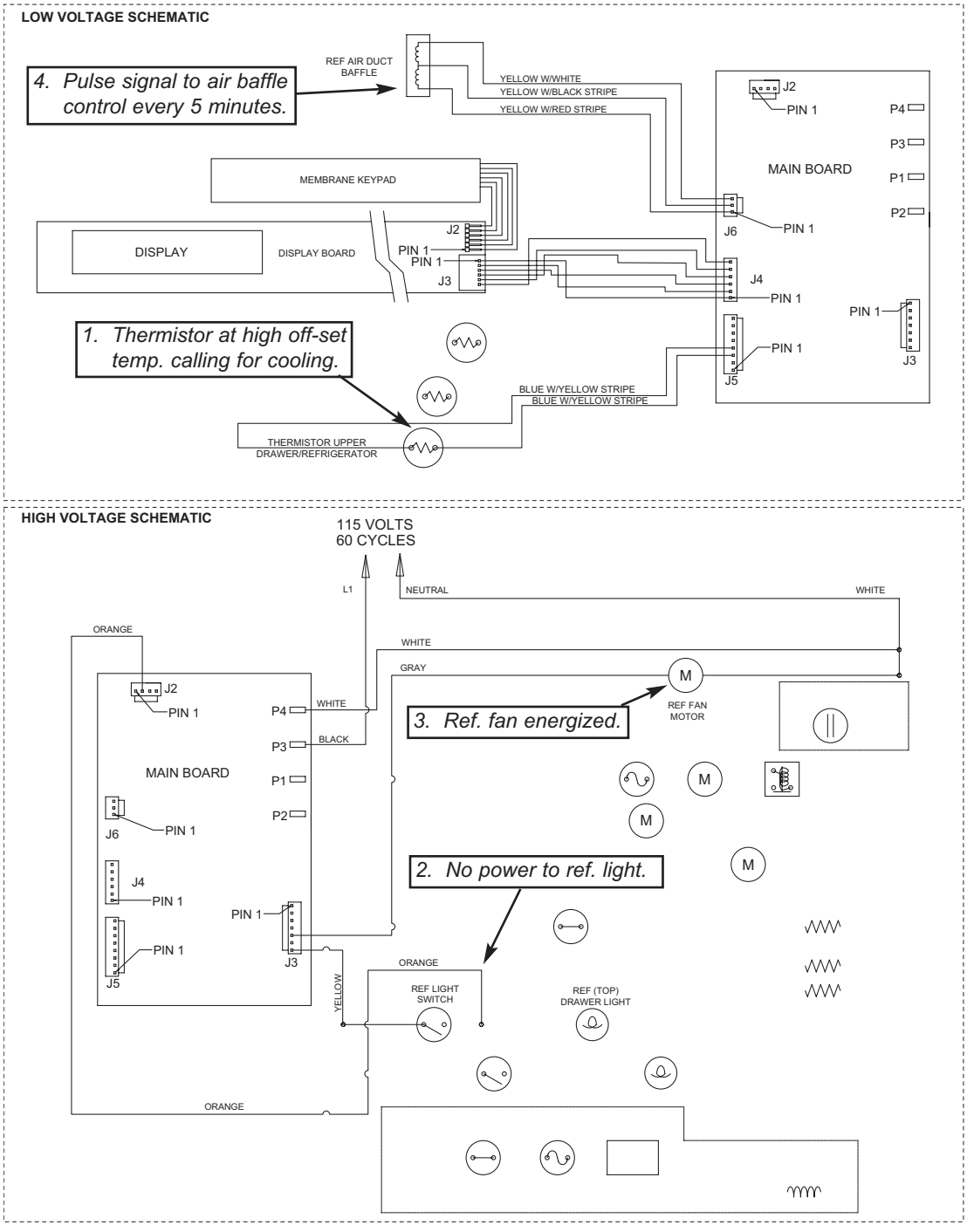


Figure 3-20. 700BCI-3 Signal Trace - Regulate Refrigerator Zone

Regulate Refrigerator Zone Temperature (700BR-3)

When the thermistor in the refrigerator compartment reaches high off-set temperature, calling for cooling, the evaporator fan is energized, but the compressor and condenser fan are not allowed to run until the thermistor on the evaporator reaches 38°F (3°C). (See Figure 3-21)

If either drawer is opened while the evaporator fan is operating, the microprocessor will detect the power signal to the lights and cut power to the fan.

Though compartment air temperatures will fluctuate, LCD displays average temperature.

NOTE: *If compartment temperature exceeds either high or low offset (Ex: drawer is left open), temperature display will change by one degree per minute.*

NOTE: *If refrigerator compartment thermistor is faulty, compressor operation defaults to 20 minutes ON, 40 minutes OFF cycling, EE appears in left of LCD, SERVICE will flash and Error Code 05 will be logged.*

NOTE: *If evaporator thermistor is faulty, the compressor will not energize until zone air temperature exceeds high offset by 5°F (3°C). SERVICE flashes and Error Code 06 is logged.*

NOTE: *When in Sabbath Mode, the refrigerator compartment thermistor still controls compressor operation, except there is a random 15 to 25 second delay before the compressor is energized.*

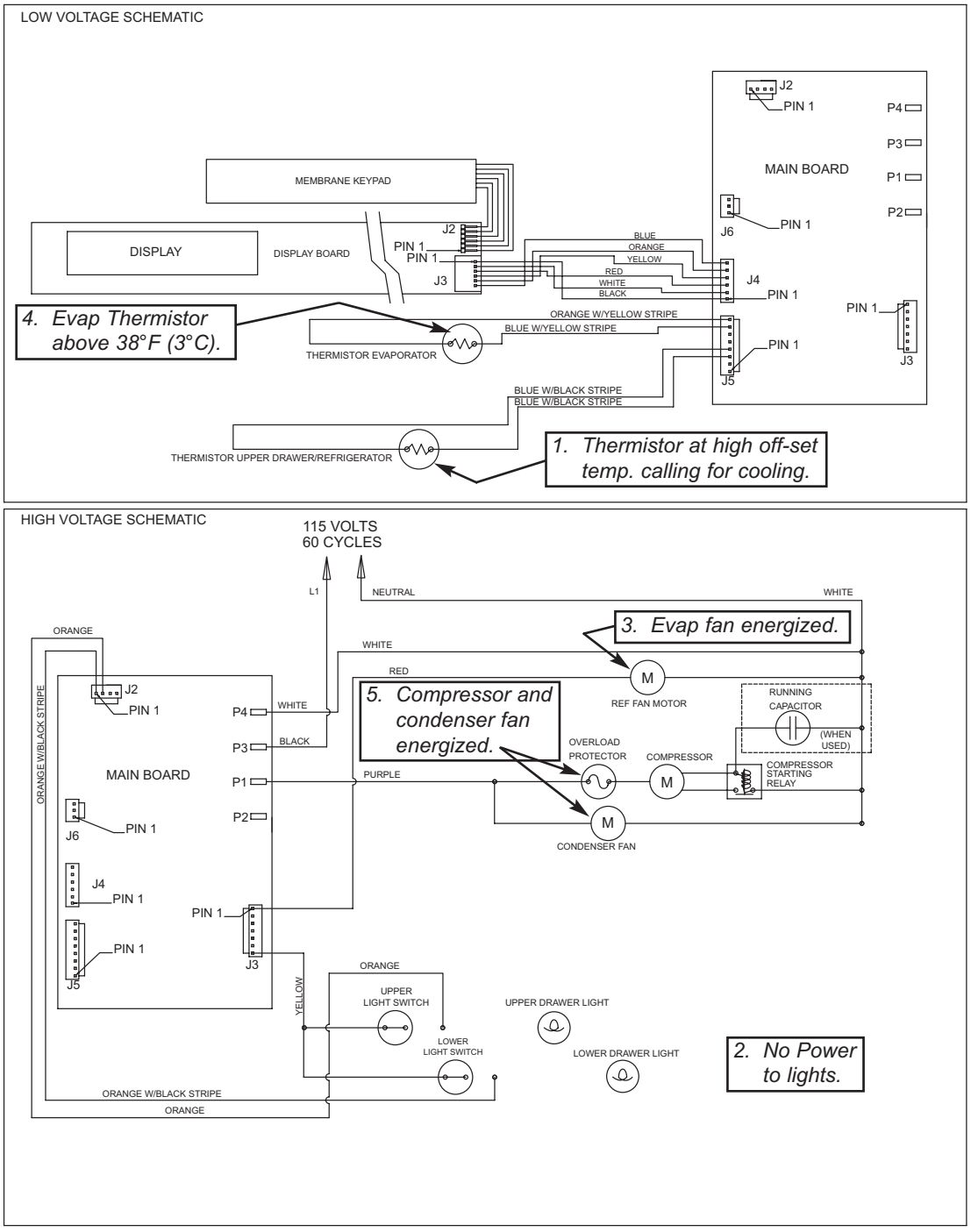


Figure 3-21. 700BR-3 Signal Trace - Regulate Refrigerator Zone

Monitor and Control "Adaptive Defrost" (700BCI-3, 700BFI-3)

Initially, the compressor will cycle-run for 12 hours, after which the microprocessor sends a signal to the defrost relay on the control board to close. This supplies power to the defrost heater, drain tube heater and fill tube heater. At the same time the compressor, condenser fan and evaporator fan are switched off.

With the "Adaptive Defrost" technique, the length of time that the defrost heater stays on to open the defrost terminator bimetal (70°F/21°C), is observed by the microprocessor via the grey w/white stripe wire to J2.

The microprocessor then determines the number of hours before the next defrost. If the heater stays on for a shorter time than specified, the microprocessor increases the next defrost interval. If the heater stays on longer than specified, the electronic control decreases the next defrost interval. (See Figure 3-13) This is an ongoing process whereby the defrost time and the defrost interval will vary by unit use.

NOTE: *A 5 minute time delay/dwell follows all defrosts, during which the drain tube heater and fill tube heater remain energized. At the end of the 5 minute dwell, the drain tube heater and fill tube heater are switched off, then the compressor and condenser fan are energized, but the evaporator fan will not be energized until the evaporator temperature falls below 35°F (2°C).*

NOTE: *The minimum defrost interval is 6 hours of compressor run time; the maximum defrost interval is 42 hours of compressor run time; the maximum defrost duration is 25 minutes plus 5 minute dwell.*

NOTE: *If the grey w/white wire defrost sensing line is open, defrost operation defaults to 25 minute defrost time and 6 hour build time, and Error Code 22 is logged. If the evaporator thermistor detects an underheat or overheat situation at the same time, Error Codes 20 or 23 will be registered, respectively.*

NOTE: *During defrost, the display temperature is locked.*

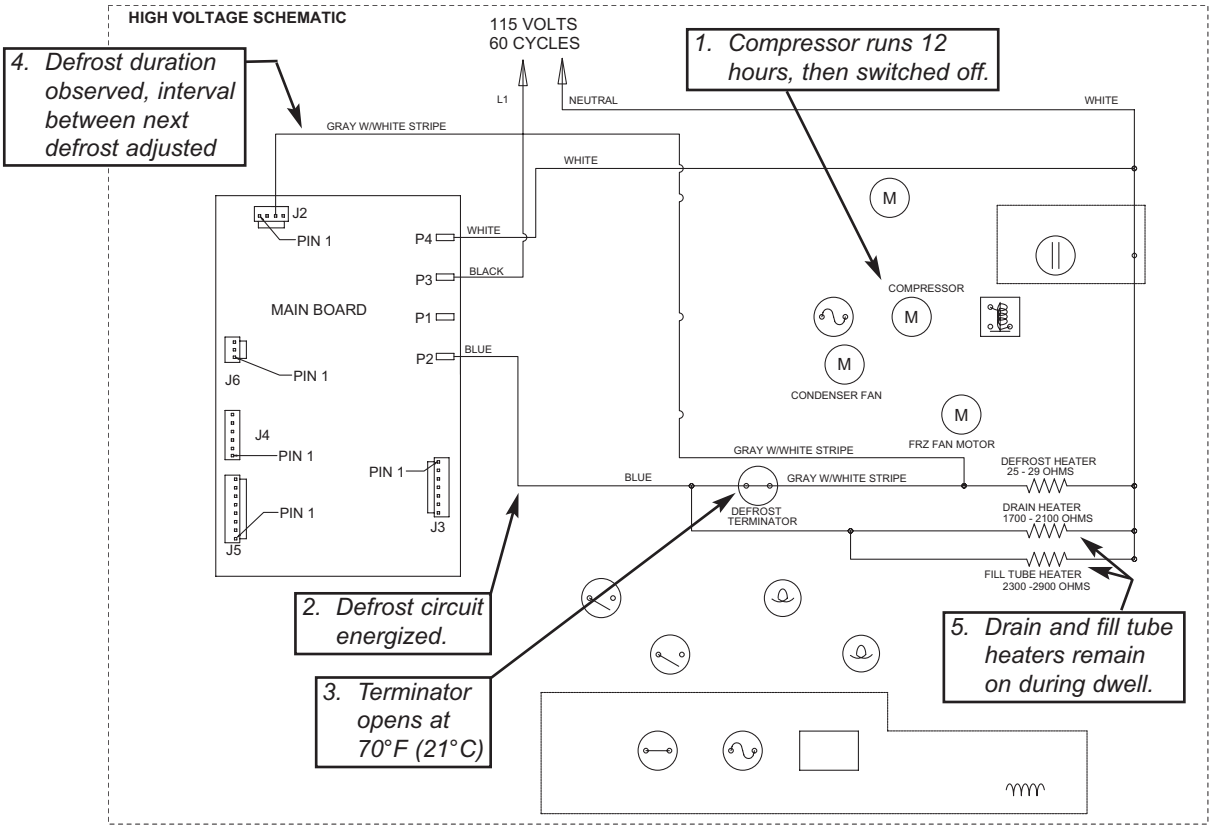


Figure 3-22. 700BCI-3 Signal Trace Schematic - Adaptive Defrost

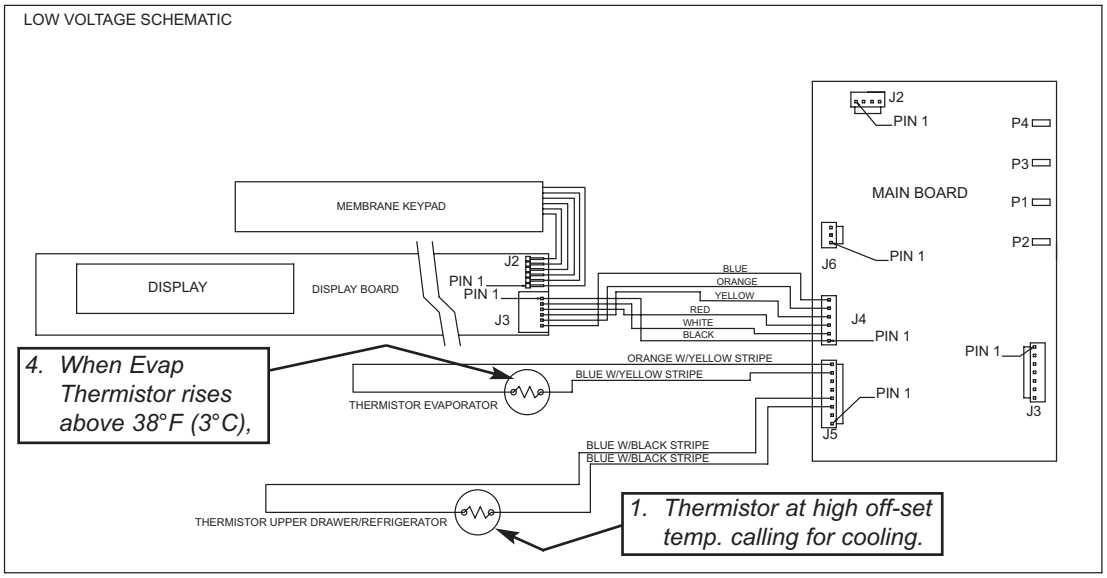
Monitor and Control Refrigerator Fan-Assisted, Off-Cycle Defrost (700BR-3)

Temperature signals from refrigerator evaporator's thermistor's are observed by the microprocessor. During off cycle defrost, if a refrigerator zone temperature reaches high offset (calling for cooling) before evaporator temperature rises to 38°F (3°C), no power will be supplied the the compressor. But, the the zone evaporator fan will switch ON. Once the evaporator temperatur reaches 38°F (3°C), normal cooling functions begin. (See Figure 3-23).

NOTE: *If refrigerator compartment thermistor is faulty, compressor operation defaults to 20 minutes ON, 40 minutes OFF cycling, EE appears in left of LCD, SERVICE will flash and Error Code 05 will be logged.*

NOTE: *If evaporator thermistor is faulty, the compressor will not energize until zone air temperature exceeds high offset by 5°F (3°C). SERVICE flashes and Error Code 06 is logged.*

NOTE: *When in Sabbath Mode, the refrigerator compartment thermistor still controls compressor operation, except there is a random 15 to 25 second delay before the compressor is energized.*



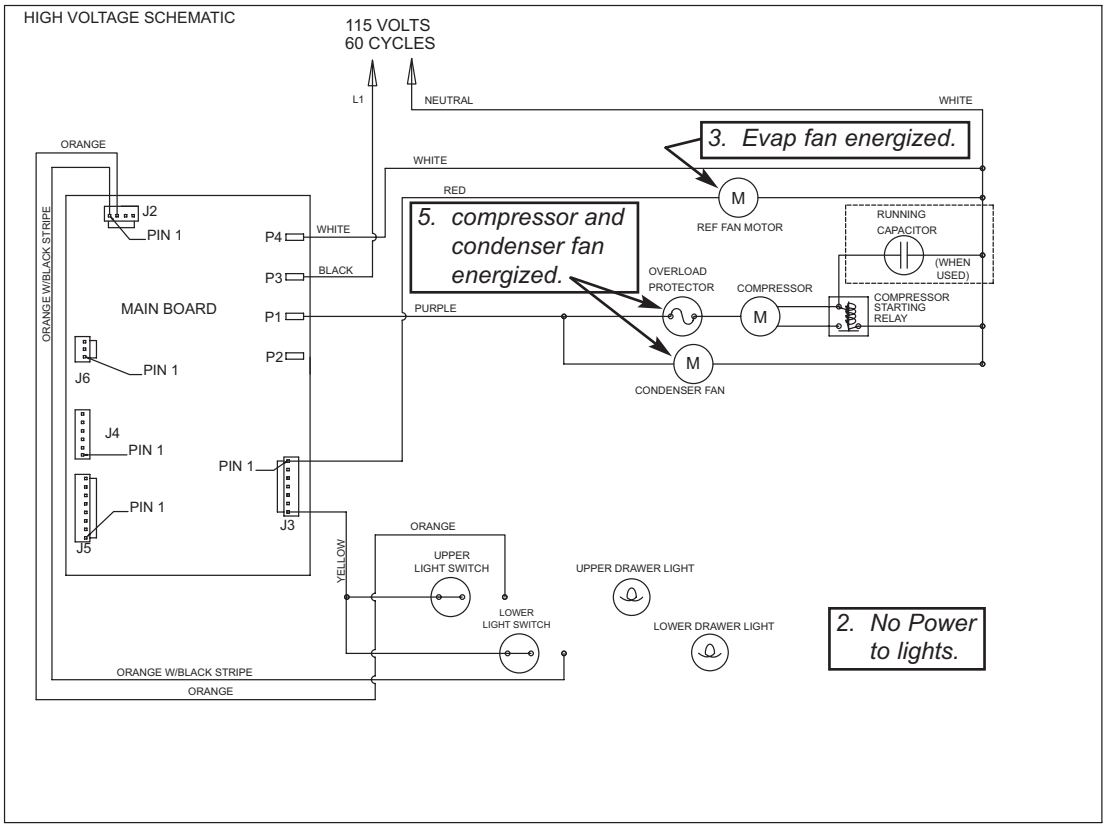


Figure 3-21. 700BR-3 Signal Trace - Regulate Refrigerator Zone

Monitor Compressor Run Duration, Displays If Service is Needed

The microprocessor observes the state of the compressor relay to determine the length of compressor run time (See Figure 3-22). If the compressor runs 100% (Freezer = 6 hours, Refrigerator = 4 hours), an error code is logged (EC 40), and defrost will be initiated, but SERVICE will not flash.

If several 100% compressor run periods occur, and a drawer was not opened during the last excessive compressor run period, and the temperature in the zone is not able to fall half way between the set point and the low off-set, then SERVICE will flash (See Figure 3-23).

NOTE: *To clear a flashing SERVICE and error codes, the problem must be corrected, then the Alarm ON/OFF key pressed for 15 seconds. Failure to clear an error code will cause SERVICE to display constant.*

NOTE: *If the unit is ever switched OFF then back ON, the compressor will not energize for at least 3 minutes. This 3 minute minimum OFF time is used to protect the compressor and its electricals.*

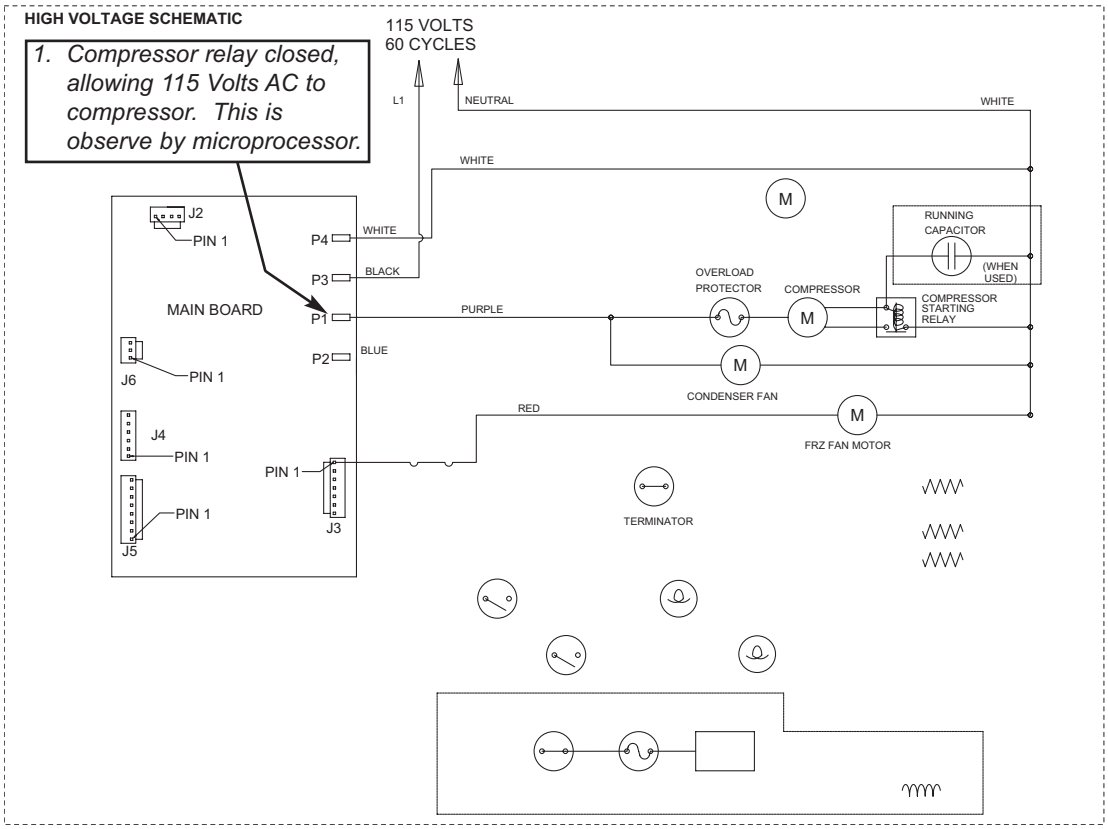


Figure 3-22. 700BCI-3 Signal Trace Schematic - Compressor Run

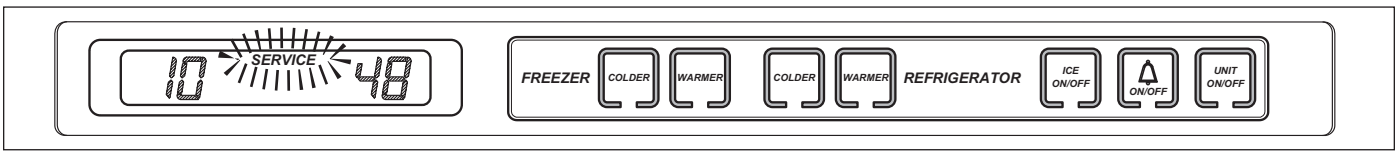


Figure 3-23. Service Flashing if several 100% compressor run periods occurred, a drawer was not opened during last excessive run period, and temperature is not able to fall half way between set point & low off-set.

Monitor Icemaker System and Display If Service is Needed

The microprocessor observes the power supplied to the icemaker water valve solenoid. If the solenoid is energized for more than 15 seconds, power to the icemaker system is disabled for 24 hours and an error code is logged (EC 30). (See Figure 3-24) If this happens five consecutive times, ICE and SERVICE on the LCD will flash and the ICE ON/OFF key will be disabled (See Figure 3-25).

NOTE: *To clear the ICE and SERVICE error indicators, and reactivate the ICE ON/OFF key, the problem must be corrected, then the unit must be switched OFF and back ON, and the Alarm key must be pressed for 15 seconds to clear the Error Code.*

NOTE: *To allow ice to freeze fully and reduce effects of low water pressure, power to the icemaker system is interrupted for 45 minutes after each ice harvest. This can be bypassed for service purposes by switching the icemaker system OFF, then back ON by pressing the ICE ON/OFF key.*

NOTE: *When in Sabbath Mode, icemaker system is disabled. Sabbath Mode will be covered later.*

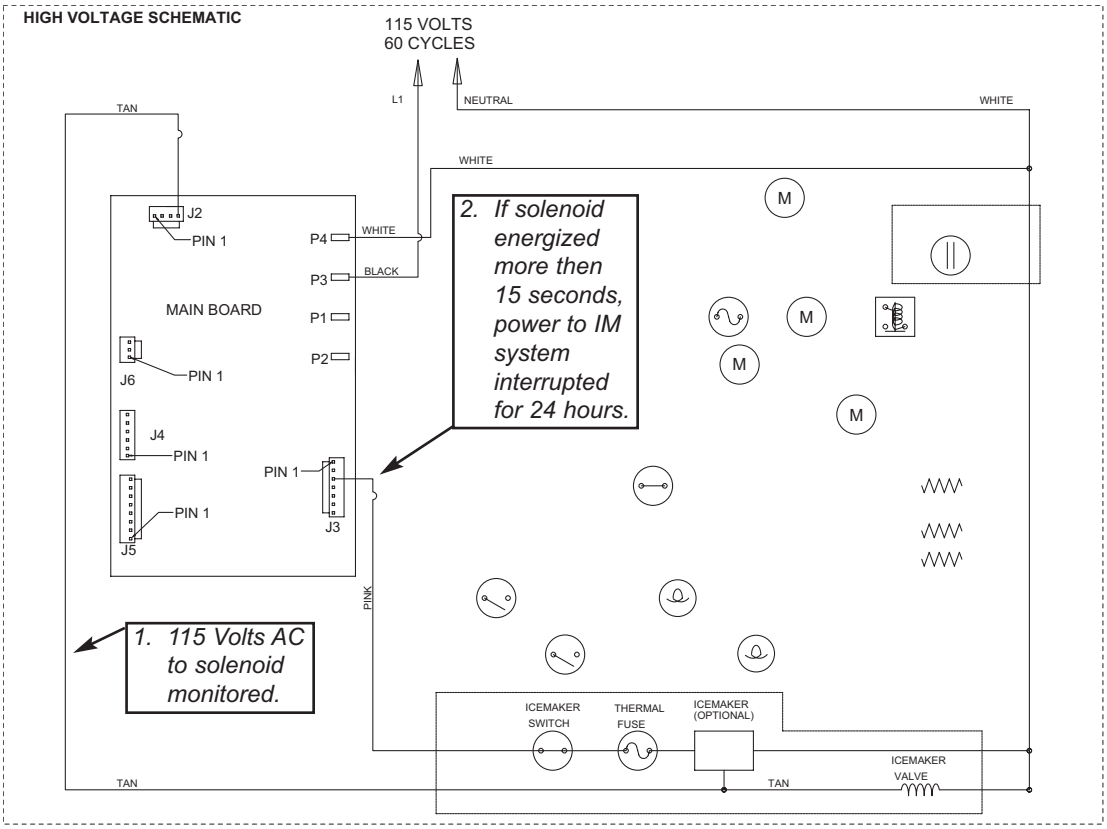


Figure 3-24. 700BCI-3 Signal Trace Schematic - Icemaker Operation and Solenoid Monitoring

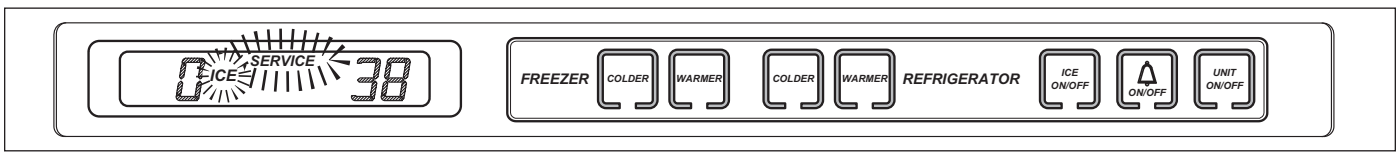


Figure 3-25. ICE & SERVICE Flashing if solenoid energized 15 seconds, every 24 hours, 5 consecutive times

POSSIBLE ERROR INDICATORS

The diagrams on this page illustration what a customers may see on LCD if a problem/error exists with the unit.

NOTE: *To clear indicators and error codes, problem must be corrected then press bell ON/OFF key for 15 seconds.*

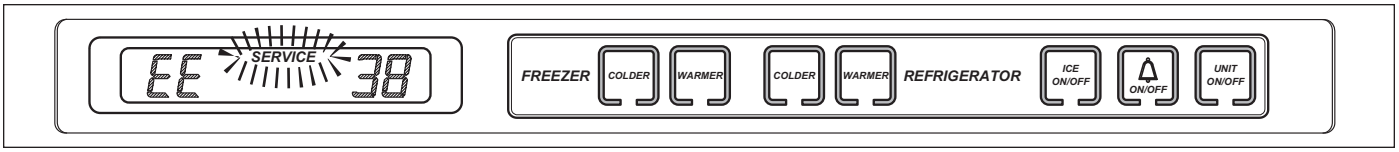


Figure 3-26.
"EE" Displayed at Left & "SERVICE" Flashing = Freezer Compartment Thermistor (or its Wiring) Fault

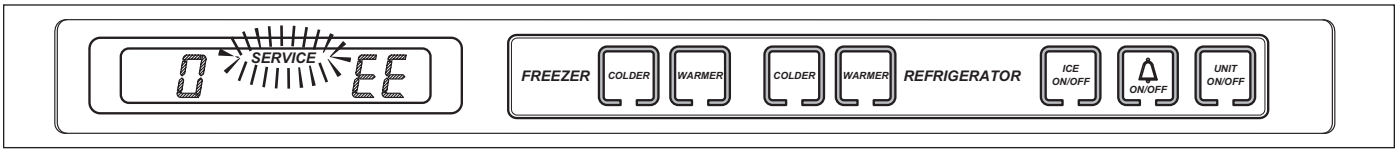


Figure 3-27.
"EE" Displayed at Right & "SERVICE" Flashing = Refrigerator Compartment Thermistor (or its Wiring) Fault

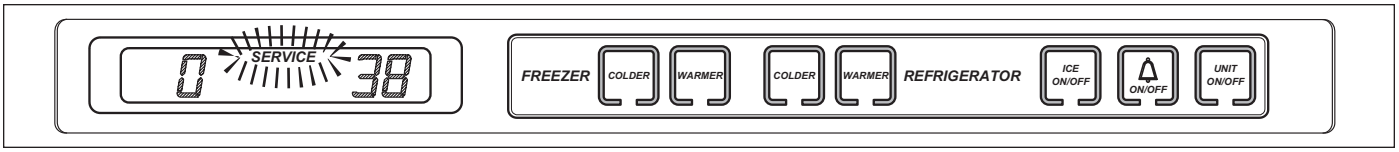


Figure 3-28.
Service Flashing = Evaporator Thermistor (or its Wiring) Fault

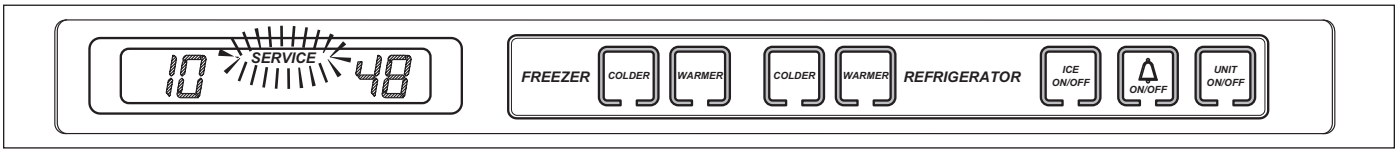


Figure 3-29.
Service Flashing = Several 100% run periods, a drawer was not open during last 100% run period, and zone temperature not able to fall half way between set point and low off-set.

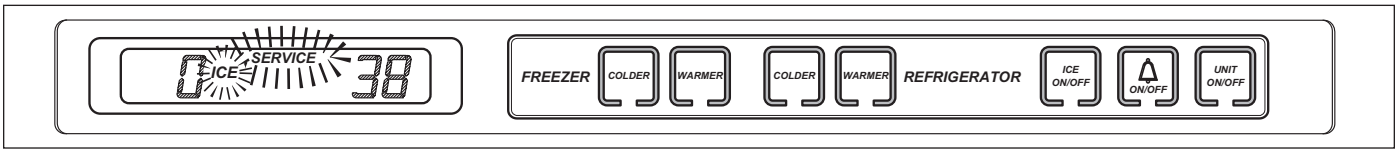


Figure 3-30.
"ICE" and "SERVICE" Flashing = Solenoid Energized 15 Seconds, Every 24 Hours, 5 Consecutive Times

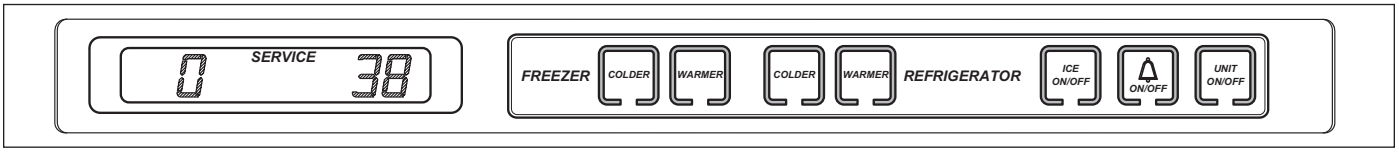


Figure 3-31.
"SERVICE" Steady, not Flashing = Error Codes Observed in Diagnostic Mode, but not Cleared

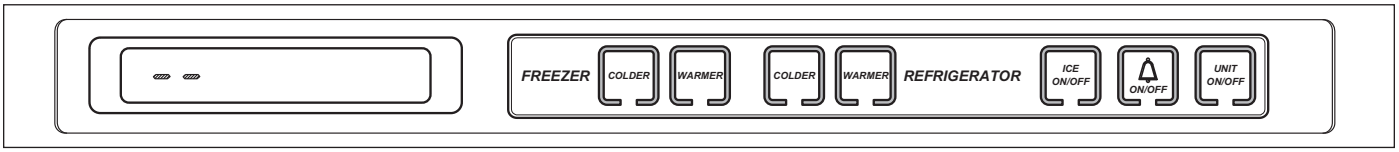


Figure 3-32.
"- - " Double Dashes Displayed = Model Configuration was not Performed

ELECTRONIC CONTROL TROUBLESHOOTING INPUT OPERATIONS

The following few pages explain troubleshooting input operations performed at the control panel. The input operations described are Diagnostic Mode, Manual Component Activation Mode and Temperature Log Recall.

Diagnostic Mode

Initiating Diagnostic Mode allows the Service Technician to observe real-time temperature readings from all thermistors without temperature averaging.

To initiate Diagnostic Mode, the unit must be ON, then press and hold either COLDER key, and press the UNIT ON/OFF key, then release both keys (See Figure 3-33). The left display area will show the real-time temperature of the thermistor, the right display area will show the thermistor location code, and all LCD indicators will illuminate. Pressing either COLDER key while in Diagnostic Mode will toggle forward to the next thermistor location (See Figures 3-34 & 3-35), while pressing either WARMER key while in Diagnostic Mode will toggle backward to the previous thermistor location.

