Service Manual
Side-by-Side Refrigerator

Fisher & Paykel
Models:
RX256DT4X1 FP
RX256DT7X1 FP

Elba
Models:
RX256ET2B1 EL
RX256ET2W1 EL

321023

PRODUCT

Brand: Fisher & Paykel

Models: RX256DT4X1 FP, RX256DT7X1 FP

Brand: Elba by Fisher & Paykel

Models: RX256ET2B1 EL, RX256ET2W1 EL

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IMPORTANT INFORMATION

Important Notices for Service Technicians and Consumers

Fisher & Paykel Appliances will not be responsible for personal injury or property damage from improper service procedures. Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service information. **IT IS THE TECHNICIAN'S RESPONSIBILITY TO REVIEW ALL APPROPRIATE SERVICE INFORMATION BEFORE BEGINNING REPAIRS.**

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit before working on/servicing the appliance.

To locate an Authorised Service Centre, please consult the dealer from whom you purchased this product. For further assistance, please contact:

Fisher & Paykel Customer Care

	E-mail	Telephone
▪ New Zealand	customer.care@fp.co.nz	0800 372 273
▪ Australia	customer.care@fp.com.au	1300 650 590
▪ USA/Canada	customer.care@fisherpaykel.com	1 888 936 7872
▪ United Kingdom	customer.care@fisherpaykel.co.uk	0845 066 2200

Recognize Safety Symbols, Words, and Labels

⚠ DANGER

DANGER - Immediate hazards that **WILL** result in severe personal injury or death.

⚠ WARNING

WARNING - Hazards or unsafe practices that **COULD** result in severe personal injury or death.

⚠ CAUTION

CAUTION - Hazards or unsafe practices that **COULD** result in minor personal injury, product or property damage.

1 COMPONENT SPECIFICATIONS

⚠ WARNING

To avoid risk of electrical shock that can cause death or severe personal injury, disconnect unit from power before servicing unless tests require power. Discharge capacitors through a 10,000 ohm resistor before handling. Wires removed during disassembly must be replaced on correct terminals to ensure proper grounding and polarization.

Component	Specifications all parts 115VAC/60HZ unless noted
Compressor Run Capacitor	Volts ..... 220 VAC Capacitance ..... 15µfd ± 10%
Compressor	BTUH ..... 905 BTUH Watts ..... 60 Hz / 153 watts Current Lock rotor ..... 19.0 amps ± 15% Current Full load ..... 1.26 amps ± 15% Resistance Run windings ..... 3.33 ohms ± 15% Resistance Start windings ..... 4.28 ohms ± 15%
Electric Damper Control	Maximum closing time (RX256DT7X1) ..... 8 seconds Maximum closing time (RX256DT4X1, RX256ET2B1, RX256ET2W1) ..... 36 seconds Temperature Rating ..... 20°F - 110°F RPM (RX256DT7X1) ..... 5 RPM (RX256DT4X1, RX256ET2B1, RX256ET2W1) 1
Thermistor	Temperature ..... Resistance 77°F ..... 10,000 ohms ± 1.8% 36°F ..... 29,500 ohms ± 1.0% 0°F ..... 86,300 ohms ± 1.8%
Condenser Motor	Rotation (facing end opposite shaft) ..... Clockwise RPM ..... 1120 RPM Watts ..... 3.4 watts ± 15% @ 115 VAC Current ..... 0.085 amps ± 15% @ 115 VAC
Evaporator Fan Motor	Rotation (facing end opposite shaft) ..... Clockwise RPM ..... 2800 RPM Watts ..... 6.0 watts ± 15% @ 115 VAC Note: Fan blade must be fully seated on shaft to achieve proper airflow.
Overload/Relay	Ult. trip amps @ 158°F (70°C) ..... 2.40 amps ± 15% Close temperature ..... 140° ± 10° Open temperature (RX256DT7X1) ..... 230° ± 5° Open temperature (RX256DT4X1, RX256ET2B1, RX256ET2W1) ..... 284° ± 9° Short time trip (seconds) (RX256DT7X1) ..... 17 seconds ± 5 Short time trip (seconds) (RX256DT4X1, RX256ET2B1, RX256ET2W1) ..... 10 seconds ± 5 Short time trip (amps @ 77°F (25°C) ..... 12 amps ± 2 amps
Thermostat (Defrost)	Volts ..... 120/240 VAC Watts (RX256DT7X1) ..... 475 watts Watts (RX256DT4X1, RX256ET2B1, RX256ET2W1) ..... 495 watts Current (RX256DT7X1) ..... 10/5 amps Current (RX256DT4X1, RX256ET2B1, RX256ET2W1) ..... 5.8/2.9 amps Resistance across terminals: Above 42°F ± 5° ..... Open Below 12°F +7° ..... Closed
Evaporator Heater 26 cu. ft.	Volts ..... 115 VAC Wattage ..... 450 ± 5% watts @ 115 VAC Resistance ..... 29 ± 5% ohms
Control Board	Volts ..... 120 VAC, 60 HZ ..... See Control board troubleshooting section.
Auger Motor	Rotation (facing end opposite shaft) Power to blue and white is clockwise. Power to orange and white is counterclockwise. RPM ..... 17 ± 3 RPM
Water Valve	Watts ..... Brown side 35W Yellow side 20W

Light Switch (RX256DT4X1, RX256ET2B1, RX256ET2W1)	Type Volts Current	SPST NC 125/250 VAC 8/4 amps
Light Switch / Interlock	Type Volts Current	SPDT NO/NC 125/250 VAC 8/4 amps
Solenoid (Ice Chute)	Resistance across leads	101 ohms ± 10%
Ice Maker Harvest	4 lbs of ice per 24 hours.	

No-Load Performance, Controls in Normal Position															
	Kw/24 hr ±0.4			Percent Run Time ±10%			Cycles/24 hr ±25%			Provision Center Compartment Average Food Temperature ±3°F			Freezer Compartment Average Food Temperature ±3°F		
Ambient °F	70°	90°	110°	70°	90°	110°	70°	90°	110°	70°	90°	110°	70°	90°	110°
26cuft	1.2	1.85	2.6	35	55	75	24	24	19	37	39	42	0	0	-2

Temperature Relationship Test Chart												
	Evaporator Outlet ±3°F		Evaporator Inlet ±3°F		Suction Line ±7°F		Average Total Wattage ±10%		Suction Pressure ±2 PSIG		Head Pressure ± 5 PSIG	
Ambient °F	70°	90°	70°	90°	70°	90°	70°	90°	70°	90°	70°	90°
26cuft	-15	-15	-16	-16	72	98	132	138	6"(Vac.)	0	87	137

2 PRODUCT DESIGN

2.1 Refrigeration System

The compressor forces high temperature vapor into the fan cooled tube and wire condenser, where vapor is cooled and condensed into high pressure liquid by circulation of air across the condenser coil (refer to Section 2.3).

High-pressure liquid passes into a post-condenser loop, which helps to prevent condensation around the freezer compartment opening, and through the molecular sieve drier and into the capillary tube. The small inside diameter of the capillary offers resistance, decreasing pressure and temperature of the liquid discharged into the evaporator. The capillary diameter and length is carefully sized for each system.

The capillary enters the evaporator at the top front. Combined liquid and saturated gas flows through the front to the bottom of the coil and into the suction line. The aluminium tube evaporator coil is located in the freezer compartment where the circulating evaporator fan moves air through the coil and into the fresh food compartment.

The large surface of the evaporator allows heat to be absorbed from both the fresh food and freezer compartments, by airflow over the evaporator coil causing some of the liquid to evaporate. The temperature of the evaporator tubing near the end of the running cycle may vary from –13^{O}F to –25^{O}F (-25^{O}C to –31^{O}C).

Saturated gas is drawn off through the suction line, where superheated gas enters the compressor. To raise the temperature of the gas, the suction line is placed in heat exchange with the capillary.

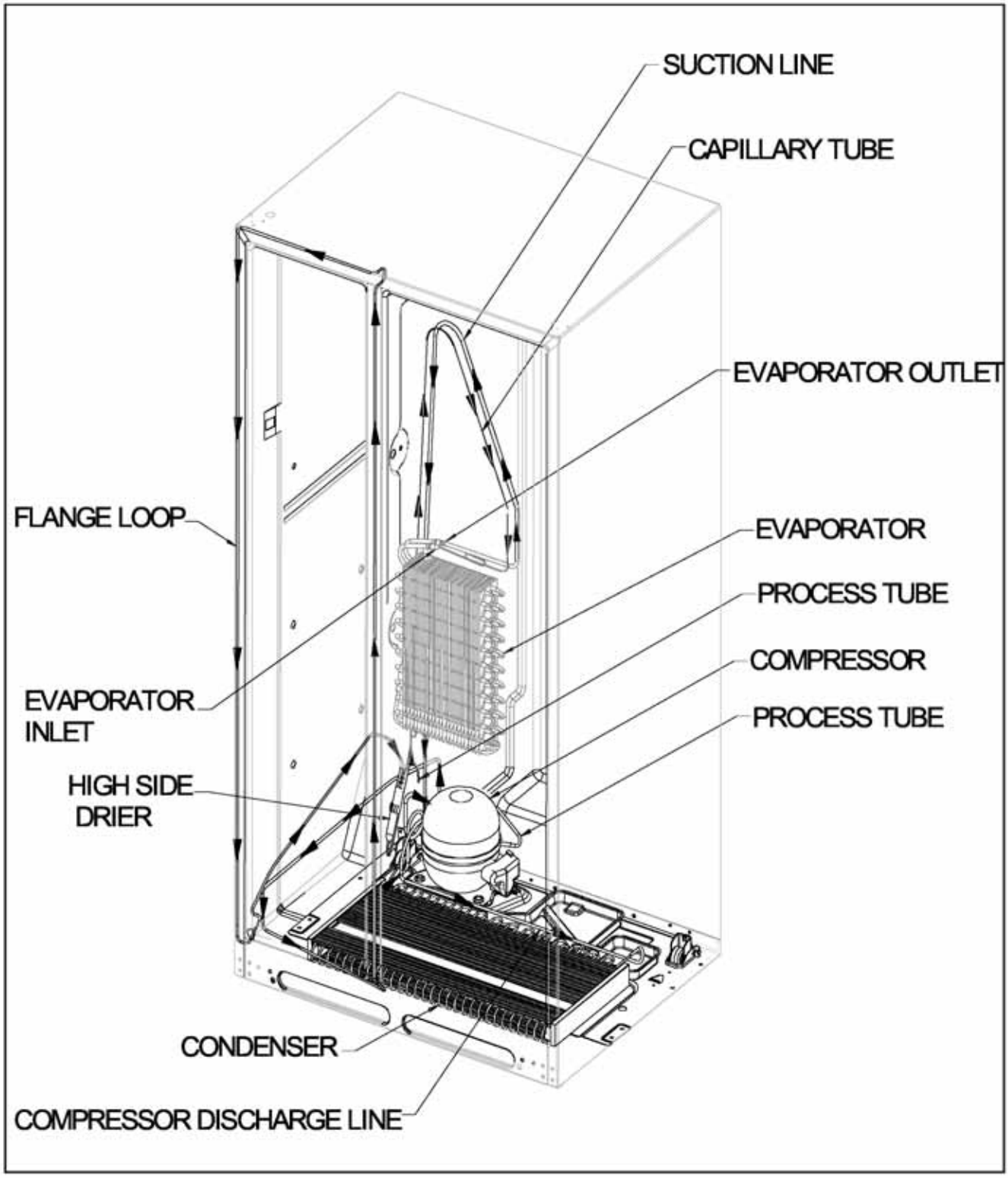
2.2 Fully Electronic Defrost System

The Control Board adapts the compressor run time between defrosts to achieve optimum defrost intervals by monitoring the length of time the defrost heater is on.