NOTE: *If the COLDER and UNIT ON/OFF keys are pressed and held for 10 seconds, Manual Component Activation Mode will be initiated (this is covered later in the section).*

NOTE: *Diagnostic Mode will end 20 seconds after the last key stroke.*

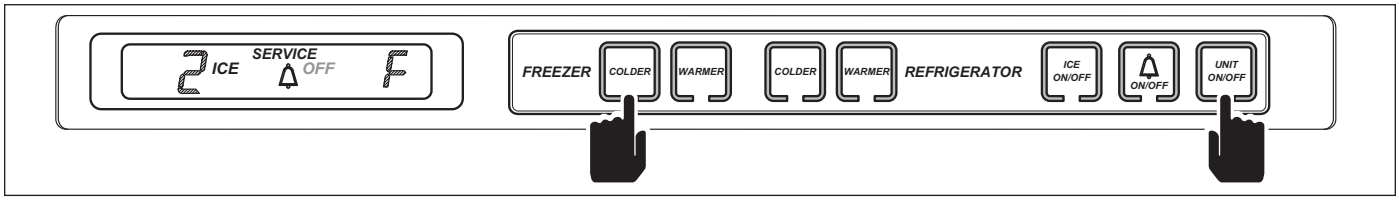


Figure 3-33. Initiate Diagnostic Mode - Press and Hold Either COLDER Key, Then UNIT ON/OFF Key ("F" Indicates Freezer Compartment)

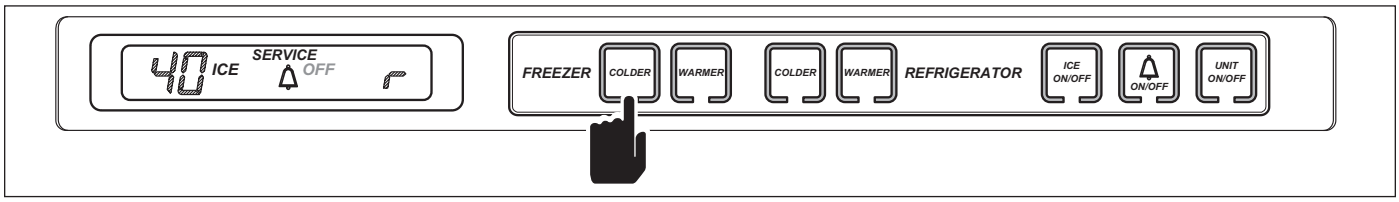


Figure 3-34. Toggle Through Temperature Readings - Press Either COLDER Key ("r" Indicates Refrigerator Compartment)

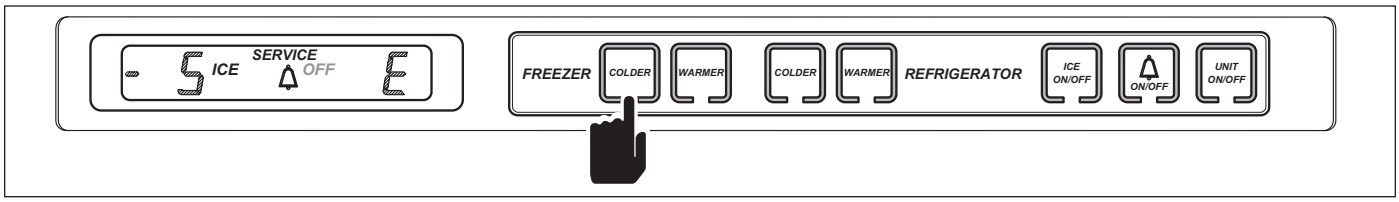


Figure 3-35. Toggle Through Temperature Readings - Press Either COLDER Key ("E" Indicates Evaporator)

BCI-3 Thermistor Code Table	
THERMISTOR LOCATION	CODE
Freezer Compartment	*F*
Refrigerator Compartment	*r*
Evaporator	*E*

BR-3 Thermistor Code Table	
THERMISTOR LOCATION	CODE
Refrigerator Compartment	*r*
Evaporator	*E*

BFI-3 Thermistor Code Table	
THERMISTOR LOCATION	CODE
Freezer Compartment	*F*
Evaporator	*E*

Diagnostic Mode Indicators

If “EE” is observed in left display area during Diagnostic Mode, the thermistor in that location is open or shorted, or there is a break in that thermistor’s wiring (See Figure 3-36).

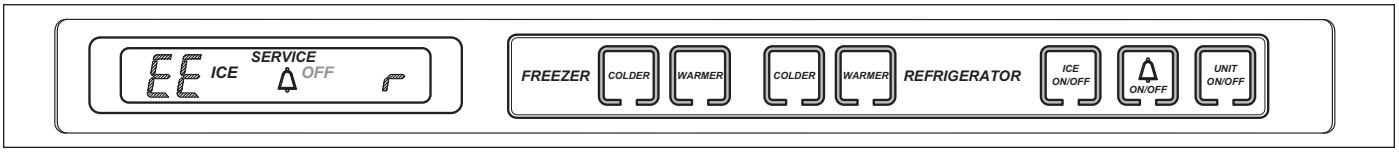


Figure 3-36. “EE” Observed in Diagnostic Mode = Thermistor Fault in Location Indicated by Code

If “Sr” is observed at left display area during Diagnostic Mode, the unit is in Showroom Mode, which was explained earlier in this section (See Figure 3-37).

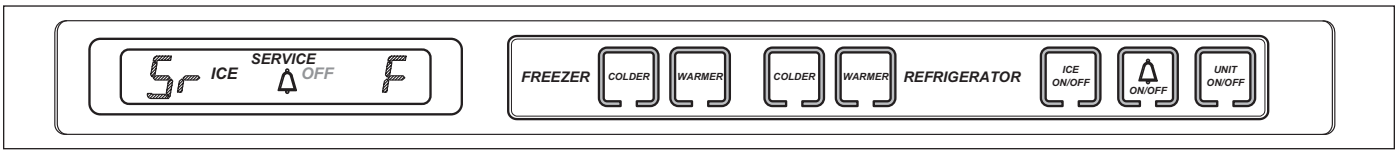


Figure 3-37. “Sr” Observed While in Diagnostic Mode = Unit is in Showroom Mode

If “EC” is observed in the right display area during Diagnostic Mode, the numbers at left are “Error Codes” (See Figure 3-38). Error Codes indicate problems registered by specific components. If error codes are registered, they will appear before temperature readings and can be toggled through with the temperature readings as described on the previous page. (See Error Code Table below and instructions on clearing Error Codes on next page.)

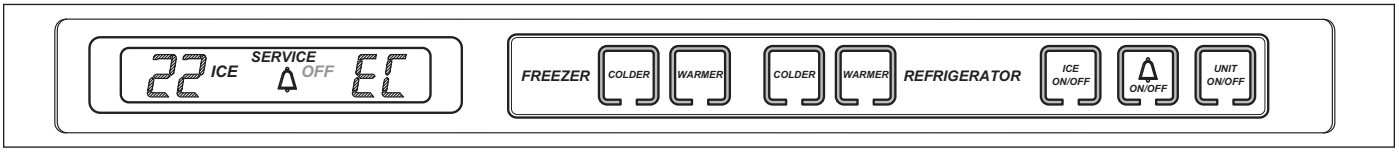


Figure 3-38. “EC” Observed While in Diagnostic Mode = Error Code
(See table below & how to clear Error Codes on next Page)

700BCI-3 Error Code Table	
CODE	**INDICATION**
05	***Refrig. cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp’s***
07	***Freezer cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp’s***
08	***Freezer evaporator thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp’s***
20	***Defrost under-heat with no voltage feedback through Gray/White wire at defrost start***
21	***Defrost overheat***
22	***No voltage feedback through Gray/White wire at defrost start***
23	***Defrost overheat with no voltage feedback through Gray/White wire at defrost start***
24	***Defrost under-heat***
30	***Excessive Icemaker Water Valve Solenoid Activation (Exceeded 15 Seconds)***
40	***Excessive Freezer Compressor Run***
50	***Excessive Refrigerator Fan Run***

If Error Codes are observed in Diagnostic Mode, a non-flashing SERVICE icon will appear on the LCD when Diagnostic Mode ends, indicating error codes are still stored (See Figure 3-39). To clear a non-flashing SERVICE icon and the error codes, the problem must be corrected and the unit must be ON, then the door ajar alarm bell ON/OFF key must be pressed and held for 15 seconds. The control will emit a short “beep” when the SERVICE icon and error codes are cleared. (See Figure 3-40)

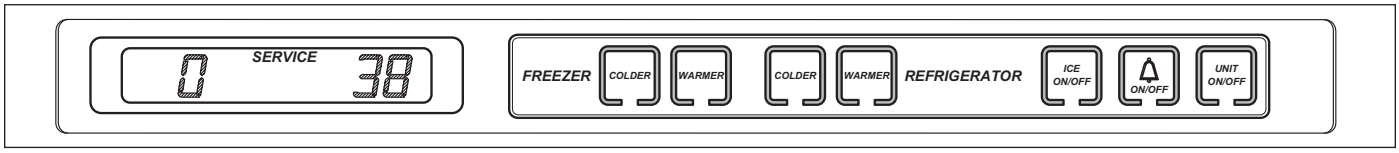


Figure 3-39. Non-flashing SERVICE after Diagnostic Mode = Error Codes are Stored

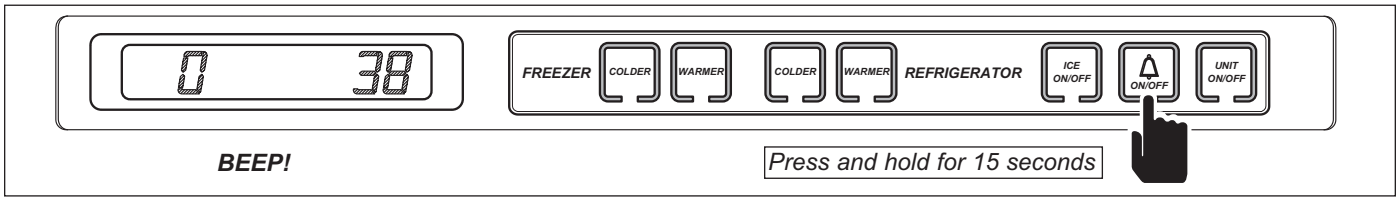


Figure 3-40. Clear Non-flashing SERVICE - Press & Hold Bell ON/OFF Key for 15 Seconds

Manual Component Activation Mode

Manual Component Activation Mode energizes the cooling system for 5 minutes, allowing a Service Technician to check for proper voltage readings at activated components without having to wait for the zone to call for cooling.

To initiate Manual Component Activation Mode the unit must be ON, then press and hold the desired COLDER key and the UNIT ON/OFF key for 10 seconds (See Figure 3-41). All cooling functions for that zone will begin and the zone compartment temperature will be displayed in the left display area of the LCD and the right display area will show the thermistor location.

NOTE: *If a COLDER and the UNIT ON/OFF keys are pressed and held for less than 10 seconds, Diagnostic Mode will be initiated. This was covered earlier in the section.*

NOTE: *It is possible to toggle through the other temperature readings as in Diagnostic Mode, but in this case the temperature readings will last for 5 minutes rather than twenty seconds.*

NOTE: *The compressor overload could prevent the compressor from energizing.*

NOTE: *Manual Component Activation Mode will end 5 minutes after it is initiated. It is possible to end this 5 minute run time and return to normal operation by switching the unit OFF then back ON. If this is done, note that the electronic control will observe a 3 minute minimum compressor OFF time when the unit is switched back ON. This is to protect the compressor and its electricals.*

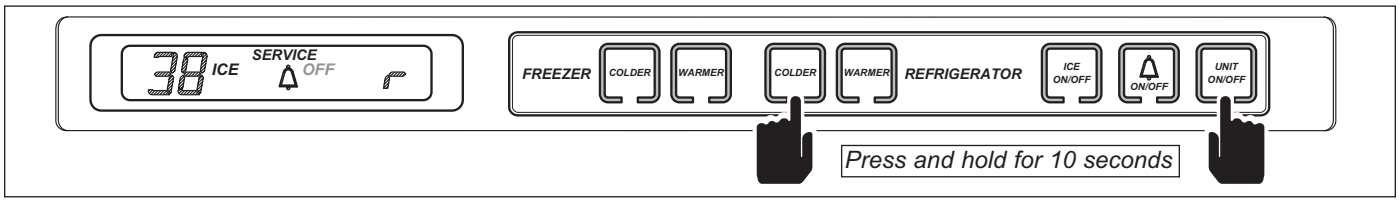


Figure 3-41. Initiate Manual Component Activation Mode (Refrigerator Zone Shown) - Press and Hold Desired COLDER Key and UNIT ON/OFF Key for 10 Seconds

Temperature Log Recall Mode

The electronic control system is equipped with a temperature history data storage system. This system logs/stores the average temperature of each individual thermistor every two hours, along with any event indicators (explained later in this section), that may have occurred. These two-hour periods are referred to as *"indexes".* Up to 168 indexes can be stored for each compartment, making it possible to observe the preceding fourteen days of the unit's temperature history *(each index equals 2 hour temperature average; 2 hours X 168 indexes = 14 days).* After 168 indexes are stored, each new index will bump the oldest index. Index number "1" being the most recent two-hour temperature average and index number "168" being the oldest. Accessing this temperature history data so it can be viewed on the LCD is accomplished by initiating Temperature Log Recall Mode.

There are two ways to initiate Temperature Log Recall Mode. One allows viewing of compartment temperature history only (see below), the other allows viewing of compartment temperature history and evaporator temperature history (see following page).

Initiate Temperature Log Recall Mode To View Compartment Temperature History Only - Begin with the unit ON. Now, press and hold the desired compartment WARMER key, then press the UNIT ON/OFF key, then release both keys (See Figure 3-42). The left display area on the LCD will show average compartment thermistor temperature and in the right display area will be the index number. The first index number will be "1", indicating the most recent two-hour temperature average. The right display area will also flash the thermistor location code at 3 second intervals (See Figure 3-43).

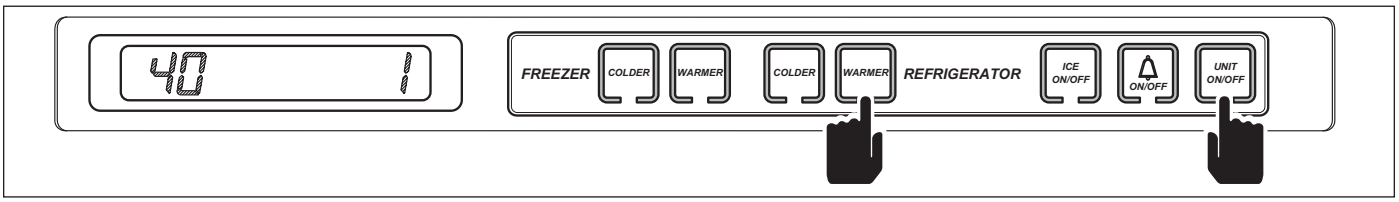


Figure 3-42. Initiate Temperature Log Recall Mode To View Compartment Temperature History Only - Press and Hold Desired WARMER Key, Then Press UNIT ON/OFF Key

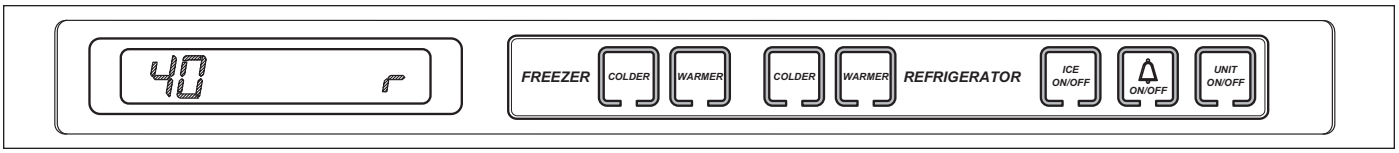


Figure 3-43. Thermistor Location Code Flashes Every 3 Seconds

To toggle up through the indexes (from 1 to 168), press the same WARMER key in multiple key strokes (See Figure 3-44). To toggle down through the indexes (from 168 to 1), press the corresponding COLDER key in multiple key strokes (See Figure 3-45).

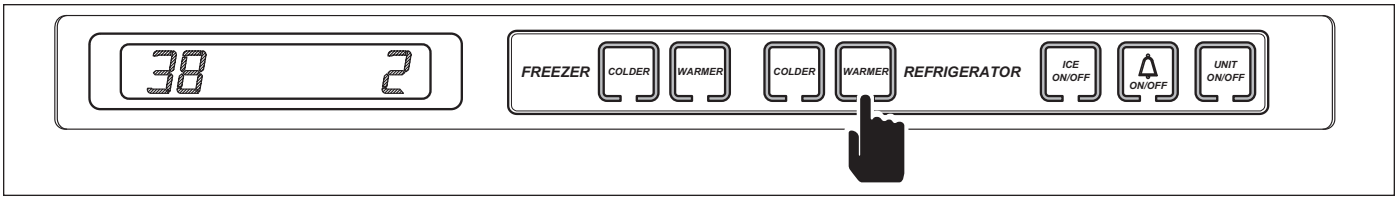


Figure 3-44. Toggle Up Through Indexes - Press WARMER Key in Consecutive Key Strokes

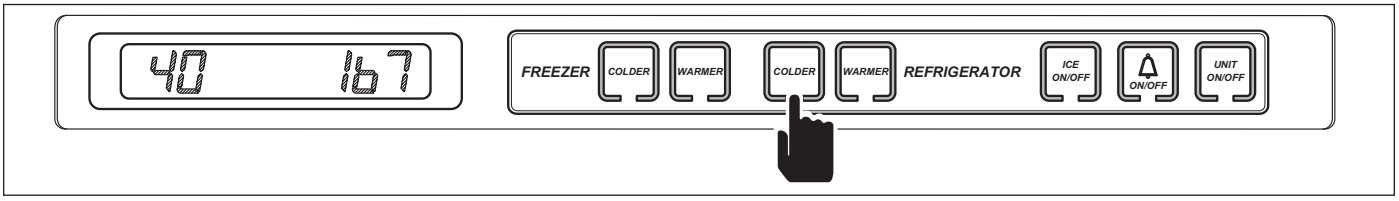


Figure 3-45. Toggle Down Through Indexes - Press COLDER Key in Consecutive Key Strokes

Initiate Temperature Log Recall Mode To View Compartment and Evaporator Temperature History - To view compartment and/or evaporator temperature history, begin with the unit ON and in Diagnostic Mode (See Figure 30-46). While in Diagnostic Mode, toggle through the readings until the desired thermistor temperature is displayed on the LCD (See Figure 3-47). Now, press and hold the UNIT ON/OFF key first, then the WARMER key, then release both keys (See Figure 3-48). The left display area on the LCD will show average thermistor temperature and in the right display area will be the index number "1" indicating the most recent two-hour temperature average. The right display area will also flash the thermistor location code at 3 second intervals (See Figure 3-49).

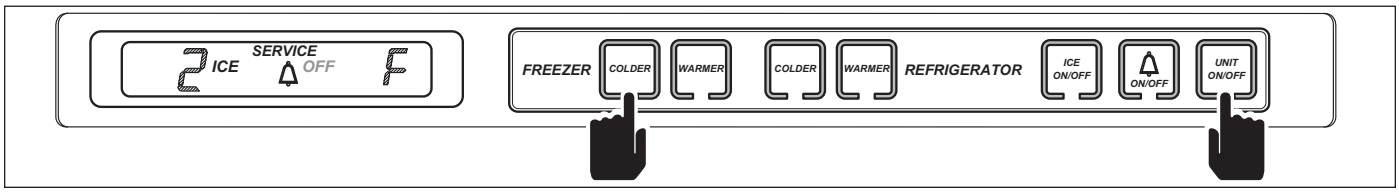


Figure 3-46. Initiate Diagnostic Mode - Press and Hold Either COLDER Key, then the UNIT ON/OFF Key

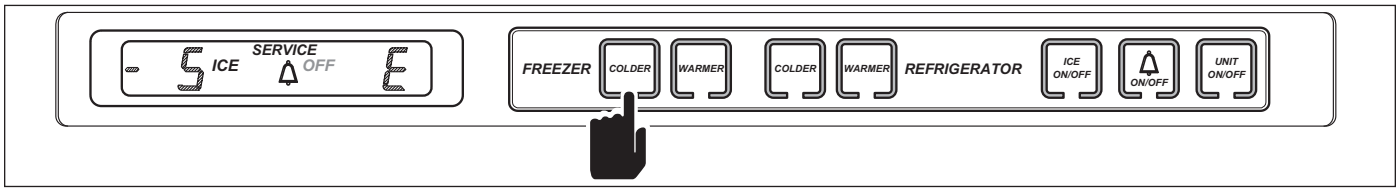


Figure 3-47. Toggle Through Readings - Press Either COLDER Key or Either WARMER Key Until Desired Thermistor Temperature is Displayed

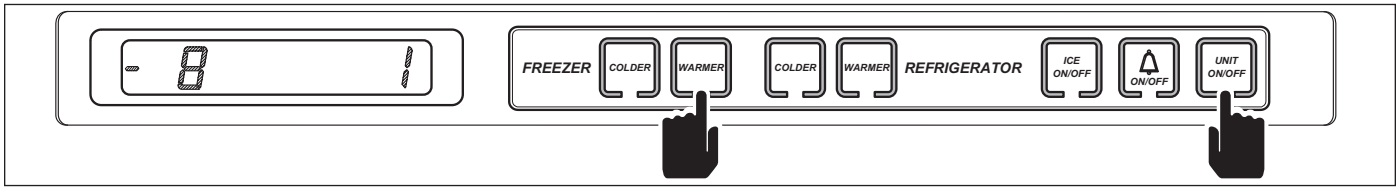


Figure 3-48. Initiate Temperature Log Recall Mode To View Temperature History - Press and Hold UNIT ON/OFF key first, then WARMER Key

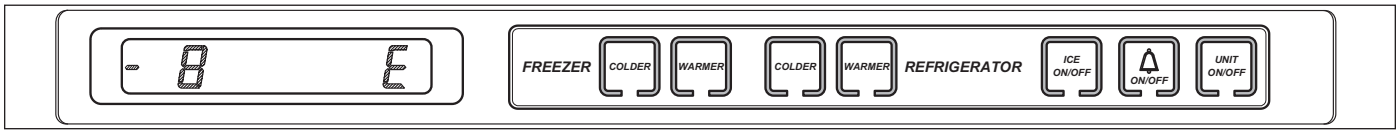


Figure 3-49. Thermistor Location Code Flashes Every 3 Seconds

To toggle up through the indexes (from 1 to 168), press the same WARMER key in multiple key strokes (See Figure 3-50). To toggle down through the indexes (from 168 to 1), press the corresponding COLDER key in multiple key strokes (See Figure 3-51).

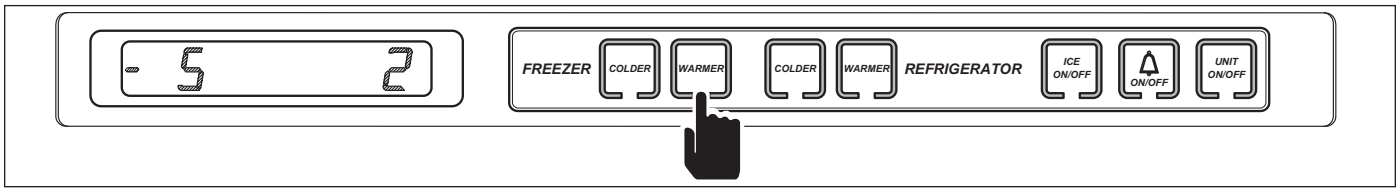


Figure 3-50. Toggle Up Through Indexes - Press WARMER Key in Consecutive Key Strokes

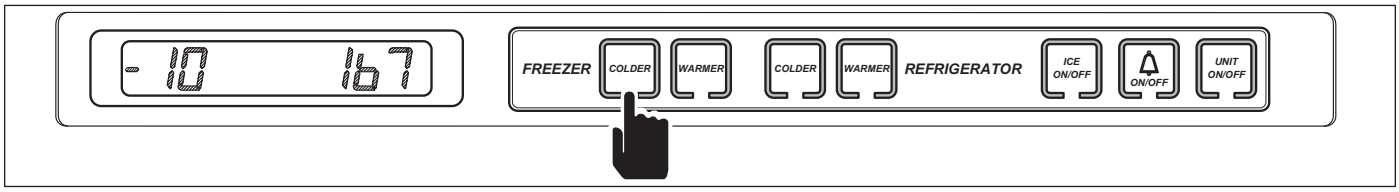


Figure 3-51. Toggle Down Through Indexes - Press COLDER Key in Consecutive Key Strokes

Temperature Log Event Indicators

The diagrams below illustrate possible event indicators that may be observed while in Temperature Log Recall Mode. (See Figures 3-50 through 3-52 and Temperature Log Index Chart on next page))

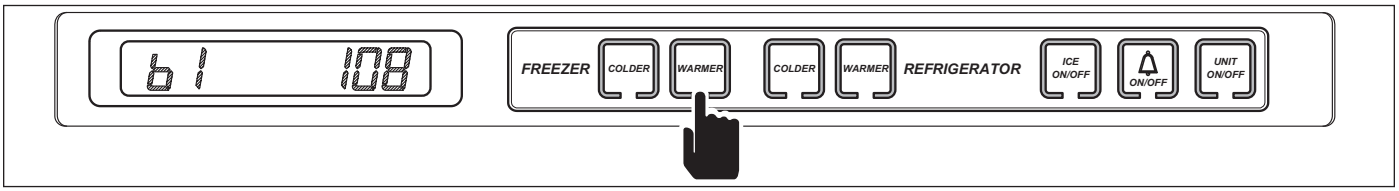


Figure 3-52. *"bl"* Indicates Index is "blank" - No Temperature has Been Logged Yet
(Only possible within first 14 days of unit operation, or after new control board is installed during service)

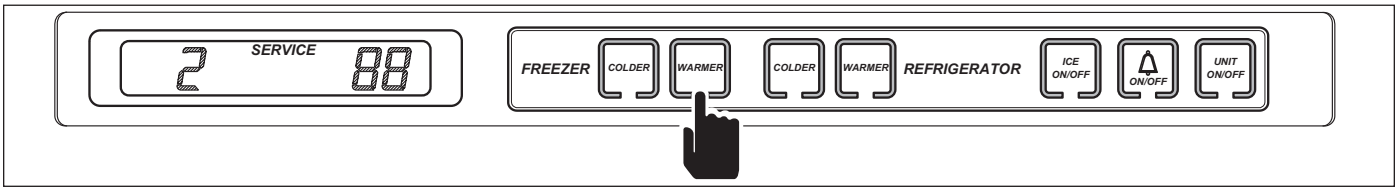


Figure 3-53. SERVICE Illuminates - Indicates Unit was switched OFF During that Index Period by Pressing UNIT ON/OFF Key

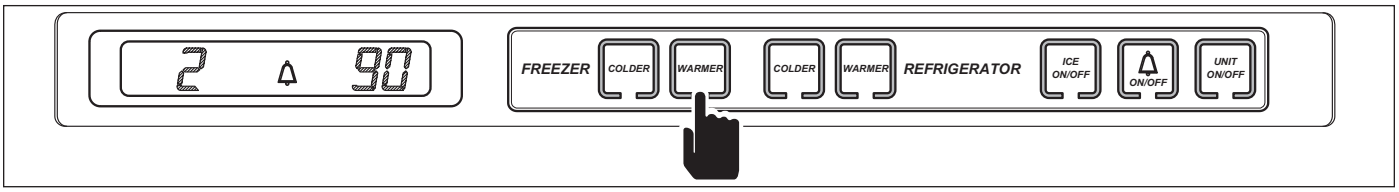


Figure 3-54. Bell Illuminates - Indicates Power Failure / Interruption During that Index Period

NOTE: *If the unit was in Showroom Mode during any of the 168 indexes, average temperatures will continue to be logged. No event indicator will appear with these temperatures.*

NOTE: *If the unit was switched OFF by pressing the UNIT ON/OFF key during any of the 168 indexes and there was still power supplied to the control board, the average temperatures will continue to be logged. This means temperatures would be expected to rise and the SERVICE icon would be present in all indexes in which the unit was OFF.*

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

Temperature Log Index Chart

NOTE : *The chart below applies to the hours in which the control has power. Temperature history data will only be stored when the control has 115V AC supplied to it. If power to the unit is interrupted, the average temperatures for that time period are stored with the event indicator. The temperature history data is stored in a non-volatile memory, so the data is not erased by a power failure, but actual time passage during the power failure will not be shown.*

TEMPERATURE LOG INDEX CHART

Index= Hours Past	Index= Hours Past	Index= Hours Past	Index= Hours Past
1 = 2 Hrs	43 = 86 Hrs	85 = 170 Hrs	127 = 254 Hrs
2 = 4 Hrs	44 = 88 Hrs	86 = 172 Hrs	128 = 256 Hrs
3 = 6 Hrs	45 = 90 Hrs	87 = 174 Hrs	129 = 258 Hrs
4 = 8Hrs	46 = 92 Hrs	88 = 176 Hrs	130 = 260 Hrs
5 = 10Hrs	47 = 94 Hrs	89 = 178 Hrs	131 = 262 Hrs
6 = 12 Hrs	48 = 96 Hrs *(4 Days)*	90 = 180 Hrs	132 = 264 Hrs *(11 Days)*
7 = 14 Hrs	49 = 98 Hrs	91 = 182 Hrs	133 = 266 Hrs
8 = 16 Hrs	50 = 100 Hrs	92 = 184 Hrs	134 = 268 Hrs
9 = 18 Hrs	51 = 102 Hrs	93 = 186 Hrs	135 = 270 hrs
10 = 20 Hrs	52 = 104 Hrs	94 = 188 Hrs	136 = 272 Hrs
11 = 22 Hrs	53 = 106 Hrs	95 = 190 Hrs	137 = 274 Hrs
12 = 24 Hrs *(1 Day)*	54 = 108 Hrs	96 = 192 Hrs *(8 Days)*	138 = 276 Hrs
13 = 26 Hrs	55 = 110 Hrs	97 = 194 Hrs	139 = 278 Hrs
14 = 28 Hrs	56 = 112 Hrs	98 = 196 Hrs	140 = 280 Hrs
15 = 30 Hrs	57 = 114 Hrs	99 = 198 Hrs	141 = 282 Hrs
16 = 32 Hrs	58 = 116 Hrs	100 = 200 Hrs	142 = 284 Hrs
17 = 34 Hrs	59 = 118 Hrs	101 = 202 Hrs	143 = 286 Hrs
18 = 36 Hrs	60 = 120 Hrs *(5 Days)*	102 = 204 Hrs	144 = 288 Hrs *(12 Days)*
19 = 38 Hrs	61 = 122 Hrs	103 = 206 Hrs	145 = 290 Hrs
20 = 40 Hrs	62 = 124 Hrs	104 = 208 Hrs	146 = 292 Hrs
21 = 42 Hrs	63 = 126 Hrs	105 = 210 Hrs	147 = 294 Hrs
22 = 44 Hrs	64 = 128 Hrs	106 = 202 Hrs	148 = 296 Hrs
23 = 46 Hrs	65 = 130 Hrs	107 = 214 Hrs	149 = 298 Hrs
24 = 48 Hrs *(2 Days)*	66 = 132 Hrs	108 = 216 Hrs *(9 Days)*	150 = 300 Hrs
25 = 50 Hrs	67 = 134 Hrs	109 = 218 Hrs	151 = 302 Hrs
26 = 52 Hrs	68 = 136 Hrs	110 = 220 Hrs	152 = 304 Hrs
27 = 54 Hrs	69 = 138 Hrs	111 = 222 Hrs	153 = 306 Hrs
28 = 56 Hrs	70 = 140 Hrs	112 = 224 Hrs	154 = 308 Hrs
29 = 58 Hrs	71 = 142 Hrs	113 = 226 Hrs	155 = 310 Hrs
30 = 60 Hrs	72 = 144 Hrs *(6 Days)*	114 = 228 Hrs	156 = 312 Hrs *(13 Days)*
31 = 62 Hrs	73 = 146 Hrs	115 = 230 Hrs	157 = 314 Hrs
32 = 64 Hrs	74 = 148 Hrs	116 = 232 Hrs	158 = 316 Hrs
33 = 66 Hrs	75 = 150 Hrs	117 = 234 Hrs	159 = 318 Hrs
34 = 68 Hrs	76 = 152 Hrs	118 = 236 Hrs	160 = 320 Hrs
35 = 70 Hrs	77 = 154 Hrs	119 = 238 hrs	161 = 322 Hrs
36 = 72 Hrs *(3 Days)*	78 = 156 Hrs	120 = 240 Hrs *(10 Days)*	162 = 324 Hrs
37 = 74 Hrs	79 = 158 Hrs	121 = 242 Hrs	163 = 326 hrs
38 = 76 Hrs	80 = 160 Hrs	122 = 244 Hrs	164 = 328 Hrs
39 = 78 Hrs	81 = 162 Hrs	123 = 246 Hrs	165 = 330 Hrs
40 = 80 Hrs	82 = 164 Hrs	124 = 248 Hrs	166 = 332 Hrs
41 = 82 Hrs	83 = 166 Hrs	125 = 250 Hrs	167 = 334 Hrs
42 = 84 Hrs	84 = 168 Hrs *(7 Days)*	126 = 252 Hrs	168 = 336 Hrs *(14 Days)*

ELECTRONIC CONTROL SERVICE INPUT OPERATIONS

Model Configuration Mode

The main control board is used in several different models, so when a 700-3 Base Unit is manufactured, the main control board must be configured/programmed for the specific model it is used in by a series of key strokes at the control panel. This is called Model Configuration.

If a new main control board is installed during a service call, double dashes (- -) will appear on the LCD (See Figure 3-55). This indicates the new board must be configured for the model it was installed into. This is accomplished in Model Configuration Mode, which is entered as soon as power is supplied to the unit. While in this mode, open the bottom drawer, then toggle through the model codes by pressing WARMER or COLDER keys, until appropriate model code is displayed (See Figure 3-56 and 3-57, and Model Code Table below). With appropriate model code displayed, press UNIT ON/OFF key to store model configuration (See Figure 3-58).

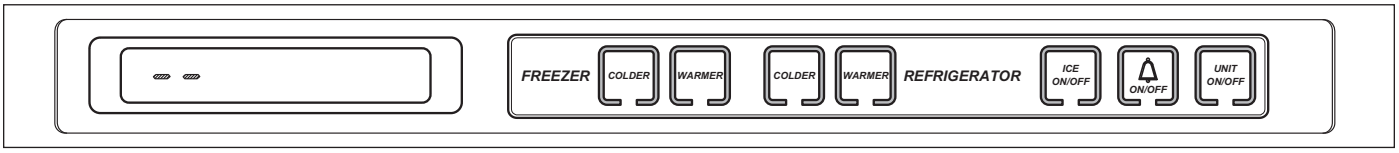


Figure 3-55. "- - " Double Dashes when New Board Installed = Model Configuration must be Performed

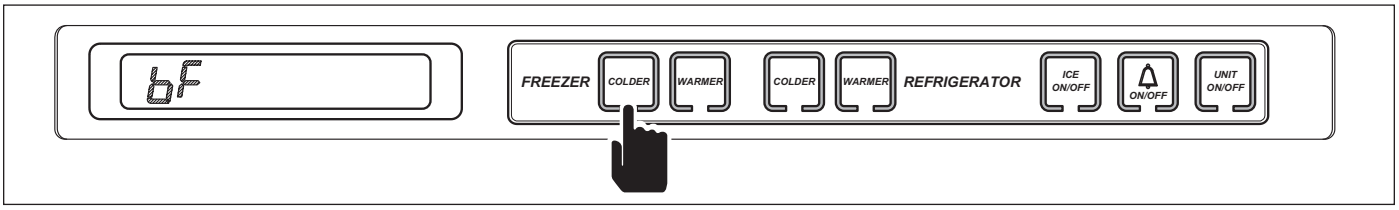


Figure 3-56. Press WARMER or COLDER key to Toggle Through Model Codes

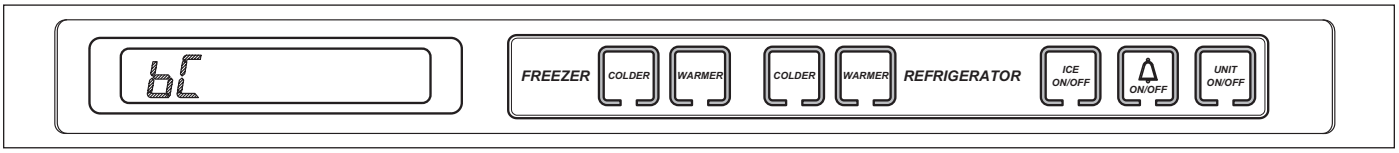


Figure 3-57. Stop When Appropriate Model Code is Displayed

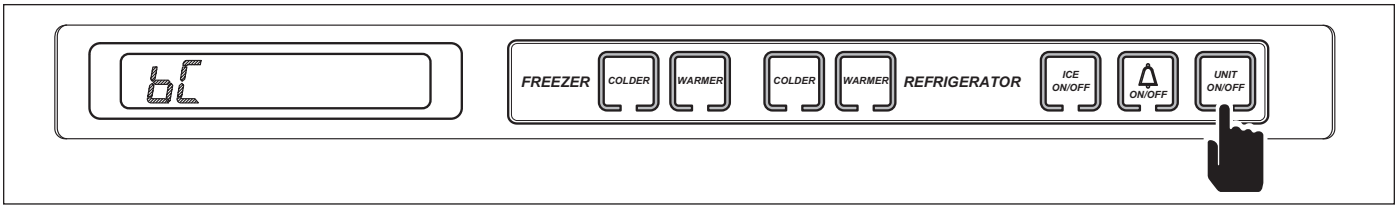


Figure 3-58. Press UNIT ON/OFF Key to Store Model Configuration

MODEL CODE TABLE	
CODE	**MODEL**
br	**700BR-3**
bC	**700BCI-3**
27	**427R-2**
bF	**700BFI-2**

Manual Entry Model Configuration Mode

Manual Entry Model Configuration Mode allows a Service Technician to verify a main control board in a 700-3 Base unit was configured correctly, and/or to reconfigure the main control board if a mistake was made during the configuration process.

To initiate Manual Entry Model Configuration Mode the unit must be ON and the bottom drawer open. Now, press either COLDER key and the UNIT ON/OFF key (See Figure 3-59). Then, Press and hold the drawer ajar alarm bell ON/OFF key and the UNIT ON/OFF key together for 15 seconds. The unit will now be in Model Configuration Mode, with the model code of the last configuration displayed (See Figure 3-60 and Model Code Table on previous page). If needed, toggle through the model codes by pressing WARMER or COLDER keys, until appropriate model code is displayed (See Figure 3-61 and 3-62). With appropriate model code displayed, press UNIT ON/OFF key to store model configuration (See Figure 3-63).

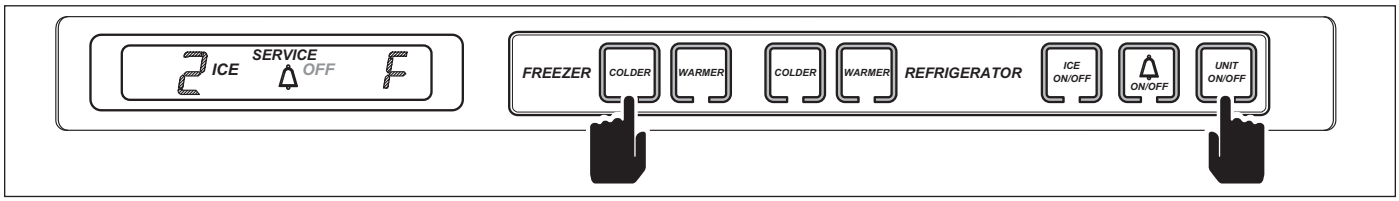


Figure 3-59. Start in Diagnostic Mode - Press and Hold Either COLDER Key, Then UNIT ON/OFF Key

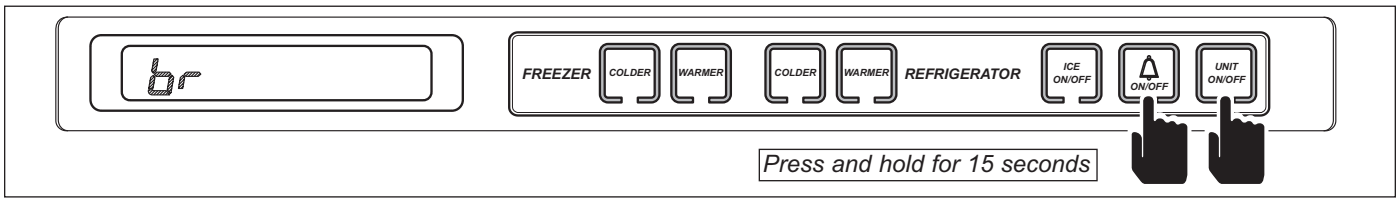


Figure 3-60. Press Alarm and UNIT ON/OFF key to Initiate Manual Entry Model Configuration Mode

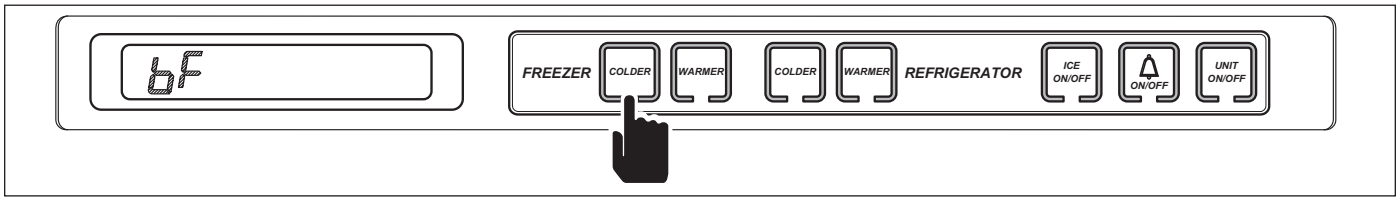


Figure 3-61. Press WARMER or COLDER key to Toggle Through Model Codes

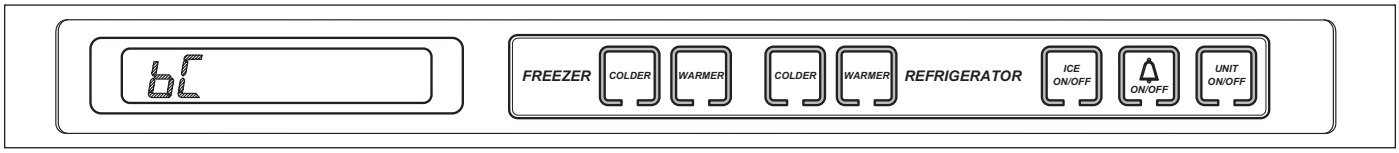


Figure 3-62. Stop When Appropriate Model Code is Displayed

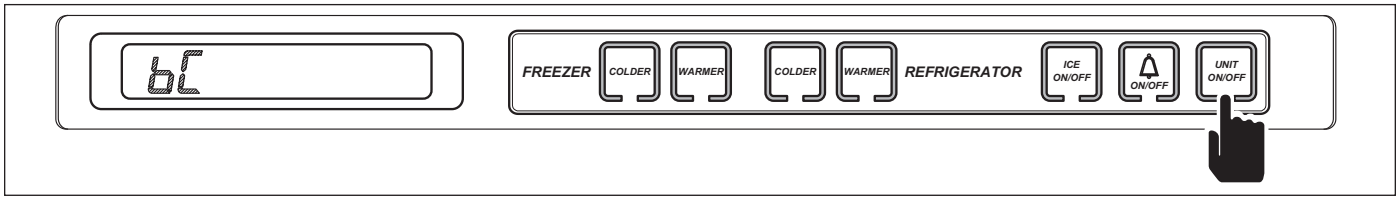


Figure 3-63. Press UNIT ON/OFF Key to Store Model Configuration

SECTION 4

SEALED SYSTEM INFORMATION

HFC-134a REFRIGERANT SERVICE INFORMATION

The sealed systems contain HFC-134a refrigerant. This section provides some general rules for working with 134a, and explains procedures to be followed while servicing the sealed system. This is followed by diagrams which illustrate 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.

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 filter-drier when servicing the sealed system.
- The filter-drier must be cut from the sealed system. Never un-braze the drier as the heat will drive moisture back into the sealed system.
- Do not leave sealed system nor replacement compressor open to the atmosphere for more than 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.

700-2 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 six diagrams on these pages 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.

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 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 is then routed through the door gasket seat heater loop to prevent sweating. After traveling through the heater loop, the high-pressure/warm liquid enters the high-side filter-drier.

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.

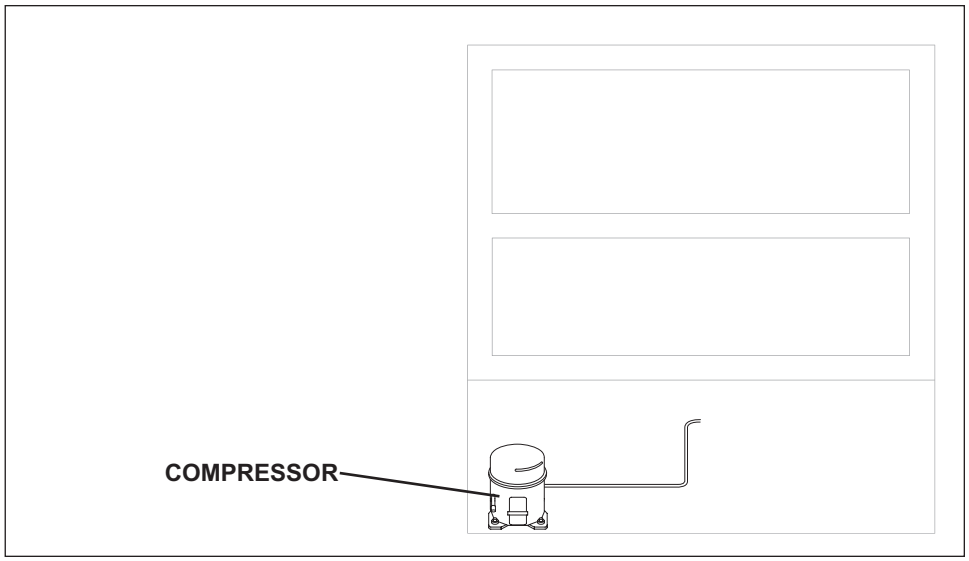


Figure 4-1. Compressor

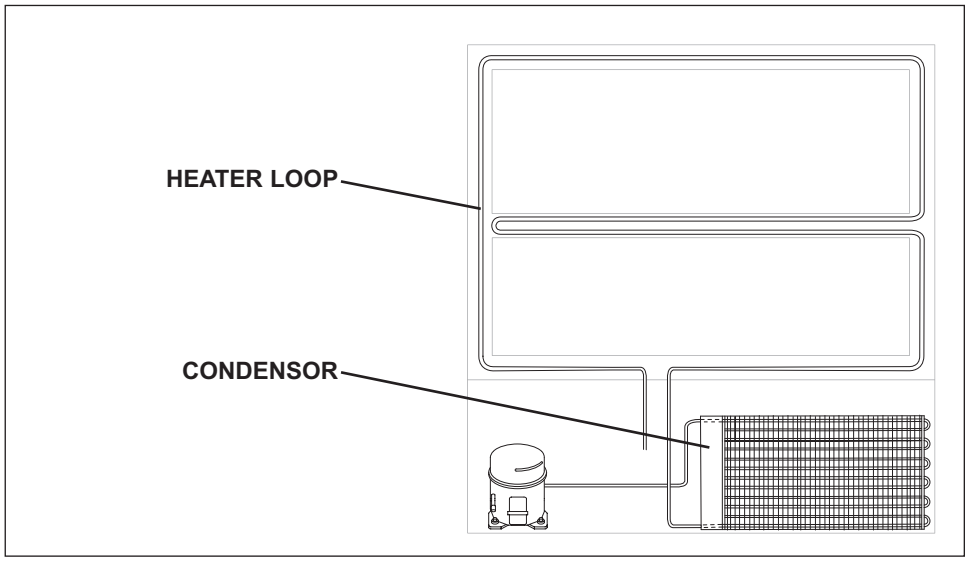


Figure 4-2. Condenser & Heater Loop

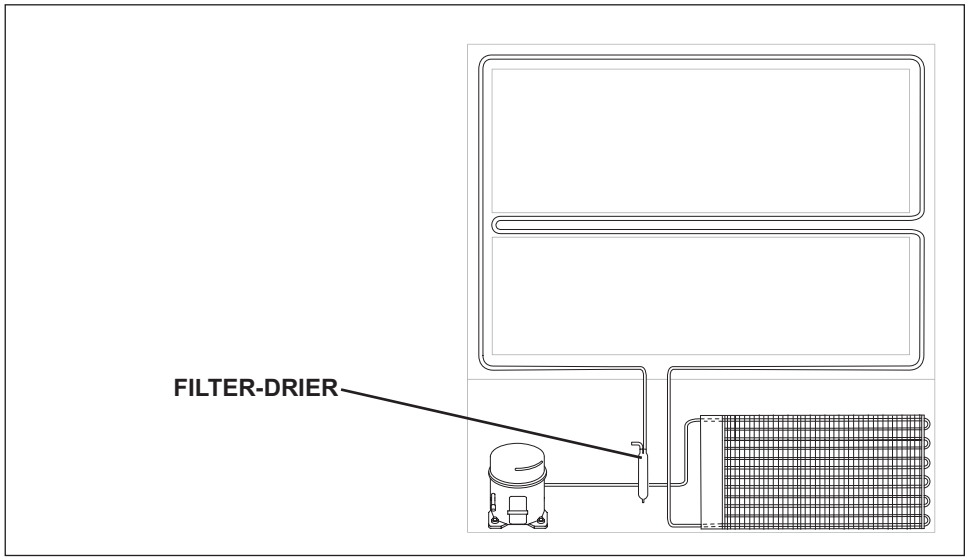


Figure 4-3. Filter-Drier

Capillary Tube (& Heat Exchanger) (Figure 4-4)
The warm liquid refrigerant travels through the long skinny capillary tube which is soldered to the suction line. (These two tubes soldered together create the heat exchanger.) As the warm liquid refrigerant travels through the capillary tube it gives up heat to the cool refrigerant gas traveling through the suction line 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 Line (& Heat Exchanger) (Figure 4-6)
The cool gas travels through the suction line which is soldered 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 line it absorbs heat from the warm liquid refrigerant traveling through the capillary tube, making it a luke warm gas. The lukewarm refrigerant gas then returns to the compressor where the process begins again.

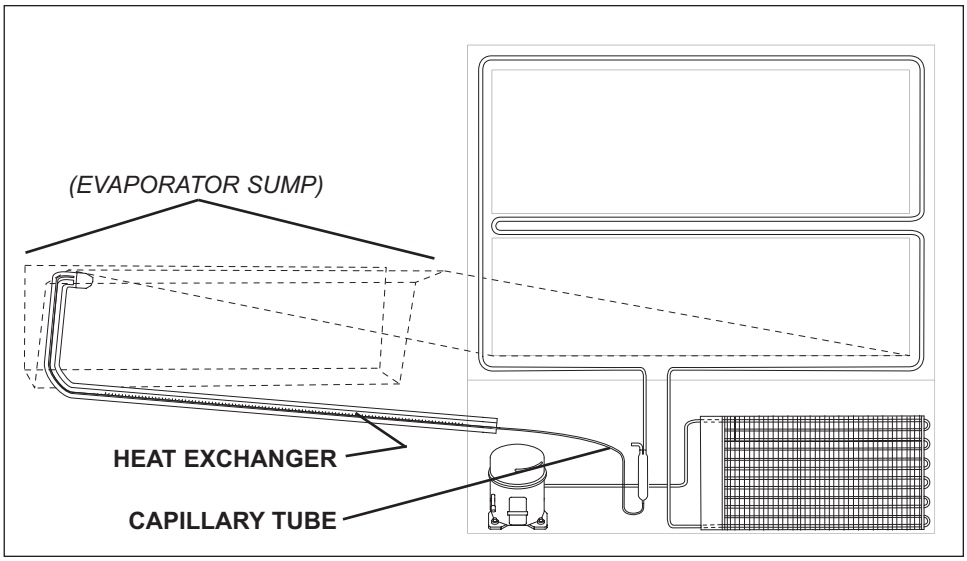


Figure 4-4. Capillary Tube (& Heat Exchanger)

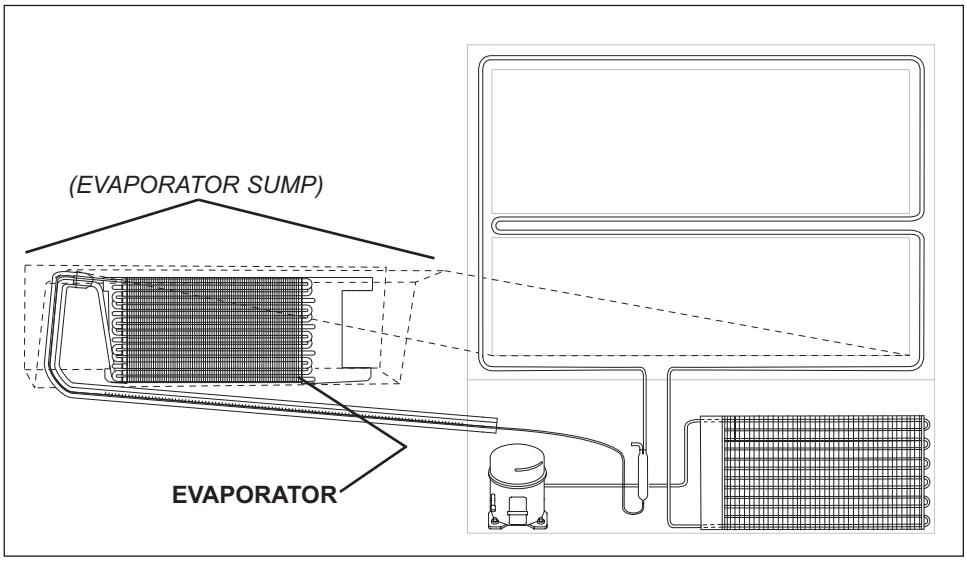


Figure 4-5. Evaporator

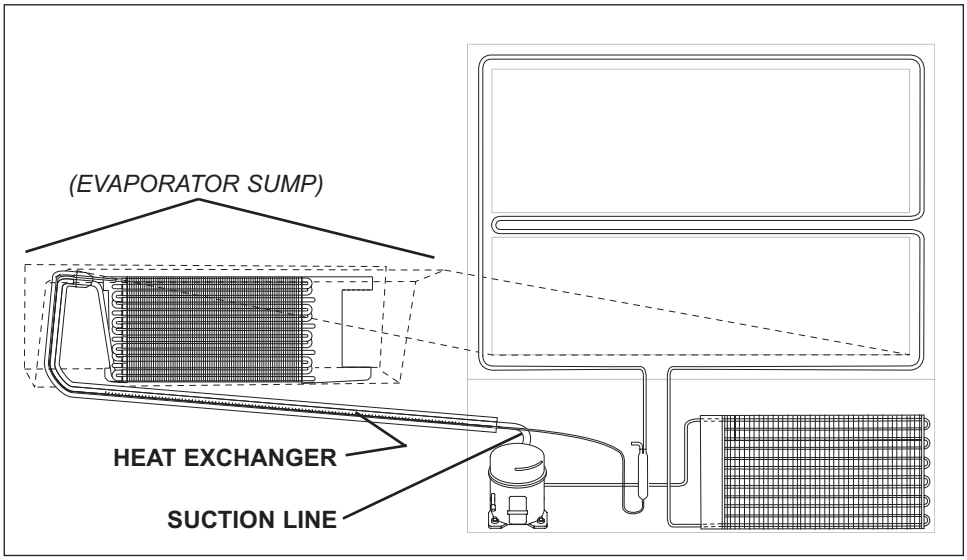


Figure 4-6. Suction Line & Heat Exchanger

SEALED SYSTEM REFRIGERANT FLOW DIAGRAM

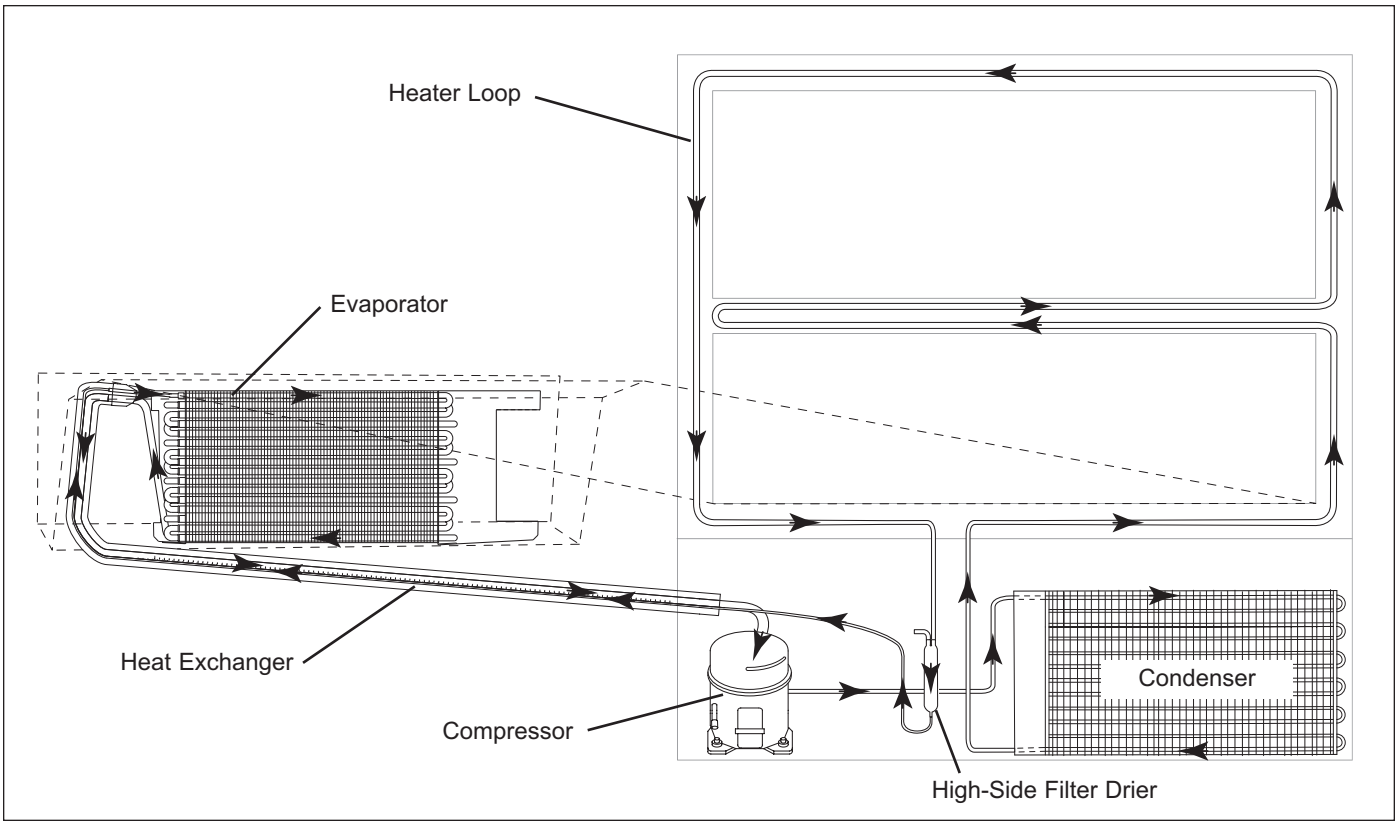


Figure 4-1. Model 700BC/I-2 Refrigerant Flow

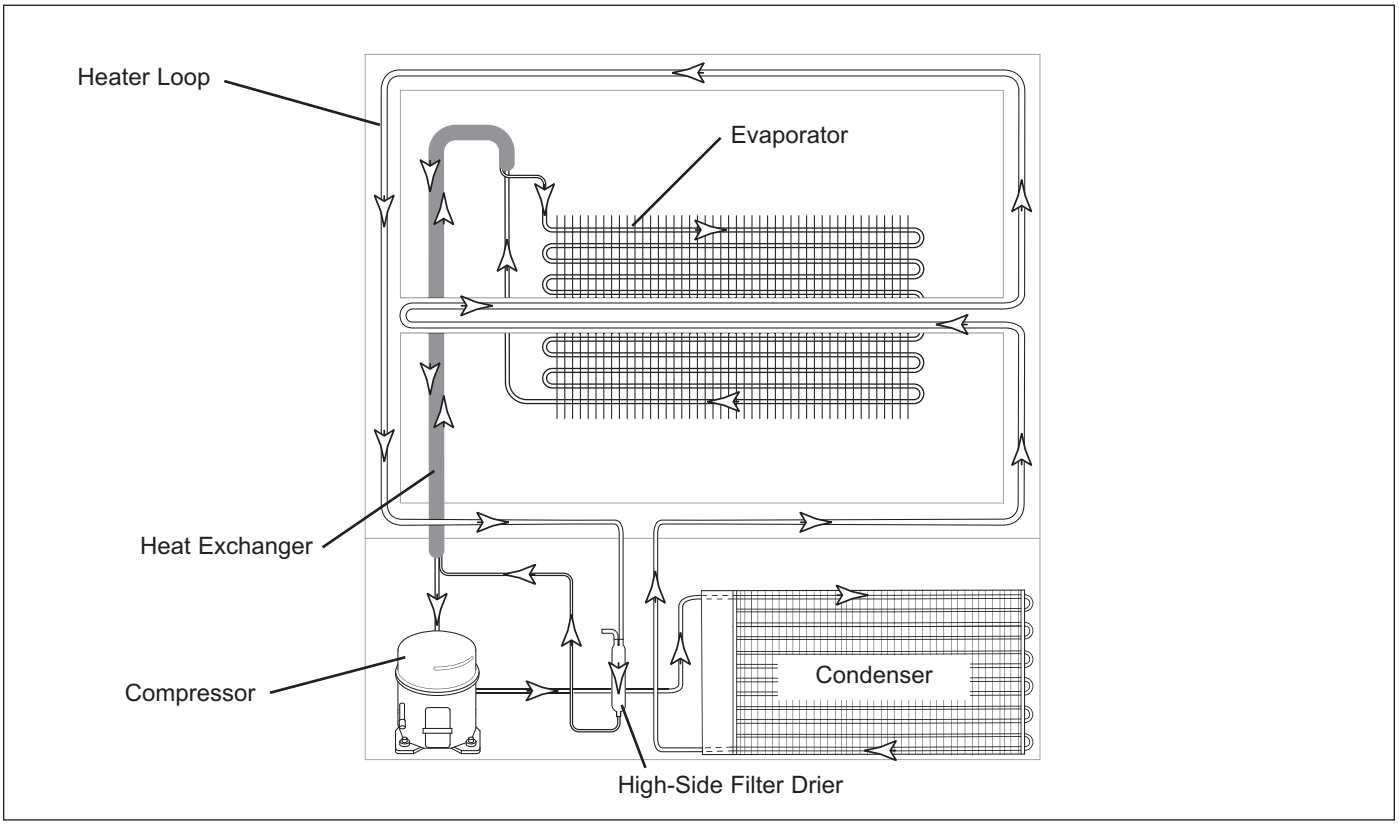


Figure 4-2. Model 700BR-2 Refrigerant Flow

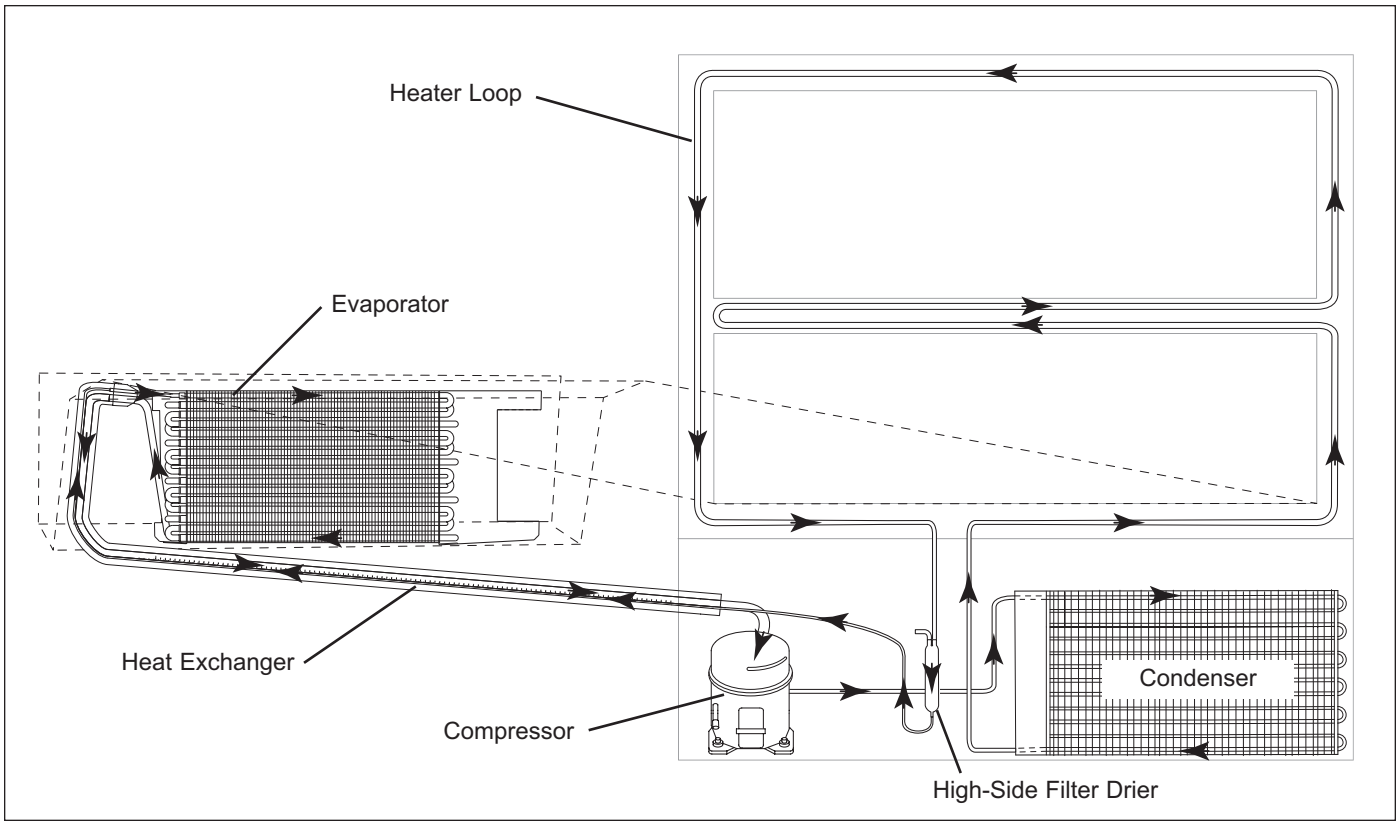


Figure 4-3. Model 700BF/I-2 Refrigerant Flow

SECTION 5

AIRFLOW & FAN BLADE SPACING

AIRFLOW AND FAN BLADE SPACING DIAGRAMS

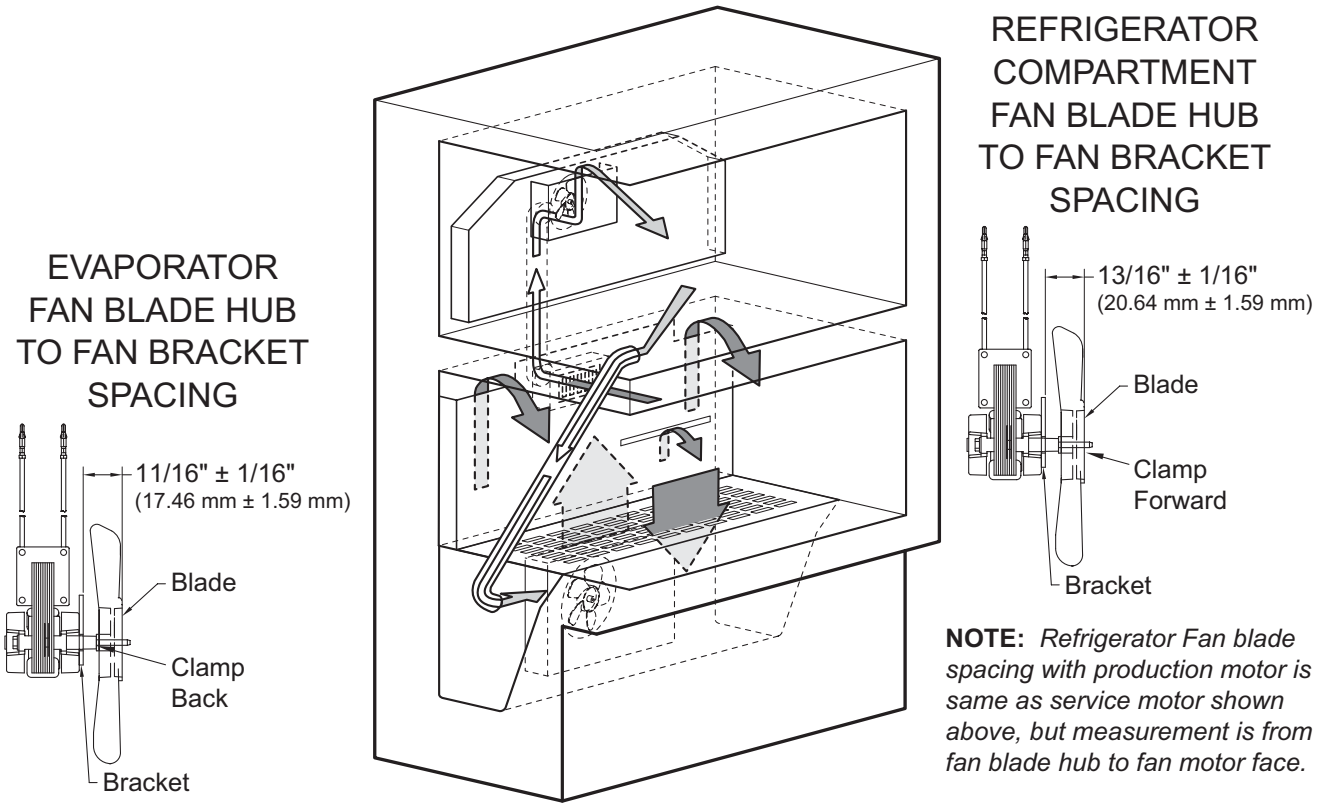


Figure 5-1. 700BC/I-3 Airflow and Fan Blade Spacing

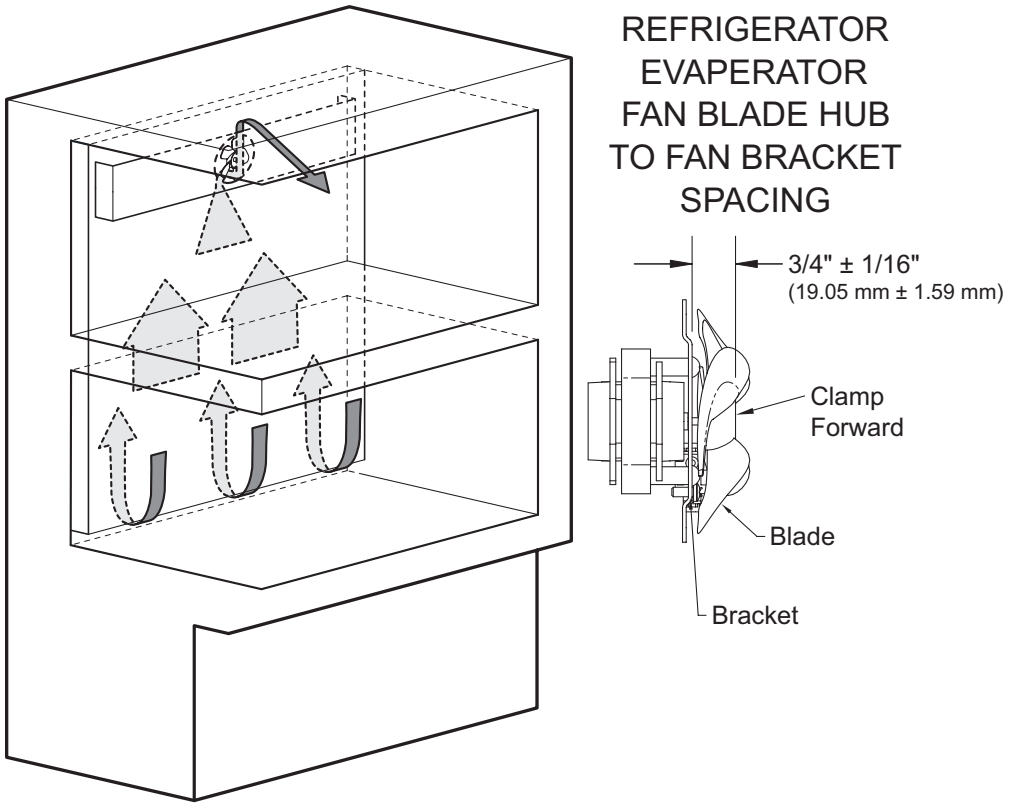


Figure 5-2. 700BR-3 Airflow and Fan Blade Spacing

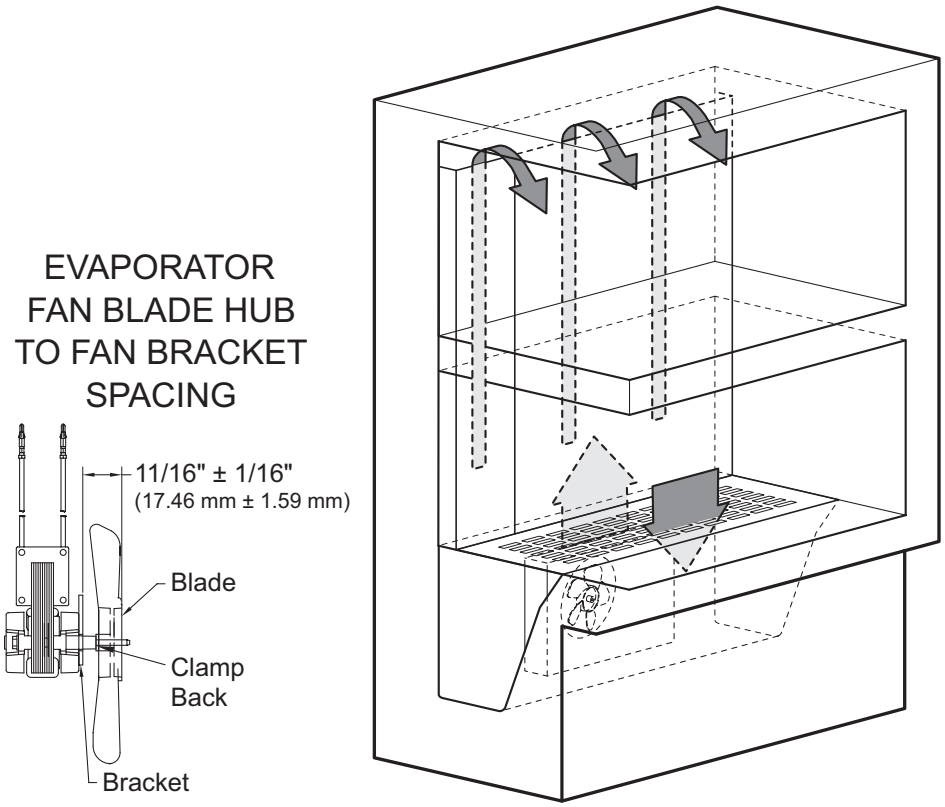


Figure 5-3. 700BF/I-3 Airflow and Fan Blade Spacing

SECTION 6

ICEMAKER INFORMATION

MODULAR ICEMAKER

All 700-2 Series units utilize a “modular icemaker.” The icemaker operation is not complex, however, an understanding of its cycle of operation is necessary in order for a serviceman to make a proper diagnosis.