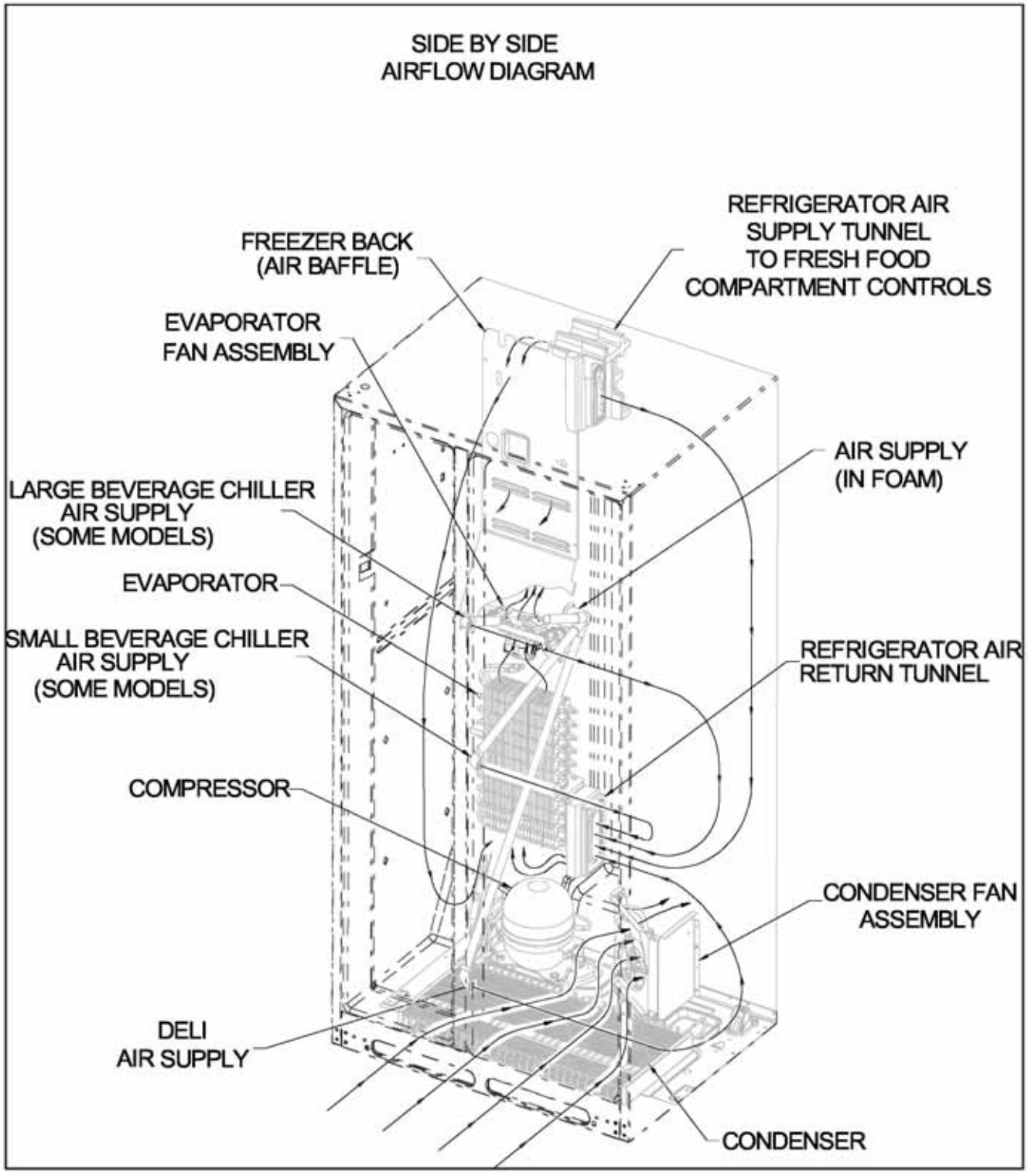
After initial power up, the defrost interval is 4 hours compressor run time. Defrost occurs immediately after the 4 hours.

Note: Once the unit is ready to defrost, there is a 4 minute wait time prior to the beginning of the defrost cycle.

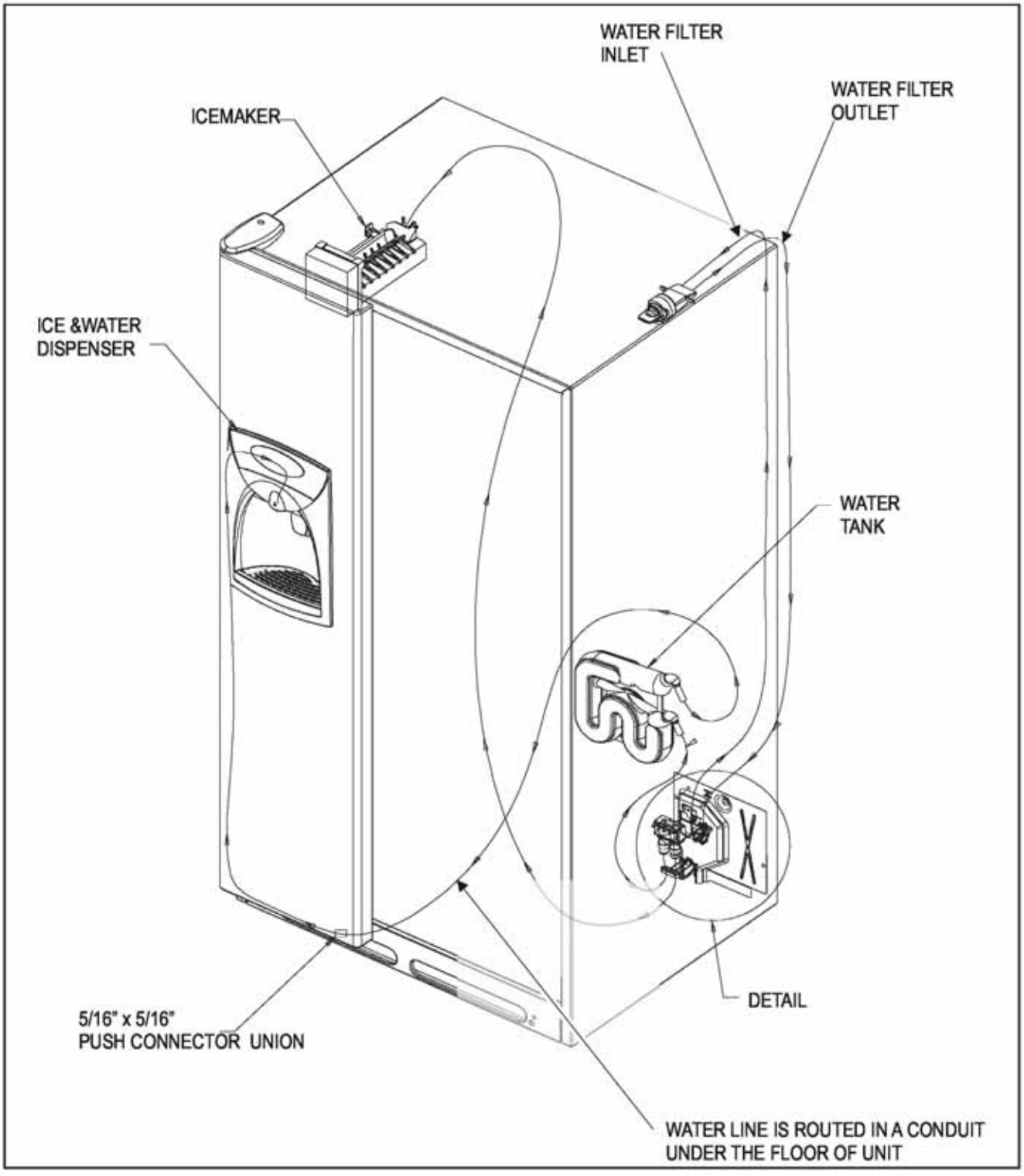
2.3 Refrigerant Flow



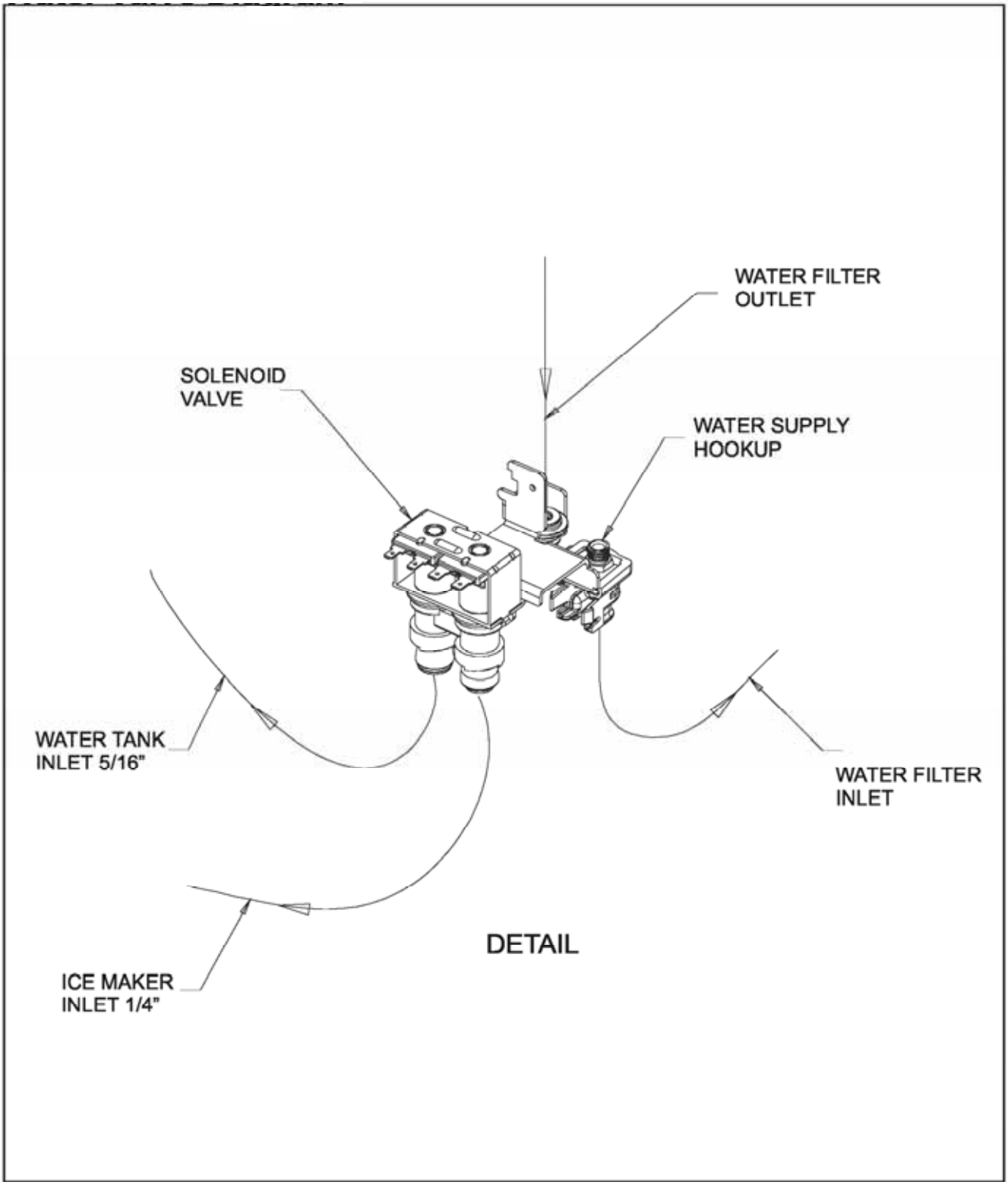
2.4 Cabinet Air Flow



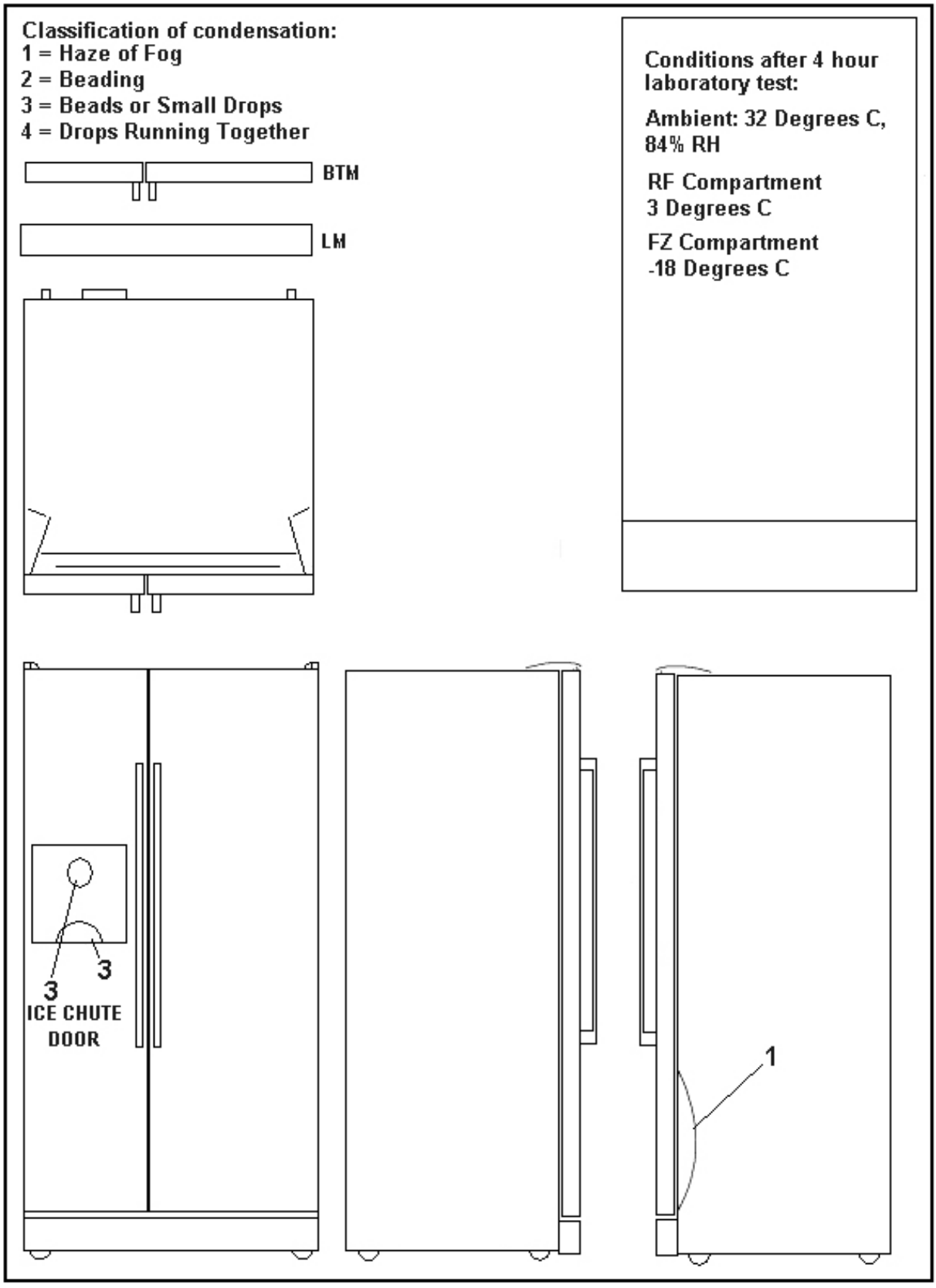
2.5 Ice And Water Dispenser Diagram



2.6 Water Valve Diagram



2.7 Typical External Sweat Pattern



Installation

Note

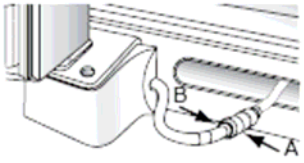
- For refrigerators in operation, shut off water before removing water line from the door.

To Disconnect the Water Line:

- Push in white collar (A) and hold.
- Pull the door-side tube from the connector (B).

To Reconnect the Water Line:

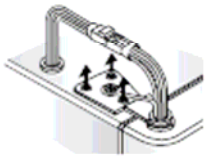
- Firmly push tube ⅝" into the connector. Use lines on the tube as a guide for full insertion.
- If tube end is damaged, cut off ⅝" before reconnecting.
- If leaking occurs, reconnect the line.



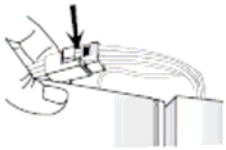
3. Close doors.
4. Remove top hinge covers by removing Phillips screws.
5. Unscrew ⅝" hex head screws from top hinges.

For water dispensing models only:

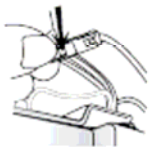
- Do not remove screw connecting green ground wire.



6. **For ice and water dispensing models only:** Detach main wire connector harness and red wire harness.
   - To detach main wire harness, use a flat blade tool or fingernail to press junction point between two connectors to release.

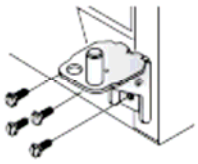


   - To detach red wire harness, press tab on underside of connector to release.



7. Remove top hinges along with doors.

8. Remove bottom hinges with a ⅜" hex head driver.



Replacing the Doors

- To replace the doors, follow the steps in *Door and Hinge Removal* in reverse order.

IMPORTANT: If water line tube end is damaged, cut off ⅝" before reconnecting.

Installation

Leveling

⚠ CAUTION

To protect personal property and refrigerator from damage, observe the following:

- Protect vinyl or other flooring with cardboard, rugs, or other protective material.
- Do not use power tools when performing leveling procedure.

To enhance the appearance and maintain performance, the refrigerator should be level.

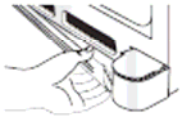
Note

- Complete any required door reversal, panel installation and/or a water supply connection, before leveling.

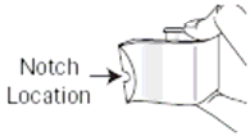
Materials Needed

- ⅜" hex head driver
- Carpenter's level

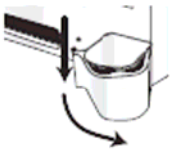
1. Remove toe grille.
   - Grasp firmly and pull bottom outward to unclip.



2. Remove bottom bracket cover(s).
   - Place the eraser end of a pencil or similar blunt tool in the cover notch.



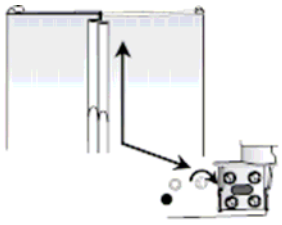
   - Use slight pressure to pry the cover loose.
   - Continue to maintain downward pressure to the notched side of the cover while swinging it off.



3. Using hex head driver, turn both of the front adjustment screws (A) clockwise to raise and counterclockwise to lower the front of the refrigerator.

4. Turn both rear adjustment screws (B) clockwise to raise and counterclockwise to lower the rear of the refrigerator.

5. Using the carpenter's level, make sure front of refrigerator is ¼" (6 mm) or ½ bubble higher than back of refrigerator and that the refrigerator is level from side to side.
6. If required, correct rocking of refrigerator by turning rear adjustment screw clockwise to raise rocking corner. If doors are uneven, do the following:
   - Determine which door needs to be raised.
   - Turn front roller adjustment screw (A) clockwise to raise front corner of door.



   - If one refrigerator door has reached the limit of its adjustment range and doors are still not level, raise or lower the opposite door by turning roller adjustment screw counterclockwise.
   - Check with level to verify ¼" tilt to the back for proper door closure.
   - If refrigerator is aligned and stable, replace toe grille and hinge covers.
7. Replace bracket cover(s).
   - Position cover into the outer edge of the hinge.
   - Swing the cover toward the cabinet and snap it into place.
8. Replace the toe grille.

Note

- For proper reinstallation, ensure the "top" marking on the interior of the toe grille is oriented correctly.
  - Align the toe grille mounting clips with the lower cabinet slots.
  - Push the toe grille firmly until it snaps into place.

Installation

Connecting the Water Supply
(select models)

⚠ WARNING

To reduce the risk of injury or death, follow basic precautions, including the following:

- Read all instructions before installing ice maker.
- Do not attempt installation if instructions are not understood or if they are beyond personal skill level.
- Observe all local codes and ordinances.
- Do not service ice maker unless specifically recommended in Use & Care Guide or published user-repair instructions.
- Disconnect power to refrigerator before installing ice maker.
- Water damage due to an improper water connection may cause mold/mildew growth. Clean up spills or leakage immediately!

⚠ CAUTION

To avoid property damage or possible injury, follow basic precautions, including the following:

- Consult a plumber to connect ¼" **O.D. copper tubing** to household plumbing to assure compliance with local codes and ordinances.
- Confirm water pressure to water valve is between 35 and 100 pounds per square inch, 20 pounds per square inch without filter.
- Do not use a self-piercing, or ⅜" saddle valve. Both reduce water flow can become clogged over time, and may cause leaks if repair is attempted.
- Tighten nuts by hand to prevent cross threading. Finish tightening nuts with pliers and wrenches. Do not overtighten.
- Wait two to three hours before placing refrigerator into final position to check and correct any water leaks. Recheck for leaks after 24 hours.
- Verify the copper tubing under the sleeve is smooth and free from defects. Do not reuse an old sleeve.