Modular Icemaker Operation

When the icemaker thermostat has sensed temperatures of 17°F, the thermostat closes. At this time, the current now has a path through the thermostat to the motor. The motor is linked with the drive gear. From the module, there are copper contacts that ride on copper strips on the backside of the drive gear. (See Figure 6-1) As the drive gear rotates, these contacts from the module will make or break a circuit (track) to the copper strips to generate the icemaker cycle.

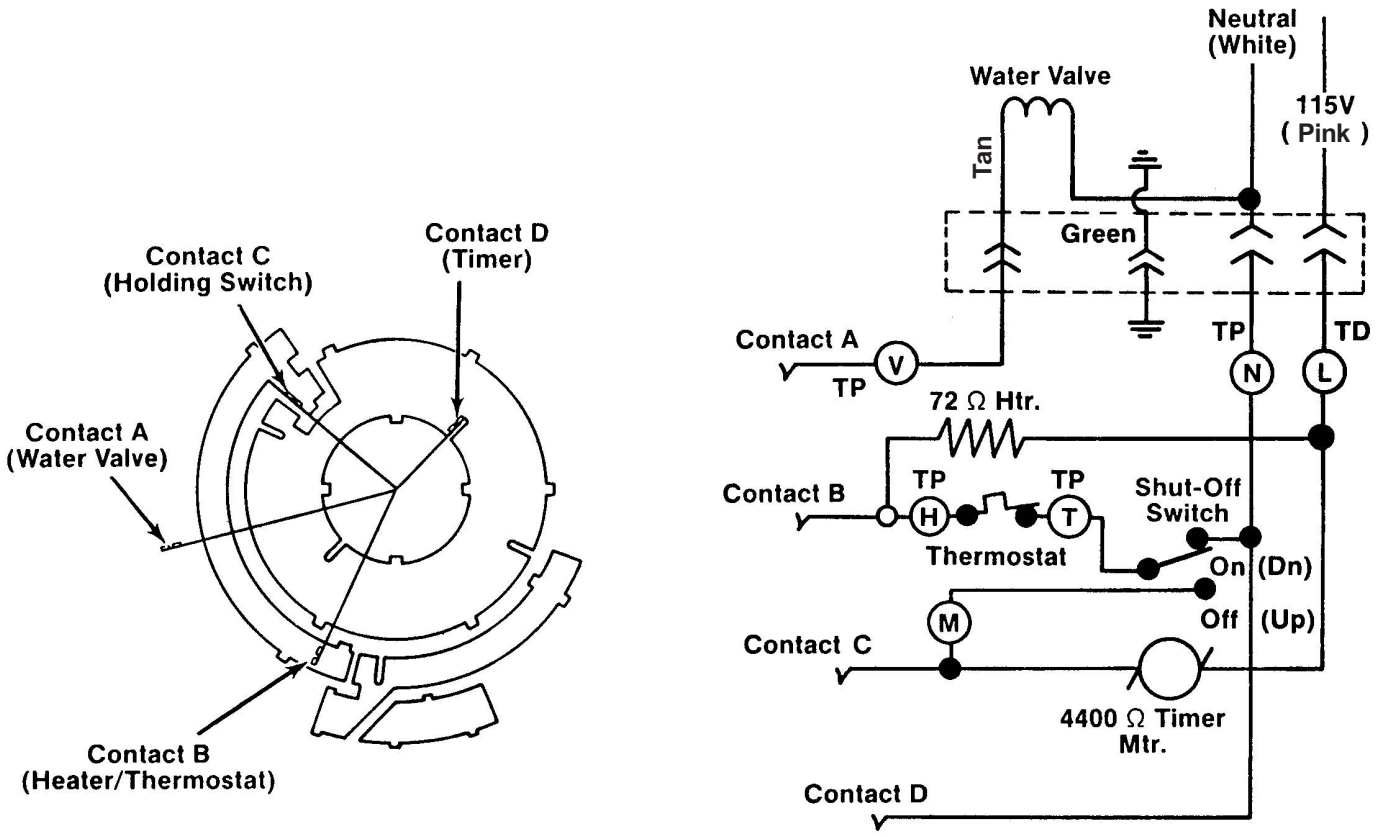


Figure 6-1. Modular Icemaker Electrical Schematic

Additional Icemaker Operation Notes

NOTE 1: *The ICE ON/OFF key at the control panel activates the icemaker system. If "ICE" is not displayed on the LCD, the icemaker system is OFF.*

NOTE 2: *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. To bypass the 45 minute dwell, press the ICE key to switch the ice making system OFF, then press the ICE key again to cycle the ice making system back ON.*

NOTE 3: *The ice bucket activates a switch when in place. If the ice bucket is not in proper position, ice production will stop.*

NOTE 4: *The icemaker shut-off arm must be in the "down / on" position for the icemaker to operate.*

NOTE 5: *The icemaker relay on the control board also controls the fill tube heater and water valve.*

What Happens During Ejector Blade Rotation

Figure 6-2 represents a view of the ejector blade from the front (or module side) of the icemaker. This diagram indicates what happens during the rotation of the ejector blade and will assist the Service Technician in diagnosing icemaker problems

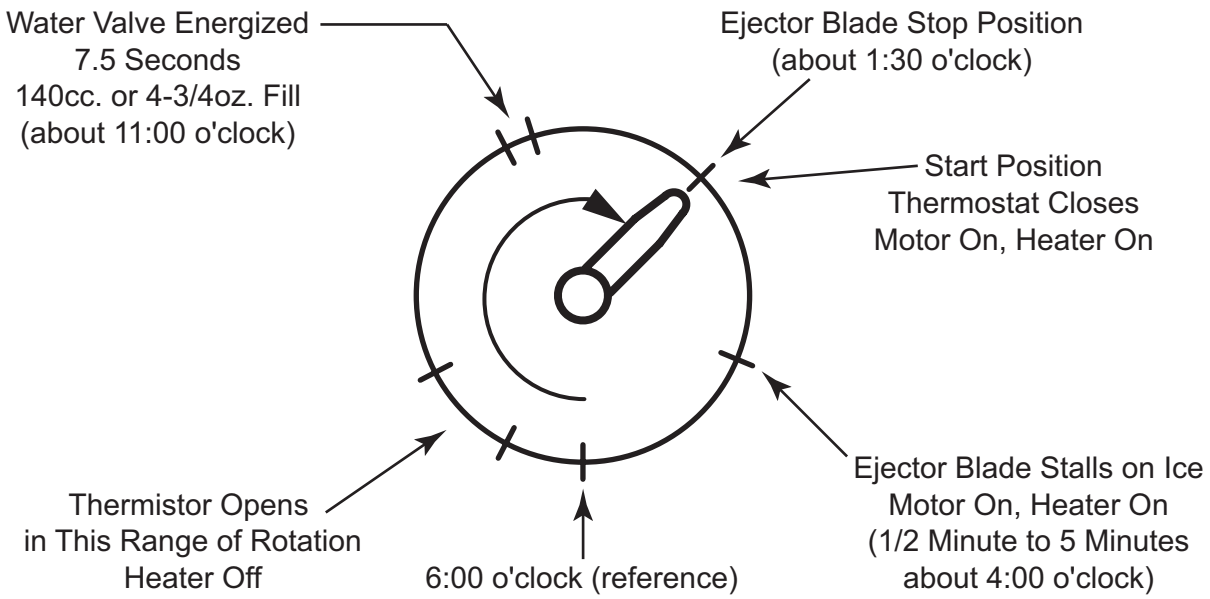


Figure 6-2. Ejector Blade Rotation Diagram

MODULAR ICEMAKER TEST PROCEDURES

Perform the following tests if the icemaker is thought to be defective. See Figure 6-3 for icemaker test port locations. Test 1 through 5 are performed with power supplied to the icemaker, so read the "WARNING" below and the "additional Ice Production Notes" on the previous page before proceeding.

⚠ WARNING

ELECTRIC SHOCK HAZARD! TESTS 1 THROUGH 5 ARE PERFORMED WITH POWER SUPPLIED TO THE ICEMAKER. CARE MUST BE TAKEN WHEN PERFORMING THESE TESTS TO AVOID SEVERE PERSONAL INJURY OR DEATH.

Voltage Tests

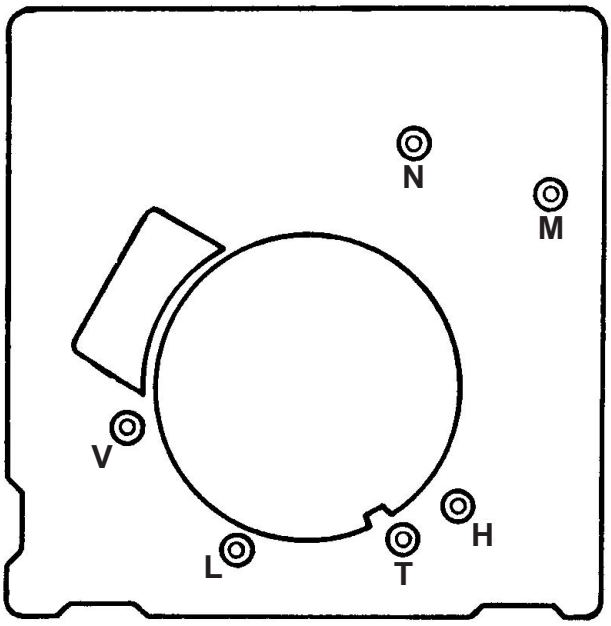
1. Check for power between ports "L" and "N". Make sure test probes go into test ports 1/2".
2. Strip 1/2" of insulation from each end of a 3" piece of insulated 14 gauge wire to create a jumper/test wire. Insert the stripped ends of this jumper/test wire into ports "T" and "H" to bypass the thermostat.

   NOTE: *Do not place the jumper/test wire between any other ports as this will damage the icemaker.*

   If the motor doesn't run, replace the module/motor assembly.
3. Leave the jumper/test wire in until the ejector blades rotate to approximately 8:00 o'clock. The mold heater should heat up. If not, see test 5 below.
4. Remove the jumper/test wire when the ejector blades reach the 8:00 o'clock position. The water valve should energize for 7.5 seconds when the ejector blades rotate to approximately 11:00 o'clock. If not, repeat test 2 through 4 and check for power to solenoid when ejector blades rotate to approximately 11:00 o'clock. If no voltage, check electrical connections.

Continuity Tests and Thermostat Inspection

5. With icemaker removed from the unit, check the resistance of the mold heater between ports "L" and "H." Reading should be between 62 - 82 Ohms. Replace mold/heater assembly if outside this range.
6. With the module/motor separated from the mold/heater assembly, check the resistance of the motor between ports "L" and "M." Reading should be between 3390 - 4410 Ohms. Replace module/motor assembly if outside this range.
7. If icemaker passes tests 1 through 6, check for adequate supply of Thermal-Mastic on icemaker thermostat. If little or no Thermal-Mastic, apply Thermal-Mastic to thermostat. If adequate supply is present, replace thermostat.
8. See General Troubleshooting Guide if icemaker passes tests 1 through 7.



TEST PORTS

H-T ➔ Thermostat
L-H ➔ Heater
L-M ➔ Motor
L-N ➔ 115V AC
V-N ➔ Valve

Figure 6-3. Icemaker Test Ports

NOTE: *Never attempt to turn the icemaker ejector blades by hand. Doing so will damage the icemaker*

WATER FILL ADJUSTMENT

The water valve should energize for approximately 7.5 seconds. This should supply 140cc. of water to the icemaker, or approximately 4.75oz. If this is not the case, the fill amount can be adjusted with the water fill adjustment screw. (See Figure 6-4)

To increase the fill amount, turn the water fill adjustment screw counterclockwise. To decrease the fill amount, turn the water fill adjustment screw clockwise. A 360° turn will affect the fill by 40cc. A 180° turn will effect the fill by 20cc.

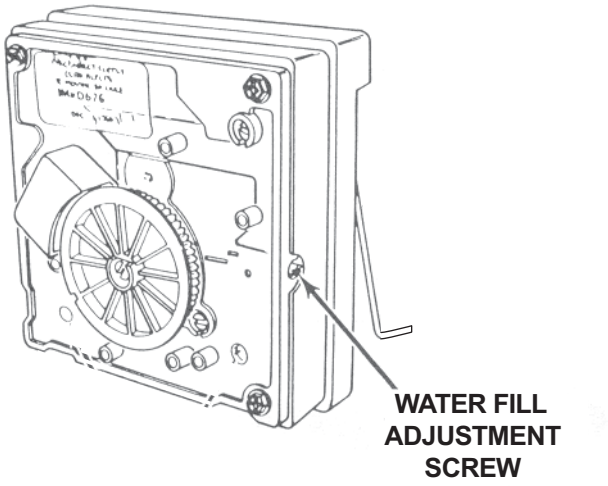


Figure 6-4. Water Fill Adjustment

ICEMAKER DISASSEMBLY

Module/Motor Assembly Removal

To remove the module/motor assembly, first remove the cover and the shut-off arm. Then, extract the module/motor assembly mounting screws and pull the module from the support. (See Figure 6-5)

Mold/Heater Assembly Removal

To remove the mold/heater assembly, first remove the cover and the shut-off arm. Insert a Phillips head screwdriver into the access holes and extract the screws. Then, pull the mold/heater assembly from the support. (See Figure 6-5)

Ejector Blades and/or Ice Stripper Removal

To remove the ejector blades and/or ice stripper, first remove the cover and the shut-off arm and disconnect the mold/heater assembly from the support. (See Figure 6-5) Then, pull the ejector blades and/or ice stripper from the mold.

Icemaker Thermostat Removal

To remove the icemaker thermostat, first remove the cover and the shut-off arm and disconnect the mold/heater assembly from the support. (See Figure 6-5) Then, use a needle-nose pliers to grasp one of the retaining clips and pull out. (See Figure 6-6)

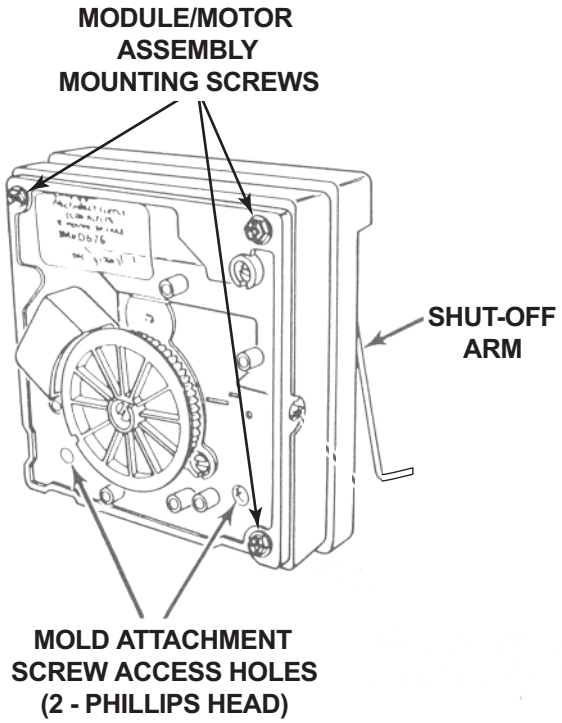


Figure 6-5. Icemaker Component Removal

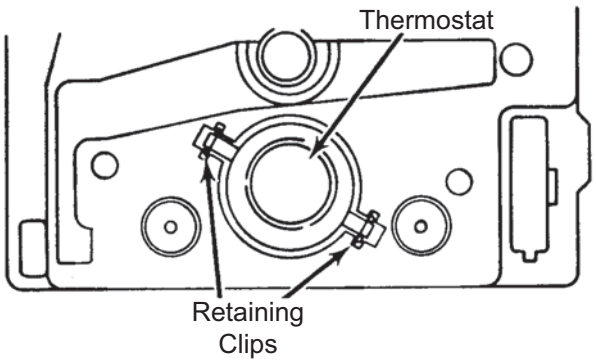


Figure 6-6. Thermostat Retaining Clips

SECTION 7

COMPONENT ACCESS AND REMOVAL

COMPONENT ACCESS AND REMOVAL

This section explains how to adjust, access and/or remove 700-3 Series base unit components. If different models have similar procedures, they are grouped together under the appropriate heading. The units covered in the procedures are listed between brackets after the heading.

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

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

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

⚠ WARNING

- **IF IT IS NECESSARY TO REMOVE A UNIT FROM ITS INSTALLATION, REMEMBER THAT THE UNIT COULD TIP FORWARD WHEN PULLED FORWARD BEYOND THE ANTI-TIP COMPONENTS, 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 UNIT ON/OFF KEY, 115 VOLTS AC IS STILL PRESENT AT THE MAIN CONTROL BOARD.**
- **IF REMOVING A DRAWER REMEMBER THAT 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.**

EXTERIOR COSMETIC AND MECHANICAL COMPONENTS

Kickplate/Grille Removal (All Base Units)

The kickplate/grille is attached by four screws passing through the kickplate into adjustable kickplate brackets.

NOTE: *Because drawer panels may extend down in front of the kickplate/grille, it may be necessary to remove the bottom drawer to gain access.*

To remove the kickplate/grille, extract the four screws (two on each side), then pull kickplate/grille forward. (See Figure 7-1)

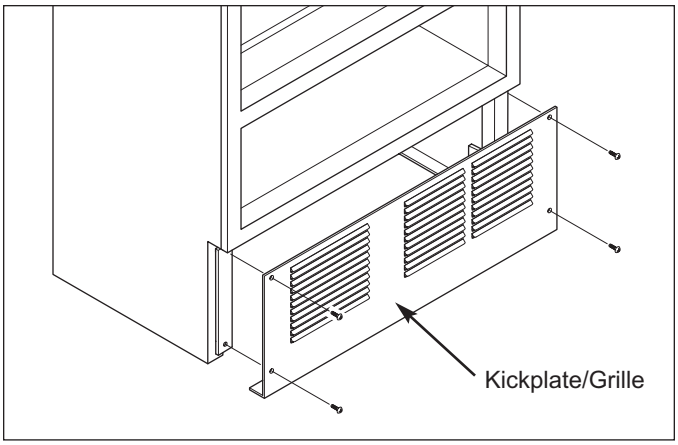


Figure 7-1. Kickplate/Grille Removal

Drawer Assembly Removal (All Base Units)

There are inverted channels on both sides of the drawer tubs which rest on telescoping drawer slide assemblies. A pin at the front of each drawer slide fits into a hole in the inverted channel of each drawer tub, holding the drawer assembly in place. (See Figure 7-2)

⚠ CAUTION

Top drawer has a display wire harness that must be disconnected during top drawer removal. Failure to disconnect wire harness could damage wiring or connections. See top drawer assembly removal procedure below.

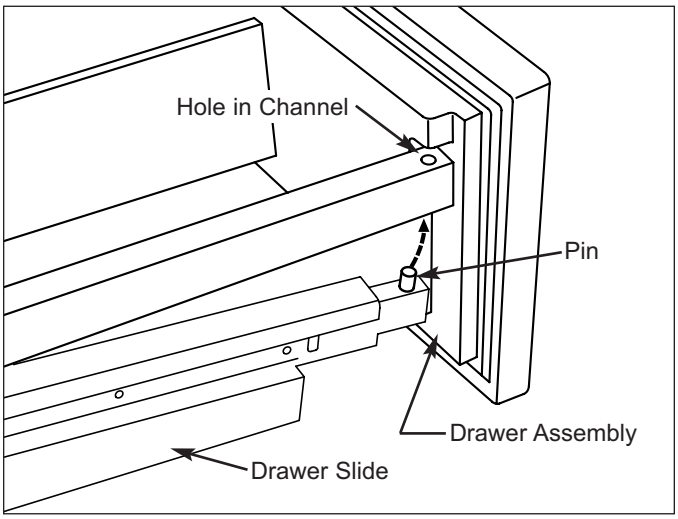


Figure 7-2. Drawer Assembly Removal

Top Drawer Removal:

1. Pull top drawer assembly open 6 to 10 inches.
2. Lift front of drawer up and off of pins at end of drawer slides, then push slides back in (See Figure 7-2).
3. Carefully place drawer assembly face down directly in front of unit.
4. Disconnect control cable at interior left rear of unit by turning collar on connector counterclockwise and unplugging pins from socket (See Figure 7-3).

Bottom Drawer Removal:

1. Pull bottom drawer open and lift front up and off of pins at end of drawer slides (See Figure 7-2).
2. Continue pulling drawer assembly forward and out. Then, push telescoping drawer slide assemblies back in.

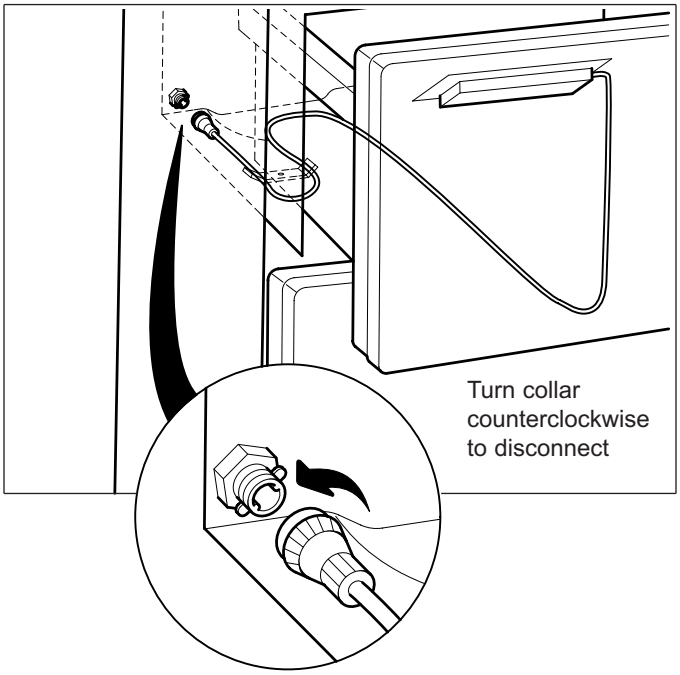


Figure 7-3. Disconnecting Control Cable

Side Trim Molding Strip Removal (All Base Units)

Side trim molding strips are held in place by two unit-to-cabinet brackets which are attached to the sides of the cabinet.

NOTE: *Removing the drawers first will make this task easier.*

To remove side trim molding strips (See Figure 7-4):

1. Insert a straight-blade screwdriver in channel at bottom of molding, then gently pull molding forward until face-frame edge of molding is accessible.
2. Place another straight-blade screwdriver under face-frame edge and gently work molding away from face-frame and out of the two unit-to-cabinet brackets.

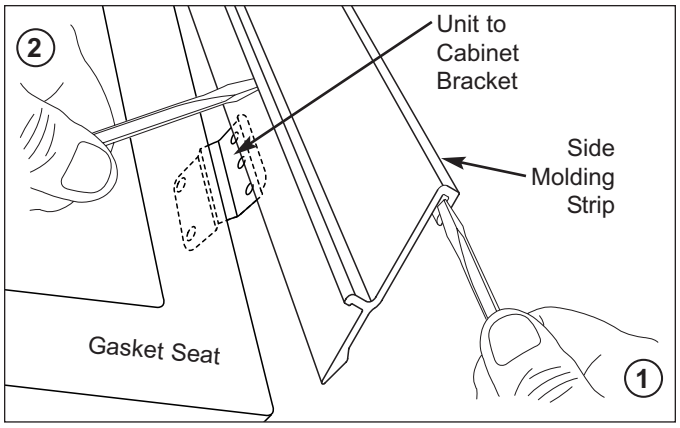


Figure 7-4. Side Molding Removal

Drawer Gasket Removal (All Base Units)

An extruded dart at the back of the drawer gaskets is pressed into retaining channels that are molded into drawer liners.

NOTE: *Drawer assemblies must be removed from unit in order to remove and/or install gaskets.*

To remove a drawer gasket, simply pull gasket from the retaining channel (See Figure 7-5).

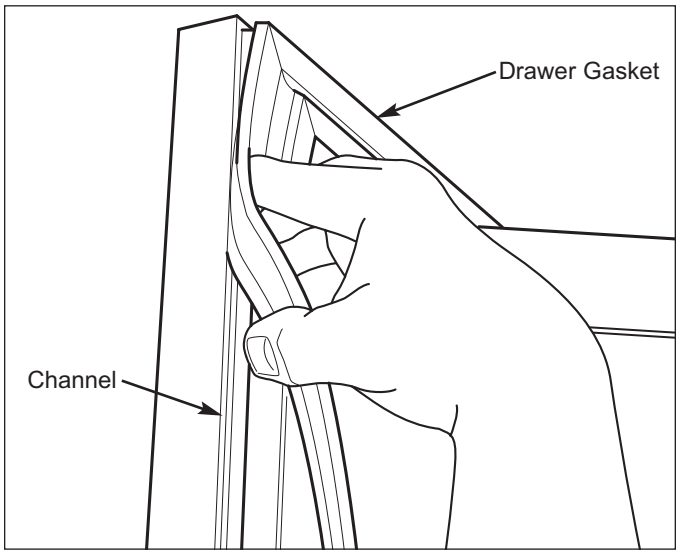


Figure 7-5. Gasket Removal

INTERIOR COSMETIC AND MECHANICAL COMPONENTS

Control Panel Assembly Removal (All Base Units)

The control panel assembly is attached inside top drawer assembly with three screws.

To remove control panel assembly (See Figure 7-6):

1. Extract screws
2. Disconnect display wire harness from control panel assembly and lift assembly up and out.

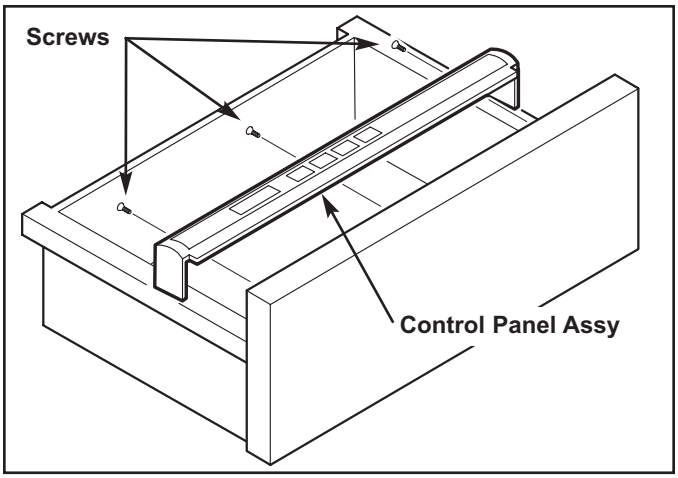


Figure 7-6. Control Panel Assy Removal

Display Wire Harness Removal (All Base Units)

One end of the display wire harness is connected at interior left rear of upper drawer compartment. The middle of the display wire harness is attached to the bottom of upper drawer assembly with tube clamps and snap rivets. The other end is routed up through a channel in the drawer front, held in place under the control panel assembly with cable clamp and screw, and plugged into the control panel assembly.

To remove the display wire harness, the upper drawer assembly must be extracted and the control panel must be removed first, then (See Figure 7-7):

1. Extract screw and cable clamp from top of drawer assembly.
2. Remove cable clamps and snap-rivets from bottom of the drawer assembly by pushing rivet's center push-pin down.
3. Pull wire harness down through channel in drawer front. (See Figure 7-7)

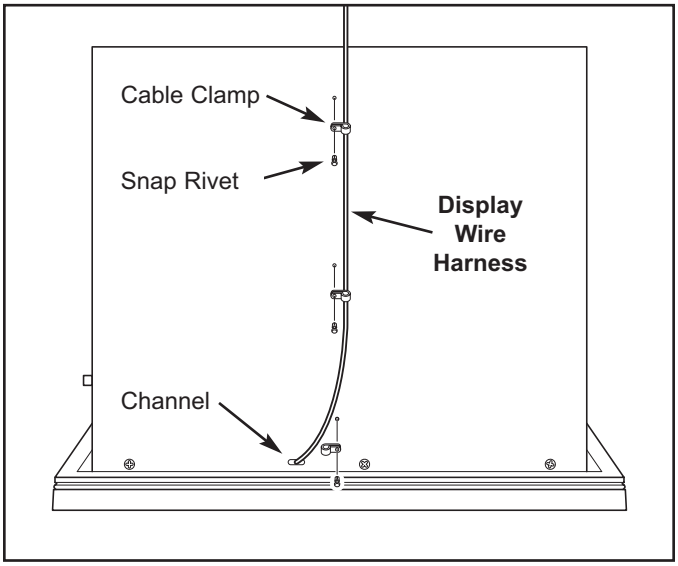


Figure 7-7. Display Wire Harness Removal

Light Bulb and Socket Removal (All Base Units)

Base units have two light bulbs: One in ceiling of top drawer area; One at bottom of divider between drawers. A rubber flange at the back of the socket holds it in a bracket.

Light Bulb Removal (See Figure 7-8)*:*

Turn light bulb counterclockwise to remove it; clockwise to install it.

Light Socket Removal (See Figure 7-8)*:*

Pull light socket from hole in bracket, then disconnect electrical leads.

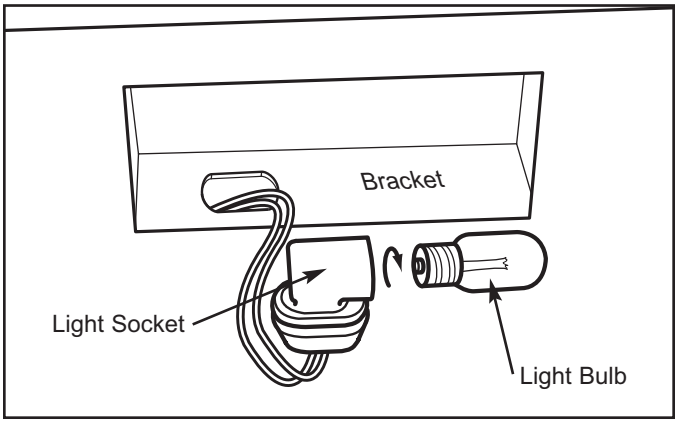


Figure 7-8. Light Bulb / Socket Removal

Mullion Divider Removal (700BC/I-3 Only)

The mullion divider assembly is set between the two drawer areas.

To remove a mullion divider (See Figure 7-9):

1. Remove display wire harness from wire clip.
2. Reach into lower drawer compartment and push divider upwards.

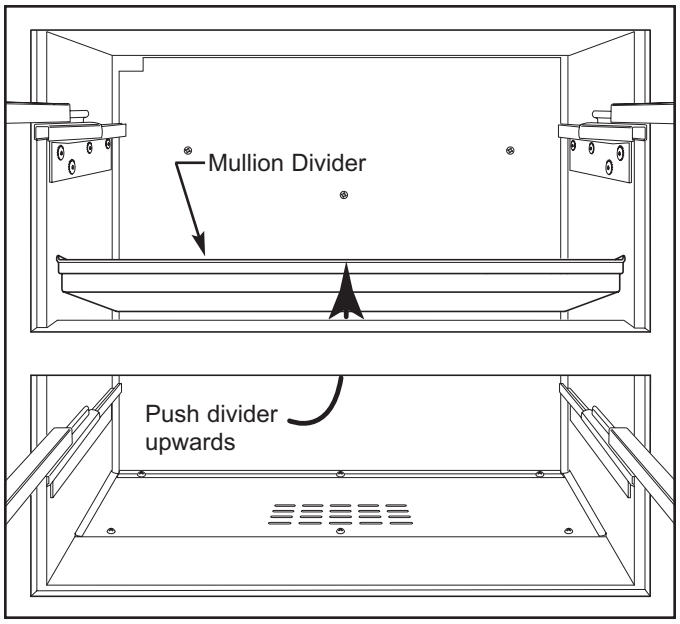


Figure 7-9. Mullion Divider Removal (700BCI-3)

Wire Tray Removal (700BR-3, 700BF/I-3 Only)

The wire tray is rests on pegs at the left and at the back right corner of the duct cover. It is set between the two drawer areas.

To remove a wire tray (See Figure 7-10):

1. Remove display wire harness from wire clip.
2. Lift right side of wire tray up, then pull it to the right and out of the compartment.

NOTE: On the model 700BF-3, the screw under the tray that supports the back right corner may need to be loosened prior to step 2 above.

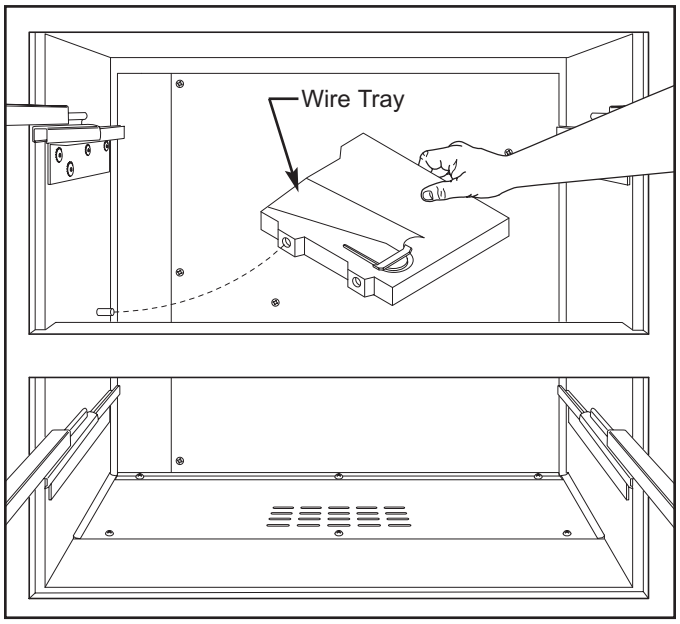


Figure 7-10. Wire Tray Removal (700BFI-3 Shown)

Drawer Closer Assembly Removal (All Base Units)

Drawer closer assemblies are located on the right side wall. Two screws secure each assembly to the wall.

To remove a drawer closer assembly, extract screws that secure drawer closer to wall and pull drawer closer assembly from wall. (See Figure 7-11)

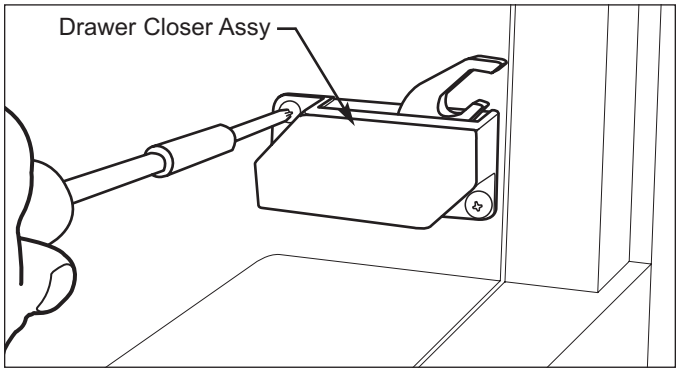


Figure 7-11. Drawer Closer Assembly Removal

Drawer Slide Assembly Removal (All Base Units)

There are four drawer slide assemblies, two on each side wall. Drawer slide assemblies are attached to side walls with Allen-head screws passing through the drawer slide bracket into blind threaded inserts.

To remove a drawer slide assembly, extract mounting screws with a 5/32" Allen-head wrench, and pull drawer slide assembly from wall. (See Figure 7-12)

NOTE: *The white thread pins at end of drawer slides are replaceable. Screw pins counterclockwise to remove them. (*See Figure 7-12*)*

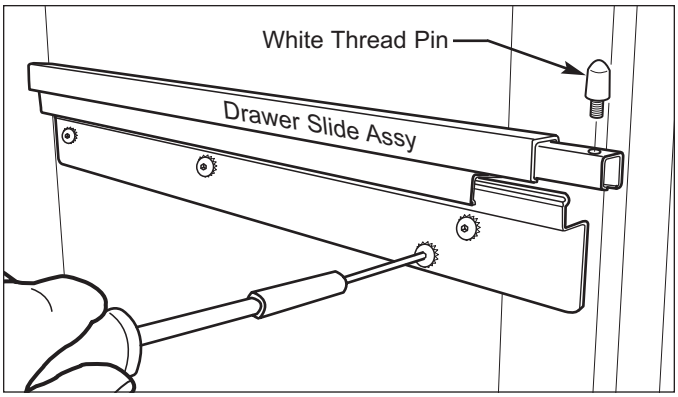


Figure 7-12. Drawer Slide Assembly & Pin

Refrigerator Fan Baffle and Fan Shroud Removal (700BC/I-3 Only)

Screws pass though the refrigerator fan shroud and baffle into screw grommet/stand-offs and a grounding bracket to secure the shroud and baffle to back wall.