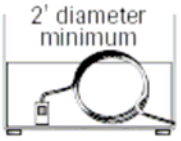
Materials Needed

- ¼" outer diameter flexible copper tubing
- Shut-off valve (requires a ¼" hole to be drilled into water supply line before valve attachment)
- Adjustable wrench
- ¼" hex nut driver

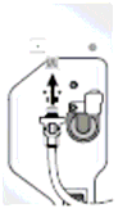
Note

- Add 8' to tubing length needed to reach water supply for creation of service loop.

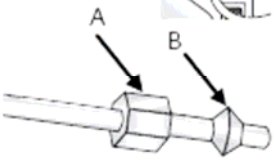
1. Create service loop with copper tubing (minimum 2' diameter). Avoid kinks in the copper tubing when bending the service loop.



2. Remove plastic cap from water valve inlet port.

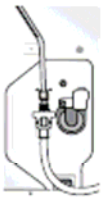


3. Place brass nut (A) and sleeve (B) on copper tube end as illustrated. (Do not use old sleeve.)



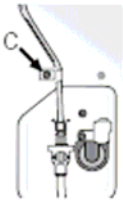
4. Place end of copper tubing into water valve inlet port. Shape tubing slightly. Do not kink – so that tubing feeds straight into inlet port.

5. Slide brass nut over sleeve and screw nut into inlet port. Tighten nut with wrench.



IMPORTANT: Do not overtighten. Cross threading may occur.

6. Pull on tubing to confirm connection is secure. Connect tubing to frame with water tubing clamp (C) and turn on water supply. Check for leaks and correct if necessary. Continue to observe the water supply connection for two to three hours prior to moving the refrigerator to its permanent location.



7. Monitor water connection for 24 hours. Correct leaks, if necessary.

4 WATER FILTER REMOVAL AND INSTALLATION (SELECTED MODELS)

⚠ WARNING

To avoid serious illness or death, do not use the refrigerated water where the water is unsafe or of unknown quality without adequate disinfection before or after filtration.

⚠ CAUTION

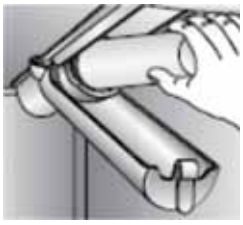
After installing a new water filter, always dispense water for two minutes before removing the filter for any reason. Air trapped in the system may cause water and the cartridge to eject. Use caution when removing.

- The bypass cap does not filter water. Be sure to have a replacement cartridge available when a filter change is required.
- If the water filtration system has been allowed to freeze, replace the filter cartridge.
- If the system has not been used for several months, or water has an unpleasant taste or odor, flush the system by dispensing water for two or three minutes. If the unpleasant taste or odor persists, change the filter cartridge.

4.1 Initial Installation

The water filter is located in the upper right-hand corner of the fresh food compartment.

- Remove the blue bypass cap and retain for future use.
- Remove the sealing label from the end of the filter and insert the filter into the filter head.
- Rotate gently clockwise until the filter stops. Snap the filter cover closed.
- Reduce water spurts by flushing air from the system. Run water continuously for two minutes through the dispenser until the water runs steadily. During initial use, allow about a one to two minute delay in water dispersal to allow the internal water tank to fill.
- Additional flushing may be required in some households where water is of poor quality.



4.2 Replacing Water Filter

IMPORTANT: Air trapped in the system may cause water and the cartridge to eject. Use caution when removing.

- Turn the filter counterclockwise until it releases from the filter head.
- Drain the water from the filter into a sink and dispose of the filter in normal household trash.
- Wipe excess water from the filter cover and install the new filter as described in *Initial Installation* above.

The filter should be changed at least every 12 months.

IMPORTANT: The condition of the water and the amount used determines the life span of the water filter cartridge. If the water use is high, or if the water is of poor quality, replacement may need to take place more often.

The dispenser feature may be used without a water filter cartridge. If this option is chosen, replace the filter with the blue bypass cap.

5 TEMPERATURE CONTROLS & USER OPTIONS

5.1 Warm Cabinet Temperatures

At times, the front of the refrigerator cabinet may be warm to touch. This is a normal occurrence that helps prevent moisture from condensing on the cabinet. This condition will be more noticeable when the refrigerator is first started, during hot weather and after excessive or lengthy door openings.

5.2 Adjusting The Controls

- 24 hours after adding food, the customer may decide that one or both compartments should be colder or warmer, so they can adjust the control(s) as indicated in the temperature control guide table below.
- Except when starting the refrigerator, do not change either control more than one number at a time.
- Allow 24 hours for temperatures to stabilize.
- Changing either control will have some effect on the temperature of the other compartment.

5.2.1 Touch Temperature Controls (Selected Models - Style Varies by Model)

The controls are located at the top front of the fresh food compartment compartment.

5.2.1.1 Initial Control Settings

- Pressing the **TEMPERATURE UP** or **TEMPERATURE DOWN** keypads, adjust the controls to the desired setting.
  - Set the freezer control to 4.
  - Set the fresh food compartment control to 4.
  - Let the refrigerator run for at least 8 to 12 hours before adding food.

Fresh food compartment too warm.	Set the fresh food compartment control to the next higher number by pressing the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad.
Fresh food compartment too cold.	Set the fresh food compartment control to the next lower number by pressing the **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad.
Freezer too warm.	Set the FREEZER control to the next higher number by pressing the **FREEZER TEMPERATURE UP** keypad.
Freezer too cold.	Set the freezer control to the next lower number by pressing the **FREEZER TEMPERATURE DOWN** keypad.
Turn refrigerator OFF.	Press the freezer or fresh food compartment **TEMPERATURE DOWN** keypad until a dash "-" appears in the display.

5.3 Speed Ice

When activated, Speed Ice reduces the freezer temperature to the optimum setting for 24 hours in order to produce more ice.

NOTE: When the Speed Ice feature is in operation, the **FREEZER TEMPERATURE UP** and **FREEZER TEMPERATURE DOWN** keypads will not operate.

5.4 Reset Filter (Selected Models)

When a water filter has been installed in the refrigerator, the yellow **ORDER** light will illuminate when 90 percent of the volume of water for which the filter is rated has passed through the filter **OR** 11 months have elepsed since the filter has been installed.

The red **REPLACE** light will illuminate when the rated volume of water has passed through the filter **OR** 12 months have elepsed since the filter was installed. A new filter should be installed immediately when the **REPLACE** light is illuminated.

After replacing the filter, press the **RESET FILTER** keypad for three seconds. The **ORDER** and **REPLACE** lights will go out on the display.

5.5 Vacation Mode

The Vacation Mode feature causes the freezer to defrost less frequently, conserving energy. The **VACATION MODE** indicator light will illuminate when the feature is activated. To deactivate, press the **VACATION MODE** keypad again **OR** open either door. The indicator light will go out.
NOTE: Door openings will not deactivate the Vacation Mode for approximately one hour after activation.

5.6 Temp Alarm

The Temp Alarm will alert the customer if the freezer or fresh food compartment temperatures exceed normal operating temperatures due to a power outage or other event. When activated, the **TEMP ALARM** light will illuminate.

If the freezer or fresh food temperatures have exceeded these limits, the display will alternately show the current compartment temperatures and the highest compartment temperature reached when the power was out. An audible alarm will sound repeatedly.

Press the **TEMP ALARM** keypad once to stop the audible alarm. The **TEMP ALARM** light will continue to flash and the temperature display will alternate until the temperatures have stabilized.

To turn off Temp Alarm, press and hold the **TEMP ALARM** keypad for three seconds. The indicator light will go out.

5.7 Door Alarm

The Door Alarm will alert the customer when one of the doors has been left open for five minutes continuously. When this happens, an audible alarm will sound every few seconds until the door is closed **OR** the **DOOR ALARM** keypad is pressed to deactivate the feature.

5.8 Max Cool

When activated, Max Cool causes the fresh food and freezer compartmentment temperatures to drop to the minimum settings on the control. This cools down the fresh food and freezer compartments after extended door openings or when loading the compartments with warm food.
NOTE: When the Max Cool feature is activated, the temperature setting kaypads will not operate.

To activate, press the **MAX COOL** keypad. Max Cool will deactivate automatically after 12 hours, **OR** press the **MAX COOL** keypad to deactivate the feature.

5.9 User Preferences

Access the User Preferences menu to:

- Activate or deactivate Super Cool (selected models).
- Change the temperature display from ^{O}F to ^{O}C.
- Enable or diable audible alarms.
- Adjust the light level at which the Dispenser Auto Light will illuminate (when this feature is activated on the ice and water dispenser) (selected models).
- Activate the Sabbath Mode.

To access the User Preferences menu, press and hold the **DOOR ALARM** keypad for three seconds. When in the User Preferences mode, a short title for the feature will appear in the freezer temperature display. And the feature status will appear in the fresh food display.

- Use the **FREEZER TEMPERATURE UP** and **FREEZER TEMPERATURE DOWN** keypads to scroll through the features.
- When the desired feature is displayed, use the **FRESH FOOD COMPARTMENT TEMPERATURE UP** and **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypads to change the status.
- When changes are complete, press the **DOOR ALARM** keypad for three seconds **OR** close the fresh food compartment door and any change will be saved.

5.9.1 Super Cool (CC) (Selected Models)

When Super Cool is ON, an air-mixing fan in the fresh food compartment is activated to improve air flow and temperature control. To save energy, this feature may be deactivated by choosing OFF.

5.9.2 Temperature Display (F_C)

Change the temperature display to show in degrees Fahrenheit or degrees Celsius.

5.9.3 Alarm (AL)

When the Alarm mode is OFF, all audible alarms will be disabled until the feature is turned on.

5.9.4 Auto Light Level (LL) (Selected Models)

This setting adjusts the light level at which the dispenser light will illuminate when the sensor detects that the light levels in the room are low. Setting 1 is the darkest light level setting, setting 9 is the lightest light level setting.

NOTE: The Auto Light mode must be activated on the ice and water dispenser control to take advantage of this option.

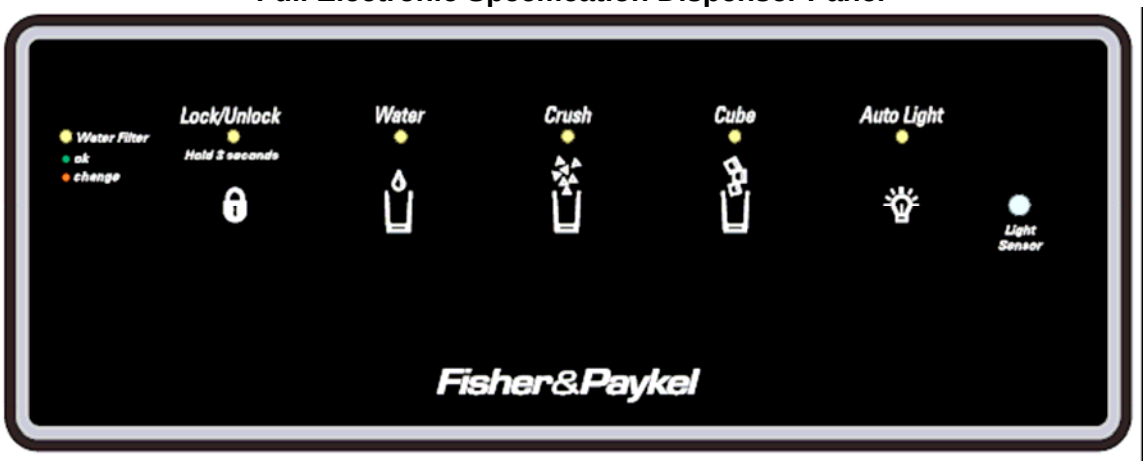
5.9.5 Sabbath Mode (SAB)

When the Sabbath Mode is ON, all control lights and the night light will be disabled until the feature is turned OFF. This feature does not disable the interior lights. Press any keypad to restore the control lights.

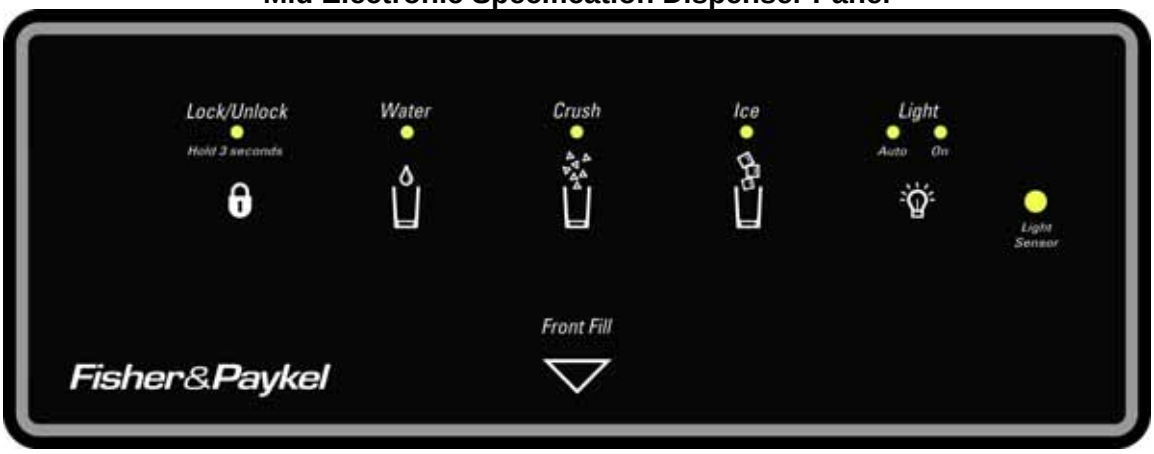
6 ICE AND WATER

6.1 Dispenser Features (Selected Models)

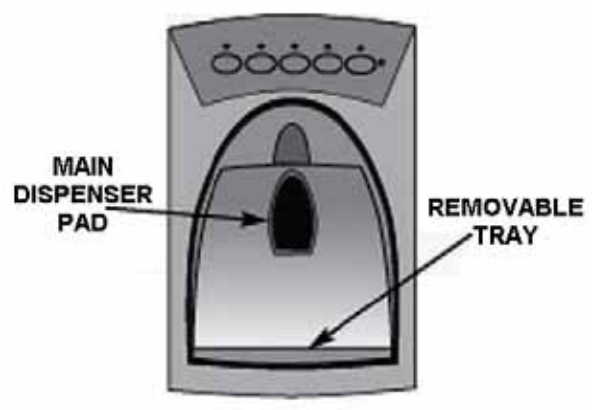
Full Electronic Specification Dispenser Panel



Mid Electronic Specification Dispenser Panel



Elba Dispenser Panel



6.1.1 Dispensing Light (Selected Models)

A light activates within the dispenser area at full power when dispensing ice or water with the main dispenser pad.

6.1.2 Dispenser Pad

The dispenser pad is located on the back wall of the dispensing area. When the dispenser pad is pressed, the selection chosen on the dispenser control panel will dispense.

6.1.3 Removable Tray

The removable tray at the bottom of the dispenser area is designed to collect small spills and may be easily removed for emptying and cleaning purposes.

IMPORTANT: The removable tray does not drain. Do not allow the tray to overflow. If it does, remove the tray and wipe up the overflow.

6.2 Dispenser Control (Selected Models)

Control features may vary by model.

Water Dispenser Operation:

⚠ CAUTION

To aviod personal injury or property damage, observe the following:

- Do not put fingers, hands or any foreign object into the dispenser opening.
- Do not use sharp objects to break ice.
- Do not dispense ice directly into thin glass, fine china or delicate crystal.

NOTE: During initial use of the water dispenser, there will be a one to two minute delay while the water tank fills before water dispenses. Discard the first 10 to 14 glasses of water after initially connecting the refrigerator to the household water supply and after extended periods of non-use.

To Use Dispenser Pad:

- Select water mode by pressing the **WATER** keypad on the dispenser control panel. A green light above the keypad indicates the mode selected.
- Press a sturdy, wide-mouthed container against the dispenser pad.
- Release pressure on the dispenser pad to stop the water dispensing. A small amount of water may continue to dispense and collect in the dispenser tray. Large spills should be wiped away.

6.2.1 Ice Dispenser Operation

To Dispense Ice:

- Select Crush or Cube mode by pressing the appropriate keypad on the dispenser control panel. A green light above the keypad indicates the mode selected.
- Press a container against the dispenser pad. When dispensing crushed ice, hold the container as close as possible to the chute to reduce spraying.

  NOTE:
  - The mode cannot be changed while the ice dispenser is in operation.
  - On selected models, if the dispenser is active for more than five minutes, an automatic lock-out sensor will shut down power to the dispenser area. Refer to *Dispenser Lock* below for unlocking information.

6.2.2 Dispenser Lock (Selected Models)

The Dispenser Lock prevents ice or water from being dispensed.

To Lock Dispenser:

- Press and hold the LOCK keypad for three seconds. The green indicator light above the keypad will illuminate when the dispenser is locked.

To Unlock Dispenser:

- Press and hold the LOCK keypad for three seconds. The green indicator light above the keypad will go out.

6.2.3 Water Filter Status Indicator Light (Selected Models)

The Water Status Indicator Light serves as a reminder to replace the water filter. A green light indicates that the filter is in good condition. A red light indicates that the filter should be changed. Once the light turns red, it will remain red until the function is reset.

To Reset Indicator:

- Press and hold the **LOCK** and **WATER** keypads simultaneously for four seconds. The green filter status indicator light will flash three times when the function has successfully reset.

6.2.4 Auto Light (Selected Models)

The Auto Light function activates the dispenser light at half power when the light sensor detects that the light levels in the room are low.

To Activate Auto Light:

- Press the **AUTO LIGHT** keypad. A green indicator light above the keypad illuminates when the sensor is active.

To Deactivate Auto Light:

- Press the **AUTO LIGHT** keypad. The green indicator light will go out.

  NOTE: The dispenser light will operate whether Auto Light is ON or OFF.

6.2.5 Light (Selected Models)

To Activate Light:

- Press the **LIGHT** keypad to turn the dispenser light on continuously. The green indicator light above the keypad will illuminate.

To Deactivate Light:

- Press the **LIGHT** keypad to turn the dispenser light off.

6.2.6 Sabbath Mode (Selected Models)

When activated, the Sabbath Mode deactivates the control lights while leaving the controls operational.

To Activate Sabbath Mode:

- Press and hold both the **LOCK** and **AUTO LIGHT** keypads simultaneously for three to four seconds, or until the control lights turn off.

To Deactivate Sabbath Mode:

- Press and hold both the **LOCK** and **AUTO LIGHT** keypads simultaneously for three to four seconds, or until the control lights turn on.

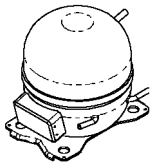
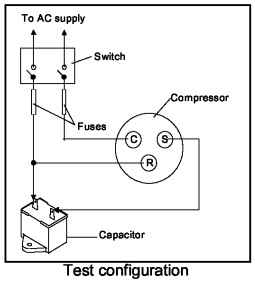
  NOTE:
  - The dispenser light will not activate during dispensing while in this mode.
  - If the power fails, the control remains in Sabbath Mode when the power is restored.

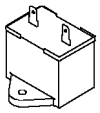
6.2.7 Front Fill (Selected Models)

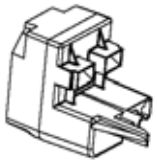
The Front Fill keypad works independently of the dispenser controls, providing an up-front alternative to the dispenser pad for dispensing water. This feature is convenient for filling large items that will not fit into the dispenser area (i.e. sports bottles, pitchers, large pans, coffee pots).

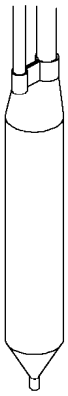
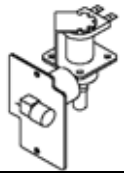
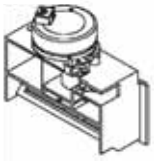
This feature allows the added convenience of dispensing ice and water simultaneously. To do so, choose the preferred ice mode. Press the container against the dispenser pad to dispense the ice while pressing the Front Fill keypad to dispense the water.

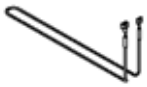
7 COMPONENT TESTING

Component	Description	Test Procedures
Compressor 	When compressor electrical circuit is energized, the start winding current causes relay to heat. After an amount of starting time, the start winding circuit turns off. The relay will switch off the start winding circuit even though compressor has not started (for example, when attempting to restart after momentary power interruption). With "open" relay, compressor will not start because there is little or no current to start windings. Overload protection will open due to high locked rotor run winding current. With "shorted" relay or capacitor, compressor will start and overload protector will quickly open due to high current of combined run and start windings. With open or weak capacitor, compressor will start and run as normal but will consume more energy.	**Resistance test** 1. Disconnect power to unit. 2. Discharge capacitor by shorting across terminals with a resistor for 1 minute. **NOTE:** (Some compressors do not have a run capacitor.) 3. Remove leads from compressor terminals. 4. Set ohmmeter to lowest scale. 5. Check for resistance between: Terminals "S" and "C", start winding. Terminals "R" and "C", run winding. If either compressor winding reads open (infinite or very high resistance) or dead short (0 ohms), replace compressor. **Ground test** 1. Disconnect power to refrigerator. 2. Discharge capacitor, if present, by shorting terminals through a resistor. 3. Remove compressor leads and use an ohmmeter set on highest scale. 4. Touch one lead to compressor body (clean point of contact) and other probe to each compressor terminal. • If reading is obtained, compressor is grounded and must be replaced. **Operation test** If voltage, capacitor, overload, and motor winding tests do not show cause for failure, perform the following test: 1. Disconnect power to refrigerator. 2. Discharge capacitor by shorting capacitor terminals through a resistor. 3. Remove leads from compressor terminals. 4. Wire a test cord to power switch. 5. Place time delayed fuse with UL rating equal to amp rating of motor in test cord socket. (Refer to Technical Data Sheet.) 6. Remove overload and relay. 7. Connect start, common and run leads of test cord on appropriate terminals of compressor. 8. Attach capacitor leads of test cord together. If capacitor is used, attach capacitor lead to a known good capacitor of same capacity.  Test configuration 9. Plug test cord into multimeter to determine start and run wattage and to check for low voltage, which can also be a source of trouble indications. 10. With power to multimeter, press start cord switch and release. • If compressor motor starts and draws normal wattage, compressor is okay and trouble is in capacitor, relay/overload, freezer temperature control, or elsewhere in system. • If compressor does not start when direct wired, recover refrigerant at high side. After refrigerant is recovered, repeat compressor direct wire test. If compressor runs after recovery but would not run when direct wired before recovery, a restriction in sealed system is indicated. • If compressor does not run when wired direct after recovery, replace faulty compressor.