<u>*Refrigerator Fan Baffle Removal*</u> (See Figure 7-13)*:*

1. Extracting the two mounting screws.
2. Pull baffle forward.

<u>*Refrigerator Fan shroud Removal*</u> (See Figure 7-13)*:*

1. Extracting all mounting screws.
2. Remove nut from display wire harness Methode connector and pull shroud forward slightly.
3. Remove thermistor from key-hole slot at top
4. Disconnect light switch electrical leads, and pull shroud out.

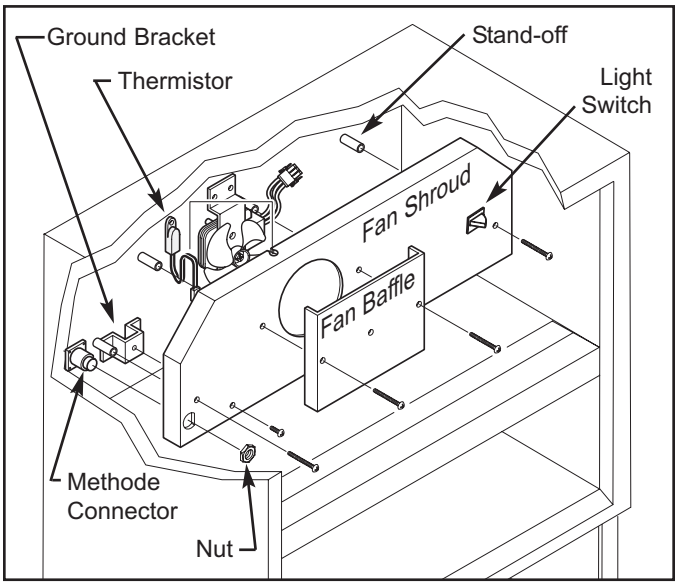


Figure 7-13. 700BC/I-3 Fan Baffle & Shroud

Refrigerator Light Switch Removal (700BC/I-3 Only)

To remove the refrigerator light switch, the fan shroud must be removed first. Then, at back side of fan shroud, depress tabs on each side of switch while pushing switch out. (See Figure 7-14)

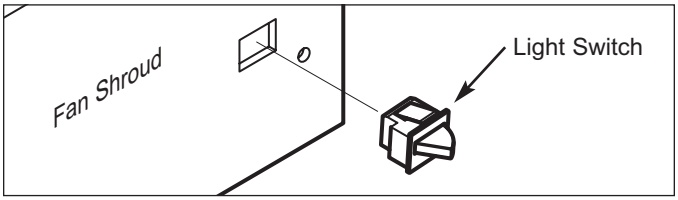


Figure 7-14. 700BC/I-3 Refrigerator Light Switch

Refrigerator Fan Baffle and Cold Plate Removal (700BR-3 Only)

Screws pass though the refrigerator fan shroud into rivnuts that are attached to the refrigerator cold plate.

Behind the baffle, Screws pass though the cold plate into screw grommet/stand-offs. A ground wire passes through a hole in the cold plate from behind, and is attached to the front of the cold plate with a screw. Slots in the side flanges of the cold plate fit over pegs at the bottom of each false wall.

Refrigerator Fan Baffle Removal (See Figure 7-15)*:*

1. Extracting baffle mounting screws.
2. Pull baffle forward.

Refrigerator Cold Plate Removal (See Figure 7-15)*:*

1. Extract grounding screw.
2. Extracting cold plate mounting screws.
3. Lean cold plate forward and lift off of locating pegs.

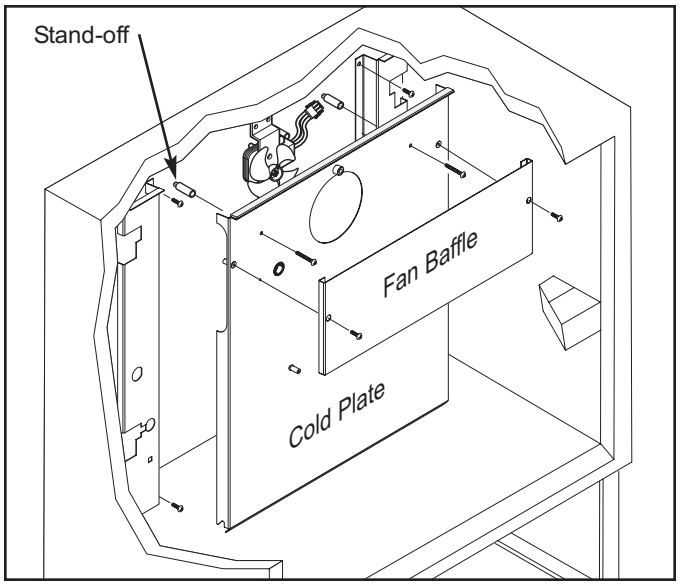


Figure 7-15. 700BR-3 Fan Baffle & Cold Plate

Refrigerator Fan Motor Removal (700BC/I-3, 700BR-3 Only)

The refrigerator fan motor is held to a bracket with screws passing through the motor into screw grommets that are attached to the bracket. The bracket sits behind the motor, and is attached to the back wall with screws.

To remove a refrigerator fan motor (See Figure 7-16):

1. Disconnect motor electrical leads.
2. Extract screw and tube clamp holding motor electrical leads.
3. Extract fan bracket mounting screws and pull the fan motor assembly from the unit.

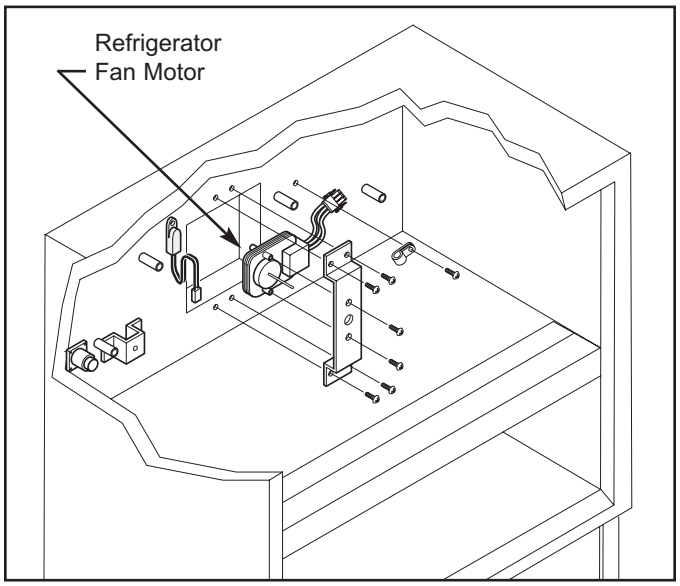


Figure 7-16. Ref Fan Motor (700BC/I-3 Shown)

Refrigerator Compartment Thermistor Removal (700BC/I-3 Only)

The refrigerator compartment thermistor is routed up through a key-hole slot at top of the fan shroud and secured to the back wall with a screw.

To remove the refrigerator compartment thermistor (See Figure 7-17):

1. Extract thermistor mounting screw.
2. Cut thermistor's wire leads six (6) to twelve (12) inches (152 mm to 305 mm) from the back wall, then pull thermistor from compartment.

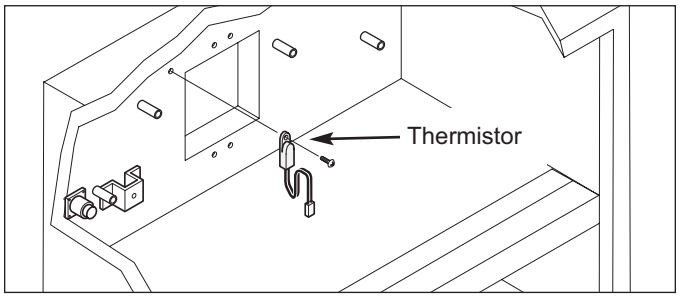


Figure 7-17. 700BC/I-3 Refrigerator Thermistor

Refrigerator Compartment Thermistor Removal (700BR-3 Only)

The refrigerator compartment thermistor passes through a hole in the left false wall from behind, and is attached to the front of the false wall with a screw.

To remove the refrigerator compartment thermistor (See Figure 7-18):

1. Extract thermistor mounting screw.
2. Remove nut from display wire harness Methode connector.
3. Extract the left false wall mounting screws and pull the false wall forward.
4. Cut thermistor's wire leads six (6) to twelve (12) inches (152 mm to 305 mm) from the back wall, then pull thermistor from compartment.

Refrigerator Light Switch Removal (700BR-3 Only)

The refrigerator light switches are inserted into square holes in the right false wall.

To remove a refrigerator light switch (See Figure 7-18):

1. Extract the right false wall mounting screws and pull the false wall forward.
2. Disconnect switch electrical leads.
3. **A**t back side of false wall, depress tabs on each side of switch while pushing switch out.

Refrigerator Evaporator Thermistor Removal (700BR-3 Only)

The refrigerator evaporator thermistor is inserted into the third opening from the top in the evaporator fins left side, extending approximately to the center of the evaporator.

To remove a evaporator thermistor, the left false wall and cold plate must be removed first, then (See Figure 7-19):

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

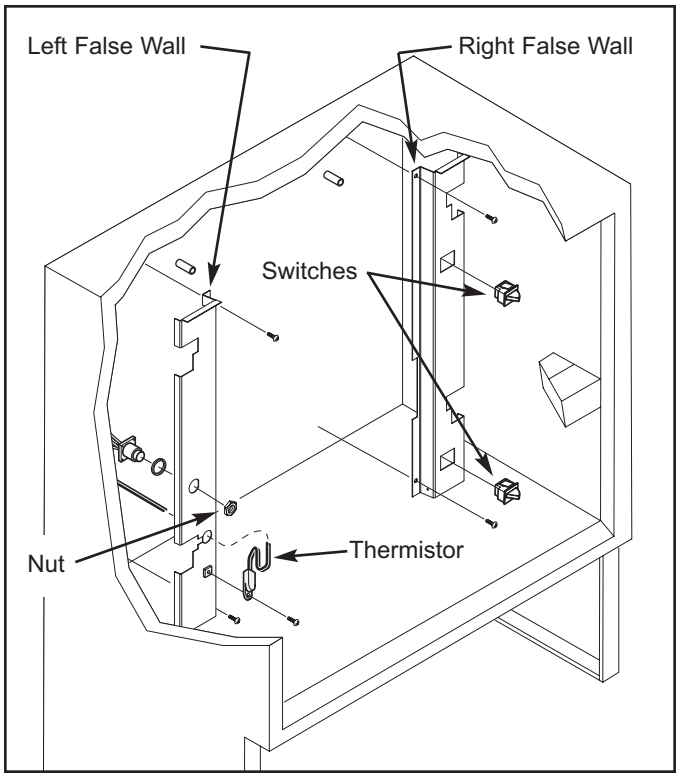


Figure 7-18. 700BR-3 Compartment Thermistor, False Walls and Light Switches

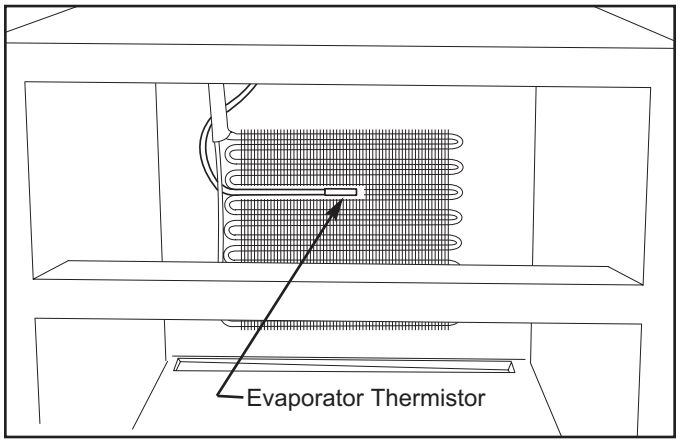


Figure 7-19. 700BR Evaporator Thermistor)

Icemaker Assembly Removal (700BC/I-3, 700BFI-3 Only)

The icemaker assembly is attached at right rear of lower compartment with two screws at top and one screw at bottom that pass through the air duct into screw grommet/stand-offs to hold assembly in place.

To remove the icemaker assembly (See Figure 7-20):

1. Extract bottom icemaker mounting screw.
2. Extract two top icemaker mounting screws.
3. Lower assembly down and disconnect wire harness from head of icemaker, then pull icemaker assembly out.

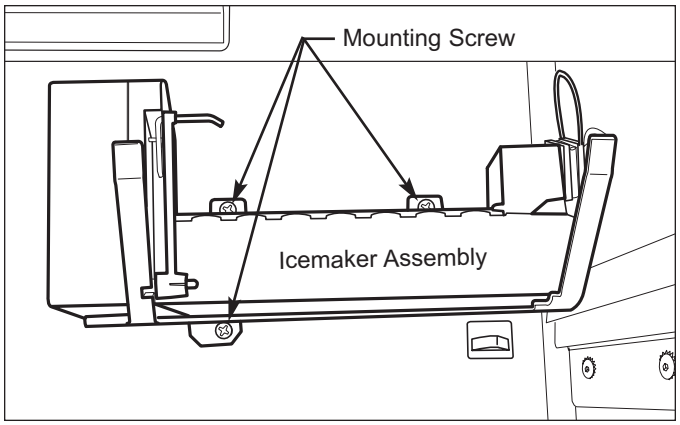


Figure 7-20. Icemaker Removal (700BCI-3/700BFI-3)

Sump Cover Removal (700BC/I-3, 700BFI-3 Only)

The sump cover assembly is held in place with three screws at front that secure it to the floor of the unit. At the rear, three screws pass through the cover into a flange at the bottom of the rear duct.

To remove the sump cover assembly (See Figure 7-21):

1. If icemaker is present, remove it first.
2. Extract screws at front and back of sump cover assembly.
3. Slide sump cover assembly forward and lift up.

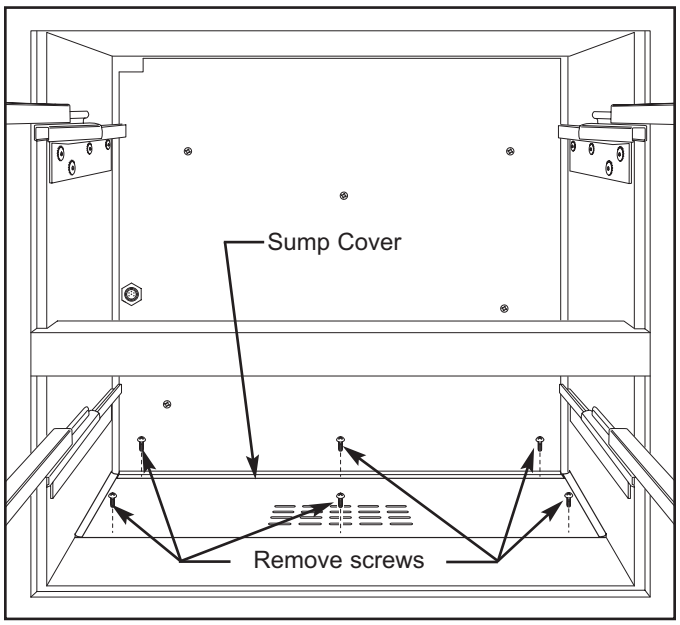


Figure 7-21. Sump Cover (700BCI-3/700BFI-3)

Lower Air Duct Removal (700BC/I-3 Only)

Screws pass though the lower air duct into screw grommet/stand-offs and a grounding bracket to secure the duct to the back wall.

NOTE: *Both lower drawer slides must be removed first.*

To remove the lower air duct (See Figure 7-22):

1. Extract all lower air duct mounting screws.
2. Pull duct forward slightly.
3. Pull icemaker wire leads from key-hole slot at right.
4. Disconnect light switch and icemaker switch electrical leads, and pull duct out.

Air Baffle Control Assembly Removal (700BC/I-3 Only)

The air baffle control sets in a recessed area of the baffle mount and a piece of tape holds the baffle control in place. Holes in the baffle mount fit over screw grommet/stand-offs in the back wall and when the lower air duct is installed, it captivates the air baffle assembly.

To remove the air baffle control asembly (See Figure 7-22):

1. Remove lower air duct.
2. Unplug the wire leads from the baffle control.
3. Pull air baffle control assembly off of screw grommet/stand-offs.

Freezer Compartment Thermistor Removal (700BC/I-3 Only)

The freezer compartment thermistor is secured to the back wall with a screw.

To remove the freezer compartment thermistor, the lower air duct will need to be removed first, then (See Figure 7-22):

1. Extract thermistor mounting screw.
2. Cut thermistor's wire leads six (6) to twelve (12) inches (152 mm to 305 mm) from the back wall, then pull thermistor from compartment.

Freezer Light Switch and Icemaker Switch Removal (700BC/I-3 Only)

To remove the freezer light switch or icemaker switch, the lower air duct must be removed first. Then, at back side of air duct, depress tabs on each side of switch while pushing switch out. (See Figure 7-23)

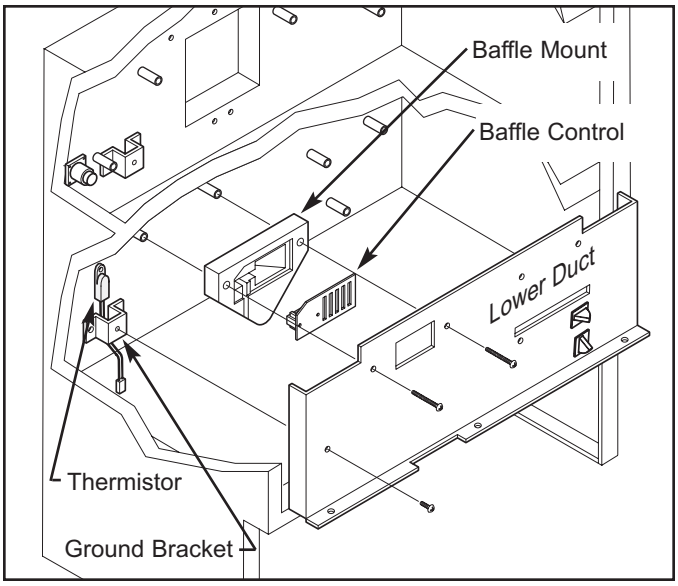


Figure 7-22. 700BC/I-3 Lower Duct, Baffle Control Assembly and Freezer Compartment Thermistor

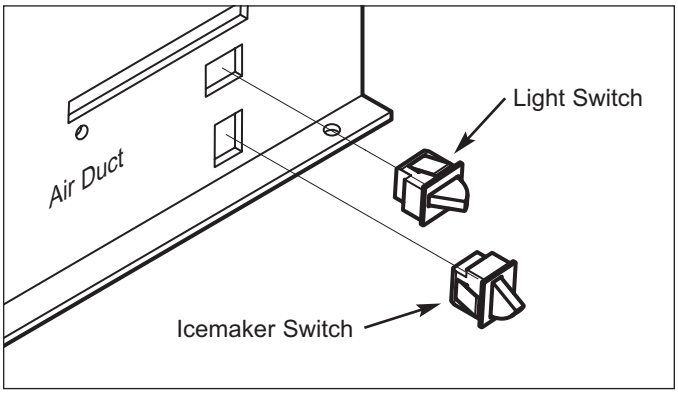


Figure 7-23. 700BC/I-3 Fre Light & IM Switches

Freezer Light Switchs and Icemaker Switch Removal (700BF/I-3 Only)

The light switches and fan switch are inserted into square holes in the main air duct.

***NOTE: The sump cover assembly must be** removed first.*

To remove a switch (See Figure 7-24):

1. Extract the main air duct mounting screws and pull duct to the left, then forward.
2. Disconnect switch electrical leads.
3. **A**t back side of duct, depress tabs on each side of switch while pushing switch out.

Freezer Compartment Thermistor Removal (700BF/I-3 Only)

The freezer compartment thermistor passes through a hole in the left air duct from behind, and is attached to the left wall of the compartment with a screw.

To remove the freezer compartment thermistor (See Figure 7-24):

1. Extract thermistor mounting screw.
2. Remove nut from display wire harness Methode connector.
3. Extract the left air duct mounting screws and pull the duct forward.
4. Cut thermistor's wire leads six (6) to twelve (12) inches (152 mm to 305 mm) from the back wall, then pull thermistor from compartment.

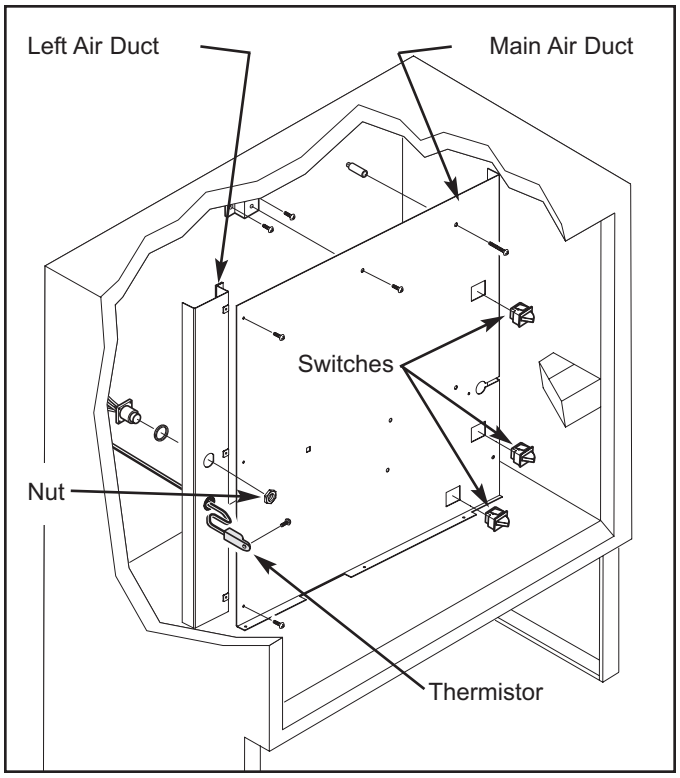


Figure 7-24. 700BF/I-3 Compartment Thermistor, Air Ducts and Light & Fan Switches

Evaporator Thermistor Removal (700BC/I-3, 700BFI-3 Only)

A cable tie holds the evaporator thermistor to the third elbow down on the right side of the evaporator.

To remove the evaporator thermistor (See Figure 7-25):

1. Cut cable tie.
2. Cut thermistor wire leads, and lift the thermistor out of the sump area.

NOTE: *There may be a Y-harness between the thermistor electrical connections, with wires exiting through the heat exchanger hole in sump. This is for factory test purposes and can be removed or bypassed.*

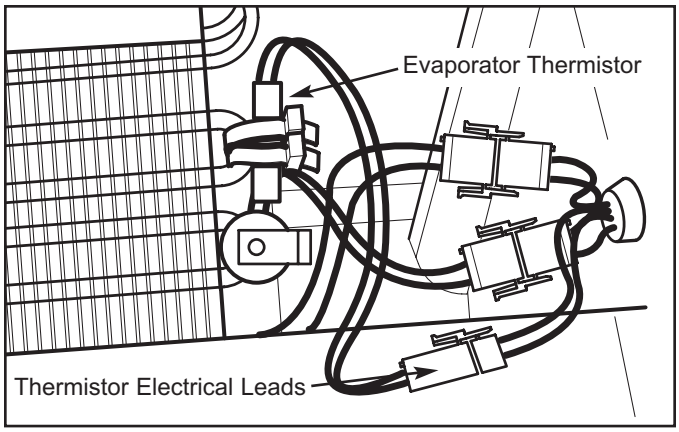


Figure 7-25.
700BCI-3 & 700BFI-3 Evaporator Thermistor

Defrost Terminator Removal (700BC/I-3, 700BF/I-3 Only)

The defrost terminator is attached to the sixth elbow down on the right side of the evaporator.

To remove the defrost terminator (See Figure 7-26):

1. Disconnect terminator electrical leads.
2. Disengage terminator clip from return elbow and lift terminator out of the sump area.

NOTE: *When reinstalling defrost terminator, it must be attached to the the same elbow (sixth down) it was removed from. Failure to do so could cause shortened defrost times which will lead to incomplete defrost.*

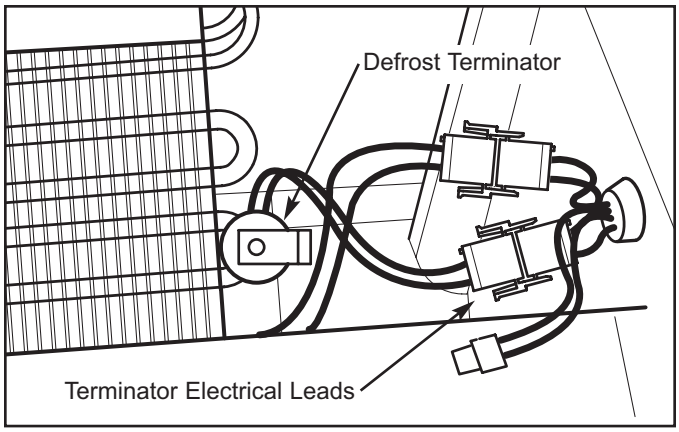


Figure 7-26.
700BCI-3 & 700BFI-3 Defrost Terminator Removal

Defrost Heater Removal (700BC/I-3, 700BF/I-3 Only)

The defrost heater is pressed into evaporator fins at front. Heater clips then hook from one evaporator tube to another, over heater.

To remove the defrost heater (See Figure 7-27):

1. Disconnect heater electrical leads.
2. Disengage heater clips from evaporator using needle-nose pliers.
3. Pull heater from evaporator fins, and lift heater out of the sump area.

NOTE: *When installing heater, make sure it is positioned as far left as possible. Installing heater too close to terminator could cause shortened defrost times which will lead to incomplete defrost.*

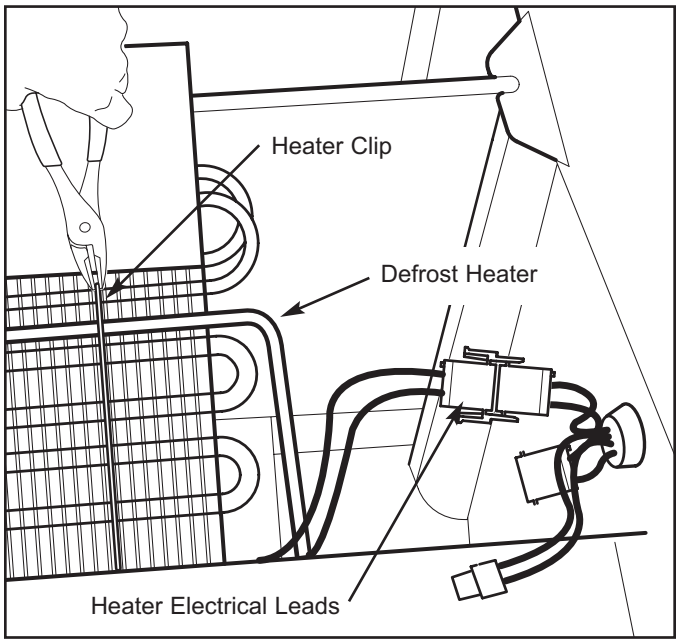


Figure 7-27.
700BCI-3 & 700BFI-3 Defrost Heater Removal

Control Board Assembly Removal (700BC/I-3, 700BFI-3 Only)

The control board assembly sets in the right side of sump. Flanges and grooves on the sides of control board assembly help to locate it.

To remove the control board assembly (See Figure 7-28):

1. First remove rear duct(s).
2. Unplug all electrical leads from the control board assembly and lift the assembly from the sump.

Evaporator Fan Assembly Removal (700BC/I-3, 700BFI-3 Only)

The side flanges of the evaporator fan assembly slide down into grooves in the fan shroud. The bottom of the evaporator fan assembly sits on a flange at the bottom of the fan shroud. (See Figure 7-29)

To remove the evaporator fan assembly (See Figure 7-30:

1. First remove rear duct(s).
2. Unplug fan assembly electrical leads and lift assembly up out of the grooves in the fan shroud.

NOTE: *Do not attempt to remove the fan assembly without removing the back duct. Doing so will deform the back duct and cause air leaks around the air baffle.*

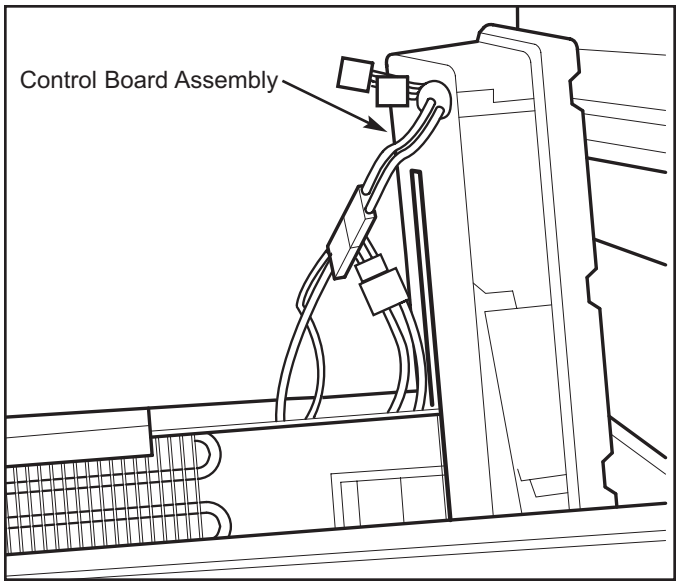


Figure 7-28.
700BCI-3 & 700BFI-3 Control Board Assembly

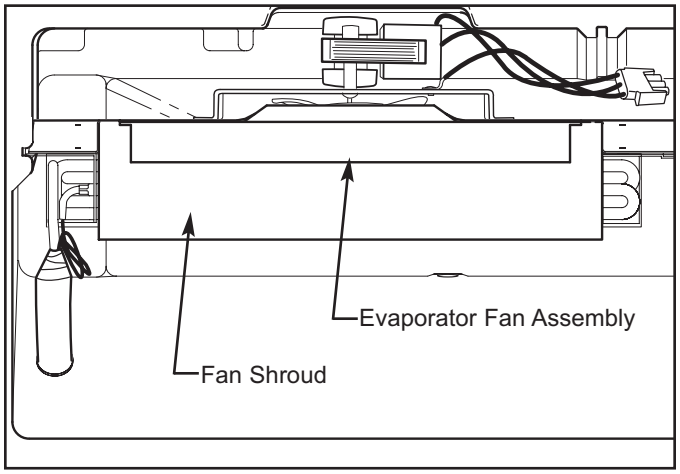


Figure 7-29. Top View of 700BCI-3 & 700BFI-3 Evaporator Fan Assembly in Sump

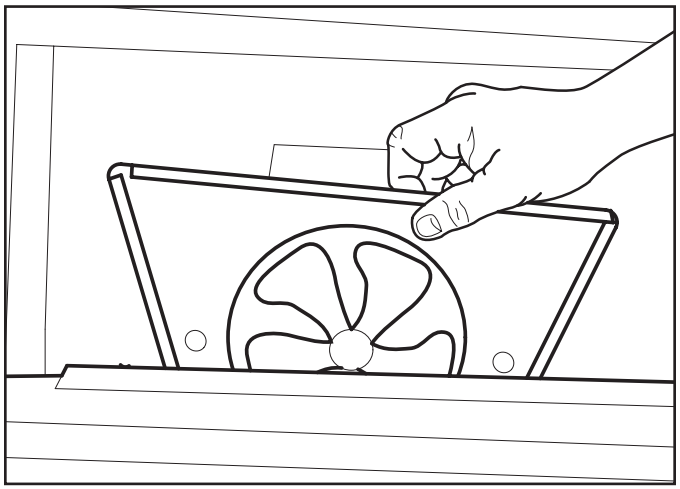


Figure 7-30.
700BCI-3 & 700BFI-3 Evaporator Fan Assembly

COMPRESSOR AREA MECHANICAL COMPONENTS

Main Control Board (700BR-3 Only)

The main control board is attached to the inside of the control housing assembly with screws. The control housing assembly is attached to the unit tray at the front right corner.

To remove the main control board, the kickplate/grill will need to be removed first. Now, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-31), then (See Figure 7-32).

1. Extract screws from control housing cover.
2. Disconnect all electrical lads from main control board.
3. Extract screws which are holding control baord in control housing and lift control board out of housing.

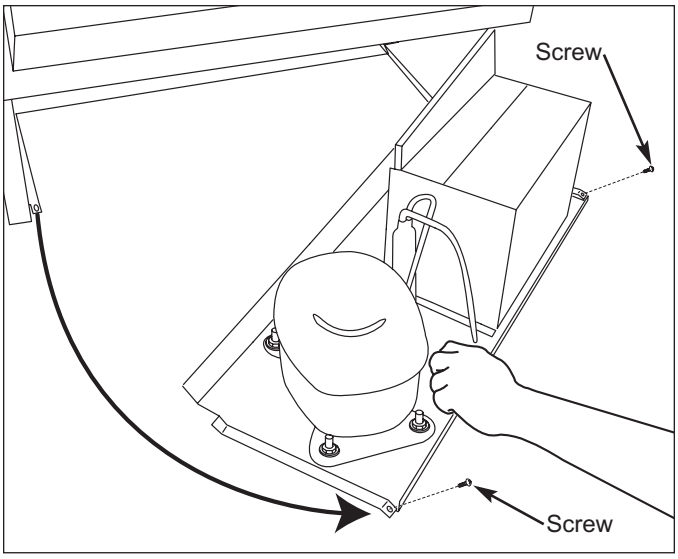


Figure 7-31. Sliding Unit Tray Out

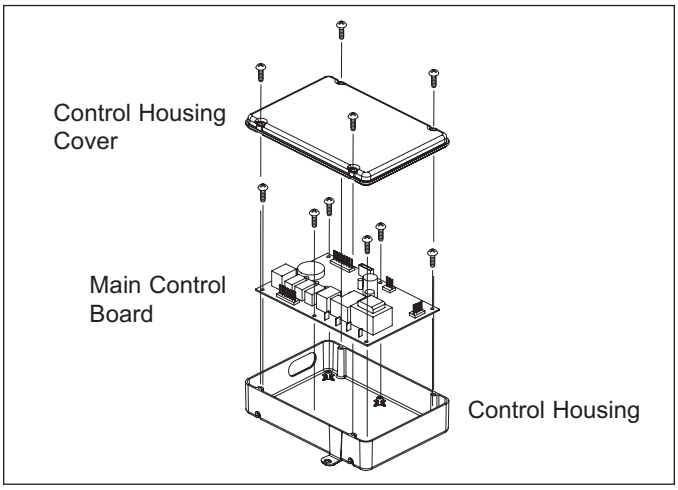


Figure 7-32. 700BR-3 Main Control Board

Icemaker Water Valve Removal
(700BCI-3, 700BFI-3 Only, Prior to Serial #2421189)

The icemaker water valve assembly is attached to the valve bracket, located on right side of compressor area. A screw passing through a key-hole slot in valve assembly secures the valve to the valve bracket.

NOTE: *Before accessing the icemaker water valve, turn off the water supply to the unit.*

To remove the water valve, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-33), then (See Figures 7-34 and 7-35).

1. With a wrench, disconnect brass compression fitting which holds water supply line to water inlet stub.
2. With a Phillips screwdriver, loosen screw that secures valve assembly to valve bracket.
3. Grab water inlet stub and lift up so head of screw lines up with large section of key-hole slot.
4. Pull valve assembly forward until screw clears key-hole slot, then lower assembly down until valve body clears valve bracket and pull assembly out from compressor area.
5. Unplug valve electrical leads.
6. Disconnect outlet tube plastic compression fitting with a wrench, and lift water valve up.

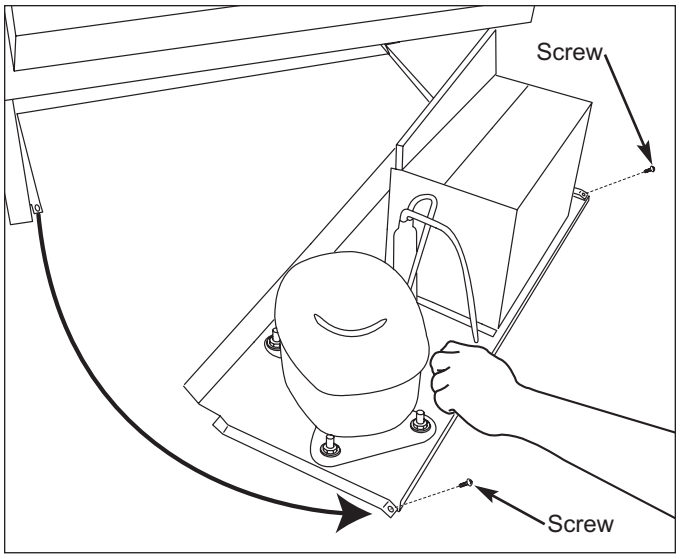


Figure 7-33. Sliding Unit Tray Out

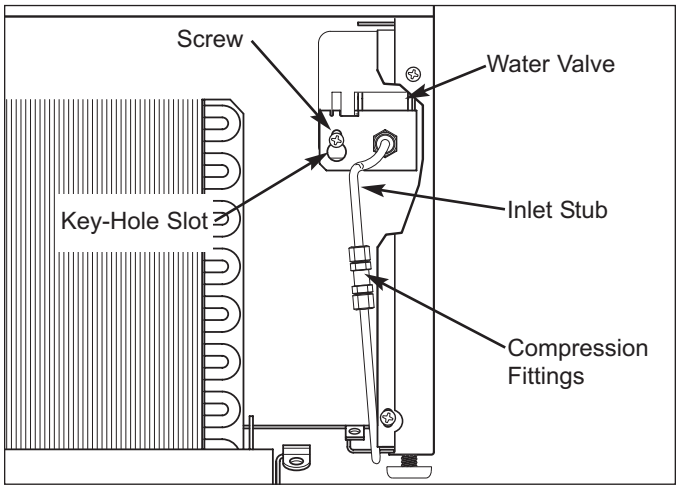


Figure 7-34. Water Valve Removal

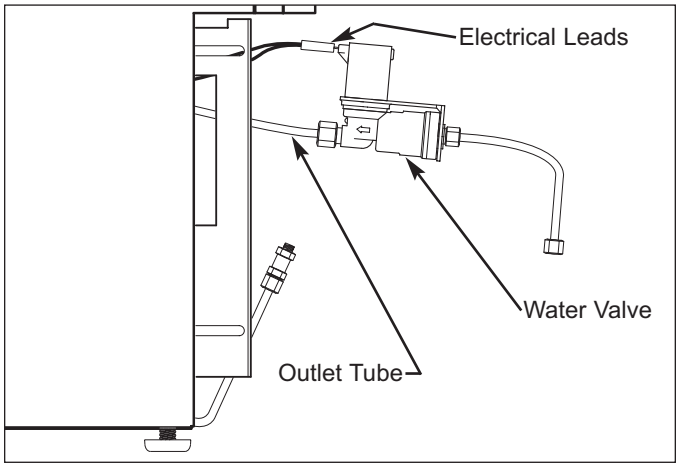


Figure 7-35. Water Valve Removal

Icemaker Water Valve Removal (700BCI-3, 700BFI-3 Only, Starting w/ith Serial #2421189)

The icemaker water valve assembly is located at the right side of the compressor area, and is attached to the valve bracket with screws.