Component	Description	Test Procedures
Capacitor 	Run capacitor connects to relay terminal 3 and L side of line. Some compressors do not require a run capacitor; refer to the Technical Data Sheet for the unit being serviced.	**⚠ WARNING** To avoid electrical shock which can cause severe personal injury or death, discharge capacitor through a resistor before handling. 1. Disconnect power to refrigerator. 2. Remove capacitor cover and disconnect capacitor wires. 3. Discharge capacitor by shorting across terminals with a resistor for 1 minute. 4. Check resistance across capacitor terminals with ohmmeter set on "X1 K" scale. • **Good**—needle swings to 0 ohms and slowly moves back to infinity. • **Open**—needle does not move. Replace capacitor. • **Shorted**—needle moves to zero and stays. Replace capacitor. • **High resistance leak**—needle jumps toward 0 and then moves back to constant high resistance (not infinity).
Condenser	Condenser is a tube and wire construction located in machine compartment. Condenser is on high-pressure discharge side of compressor. Condenser function is to transfer heat absorbed by refrigerant to ambient. Higher pressure gas is routed to condenser where, as gas temperature is reduced, gas condenses into a high pressure liquid state. Heat transfer takes place because discharged gas is at a higher temperature than air that is passing over condenser. It is very important that adequate airflow over condenser is maintained. Condenser is air cooled by condenser fan motor. If efficiency of heat transfer from condenser to surrounding air is impaired, condensing temperature becomes higher. High liquid temperature means liquid will not remove as much heat during boiling in evaporator as under normal conditions. This would be indicated by higher than normal head pressures, long run time, and high wattage. Remove any lint or other accumulation that would restrict normal air movement through condenser. From condenser, the refrigerant flows into a post condenser loop that helps control exterior condensation on flange, centre mullion, and around freezer door. Refrigerant then flows through the drier to evaporator and into compressor through suction line.	Leaks in condenser can usually be detected by using an electronic leak detector or leak detection fluid. Look for signs of compressor oil when checking for leaks. A certain amount of compressor oil is circulated with refrigerant. Leaks in post condenser loop are rare because loop is a one-piece copper tube. For minute leaks: 1. Separate condenser from rest of refrigeration system and pressurize condenser up to a maximum of 235 PSI with a refrigerant and dry nitrogen combination. 2. Recheck for leaks. **⚠ WARNING** To avoid personal injury or death from sudden eruption of high pressure gases, observe the following: Protect against a sudden eruption if high pressures are required for leak checking. Do not use high pressure compressed gases in refrigeration systems without a reliable pressure regulator and pressure relief valve in the lines.

Component	Description	Test Procedures
Overload/Relay 	When voltage is connected and relay is cool, current passes through relay to start winding. After a short time, current heats the resistor in relay and resistance will rise blocking current flow through relay. Start winding remains in the circuit through run capacitor. Solid state relay plugs directly on compressor start and run terminals. Relay terminals 2 and 3 are connected within relay. Run capacitor is connected to relay terminal 3. L2 side of 120 VAC power is connected to relay terminal 2.	1. Disconnect power to the refrigerator. 2. Remove relay cover and disconnect leads. 3. Check resistance across terminals 2 and 3 with an ohmmeter: Normal = 3 to 12 ohms Shorted = 0 ohms Open = infinite ohms
Ice maker	See “Ice Maker” section for service information.	
ECM condenser motor 	Condenser fan moves cooling air across condenser coil and compressor body. Condenser fan motor is in parallel circuit with compressor.	Check resistance across coil.
Evaporator fan motor 	Evaporator fan moves air across evaporator coil and throughout refrigerator cabinet.	1. Disconnect power to unit. 2. Disconnect fan motor leads. 3. Check resistance from ground connection solder. Trace to motor frame must not exceed .05 ohms. 4. Check for voltage at connector to motor with unit in refrigeration mode and compressor operating.
Fresh food light switch 	Single pole, single throw switch completes circuit for light when door is open.	Check resistant across terminals. Switch arm depressed “NO” terminals Open Switch arm up “NO” terminals Closed
Freezer light/interlock switch 	Single pole, Double throw switch completes circuit for light when door is open. Completes circuit for dispenser when door is closed.	Check resistant across terminals. Switch arm depressed “NO” terminals Open ”NC” terminals Closed Switch arm not depressed “NC” terminals Open “NO” terminals Closed

Component	Description	Test Procedures
Drier 	Drier is placed at post condenser loop outlet and passes liquefied refrigerant to the capillary. Desiccant 12grams XH9. Long tail drier P/no 814843P.	**Drier must be changed every time the system is opened for testing or compressor replacement.** Before opening refrigeration system, recover HFC134a refrigerant for safe disposal. 1. Cut drier out of system using the following procedure. Do not unbraze drier. 2. Applying heat to remove drier will drive moisture into the system. 3. Score capillary tube close to drier and break. 4. Reform inlet tube to drier allowing enough space for large tube cutter. 5. Cut circumference of drier 32mm below condenser inlet tube joint to drier. 6. Remove drier. 7. Apply heat trap paste on post condenser tubes to protect grommets from high heat. 8. Unbraze remaining part of drier. Remove drier from system. 9. Discard drier in safe place. Do not leave drier with customer. If refrigerator is under warranty, old drier must accompany warranty claim. **⚠ WARNING** To avoid death or severe personal injury, cut drier at correct location. Cutting drier at incorrect location will allow desiccant beads to scatter. If spilled, completely clear area of beads.
Water valve 	Controls water flow to the icemaker. Controlled by thermostat in icemaker. See Ice Maker Section for further information.	Check resistance across coil windings.
Electric damper control 	Damper control balances the air delivery between provision and freezer compartments providing temperature control for the fresh food compartment. The Electrical voltage activates damper control and the door closes, restricting flow of air from freezer compartment to fresh food compartment.	Check resistance across terminals. If no resistance across terminals replace damper control. Can be checked in Diagnostic

Component	Description	Test Procedures
Evaporator	Inner volume of evaporator allows liquid refrigerant discharged from capillary to expand into refrigerant gas. Expansion cools evaporator tube and fin temperature to approximately –20^{O}F, transferring heat from freezer section to refrigerant. Passing through suction line to compressor, the refrigerant picks up superheat (a relationship between pressure and temperature that assures complete vaporization of liquid refrigerant) as the result of capillary tube soldered to suction line. Refrigerant gas is pulled through suction line by compressor, completing refrigeration cycle.	Test for leaks in evaporator with electronic leak detector or with leak detection fluid. Compressor oil is circulated with refrigerant; check for oil when checking for leaks. For minute leaks 1. Separate evaporator from rest of refrigeration system and pressurize evaporator up to a maximum of 140 PSI with a refrigerant and dry nitrogen combination. 2. Recheck for leaks. **⚠ WARNING** To avoid personal injury or death from sudden eruption of high pressure gases, observe the following: Protect against a sudden eruption if high pressures are required for leak checking. Do not use high pressure compressed gases in refrigeration systems without a reliable pressure regulator and pressure relief valve in the lines.
Evaporator defrost heater 	Activated when defrost thermostat, defrost timer, and freezer control complete circuit through heater.	Check resistance across heater. To check defrost system: 1. Thermocouple defrost thermostat and plug refrigerator into wattmeter. 2. Turn into Forced Defrost Mode. Wattmeter should read specified watts (according to Technical Data Sheet). 3. When defrost thermostat reaches specified temperature ±5^{O}F (see Technical Data Sheet), thermostat should interrupt power to heater.
Thermostat 	Thermostat is in a series circuit with terminal 2 of defrost timer, and defrost heater. Circuit is complete if evaporator fan motor operates when cold. Controls the circuit from freezer thermostat through defrost terminator to defrost heater. Opens and breaks circuit when thermostat senses preset high temperature.	Test continuity across terminals. With power off and evaporator coil below freezing, thermostat should show continuity when checked with ohmmeter. See “Heater, evaporator (defrost)” section for additional tests. After defrost thermostat opens, thermostat remains open until end of defrost cycle and refrigerator starts cooling again. Defrost thermostat senses a preset low temperature and resets (closes).
Thermistor 	Temperature sensing device.	Check resistance across leads. **Temperature** — **Resistance** 77^{O}F / 25^{O}C — 10,000 ohms 36^{O}F / 2^{O}C — 29,500 ohms 0^{O}F / -18^{O}C — 86,300 ohms
Ice & water dispensing board 	Customer water and ice dispensing interface board.	Refer to specific the Technical Data Sheet supplied with the unit for troubleshooting procedures.
Electronic control board 	Customer fresh food compartment and freezer temperature adjustment interface board.	Refer to specific the Technical Data Sheet supplied with the unit for troubleshooting procedures.

Component	Description	Test Procedures
Main control board 	The control of cabinet components such as compressor and defrost heater is carried out by this board via relays mounted on the board.	Refer to specific the Technical Data Sheet supplied with the unit for troubleshooting procedures.
Mid electronic specification display board 	The control of cabinet components such as compressor and defrost heater is carried out by this board.	

8 ELECTRONIC CONTROL BOARD

The difference between the full electronic specification cabinet and the mid electronic specification cabinet are as follows:

- The full electronic specification cabinet consists of a main high voltage board located in the compressor compartment with a display board mounted in the top of the fresh food compartment, and a dispenser board mounted in the front of the freezer compartment. These three boards control the many features of the fully electronic product using a switch mode power supply.
- The mid electronic specification cabinet has only the two boards, one being mounted in the roof of the fresh food compartment and the other being the dispenser board, using a capacitive power supply, mounted in the front of the freezer door. This results in a less number of feature buttons available for the customer to access and less digits displayed. The service technician does not have access to all the diagnostic features of the fully electronic spec cabinet.

Full electronic specification cabinet (RX256DT7X1):

- SMPS Switch Mode Power Supply
- Inputs/Outputs:
  - Water valve
  - Auger Motor
  - Ice Door Solenoid
  - Door Switch I/P
  - Compressor
  - Defrost Heater
  - Defrost Termination Switch
  - Evaporator Fan
  - Damper
  - Fountain Light
  - Ice On/Off

Mid electronic specification cabinet (RX256DT4X1, RX256ET2B1, RX256ET2W1):

- Capacitive Power Supply
- Inputs/Outputs:
  - User Interface
  - Evaporator Fan
  - Compressor / Condenser Fan
  - Thermistor x2
  - Defrost Heater
  - Damper
  - Door Switch I/P x2

8.1 Full Electronic Specification Control Board (RX256DT7X1)

8.1.1 Programming Mode

A manual method of entering the program code is available for use when replacing controls in the field for repair. Improper use of this feature may result in performance problems. Great care should be exercised when setting program codes.

NOTE: The 4-digit program code is located on the serial plate after the word "Code".

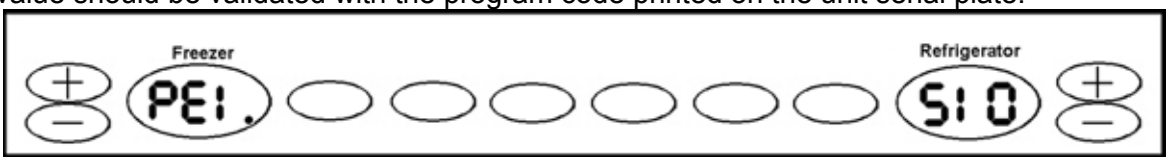
Entering Program Code Programming Mode.

The program code programming function is performed using the refrigerator display and keypads. Enter the program code programming mode by performing the following sequence of events:

- Press and hold the Door Alarm keypad.
- Within 1 second, press and hold the Freezer Temperature Down keypad ⊖.
- Release the Door Alarm keypad and wait until the freezer display shows a “pe” and the refrigerator display is blank.

NOTE: To exit program code programming mode, press any of the 6 feature keypads once.

- Entry is confirmed by pressing the Freezer Temperature Down keypad ⊖ once more.
- The control will display the current program code. (i.e. program code 1510 shown here). This value should be validated with the program code printed on the unit serial plate.



- If the program code is correct, the program code programming mode is exited by closing the refrigerator door(s).
- To set the desired program code number, use the Freezer Temperature Up keypad ⊕ to move the decimal point to the desired digit position.

  NOTE: The program code can be entered only one digit at a time. The digit on the left of the decimal point is the selected digit.
- Once the desired digit is selected, use the Refrigerator Up and Down keypads ⊕/⊖ to enter each digit.
- Once the desired program code is entered, hold the Freezer Down keypad ⊖ until the program code begins flashing, indicating it has been saved.

  NOTE: If an attempt is made to enter an invalid program code, the control will not save the new code, but will give a long beep and the display will not flash. (The unit will NOT run with a program code of 0000).
- Once the code has been saved, the program code programming mode is exited by closing the refrigerator door(s).
- If the new code is incorrect, this process should be repeated after closing the refrigerator door(s).

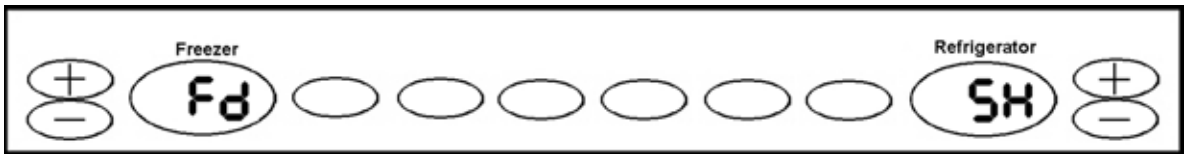
8.1.2 Forced Defrost Mode

A manual method to force defrosts for use in testing is provided. This mode can be used to force an immediate defrost followed by either a short period (8 –12 hours) or a long period (> 72 hours) of compressor cycle time to the next defrost.

Entering Forced Defrost Mode:

- Press and hold the Door Alarm keypad.
- Within 1 second, press and hold the Refrigerator Temperature Down keypad ⊖.
- Release the Door Alarm keypad. The freezer display will show “Fd”.

- Press the Refrigerator Temperature Down keypad ⊖ once to confirm entry.
- Press the Refrigerator Temperature Up keypad ⊕ to select “Sh” for *short term,* or “Lo” for *long term.*



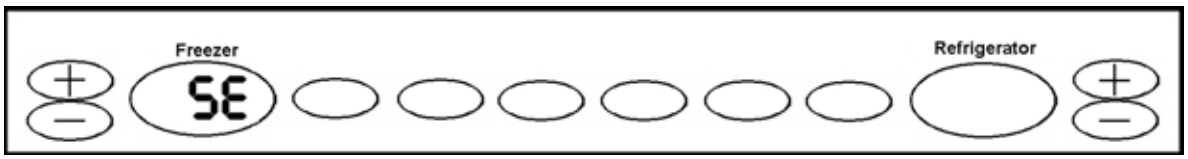
- Press the Refrigerator Temperature Down keypad ⊖ to confirm. The display will flash and begin defrost.
- Trip the light switch or press any keypad on the keypad to return to temperature display.

8.1.3 Service Test Mode

There are several test modes available through the diagnostic system. Use of these test modes can greatly decrease the time needed for troubleshooting. It is to the technician’s advantage to be able to perform many tests in a very short period of time.

Entering Service Test Mode.
The service test functions are performed using the refrigerator display and keypads. Enter the Service Test mode by performing the following sequence of events:

- Hold the Door Alarm keypad.
- Hold the Refrigerator Temperature Up keypad ⊕.
- Release the Door Alarm keypad.
- The freezer display will show “SE”, allowing the technician to confirm entry into the service mode.



- Entry to the service menu is confirmed by pressing the Refrigerator Temperature Up keypad ⊕ once more.
- The display will read the first test.

- All control functions will be turned off (compressor, defrost, evaporator fan, and the damper will remain in its current position).

The refrigerator is now in the Service Test mode and the diagnostic tests may be carried out.

The Service Test mode can be exited at any time by closing the refrigerator door(s).

8.1.4 Service Test Mode - Navigation

Within the Service Test mode the control keypads have alternate functions. The Freezer Temperature Up/Down keypads ⊕/⊖ will move to the next or the previous service test. The Refrigerator Temperature Up/Down keypads ⊕/⊖ will be used to toggle test modes.

8.1.4.1 Service Test 001 - Power-Up Test Results.

When selected, this test will display the result of the Power Up test. The Power Up test runs a sequence of 11 tests. Test 001 will show the error code associated with the failed test.

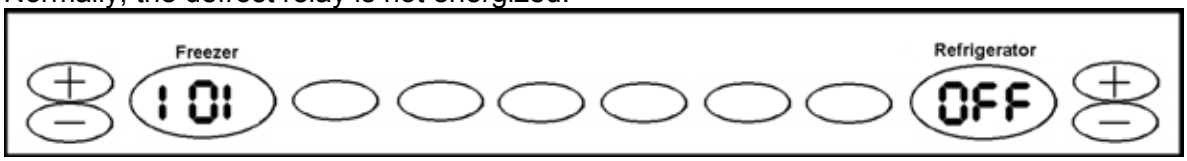
- Error Code 0
  - This code indicates no failure and a successful Power Up test.
- Error Code 1
  - This error code indicates a failure of +12v power supply where voltage was higher than expected. Most of the time, this error code indicates that the control's main board is defective. Replacing the main board would be the first step to troubleshoot this problem.
- Error Code 2
  - This error code indicates a failure of +12v power supply where voltage was lower than expected. Most of the time, this error code indicates that the control's main board is defective. Replacing the main board would be the first step to troubleshoot this problem.
- Error Code 3
  - This error code indicates an open refrigerator thermistor. Service test 141 can be helpful to determine the state of refrigerator thermistor (refer to Section 8.1.4.6 for troubleshooting). This failure may be caused by a bad wiring harness or defective thermistor (refer to thermistor chart in Section 8.1.13).
- Error Code 4
  - This error code indicates a shorted refrigerator thermistor. Service test 141 can be helpful to determine the state of refrigerator thermistor (refer to Section 8.1.4.6 for troubleshooting). This failure may be caused by a bad wiring harness or defective thermistor (refer to thermistor chart in Section 8.1.13).
- Error Code 5
  - This error code indicates an open freezer thermistor. Service test 142 can be helpful to determine the state of freezer thermistor (refer to Section 8.1.4.6 for troubleshooting). This failure may be caused by a bad wiring harness or defective thermistor (refer to thermistor chart in Section 8.1.13).

- Error Code 6
  - This error code indicates a shorted freezer thermistor. Service test 142 can be helpful to determine the state of freezer thermistor (refer to Section 8.1.4.7 for troubleshooting). This failure may be caused by a bad wiring harness or defective thermistor (refer to thermistor chart in Section 8.1.13).
- Error Code 7
  - This error code indicates an open ambient thermistor. Service test 143 can be helpful to determine the state of ambient thermistor (refer to Section 8.1.4.7 for troubleshooting). This failure indicates a defective main board (refer to thermistor chart in Section 8.1.13).
- Error Code 8
  - This error code indicates a shorted ambient thermistor. Service test 143 can be helpful to determine the state of ambient thermistor (refer to Section 8.1.4.8 for troubleshooting). This failure indicates a defective main board (refer to thermistor chart in Section 8.1.13).
- Error Code 9
  - This error indicates an evaporator fan failure because of high output voltage (refer to Section 8.1.4.4 for troubleshooting). Possible defective Main Control Boards.
- Error Code 10
  - This error indicates an evaporator fan failure because of low output voltage (refer to Section 9.2.5 for troubleshooting). Possible defective main control board.
- Error Code 11
  - This error indicates a defrost circuit failure. The test detected a closed defrost terminator. Service test 101 can be helpful to determine the state of the defrost terminator (refer to Section 8.1.4.2 for troubleshooting). The unit may have a defective wiring harness.
- Error Code 12
  - This failure occurs when the system fails to run the Power Up test. Possible defective main control board.

8.1.4.2 Service Test 101 - Defrost Heater.

When selected, this test will display the state of the defrost thermostat. This test also allows observation and measurement of proper defrost function. The service technician must observe defrost heat and voltages while the test is activated.

- When the test is activated, the refrigerator display will show the status of the defrost relay. Normally, the defrost relay is not energized.



DEFROST RELAY IS OPEN

- The Refrigerator Temperature Up/Down keypad ⊕/⊖ can be used to activate and deactivate the defrost relay.
- When the defrost relay is activated, the refrigerator display will show the status of the defrost terminator.

DEFROST THERMOSTAT OPEN

DEFROST THERMOSTAT CLOSED

8.1.4.3 Service Test 102 - Compressor/Condenser System.

When selected and activated, this test will operate the compressor/condenser fan circuit. A service technician should evaluate proper operation of the compressor and condenser fan. The Refrigerator Temperature Up/Down keypads ⊕/⊖ will toggle the compressor drive circuit between "On" and "Off".