NOTE: *Before accessing the icemaker water valve, turn off the water supply to the unit.*

To remove the water valve, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-36), then (See Figure 7-37).

1. Disconnect inlet water tube from the valve inlet by pushing collar around tube toward valve, while pulling inlet water tube away from valve.
2. With a Phillips screwdriver, remove screws from valve bracket.
3. Lower valve and pull forward.
4. Unplug valve electrical leads.
5. Disconnect outlet tube from the valve outlet by pushing collar around tube toward valve, while pulling outlet water tube away from valve.

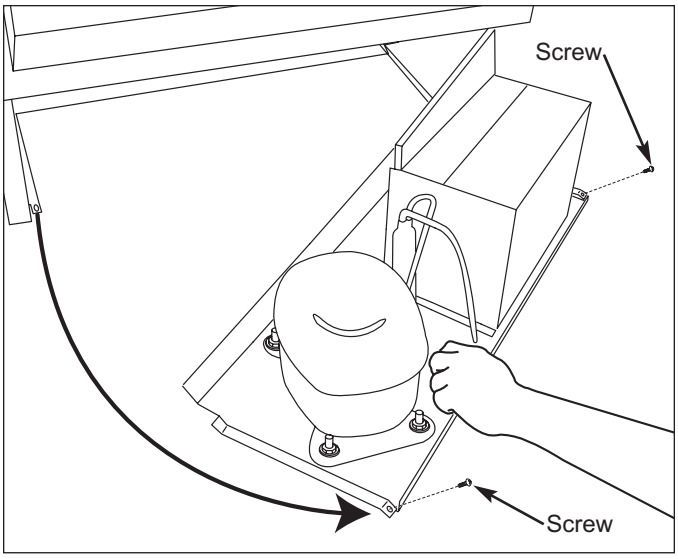


Figure 7-36. Sliding Unit Tray Out

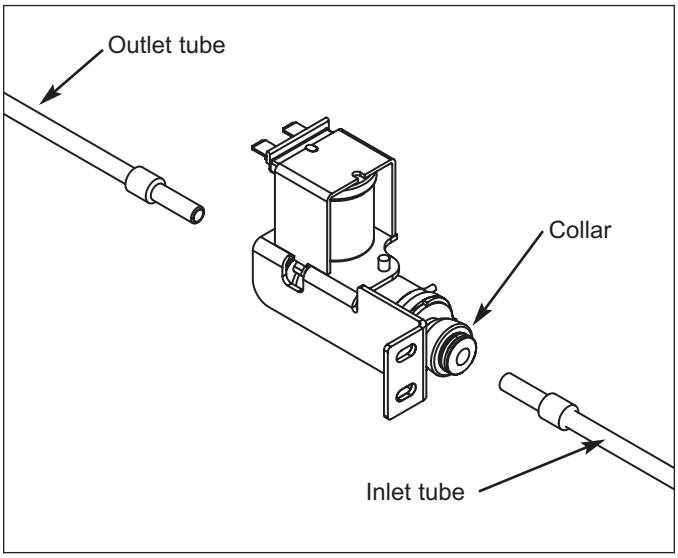


Figure 7-37. Water Valve Removal

Condenser Fan Assembly Removal (All Base Units)

The condenser fan shroud sets on pegs protruding from unit tray, with two screws at top securing it to the condenser. The condenser fan is mounted to the condenser fan shroud with three fan mounting brackets that are hooked into grommeted holes in the fan shroud. Screws passing through these brackets secure the fan motor to the brackets. The condenser fan blade is held onto the fan motor shaft with a nut.

To remove the condenser fan components, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-38).

NOTE: *It may be necessary to disconnect compressor electrical leads in order to pull tray out far enough to access condenser fan assembly.*

Condenser Fan Assembly Removal (See Figure 7-39)*:*

1. Disconnect condenser fan motor electrical leads.
2. Extract the screws at top of fan shroud and lift shroud and motor up off pegs at the bottom.

Condenser Fan Motor Removal (See Figure 7-40)*:*

1. Extract screws securing motor to brackets.
2. Unhook brackets from grommeted holes in condenser fan shroud.

Condenser Fan Blade Removal (See Figure 7-40)*:*

1. Grab fan blade and motor.
2. Turning nut counterclockwise.
3. Pull blade from motor shaft.

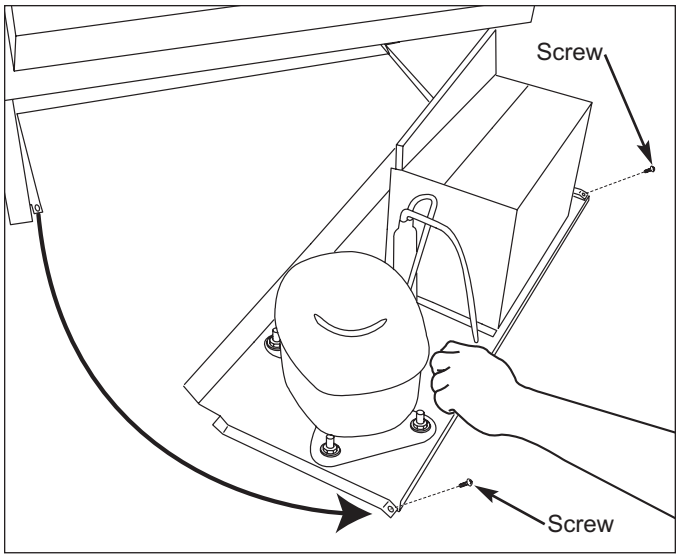


Figure 7-38. Sliding Unit Tray Out

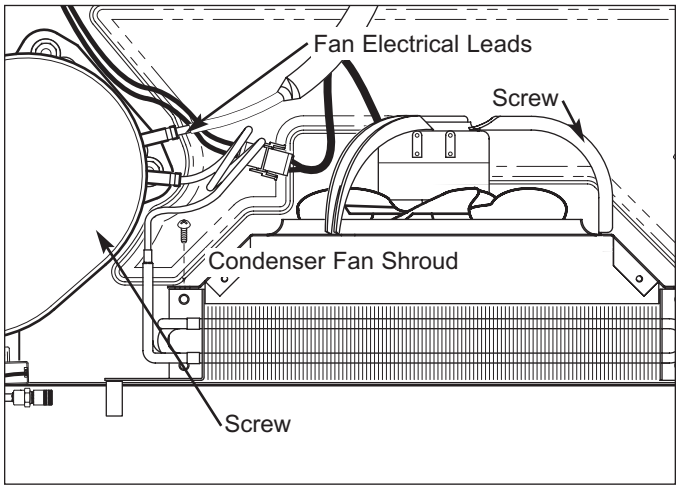


Figure 7-39. Condenser Fan Shroud Removal

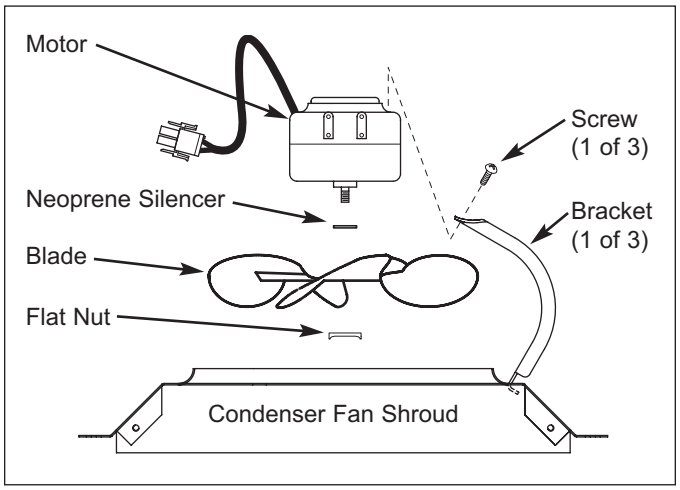


Figure 7-40. Condenser Fan Assembly

Drain Tube Heater Removal (700BC/I-3, 700BF/I-3 Only)

The electrical connections for the drain tube heater are located at the back of the compressor area with the braided heater leads entering the sump drain tube from the compressor area.

To remove the drain tube heater, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-41).

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the drain tube heater.*

Unplug the drain tube heater electrical leads and pull the heater from the drain tube (See Figure 7-42).

NOTE: *When installing the replacement drain tube heater, push the braided heater leads into the sump drain tube until splices are 2-1/2" from drain tube outlet (See Figure 7-42). Also, it is recommended to remove the sump cover to make sure the drain tube heater has slid under the evaporator.*

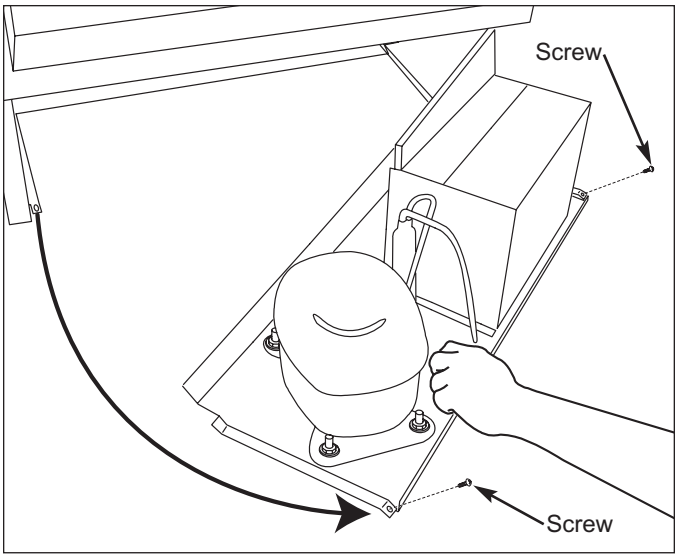


Figure 7-41. Sliding Unit Tray Out

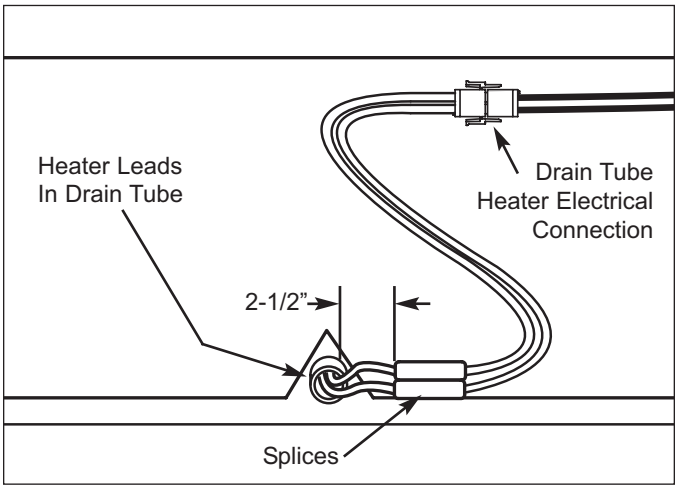


Figure 7-42. Drain Tube Heater in Compressor Area

SEALED SYSTEM COMPONENTS

NOTE: When entering the sealed system, a*lways use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*

NOTE: *Whenever servicing the sealed system, the high-side filter-drier must be replaced.*

High-Side Filter-Drier Removal (All Base Units)

The high-side filter-drier is located to the right of the condenser and is attached to the condenser outlet tube with a cable tie.

NOTE: *Before attempting to remove a filter drier, evacuate refrigerant from sealed system.*

To remove the filter-drier, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-43).

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the filter-driers.*

To Remove the filter drier (See Figure 7-44):

1. Cut cable tie securing filter-drier to bracket, or condenser outlet tube.
2. With the edge of a file, score a line around capillary tube approximately one inch (25 mm) from filter-drier outlet
3. Fatigue capillary tube at line just scored until it separates.
4. With a tube cutter, cut inlet tube approximately one inch (25 mm) from filter-drier.

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system and could cause a solder restriction in the capillary tube.*

NOTE: *Check the end of the remaining capillary tube for internal burrs. If burrs exist, rescore a line around the capillary tube approximately one inch from the end and fatigue the capillary tube at this new line until it separates.*

NOTE: *When installing the replacement filter-drier, insert the capillary tube until it touches the screen, then pull the capillary tube approximately 3/8" away from the screen before brazing (See Figure 7-45). When installing a new filter-drier, be sure to thoroughly clean the tubing before brazing.*

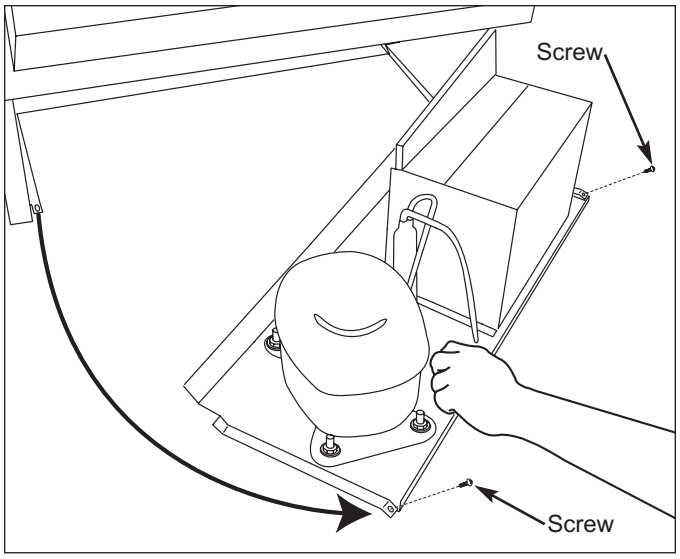


Figure 7-43. Sliding Unit Tray Out

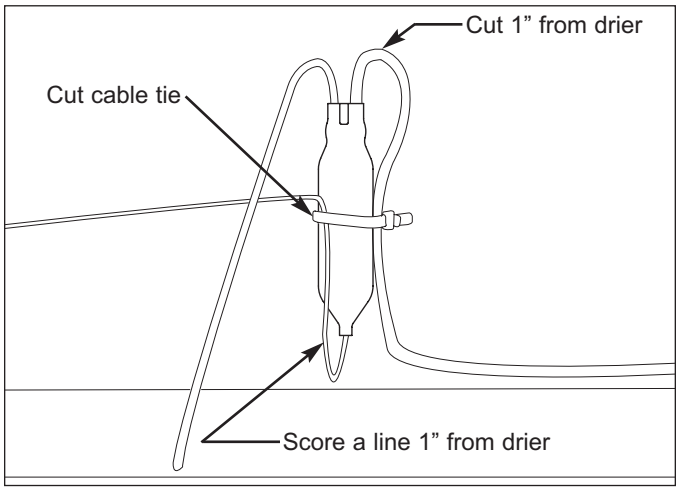


Figure 7-44. Filter-Drier Removal

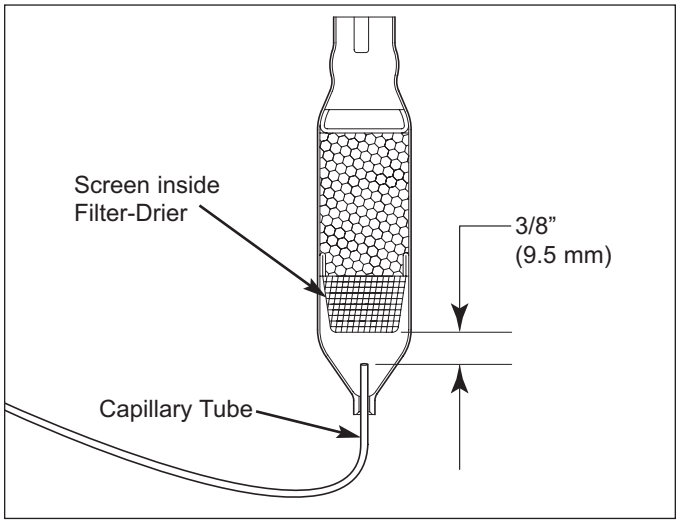


Figure 7-45. Filter-Drier Cut-Away View

Compressor Removal (All Base Units)

The compressor has four rubber compressor grommets inserted into its base. Cylindrical metal spacers are placed over threaded studs that are press fit to the unit tray. The compressor grommets fit over the spacers and a washer sets on top of the grommet and spacer. A nut is then installed on the threaded stud and tightened down on the washer and spacer.

NOTE: *Before attempting to remove a compressor, evacuate the refrigerant from the sealed system.*

To remove the compressor, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-46), then (See Figures 7-48 and 7-48).

1. Use a flat-blade screwdriver to remove compressor electrical cover
2. Disconnect electrical leads from compressor.
3. Cut compressor inlet and outlet tubing with a tube cutter, approximately one inch (25 mm) from compressor ports.
4. Extract nuts and washers from threaded studs.
5. Lift compressor off of threaded studs.

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system.*

NOTE: *The high-side filter-drier must be replaced whenever servicing the sealed system.*

NOTE: *When installing a compressor, be sure to thoroughly clean the tubing before brazing.*

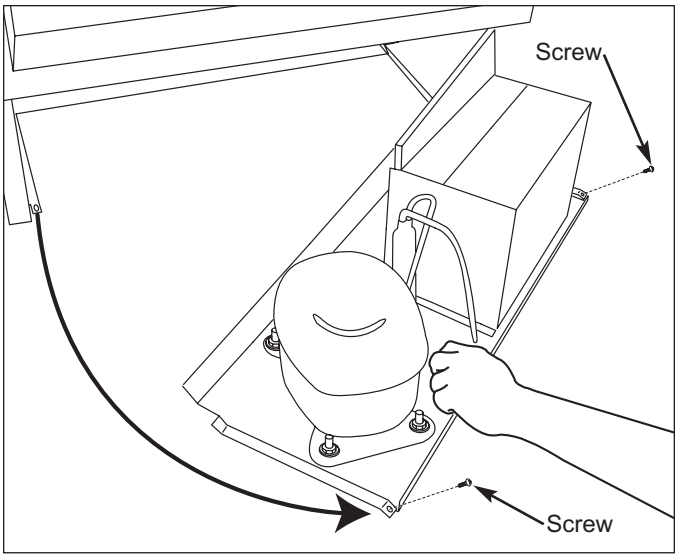


Figure 7-46. Sliding Unit Tray Out

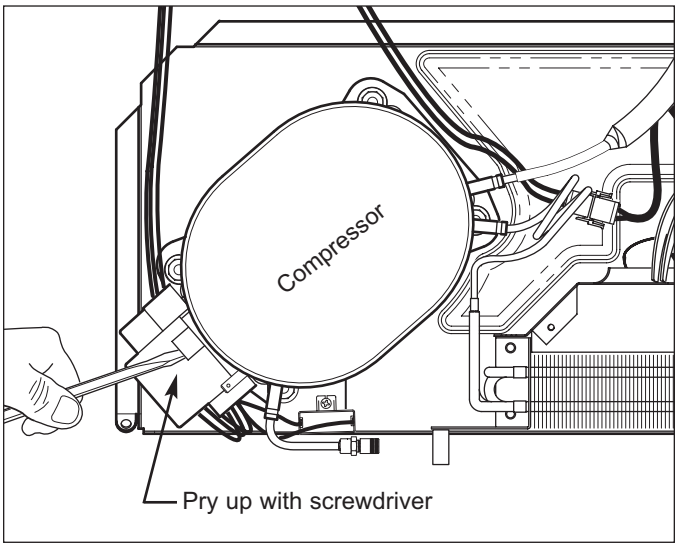


Figure 7-47. Removing Compressor Electrical Cap

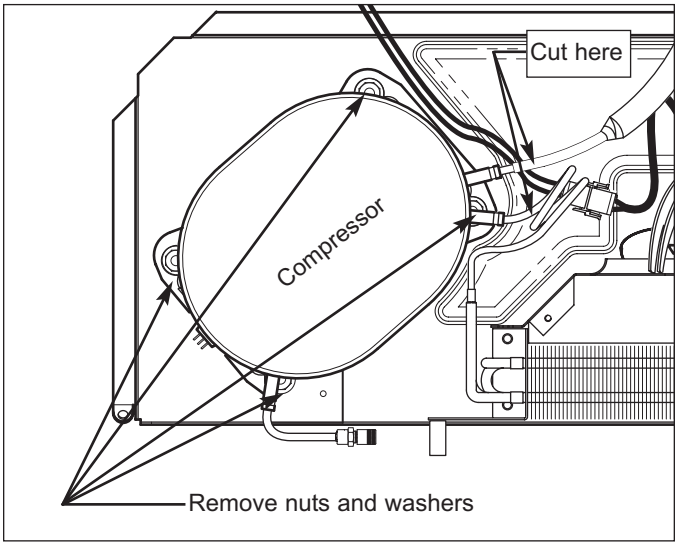


Figure 7-48. Compressor Removal

Condenser Removal (All Base Units)

The condenser is secured to the unit tray by four rivets that pass up through the unit tray into the condenser side brackets.

NOTE: *Before attempting to remove the condenser, evacuate the refrigerant from the sealed system.*

To remove the condenser, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-49).

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to remove the condenser.*

To Remove the condenser (See Figure 7-50):

1. Cut condenser inlet and outlet tubes to and from the condenser, approximately one inch (25 mm) from weld joints.
2. Prop front of unit tray up.
3. Drill out rivets securing condenser to tray.

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system.*

NOTE: *The high-side filter-drier must be replaced whenever replacing the condenser.*

NOTE: *When installing the replacement condenser, be sure to thoroughly clean the tubing before brazing.*

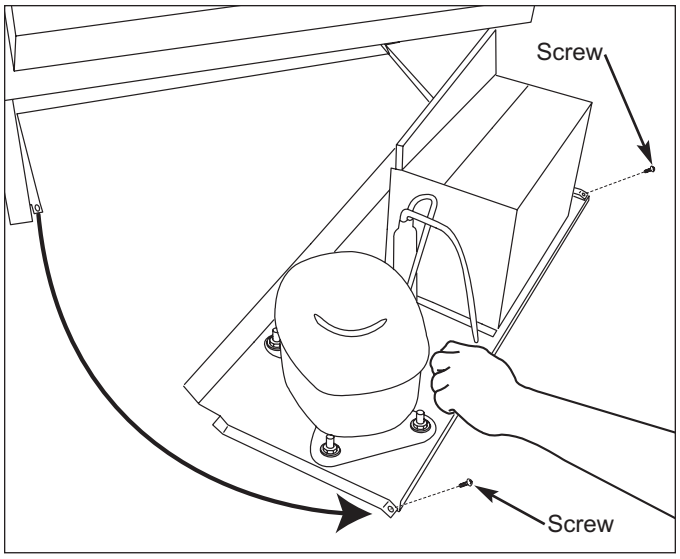


Figure 7-49. Sliding Unit Tray Out

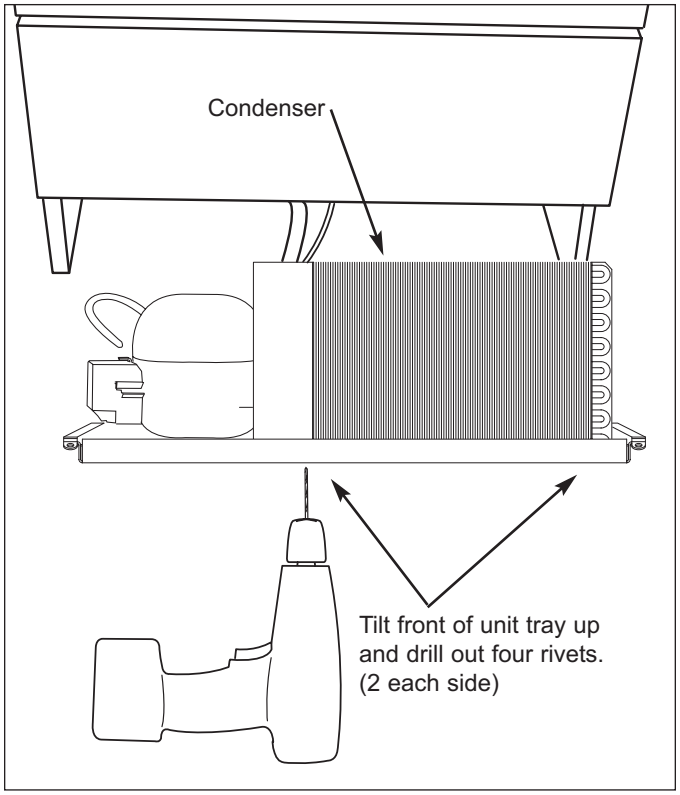


Figure 7-50. Condenser Removal

Evaporator / Heat Exchanger Assembly Removal (700BC/I-3, 700BF/I-3 Only)

The evaporator / heat exchanger assembly was installed into the unit by inserting the heat exchanger down through the hole at top left front of sump. As the heat exchanger is fed through the hole, the side brackets of the evaporator slide down into channels in sump and control board enclosure. Tubing insulation is then installed over the heat exchanger before it is coiled and attached to the back of unit tray area with a P-clamp and screw. Then, the heat exchanger is attached to the compressor and filter-drier.

NOTE: *Before attempting to remove the evaporator / heat exchanger assembly, evacuate the refrigerant from the sealed system.*

To remove the evaporator / heat exchanger assembly, the kickplate/grill will need to be removed first. Then, extract the two screws that secure the unit tray to the unit and slide the tray out (See Figure 7-49).

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to remove the heat exchanger.*

To remove the evaporator/heat exchanger assembly (See Figures 7-51, 7-52 and 7-53):

1. Since evaporator/heat exchanger assembly being removed will be scrapped, use a tin snips or similar tool to cut heat exchanger near hole in sump.
2. Disconnect all electrical leads of components attached to evaporator and lift evaporator from sump.

NOTE: *There may be a Y-harness between the thermistor electrical connections, with wires exiting through the heat exchanger hole in sump. This is for factory test purposes and can be removed or bypassed.*

3. Cut suction line approximately 2” (51 mm) from compressor.
4. Since filter-drier will be replaced, cut drier inlet tube approximately one inch (25 mm) from drier, leaving capillary tube attached.
5. Extract screw holding heat exchanger and P-clamp to rear of unit tray area.
6. Pull heat exchanger down through hole at top left front of sump and out of unit tray area.

NOTE: *When installing replacement evaporator / heat exchanger assembly, be sure to thoroughly clean tubing before brazing.*

NOTE: *After installing replacement evaporator / heat exchanger assembly, apply a bead of silicone around heat exchanger where it exits through hole in sump.*

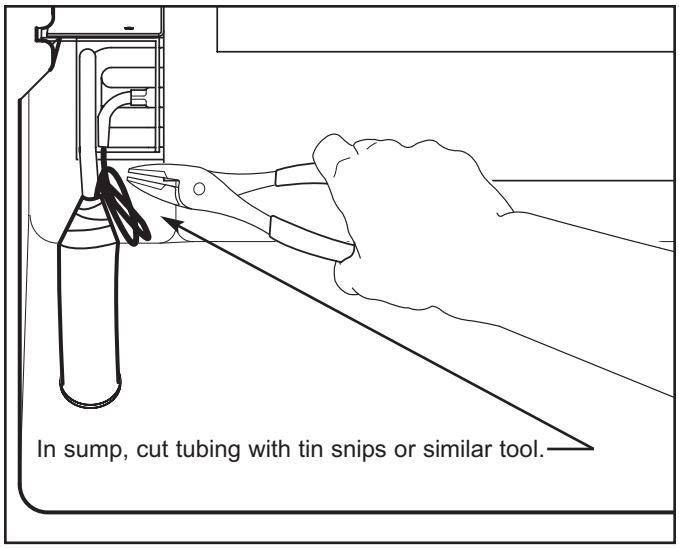


Figure 7-51. Cut Suction & Capillary Tube at Evap.

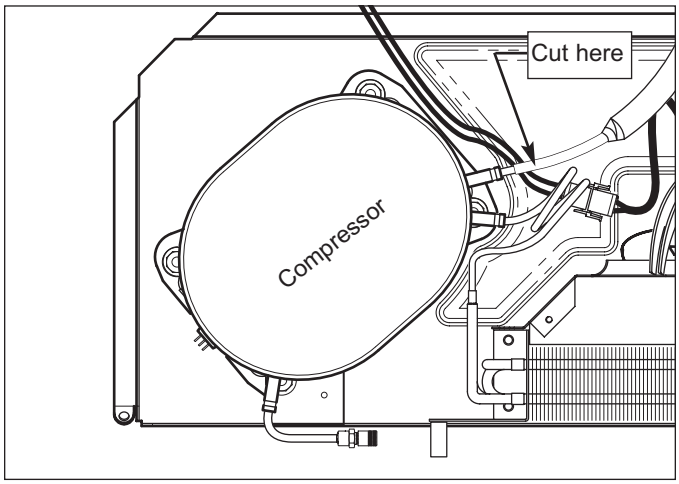


Figure 7-52. Cut Suction line at compressor

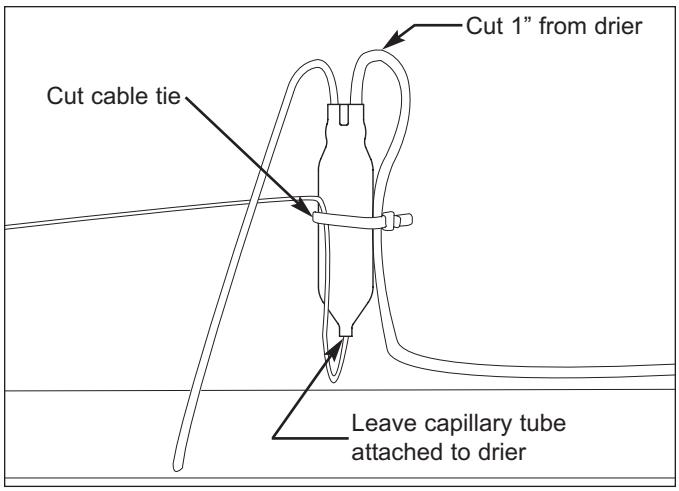


Figure 7-53. Cut Inlet at Filter-Drier

Evaporator Removal (700BR-3 Only)

The evaporator is attached to the rear walls of the compartments with screws.

NOTE: *Before attempting to remove the evaporator, evacuate the refrigerant from the sealed system.*

To remove the refrigerator evaporator (See Figure 7-54):

1. Extract screws which hold evaporator to rear wall of compartment.
2. Pull and rotate evaporator so heat exchanger is accessible.
3. With a file, score a line around capillary tube, 1” (25 mm) or less from evaporator inlet, then fatigue capillary tube at this line until it separates.
4. With a tube-cutter, cut evaporator outlet 1” (25 mm) or less from suction line connection point.

NOTE: *It is not recommended to sweat tubing apart. Doing so will induce moisture into the sealed system.*

NOTE: *After capillary tube is fatigue until it separates, check tubing for internal burrs. If burrs exist, repeat step 3 above.*

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system and could cause a solder restriction in the capillary tube.*

NOTE: *When installing replacement evaporator, be sure to thoroughly clean tubing before brazing.*

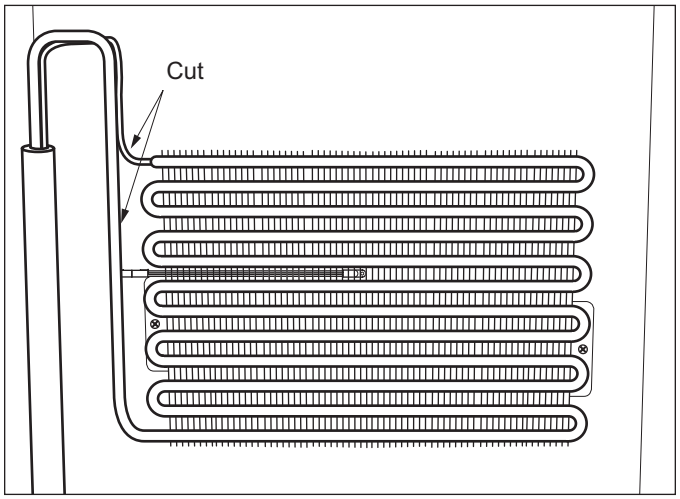


Figure 7-54. 700 BR-3 Refrigerator Evaporator

SECTION 8

TROUBLESHOOTING GUIDES

TROUBLESHOOTING GUIDES

This section of the manual contains:

- The Error Code Table and the Error Code Troubleshooting Guide.
- The General Troubleshooting Guide, which covers all problems that a 700-3 Series Base unit may experience.
- The Membrane Switch/Ribbon Cable Test Procedures, used to determine if a control panel assembly is defective.

HOW TO USE THE ERROR CODE TROUBLESHOOTING GUIDE

Error Codes indicate problems registered by specific components. If error codes are registered, they will appear before temperature readings while in Diagnostic Mode.

NOTE: *If Error Codes appear with a flashing "SERVICE" annunciator prior to initiating Diagnostic Mode, the unit experienced excessive compressor run condition that may or may not be associated with the Error Codes displayed.*

To initiate Diagnostic Mode, press and hold either COLDER key, then press the UNIT ON/OFF key, then release both keys. Now, check to see if Error Codes are present, being sure to toggle through all error and temperature readings by pressing either COLDER key or either WARMER key. (See Error Code Table Below)

If Error Codes appear during Diagnostic Mode, follow the Error Code Troubleshooting Guide on the following page. The left column of the troubleshooting guide lists the error codes. The information in the right column explains what tests to perform and/or what action to take to correct the error.

NOTE: *If error codes are observed in diagnostic mode, a non-flashing SERVICE annunciator will appear on the LCD when Diagnostic Mode ends, indicating error codes are still stored. Error Codes must be cleared from the electronic control memory manually. To clear the non-flashing SERVICE annunciator and the error codes, the problem must be corrected and the unit must be ON. Then, press and hold the Door Ajar Alarm Bell ON/OFF key for 15 seconds. The control will emit a short "beep" when the SERVICE annunciator and error codes are cleared.*

Error Code Table	
CODE	**INDICATION**
05	***Refrig. cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
07	***Freezer cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
08	***Freezer evaporator thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
20	***Defrost under-heat with no voltage feedback through Gray/White wire at defrost start***
21	***Defrost overheat***
22	***No voltage feedback through Gray/White wire at defrost start***
23	***Defrost overheat with no voltage feedback through Gray/White wire at defrost start***
24	***Defrost under-heat***
30	***Excessive Icemaker Water Valve Solenoid Activation (Exceeded 15 Seconds)***
40	***Excessive Freezer Compressor Run***
50	***Excessive Refrigerator Compressor Run - 700BCI-3 (Excessive Refrigerator Fan Run - 700BR-3)***

ERROR CODE TROUBLESHOOTING GUIDE

EC	TEST / ACTION
05	A. If "EE" for refrigerator compartment was displayed and "SERVICE" flashing, check the following: 1. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 2. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. B. If "EE" for refrigerator compartment was NOT displayed, problem is intermittent thermistor error: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 4. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 05" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "05" Error Code. See problem A in General Troubleshooting Guide.
06	A. Initiate Diagnostic Mode. If "EE" is displayed for refrigerator evaporator thermistor, check the following: 1. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 2. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. B. Initiate Diagnostic Mode. If "EE" is NOT displayed for refrigerator evaporator thermistor, problem is intermittent: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 4. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 06" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "06" Error Code. See problem A in General Troubleshooting Guide.
07	A. If "EE" for freezer compartment was displayed and "SERVICE" flashing, check the following: 1. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 2. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. B. If "EE" for freezer compartment was NOT displayed, problem is intermittent thermistor error or caused by over-heating (above 116°F), check the following: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Proper mounting and location of freezer compartment thermistor. Remount correctly. 4. Defrost terminator. Replace if defective. 5. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 6. Resistance of thermistor -r 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 07" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "07" Error Code. See problem A in General Troubleshooting Guide.
08	A. Initiate Diagnostic Mode. If "EE" is displayed for freezer evaporator thermistor, check the following: 1. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 2. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. B. Initiate Diagnostic Mode. If "EE" is NOT displayed for freezer evaporator thermistor, problem is intermittent thermistor error or caused by over-heating (above 116°F), check the following: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Proper mounting and location of freezer evaporator thermistor. Remount correctly. 4. Proper operation of defrost terminator (Cut-in 30°F/Cut-out 70°F). Replace if defective. 5. Thermistor electrical connections and continuity from thermistor to J5 on control board. Reconnect / repair. 6. Resistance of thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 08" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "08" Error Code. See problem A in General Troubleshooting Guide.

NOTE: *After repairs, always clear Error Codes by pressing Bell ON/OFF key for 15 seconds.*

ERROR CODE TROUBLESHOOTING GUIDE

EC	TEST / ACTION
20	A. With cold evap. (< 10°F), initiate Manual Defrost, then initiate Diagnostic Mode (press UNIT ON/OFF key every 20 seconds to keep in Diagnostic Mode) and observe evap. temp. If temp. exceeds 45°F and defrost lasts longer then 5 minutes, error code is false. Clear error code. If error code is not false: 1. Check continuity of Grey/White wire from defrost heater to J2-3 on control board. Reconnect / repair Grey/White wire. 2. While in defrost, check for 115V AC at P2 on control board. If no voltage, replace board. 3. Check continuity of Blue wire from defrost terminator to P2 on control board. Reconnect / repair Blue wire. 4. Check resistance of defrost heater (see wire diagram for proper resistance). Replace heater if defective. 5. Check electrical connections and operation of defrost terminator (Cut-in 30°F/Cut-out 70°F). Reconnect / repair or replace terminator. 6. Reference wiring diagram to identify components in same White wire circuit as defrost heater. Check all White wire electrical connections and continuity from defrost heater to P4 on control board.
21	A. With cold evap. (< 10°F), initiate Manual Defrost, then initiate Diagnostic Mode (press UNIT ON/OFF key every 20 seconds to keep in Diagnostic Mode) and observe evap. temp. If temp. does <u>not</u> exceed 105°F, error code is false. Clear error code. If error code is not false: 1. Check Blue wire connection at control board (P2). If connected to wrong pin, connect correctly. 2. Check Grey/White wire connection at control board (J2-3). if connected wrong or bad connection, reconnect / repair. 3. Check for proper mounting & location of evap. thermistor, defrost heater & terminator. Remount correctly. 4. Check for electrical short of Blue wire to another circuit. Repair Blue wire &/or electrical connections. 5. Check operation of defrost terminator (Cut-in 30°F / Cut-out 70°F). Replace if defective.
22	A. With cold evap. (< 10°F), initiate Manual Defrost. If compressor starts 5 minutes (10 minutes in 700TF/I-2V) after defrost is initiated, check Grey/White wire and continuity from defrost heater to J2-3 on control board. Reconnect / repair Grey/White wire.
23	A. With cold evap. (< 10°F), initiate Manual Defrost. If compressor starts 5 minutes (10 minutes in 700TF/I-2V) after defrost is initiated, check Grey/White wire connections and continuity from defrost heater to J2-3 on control board. Reconnect / repair Grey/White wire. B. Check for proper mounting and location of evap. thermistor, defrost heater & terminator. Remount correctly. C. Check Blue wire connection at control board (P2). If connected to wrong pin, connect correctly. D Check for electrical short of Blue wire to another circuit. Repair Blue wire &/or electrical connections.
24	A. With cold evap. (< 10°F), initiate Manual Defrost, then initiate Diagnostic Mode (press UNIT ON/OFF key every 20 seconds to keep in Diagnostic Mode) and observe evap. temp. If temp. exceeds 45°F, error code is false. Clear error code. If error code is not false: 1. Check Blue wire connection at control board (P2). If connected to wrong pin, connect correctly. 2. Verify proper location of Grey/White wire at control board (J2-3). if connected wrong or bad connection, reconnect / repair. 3. Check for proper mounting & location of evap. thermistor, defrost heater & terminator. Remount correctly.
30	A. Check for jammed cube in icemaker. B. Reference wiring diagram to identify components in same White wire circuit as water valve solenoid. Check all White wire electrical connections and continuity from water valve solenoid to P4 on control board.

NOTE: *After repairs, always clear Error Codes by pressing Bell ON/OFF key for 15 seconds.*

ERROR CODE TROUBLESHOOTING GUIDE

EC	TEST / ACTION
40	A. If Error Code 07, 20, 21, 22, 23, or 24 is also displayed during Diagnostic Mode, see Test/Actions under that code. B. Check for obstructions to freezer drawer closing, including drawer closer position. Remove obstruction/Trip drawer closer forward. C. Check cleanliness of condenser. Clean if needed. D. Check for obstruction to condenser fan blade or loose fan blade. Remove obstruction/Tighten Blade. E. With unit running, check for 115 V AC from compressor to condenser fan. Repair defective wiring or replace defective motor. F. Check resistance of freezer compartment thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. G. Check evaporator fan blade position and for obstructions. Reposition if incorrect/Remove obstruction. H. With unit running and light switches depressed: 1. Check for 115 V AC form J3-7 to light switches. Repair wiring/Replace defective switch. 2. Check for 115 V AC form J3-1 to evaporator fan motor. Repair wiring/Replace defective motor. 3. Check for 115 V AC form P1 to compressor. Repair wiring if defective. I. Check sealed system for leaks, restrictions or inefficient compressor.
50	A. If Error Code 07, 20, 21, 22, 23, 24 or 40 is also displayed during Diagnostic Mode, see Test/Actions under that code. B. Check for obstructions to refrigerator drawer closing, including drawer closer position. Remove obstruction/Trip drawer closer forward. C. Check resistance of refrigerator compartment thermistor - 30,000 to 33,000 ohms at 32°F. Replace if defective. D. Check refrigerator compartment fan blade position and for obstructions. Reposition if incorrect/Remove obstruction. E. With unit running and light switches depressed: 1. Check for 115 V AC form J3-5 to evaporator fan motor. Repair wiring/Replace defective motor. F. Check air baffle control operation (700BC/I-3 Only). Repair wiring/Replace if defective. G. Check sealed system for leaks, restrictions or inefficient compressor.

NOTE: *After repairs, always clear Error Codes by pressing Bell ON/OFF key for 15 seconds.*

HOW TO USE THE GENERAL TROUBLESHOOTING GUIDE

- The table on page 8-6 indicate how the General Trouble Shooting Guide is arranged.
- Identify the description of the problem that the unit is experiencing from the table.
- To the left of the problem description is a letter.
- Locate that letter in the left column of the General Troubleshooting Guide.
- The center column will identify the possible causes for the problem.
- The information in the right column explains the tests to perform and/or action to take to correct the problem.
- If the unit is experiencing temperature problems, refer to the instructions below before beginning troubleshooting.

For Temperature Problems

1. Begin troubleshooting by observing compartment set points.
2. If set-points are normal, initiate Diagnostic Mode by pressing and holding either COLDER key, then press UNIT ON/OFF key, then release both keys.

   NOTE: *Diagnostic Mode will end twenty seconds after last key stroke.*
3. When Diagnostic Mode is initiated, check to see if "Error Codes" are present, being sure to toggle through all error codes and temperature readings by pressing either COLDER key, or either WARMER key. (See Thermistor Location Code Tables below.)
4. If Error Codes are present, refer to Error Code Troubleshooting Guide on previous pages.
5. If no Error Codes, initiate Manual Component Activation Mode (which lasts for 5 minutes) by pressing and holding freezer COLDER and UNIT ON/OFF keys for 10 seconds, then observe evaporator temperatures.
6. After observing evaporator temperature as instructed above, take note of *"Pointers"* in first column of the troubleshooting guide under problems "A" through "D". The *"Pointers"* list what possible causes to check based on evaporator temperature observed.

NOTE: *If compartment and/or evaporator temperature history is needed to help diagnose problem, initiate Temperature Log Recall Mode. Begin with unit ON and in Diagnostic Mode.* While in Diagnostic Mode, toggle through readings until desired thermistor temperature is displayed on LCD. Now, press UNIT ON/OFF key then either WARMER key simultaneously. *Toggle through indexes by pressing WARMER or COLDER key.*

BCI-3 Thermistor Code Table	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Refrigerator Compartment	***r***
Evaporator	***E***

BR-3 Thermistor Code Table	
THERMISTOR LOCATION	**CODE**
Refrigerator Compartment	***r***
Evaporator	***E***

BFI-3 Thermistor Code Table	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Evaporator	***E***

GENERAL TROUBLESHOOTING GUIDE TABLE OF CONTENTS

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
A. "EE" Displayed in place of Freezer Temperature with "SERVICE" Flashing	**Freezer Compartment Thermistor Disconnected, Shorted, or misread**	Check freezer compartment thermistor electrical connections from thermistor to control board. Reconnect / repair connections. Check resistance of freezer compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
B. "EE" Displayed in place of Refrigerator Temperature with "SERVICE" Flashing	**Refrigerator Compartment Thermistor Disconnected, Shorted, or misread**	Check refrigerator compartment thermistor electrical connections from thermistor to control board. Reconnect / repair connections. Check resistance of refrigerator compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
C. Warm or Normal Temperatures Displayed with "SERVICE" Alone Flashing	**Excessive Compressor or Evaporator Fan Run**	Initiate Diagnostic Mode and see Error Code Troubleshooting Guide
	Evaporator Thermistor Disconnected, Shorted, or misread	Check evaporator thermistor electrical connections from thermistor to control board. Reconnect / repair connections. Check resistance of evaporator thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
D. Warm or Normal Temperatures Displayed with non-flashing "SERVICE" Displayed	**Error Codes Observed in Diagnostic Mode, but not Cleared from Memory**	Enter diagnostic mode to observe error codes. See Error Code Troubleshooting Guide. Verify unit was repaired for error codes displayed. Press and hold alarm key for 15 seconds to clear error codes.
E. Erratic Temperatures with or without "SERVICE" Flashing	**Control Board Configured for Wrong Model**	*Initiate Manual Model Configuration Mode and reconfigure to correct model.*
F. Warm Refrigerator Temperatures, "SERVICE" not displayed or Flashing	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Door or Drawer Ajar a. Food product obstruction b. Drawer closer tripped backwards	 a. Move obstruction. b. Trip drawer closer forward
	Faulty Light Switch	Check operation of light switches, lights off when switch is depressed. Replace switch if defective. *(**NOTE:** Two light switches in unit)*

(Continued)

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **F. Warm Refrigerator Temperatures, "SERVICE" <u>not</u> displayed or Flashing**	**Refrigerator Compartment Fan Fault** a. Fan blade obstructed or out of position b. Evaporator fan motor disconnected c. Power to Fan Fault, or Fan Motor Defective	 a. Move obstruction or reposition blade. b. Check electrical connections & continuity from control board to motor. Reconnect / repair bad connections. c. With light switches depressed, check for 115V AC from control board to fan motor. Replace control board if defective, or Replace motor if defective.
	Compartment Thermistor Disconnected, Shorted, or misread	Check refrigerator evaporator thermistor electrical connections from thermistor to control board. Reconnect / repair connections. Check resistance of refrigerator evaporator thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
	Air Baffle Control Fault (700BCI-3 Only) a. Baffle Control Stuck Closed b. Baffle Control Disconnected, Defective, or not Receiving Signal from Control Board.	 a. Manually open / close air baffle control. If movement is not smooth, replace baffle control. b. With light switches depressed, initiate Manual Compartment Activation Mode for refrigerator compartment and observe baffle operation. If baffle does not open within 3 minutes: 1. Check electrical connections from baffle control to control board. Reconnect / repair bad connections. 2. If electrical connections and wiring are good, and baffle moves freely, replace control board. **⚠ CAUTION** **Low Voltage Circuit. Do NOT apply 115V AC.**

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
G.) Warm Freezer Temperatures, "SERVICE" <u>not</u> displayed or Flashing *Pointers:* *Compressor must be ON & unit not defrosting, then initiate Diagnostic Mode to observe evaporator temperature.* *1. "Sr" appears, see:* • *Unit in Showroom Mode* *2. "EC" appears, see:* • *Error Code Troubleshooting Guide* *3. Evap. temp. -20°F (-29°C) or lower, see:* • *Drawer ajar* • *Lights switch fault* • *Evaporator fan fault* • *Compartment thermistor misread* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *4. Evaporator Temp. between -19°F (-28°C) & 10°F (-12°C), see:* • *Warm food load* • *High room ambient* • *Drawer ajar* • *Condenser Air Flow* • *Compartment thermistor misread* • *Sealed system fault, leak* *5. Evap. Temp. 20°F (-29°C) or higher, see:* • *Power To Compressor fault* • *Sealed system fault, leak restriction or inefficient compressor* (***NOTE:*** *"Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)* *(Continued)*	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Drawer Ajar a. Food product obstruction b. Drawer closer tripped backwards	 a. Move obstruction. b. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective	 a. Clean condenser. b. Remove obstruction or tighten blade. c. Check continuity from motor to compressor. Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace if defective.
	Faulty Light Switch	Check operation of light switches, lights off when switch is depressed. Replace switch if defective. (***NOTE:*** *Two light switches in unit)*
	Evaporator Fan Fault a. Fan blade obstructed or out of position b. Evaporator fan motor disconnected c. Power to Fan Fault, or Fan Motor Defective (***NOTE:*** *Compressor must be running)*	 a. Move obstruction or reposition blade. b. Check electrical connections & continuity from control board to motor. Reconnect / repair bad connections. c. With light switches depressed, check for 115V AC from control board to fan motor. Replace control board if defective, or Replace motor if defective.
	Compartment Thermistor Misread	Check resistance of freezer compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **G.) Warm Freezer Temperatures, "SERVICE" <u>not</u> displayed or Flashing** *Pointers:* *Compressor must be ON & unit not defrosting, then initiate Diagnostic Mode to observe evaporator temperature.* *1. "Sr" appears, see:* • *Unit in Showroom Mode* *2. "EC" appears, see:* • *Error Code Troubleshooting Guide* *3. Evaporator temp. -20°F (-29°C) or lower, see:* • *Drawer ajar* • *Lights switch fault* • *Evaporator fan fault* • *Compartment thermistor misread* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *4. Evaporator. Temp. between -19°F (-28°C) & 10°F (-12°C), see:* • *Warm food load* • *High room ambient* • *Drawer ajar* • *Condenser Air Flow* • *Compartment thermistor misread* • *Sealed system fault, leak* *5. Evaporator. Temp. 20°F (-29°C) or higher, see:* • *Power To Compressor fault* • *Sealed system fault, leak restriction or inefficient compressor* *(**NOTE:** "Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)*	**Evaporator Heavily Frosted** a. Drawer ajar b. Evaporator fan fault c. Compartment thermistor misread d. Defrost heater disconnected or faulty e. Defrost terminator disconnected or faulty. f. Defrost sense line disconnected. g. No power from control board to defrost circuit	 a. See Drawer Ajar above. b. See Evaporator Fan Fault above. c. See Thermistor Misread above d. Check electrical connections. Reconnect / repair bad connections. Check resistance of heater, 30-38 Ohms, replace if defective. e. Check electrical connections, Reconnect / repair connections or replace bad terminator. f. Manually initiate defrost - press ICE key for 10 seconds. If defrost lasts exactly 5 minutes, check all connections of gray/white wire from terminator to control board. Reconnect / repair bad connections. g. Manually initiate defrost - Press ICE key for 10 seconds. Check for 115V AC at control board. Replace control board if defective.
	Power to Compressor Fault	Check for 115V AC at control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
H. Product Temperature 10° or More Colder than Displayed Temperature	**Compartment Thermistor Misread**	Check resistance of compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
I. 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** **2. If Outside US - Control Set to Display Fahrenheit**	1. Change temperature units of measure to Fahrenheit. Switch unit OFF, then ON, then press & hold Bell key and UNIT ON/OFF key for 10 seconds. 2. If Outside US - Change temperature units of measure to Celsius. Switch unit OFF, then ON, then press & hold Bell key and UNIT ON/OFF key for 10 seconds.
J. "ICE" and "SERVICE" Flashing	**Water Valve Energized Longer then 15 Seconds**	• Check icemaker for jammed ice cube, clear jam if present. • Check icemaker levelness; level if needed. • Check position of fill cup. Reposition if in ice path. • Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer. • Check water valve operation, opens when 115V AC is applied, closes completely when 115V AC is removed. Water valve Ohms = 160. Replace if defective. ***NOTE:*** *Unit must be switched OFF, then ON to clear flashing ICE & SERVICE, then press alarm key for 15 seconds to clear error codes.*
K. No Ice, "ICE" Displayed, but not Flashing **(NOTE:** *The Icemaker system is disabled for 45 minutes after each harvest.)*	**No Water Supply to Unit**	Connect/turn on water supply.
	Unit Has Not Run Long Enough	Freezer must be 17°F for icemaker to operate, approximately 24 hours after unit installation. Instruct customer.
	Warm Freezer Temperatures *(**NOTE**: Freezer must be 17°F or colder for icemaker to function)*	See PROBLEM A, B, D, E, F & G earlier in Troubleshooting Guide.
	Shut-off Arm Stuck in Up/Off Position	Check shut-off arm, if stuck in up/off position, correct problem.
	Disconnected or Defective Water Valve	Check electrical connections and water connections at water valve, Reconnect / repair connections. Check resistance of water valve, 160 ohms. Replace if defective.
	Frozen Fill Tube a. Water Supply Problem b. Disconnected or defective fill tube heater c. No power from control board to fill tube heater	 a. Check water supply pressure for "constant" 20-100 PSI. If not, instruct customer. b. Check electrical connections at fill tube heater. Reconnect / repair connections. Check resistance of fill tube heater. Replace if defective. c. Initiate manual defrost and check for 115V AC from control board. Replace board if defective.

(Continued)

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **K. No Ice, "ICE" Displayed, but not Flashing** **(NOTE:** *The Icemaker system is disabled for 45 minutes after each harvest.)*	**Icemaker System Fault**	Press ICE key to OFF, then to ON to bypass 45 minute dwell. Then, depress icemaker switch & manually start icemaker with jumper between ports "T" & "H". Watch cycle of icemaker and see #1, #2 & #3 below. 1. If icemaker motor starts and finishes cycle:
	a. Disconnected or damaged electrical connections at icemaker or water valve.	a. Check for 115V at valve during fill mode. If no 115V, inspect connections at icemaker and valve. Repair or replace connection.
	b. Defective icemaker	b. Check for 115V from icemaker during fill mode. If no power, replace icemaker.
		2. If icemaker motor starts but does not finish cycle:
	c. Defective icemaker	c. Replace icemaker.
		3. If icemaker motor does NOT start:
	d. Disconnected or damaged electrical connections at icemaker	d. Check for 115V to icemaker. If no power, repair electrical connection.
	e. Icemaker switch disconnected or faulty	e. Check power to/from icemaker switch. Repair connection, replace defective switch.
	f. Electrical connection at control board or control board defect	f. Check for 115V at control board (J7-5). If no power, replace control board. If power, repair connection.
L. No Ice and "ICE" <u>not</u> Displayed	**Icemaker System Not Energized**	Press ICE key. " ICE" should appear on LCD.
M. Icemaker produces Too much ice	**Ice Level Arm/Linkage Bent or Broken**	Inspect ice level arm, shut-off arm and linkage. Replace defective parts.
	Icemaker Faulty	With ice level arm in UP/OFF position, Pressing ICE key to OFF, then ON to bypass 45 minute dwell. Then, depress icemaker switch & manually start icemaker with jumper between ports "T" & "H". If icemaker motor starts with arm in the UP/OFF position, replace icemaker.
N. Icemaker Produces Hollow Cubes	**Freezer Too Cold, Cycles Icemaker Too Soon**	See PROBLEM "H" earlier in Troubleshooting Guide.
	Not Enough Thermal-Mastic on Icemaker Thermostat	Inspect icemaker thermostat, apply more Thermal-Mastic to thermostat.
	Icemaker Thermostat Fault	Replace Thermostat.
O. Icemaker Produces Small cubes	**Water Supply Problem**	Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer.
	Icemaker Not Level	Check level of icemaker, adjust if needed
	Low Fill Adjustment on Icemaker	Check for 100-110 cc. fill (3.5-3.75 oz.). If low, increase fill by turning adjusting screw counterclockwise.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
P. Water or Clump of Ice in Ice Bucket	**Icemaker Not Level**	Check level of icemaker, level if needed.
	High Fill Adjustment on Icemaker	Check for 100-110 cc. fill (3.5-3.75 oz.). Turn adjusting screw clockwise to decrease.
	Water Valve Energized Too Long	• Check icemaker for jammed ice cube, clear jam if present. • Check icemaker levelness; level if needed. • Check position of fill cup. Reposition if in ice path. • Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer. • Check water valve operation, opens when 115V AC is applied, closes completely when 115V AC is removed. Water valve Ohms = 160. Replace if defective. ***NOTE:*** *Unit must be switched OFF, then ON to clear flashing ICE & SERVICE, then press alarm key for 15 seconds to clear error codes.*
	Intermittent Warm Freezer Temperatures	See PROBLEM A, B, D, E, F & G earlier in Troubleshooting Guide.
Q. No LCD	**Unit in Sabbath Mode**	Exit Sabbath Mode, press UNIT ON/OFF key.
	Display Wire Harness Disconnected or Faulty	Check display wire harness and connections, including wires behind refrigerator duct cover. Reconnect, repair, replace bad wiring.
	Control Panel Assembly Defective (OR) No Signal Read at Control Board	See Membrane Switch/Ribbon Cable Test Procedures. If membrane switch fails any test, replace entire control panel assembly. If switch passes all tests, replace control board.
R. No Lights	**No power to unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit switched OFF	Switch unit ON, press UNIT ON/OFF key.
	Unit in Sabbath Mode	Exit Sabbath Mode, press UNIT ON/OFF key.
	Defective or loose light bulb(s)	Install a known good light bulb.
	Light Switch Disconnected or Defective	Check wire connections at light switch. Reconnect/repair. Check for 115V AC to and from light switch. Replace switch if defective.
	Lighting System Wiring Disconnected or Defective	Check continuity from light sockets to switch. Reconnect/repair or replace defective components.
	No Power From Control Board (***NOTE:*** *See Unit in Sabbath Mode above.)*	Check for 115V AC from control board. Replace board if defective. (***NOTE:*** *See Unit in Sabbath Mode above.)*

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
S. Lights Stay ON when Drawers Closed - (May be Accompanied by /Drawer Ajar Alarm Bell)	**Door or Drawer Ajar** a. Food product obstruction b. Drawer closer tripped backwards	 a. Move obstruction. b. Trip drawer closer forward
	Faulty Light Switch	Check operation of light switches, lights off when switch is depressed. Replace switch if defective. *(**NOTE:** Two light switches in unit)*
T. Drawers Not Able to Close Completely	**Food Product Obstruction**	Move obstruction.
	Drawer Closer Tripped Backwards	Trip drawer closer forward
U. Drawers Uneven	**Improper Drawer Panel Installation**	The drawers are non-adjustable. Instead, the drawer panels must be adjusted if there is an alignment problem. Refer to the Installation Manual and/or installation video for panel installation and adjustment.
	Unit Not Level	Check levelness of unit. If un-level, turn front leveling legs counterclockwise to raise front or clockwise to lower it. Rear levelers are adjusted from front of base by turning adjusting screw clockwise to raise rear or counterclockwise to lower it. Refer to the Installation Manual and/or installation video for complete installation and leveling instructions.

SEALED SYSTEM TROUBLESHOOTING / DIAGNOSTICS TABLES

Before tapping into the sealed system to check pressures, see General Troubleshooting Guide, taking note of problems "A" through "J", and if applicable, be sure to reference the "Pointers" in the first column. By initiating Diagnostic Mode and observing evaporator temperatures, it may be determined unnecessary to tap the sealed system. If needed, the table on the following page provides a quick reference for temperature/pressure correlation.

NOTE: *If entering the sealed system to check pressures, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*

NOTE: *Whenever servicing the sealed system, the high-side filter-drier must be replaced.*

NORMAL OPERATING PRESSURES		
Model	**Normal Low-Side Pressures**	**Normal High-Side Pressures**
700BC/I-3	**3" vacuum to 2 psi**	**90 psi to 120 psi**
700BR-3	**X" vacuum to X psi**	**XX psi to XXX psi**
700BF/I-3	**3" vacuum to 2 psi**	**90 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, etc.*

If a unit is experiencing temperature problems, it is recommended to reference the General Troubleshooting guide and follow any "Pointers" that may appear in the first column. 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.

Temp °F	Pressure
-30	10” Vac
-25	7” Vac
-20	4” Vac
-15	0” Vac
-10	2 Psi
-5	4 Psi
0	7 Psi
5	9 Psi
10	12 Psi
15	15 Psi
20	18 Psi
25	22 Psi
30	26 Psi
35	30 Psi
40	35 Psi
45	40 Psi
50	45 Psi
55	51 Psi
60	57 Psi
65	64 Psi
70	71 Psi
75	78 Psi

BASE UNIT MEMBRANE SWITCH / RIBBON CABLE TEST

If the integrity of a Base Unit control panel assembly is suspect, continuity tests should be performed at the membrane switch ribbon cable terminal housing. Begin by removing the control panel assembly from the unit and place it on a solid surface. Disconnect the ribbon cable from control panel PC board.

How To Identify Pin 1 on Terminal Housing

The ribbon cable wires are exposed at the back of the terminal housing, but since there are two vendors of the membrane switch, determining the location of pin 1 is not always easy. To identify the pins, follow these guidelines:

1. If terminal housing is BLUE, then pin 1 is closest to arrow on housing.
2. If terminal housing is BLACK, check for continuity between first two pins at each end of housing while pushing Freezer WARMER key. If there is continuity, then pin 1 is at that end.

700BCI-3 Membrane Switch/Ribbon Cable Test Procedure

1. Press no keys on membrane switch. Check for continuity between all pin combinations. With no keys pressed, there should be no continuity between any pins.
2. Press UNIT ON/OFF key, there should be continuity across pins 3 & 4.
3. Press Door Ajar Alarm ON/OFF key, there should be continuity across pins 2 & 4.
4. Press Freezer WARMER key, there should be continuity across pins 1 & 2.
5. Press Freezer COLDER key, there should be continuity across pins 1 & 5.
6. Press Refrigerator WARMER key, there should be continuity across pins 4 & 5.
7. Press Refrigerator COLDER key, there should be continuity across pins 1 & 3.

NOTE: *If any of the tests show failure, replace entire control panel assembly.*

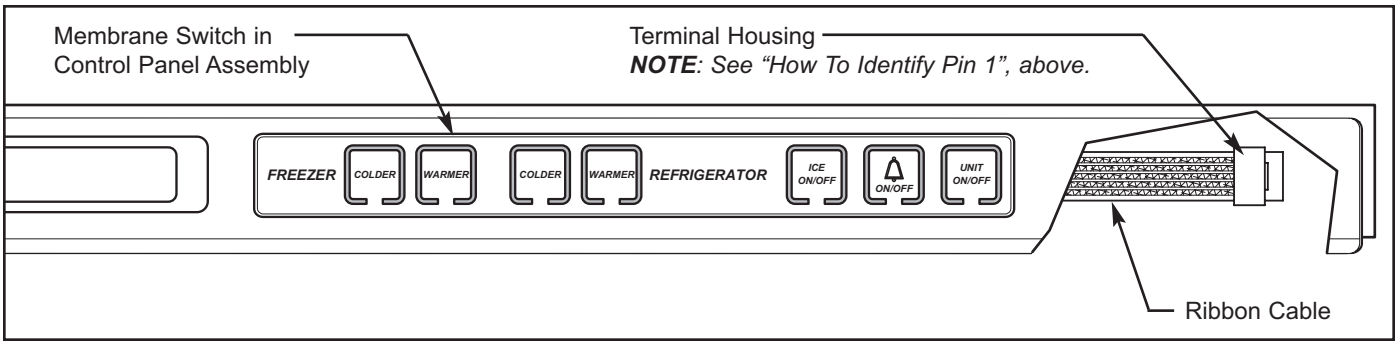


Figure 9-2. 700BCI3 Control Panel Assembly with Cut-Away View to Show Ribbon Cable

SECTION 9

TECHNICAL DATA

Model 700BC/I-3

	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	6 oz.
NORMAL OPERATING PRESSURES	
Low Side	3" vacuum to 2 psi
High Side	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*	
Service Part No.	4201860
Manufacturer	Embraco
Mfg. Model No.	FGS70 A
Original/Service Compressor Amps	1.2 / 1.2
Original/Service Compressor BTU/H	710 / 715
DEFROST METHOD	"Adaptive Defrost" Defrost intervals and duration vary by unit use. 5 minute compressor delay after each defrost.
DEFROST TERMINATOR	
Cut-In Temp.	30°F / -1°C
Cut-Out Temp.	70°F / 21°C
DEFROST HEATER	
Watts	490
Amps	4.1 - 4.5
Resistance/Ohms	25 - 29
DRAIN TUBE HEATER	
Watts	7
Amps	50 - 60 mA
Resistance/Ohms	1700 - 2100
FILL TUBE HEATER	
Watts	4.2
Amps	30 - 40 mA
Resistance/Ohms	2300 - 2900
WATER VALVE	
Watts	50
Amps	0.42
Resistance/Ohms (Inductive)	160
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000

Model 700BR-3

	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	3.75 oz.
NORMAL OPERATING PRESSURES Low Side High Side	 X" vacuum to X psi XX psi to XXX psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.* Service Part No. Manufacturer Mfg. Model No. Original/Service Compressor Amps Original/Service Compressor BTU/H	 4201880 Embraco EMT30HSC .06 / 1.2 310 / 280
DEFROST METHOD	"Fan Assisted Off-Cycle Defrost" Evap > 38°F before Compressor ON.
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	 30000 - 33000

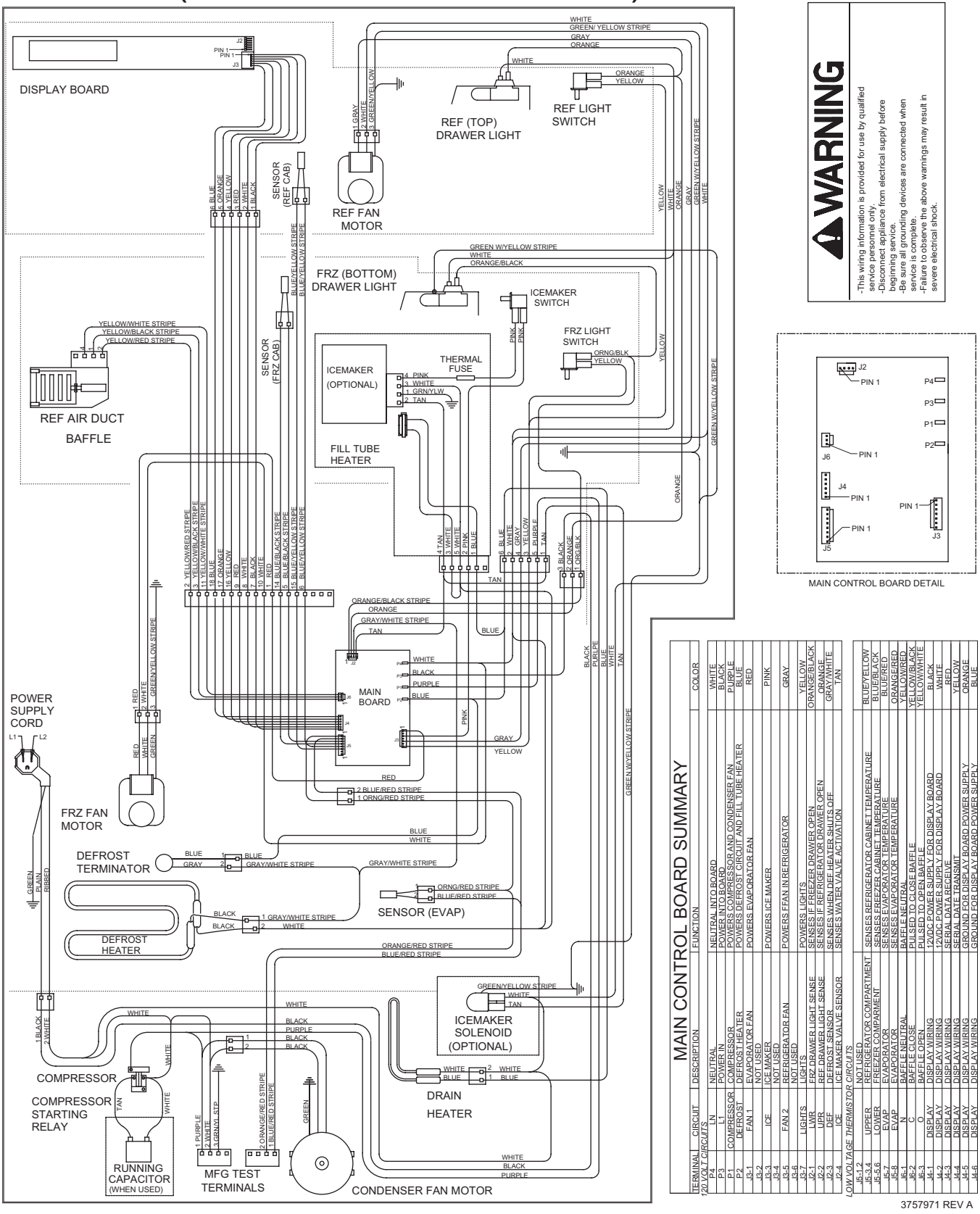
Model 700BF/I-3

		FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*		6 oz.
NORMAL OPERATING PRESSURES		
	Low Side	3" vacuum to 2 psi
	High Side	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*		
	Service Part No.	4201860
	Manufacturer	Embraco
	Mfg. Model No.	FGS70HA
	Original/Service Compressor Amps	1.2 / 1.2
	Original/Service Compressor BTU/H	710 / 715
DEFROST METHOD		"Adaptive Defrost" Defrost intervals and duration vary by unit use. 5 minute compressor delay after each defrost.
DEFROST TERMINATOR		
	Cut-In Temp.	30°F / -1°C
	Cut-Out Temp.	70°F / 21°C
DEFROST HEATER		
	Watts	490
	Amps	4.1 - 4.5
	Resistance/Ohms	25 - 29
DRAIN TUBE HEATER		
	Watts	7
	Mili-Amps	50 - 60 mA
	Resistance/Ohms	1700 - 2100
FILL TUBE HEATER		
	Watts	4.2
	Amps	30 - 40 mA
	Resistance/Ohms	2300 - 2900
WATER VALVE		
	Watts	50
	Amps	0.42
	Resistance/Ohms (Inductive)	160
THERMISTORS (Evap & Compartment)	Resistance/Ohms at 32°F / 0°C	30000 - 33000

SECTION 10

WIRING DIAGRAMS AND SCHEMATICS

WIRING DIAGRAM MODEL 700 BC/BCI-3
(Prior to Serial #2300444)



WARNING

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MAIN CONTROL BOARD DETAIL

MAIN CONTROL BOARD SUMMARY

TERMINAL	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
120 VAC CIRCUITS				
P4	L	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P3	L1	POWER IN	POWER INTO BOARD	BLACK
P1	COMPRESSOR	COMPRESSOR	POWERS COMPRESSOR AND CONDENSER FAN	PURPLE
P2	DEFROST	DEFROST HEATER	POWERS DEFROST CIRCUIT AND FILL TUBE HEATER	BLUE
J3-1	FAN 1	EVAPORATOR FAN	POWERS EVAPORATOR FAN	RED
J3-2		NOT USED		
J3-3	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J3-4		NOT USED		
J3-5	FAN 2	REFRIGERATOR FAN	POWERS FFAN IN REFRIGERATOR	GRAY
J3-6		NOT USED		
J3-7	LIGHTS	LIGHTS	POWERS LIGHTS	YELLOW
J2-1	LWR	FRZ DRAWER LIGHT SENSE	SENSES IF FREEZER DRAWER OPEN	ORANGE/BLACK
J2-2	UPR	REF DRAWER LIGHT SENSE	SENSES IF REFRIGERATOR DRAWER OPEN	ORANGE
J2-3	DEF	DEFROST SENSOR	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE
J2-4	ICE	ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J6-1,2		NOT USED		BLUE/YELLOW
J6-3,4	UPPER	REFRIGERATOR COMPARTMENT	SENSES REFRIGERATOR CABINET TEMPERATURE	BLUE/BLACK
J6-5,6	LOWER	EVAPORATOR COMPARTMENT	SENSES EVAPORATOR CABINET TEMPERATURE	BLUE/RED
J6-7,8	EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	ORANGE/RED
J6-1	N	BAFFLE NEUTRAL	BAFFLE NEUTRAL	YELLOW/RED
J6-2	C	BAFFLE CLOSE	PULSED TO CLOSE BAFFLE	YELLOW/BLACK
J6-3	O	BAFFLE OPEN	PULSED TO OPEN BAFFLE	YELLOW/WHITE
J4-1	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	BLACK
J4-2	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	WHITE
J4-3	DISPLAY	DISPLAY WIRING	SERIAL DATA RECEIVE	RED
J4-4	DISPLAY	DISPLAY WIRING	SERIAL DATA TRANSMIT	YELLOW
J4-5	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	ORANGE
J4-6	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	BLUE

3757971 REV A

WIRING SCHEMATIC
MODEL 700 BC/BCI-3
(Prior to Serial #2300444)

⚠ WARNING

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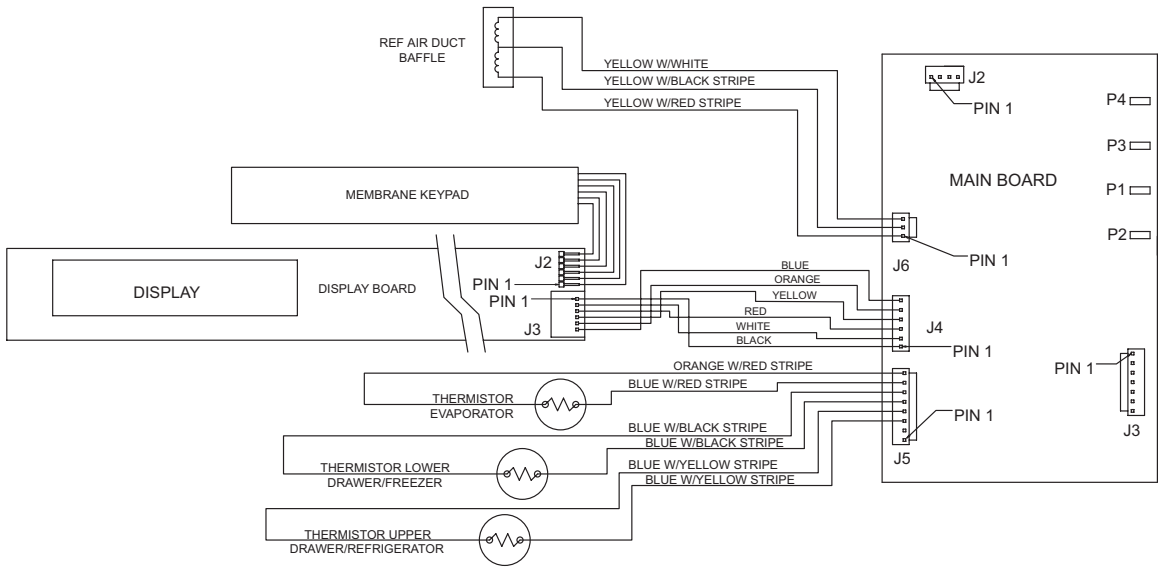
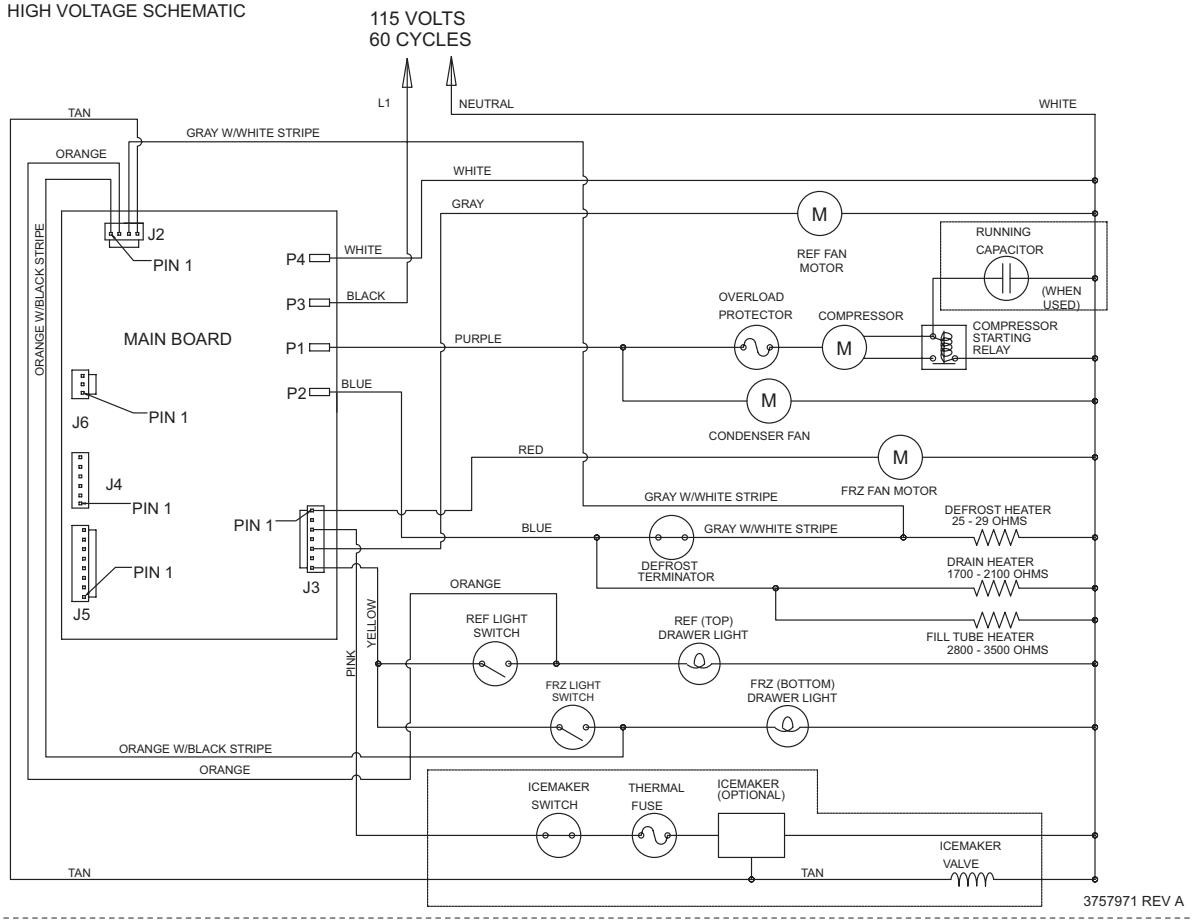
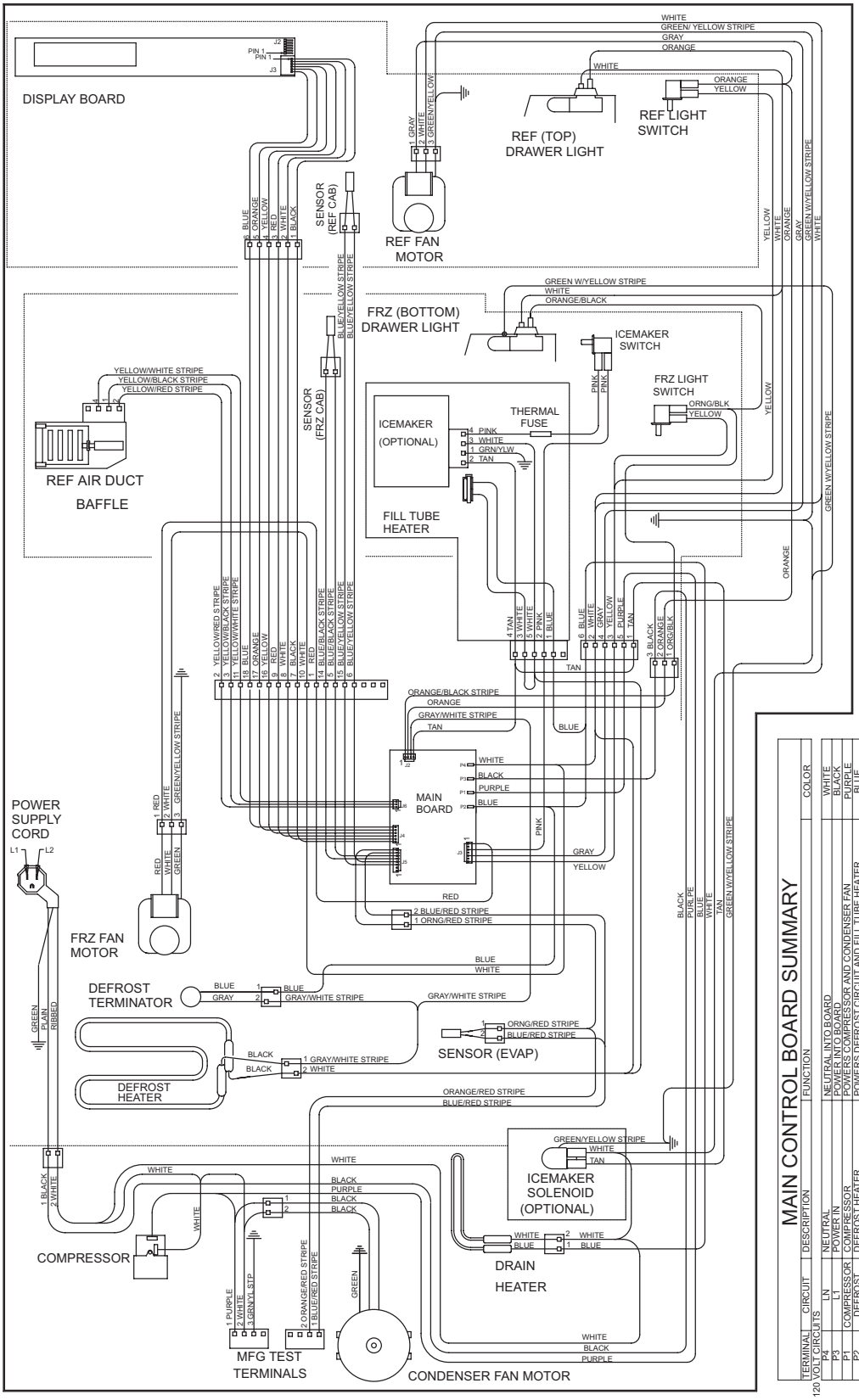
LOW VOLTAGE SCHEMATIC



HIGH VOLTAGE SCHEMATIC



WIRING DIAGRAM MODEL 700 BC/BCI-3
(Starting with Serial #2300444)



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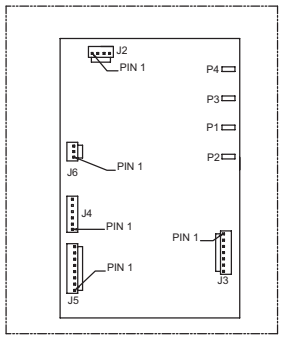

MAIN CONTROL BOARD DETAIL

MAIN CONTROL BOARD SUMMARY

TERMINAL	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
120 VOLT CIRCUITS				
P4	LN	NEUTRAL	NEUTRAL INTO BOARD	WHITE
P3	NOT USED	NOT USED	POWER INTO BOARD	BLACK
P1	COMPRESSOR	COMPRESSOR	POWERS COMPRESSOR AND CONDENSER FAN	PURPLE
P2	DEFROST	DEFROST HEATER	POWERS DEFROST CIRCUIT AND FILL TUBE HEATER	BLUE
J3-1	FAN 1	EVAPORATOR FAN	POWERS EVAPORATOR FAN	RED
J3-2		NOT USED		
J3-3	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J3-4		NOT USED		
J3-5	FAN 2	REFRIGERATOR FAN	POWERS FAN IN REFRIGERATOR	GRAY
J3-6		NOT USED		
J3-7	LIGHTS	LIGHTS	POWERS LIGHTS	YELLOW
J2-1	LWR	FRZ DRAWER LIGHT SENSE	SENSES IF FREEZER DRAWER OPEN	ORANGE/BLACK
J2-2	UPR	REF DRAWER LIGHT SENSE	SENSES IF REFRIGERATOR DRAWER OPEN	ORANGE
J2-3	DEF	DEFROST SENSOR	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE
J2-4	ICE	ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J5-1,2		NOT USED		BLUE/YELLOW
J5-3,4	UPPER	REFRIGERATOR COMPARTMENT	SENSES REFRIGERATOR CABINET TEMPERATURE	BLUE/BLACK
J5-5,6	LOWER	FREEZER COMPARTMENT	SENSES FREEZER CABINET TEMPERATURE	BLUE/RED
J5-7	EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	ORANGE/RED
J5-8	N	BAFFLE NEUTRAL	BAFFLE NEUTRAL	YELLOW/RED
J6-1	C	BAFFLE CLOSE	PULSED TO CLOSE BAFFLE	YELLOW/BLACK
J6-3	O	BAFFLE OPEN	PULSED TO OPEN BAFFLE	YELLOW/WHITE
J4-1	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	BLACK
J4-2	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	WHITE
J4-3	DISPLAY	DISPLAY WIRING	SERIAL DATA RECEIVE	RED
J4-4	DISPLAY	DISPLAY WIRING	SERIAL DATA TRANSMIT	YELLOW
J4-5	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	ORANGE
J4-6	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	BLUE

P/N 3758462 REV A

WIRING SCHEMATIC MODEL 700 BC/BCI-3

(Starting with Serial #2300444)

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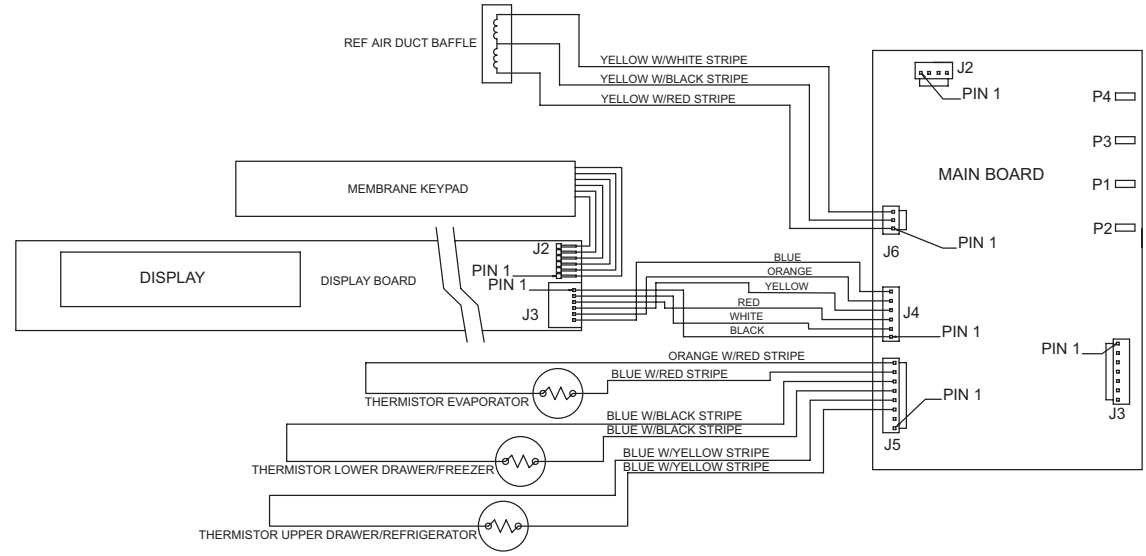
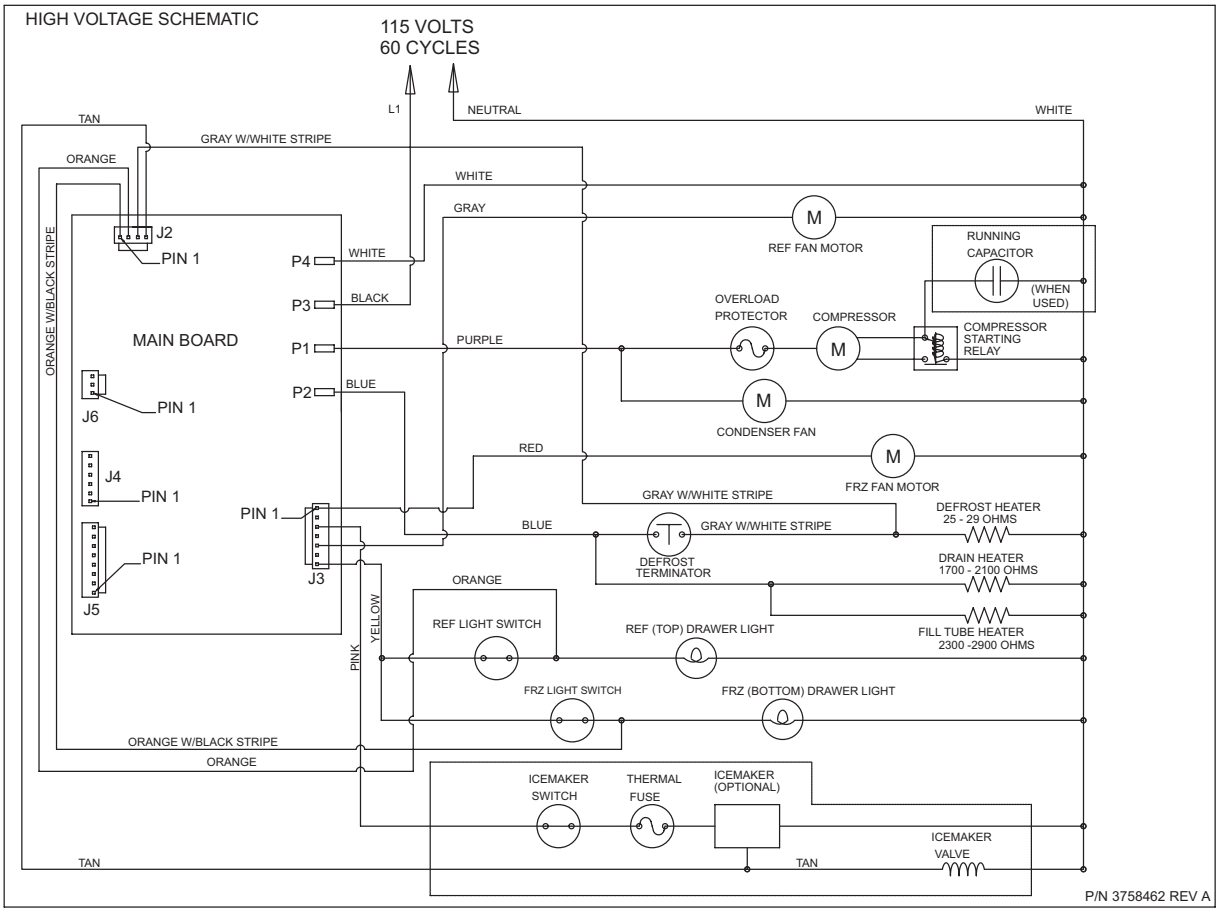
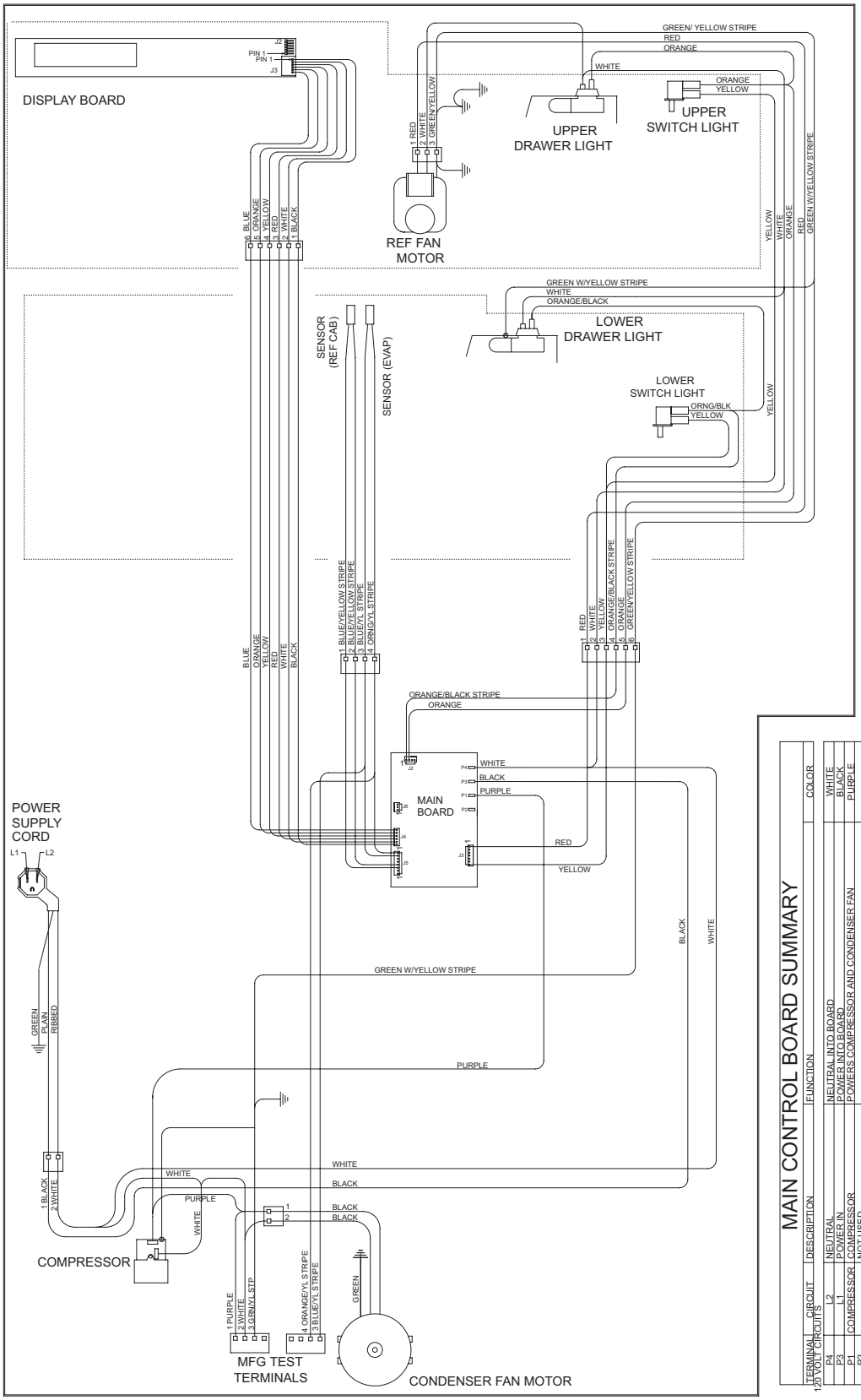
LOW VOLTAGE SCHEMATIC



HIGH VOLTAGE SCHEMATIC



WIRING DIAGRAM MODEL 700BR-3



WARNING

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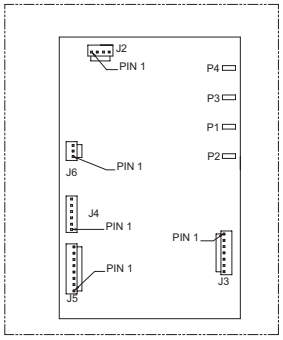

MAIN CONTROL BOARD DETAIL

MAIN CONTROL BOARD SUMMARY

TERMINAL	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
120 VOLT CIRCUITS				
P4		NEUTRAL	NEUTRAL INTO BOARD	WHITE
P3	L2	POWER IN	POWER INTO BOARD	BLACK
P1	L1	COMPRESSOR	POWERS COMPRESSOR AND CONDENSER FAN	PURPLE
P2	COMPRESSOR	NOT USED		
J3-1	FAN 1	EVAPORATOR FAN	POWERS EVAPORATOR FAN	RED
J3-2		NOT USED		
J3-3		NOT USED		
J3-4		NOT USED		
J3-5		NOT USED		
J3-6		NOT USED		
J3-7	LIGHTS	LIGHTS	POWERS LIGHTS	YELLOW
J2-1	LWR	UPPER LIGHT SENSE	SENSES IF UPPER DRAWER OPEN	ORANGE
J2-2	UPR	LOWER LIGHT SENSE	SENSES IF LOWER DRAWER OPEN	ORANGE/BLACK
J2-3		NOT USED		
J2-4		NOT USED		
LOW VOLTAGE THERMISTOR CIRCUITS				
J5-1,2		NOT USED		BLUE/BLACK
J5-3,4	COMPT	REFRIGERATOR COMPARTMENT	SENSES REFRIGERATOR CABINET TEMPERATURE	
J5-5,6		NOT USED		
J4-1	EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	BLUE/YELLOW
J5-8	EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	ORANGE/YELLOW
J6-1		NOT USED		
J6-2		NOT USED		
J6-3		NOT USED		
J4-1	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	BLACK
J4-2	DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	WHITE
J4-3	DISPLAY	DISPLAY WIRING	SERIAL DATA RS485	RED
J4-4	DISPLAY	DISPLAY WIRING	SERIAL DATA RS485	YELLOW
J4-5	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	ORANGE
J4-6	DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	BLUE

P/N 3758575 REV A

WIRING SCHEMATIC MODEL 700BR-3

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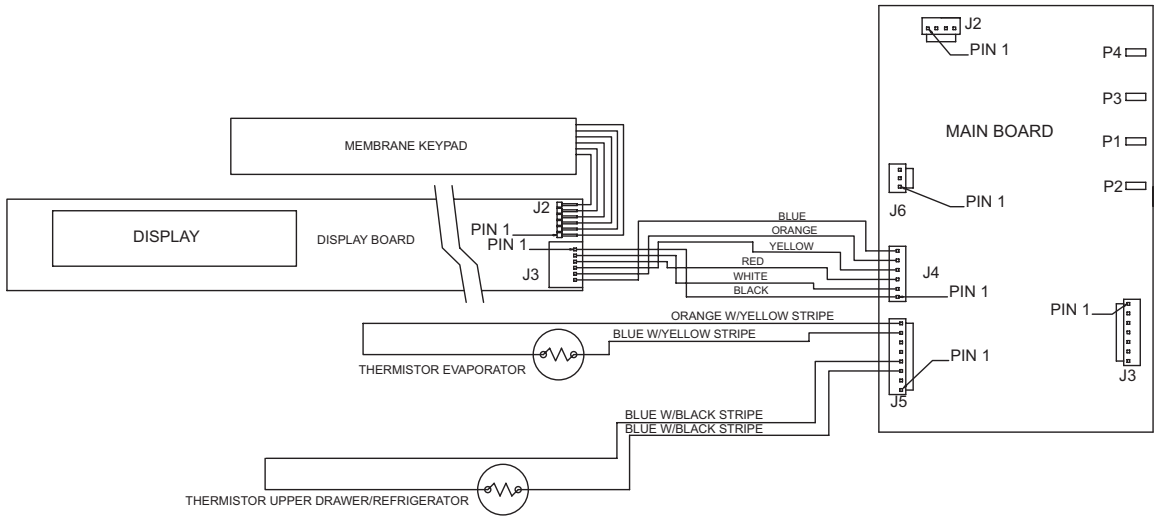
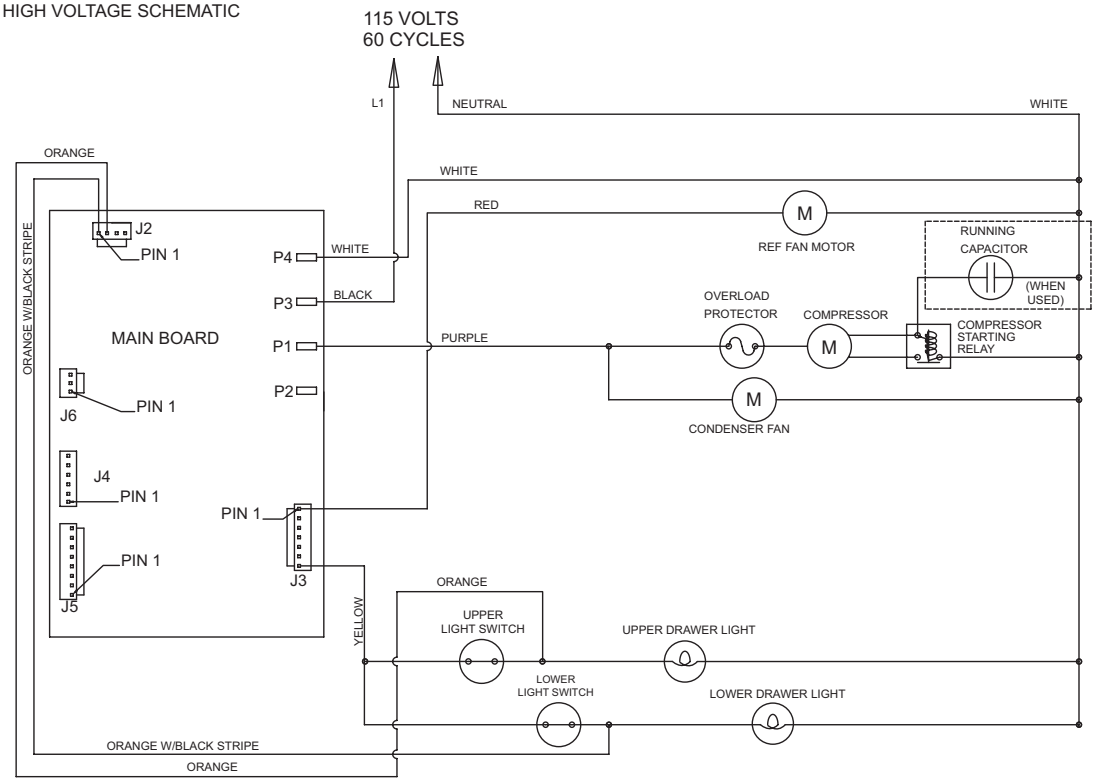
LOW VOLTAGE SCHEMATIC

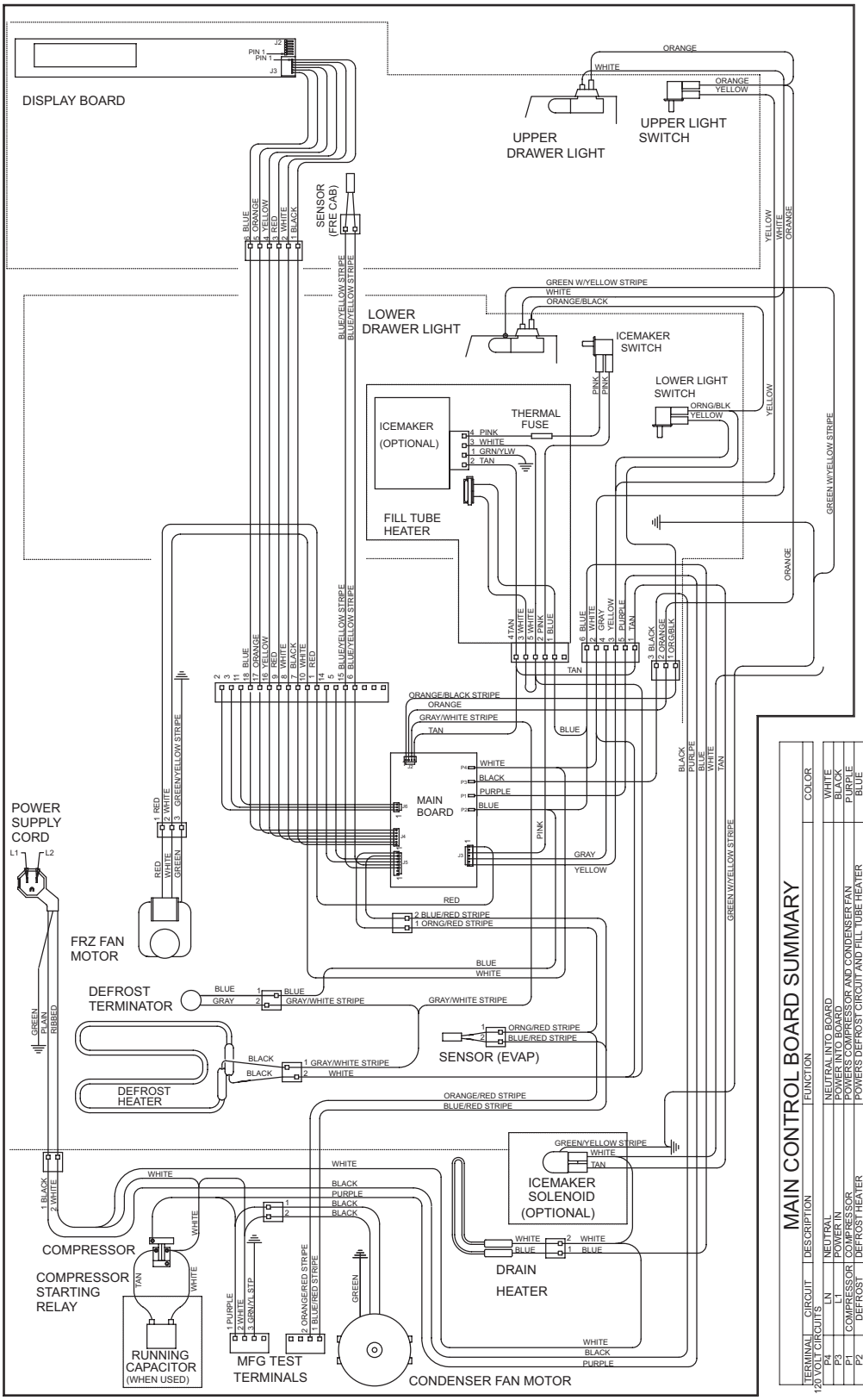


HIGH VOLTAGE SCHEMATIC



P/N 3758575 REV A

WIRING DIAGRAM MODEL 700 BF/BFI-3



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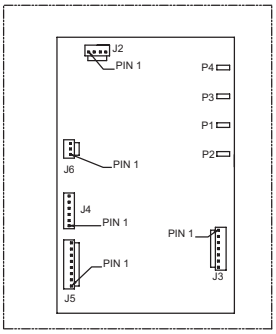

MAIN CONTROL BOARD DETAIL

MAIN CONTROL BOARD SUMMARY

TERMINAL	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
120 VOLT CIRCUITS				
P4		LN	NEUTRAL INTO BOARD	WHITE
P3		L1	POWER INTO BOARD	BLACK
P1		COMPRESSOR	POWERS COMPRESSOR AND CONDENSER FAN	PURPLE
P2		DEFROST	POWERS DEFROST CIRCUIT AND FILL TUBE HEATER	BLUE
J3-1		FAN 1	EVAPORATOR FAN	RED
J3-2		NOT MARKED		
J3-3		ICE	POWERS ICE MAKER	PINK
J3-4		NOT USED		
J3-5				GRAY
J3-6		NOT USED		
J3-7		LIGHTS	POWERS LIGHTS	YELLOW
J2-1		LWR	SENSES IF FREEZER DRAWER OPEN	ORANGE/BLACK
J2-2		UPR	SENSES IF REFRIGERATOR DRAWER OPEN	ORANGE
J2-3		DFR	SENSES WHEN DEFROST HEATER IS OFF	GRAY/WHITE
J2-4		ICE	ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J5-1,2			NOT USED	
J5-3,4				BLUE/YELLOW
J5-5,6		LOWER	FREEZER COMPARMENT	SENSES FREEZER CABINET TEMPERATURE	BLUE/BLACK
J5-7		EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	BLUE/RED
J5-8		EVAP	EVAPORATOR	SENSES EVAPORATOR TEMPERATURE	ORANGE/RED
J6-1					YELLOW/RED
J6-2					YELLOW/BLACK
J6-3		DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	YELLOW/WHITE
J4-1		DISPLAY	DISPLAY WIRING	12VDC POWER SUPPLY FOR DISPLAY BOARD	BLACK
J4-2		DISPLAY	DISPLAY WIRING	SERIAL DATA RECEIVE	WHITE
J4-3		DISPLAY	DISPLAY WIRING	SERIAL DATA TRANSMIT	RED
J4-4		DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	YELLOW
J4-5		DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	ORANGE
J4-6		DISPLAY	DISPLAY WIRING	GROUND FOR DISPLAY BOARD POWER SUPPLY	BLUE

3758566 REV A

WIRING SCHEMATIC
MODEL 700 BF/BFI-3

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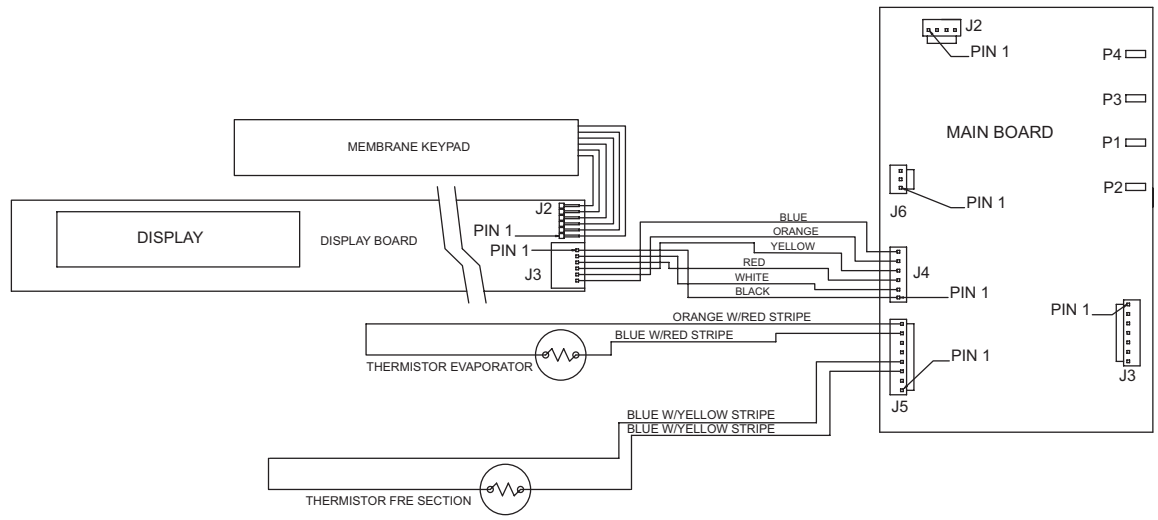
LOW VOLTAGE SCHEMATIC



HIGH VOLTAGE SCHEMATIC