OBSERVE COMPRESSOR & CONDENSER FAN FUNCTION

8.1.4.4 Service Test 112 - Freezer Fan Operation.

When selected and activated, this test will operate the freezer fan (evaporator fan). The Refrigerator Temperature Up /Down keypads ⊕/⊖ will toggle the fan drive circuit between on and off. The technician will have to inspect the fan for proper function.

- The refrigerator display will show the voltage level supplied to the fan. When on, the refrigerator display will show a voltage reading between 11.0 to 14.0 volts. When off, the refrigerator display will show a voltage reading of 0.0 volts.

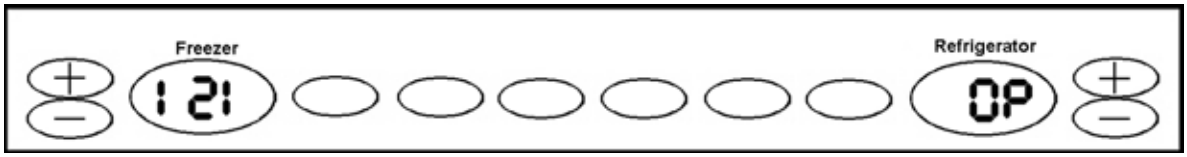
EVAPORATOR FAN IS OFF

EVAPORATOR FAN IS ON

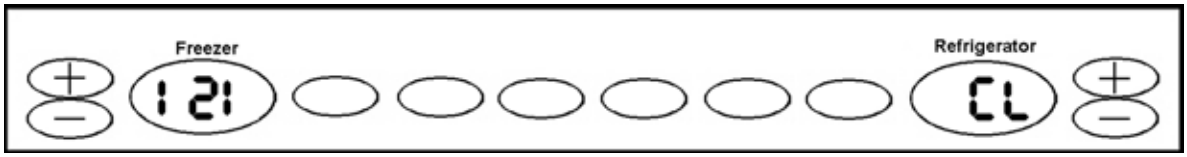
8.1.4.5 Service Test 121 - Damper Operation.

When selected, the refrigerator display will show the status of the refrigerator damper. The Refrigerator Temperature Up / Down keypads (+)/(—) will toggle the damper to open and close position.

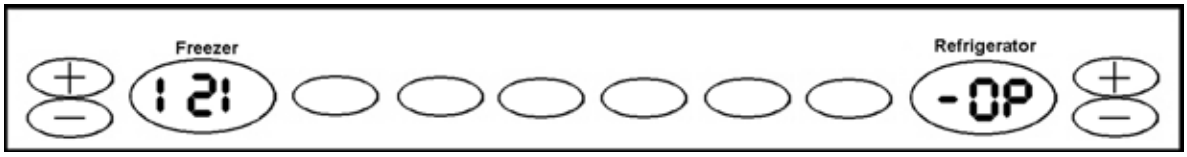
The technician must allow 1 minute for each attempt to change the damper position. If the technician tries to change the state of the damper during this 1 minute wait time, the system will give a short beep and the damper state will not change. During the 1 minute delay, the refrigerator display will show will show a "-" symbol before the position state to indicate that the damper has not reached that state yet.



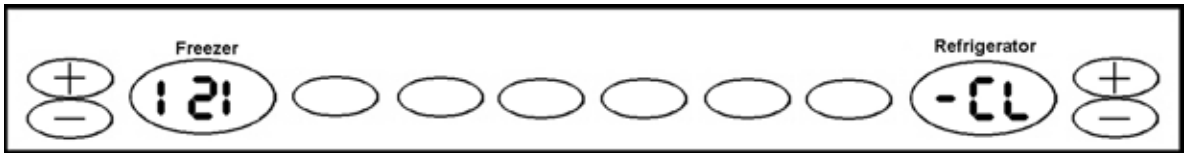
DAMPER IS IN THE OPEN POSITION



DAMPER IS IN THE CLOSED POSITION



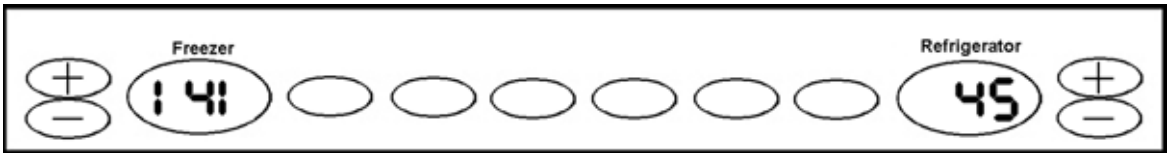
DAMPER IS IN THE PROCESS OF OPENING



DAMPER IS IN THE PROCESS OF CLOSING

8.1.4.6 Service Test 141 - Refrigerator Thermistor (See Thermistor Chart in Section 8.1.13).

When selected and activated the refrigerator display will show the temperature reading in the refrigerator compartment. This test will also indicate any failure in the refrigerator thermistor.



PASS RESULT – Displaying the Temperature inside Refrigerator

FAIL RESULT - Thermistor is Open

FAIL RESULT - Thermistor is shorted

8.1.4.7 Service Test 142 - Freezer Thermistor Test. (See Thermistor Chart in Section 8.1.13).

When selected and activated, the refrigerator display will show the temperature reading in the freezer compartment. This test will also indicate any failure in the freezer thermistor.

PASS RESULT – Displaying the Temperature inside Freezer

FAIL RESULT - Thermistor is Open

FAIL RESULT - Thermistor is shorted

8.1.4.8 Service Test 143 - Ambient Thermistor Test. (See Thermistor Chart in Section 8.1.13).

When selected and activated, the refrigerator display will show the temperature reading in the compressor compartment. This test will also indicate any failure in the ambient thermistor.

PASS RESULT — Displaying the Temperature inside Compressor Compartment

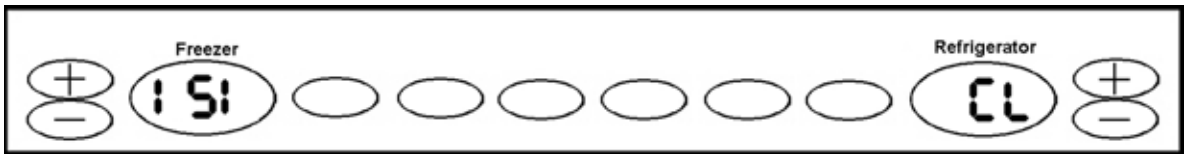
FAIL RESULT - Thermistor is Open

FAIL RESULT - Thermistor is shorted

Service Test 151 - Refrigerator Door State.

When selected, the refrigerator display will show the state of the refrigerator door.

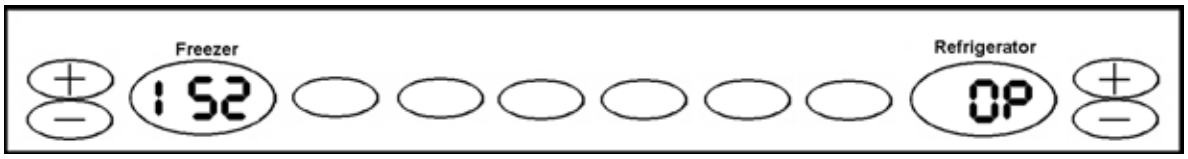
REFRIGERATOR DOOR IS OPEN



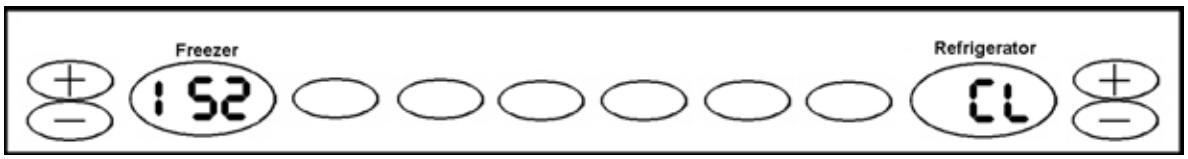
REFRIGERATOR DOOR IS CLOSED

8.1.4.9 Service Test 152 - Freezer Door State.

When selected, the refrigerator display will show the state of the freezer door.



FREEZER DOOR IS OPEN

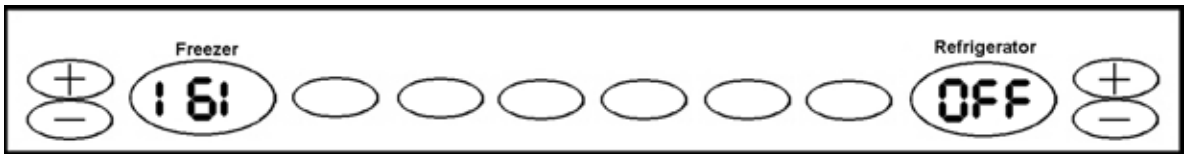


FREEZER DOOR IS CLOSED

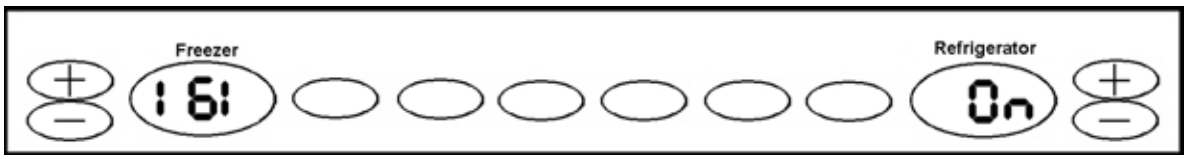
- During this test, the freezer door switch must be closed. During these service mode tests, all dispenser keypad LEDs should be off.

8.1.4.10 Service Test 161 - Cube Dispense Test.

This test is used to test the cubed ice function. When selected, the refrigerator display will show “Off” when the actuator is not activated. When the actuator is pressed, the refrigerator display will show “On”. A service technician should evaluate proper operation of the auger motor with the actuator activated.



ACTUATOR IS NOT ACTIVE



ACTUATOR IS ACTIVE

8.1.4.11 Service Test 162 - Crush Dispense Test.

This test is used to test the crushed ice function. When selected, the refrigerator display will show “Off” when the actuator is not activated. When the actuator is pressed, the refrigerator display will show “On”. A service technician should evaluate proper operation of the auger motor with the actuator activated.

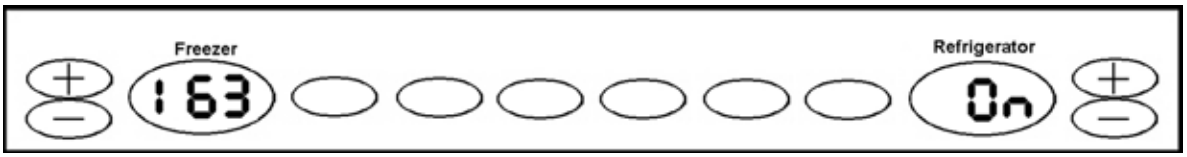
ACTUATOR IS NOT ACTIVE

ACTUATOR IS ACTIVE

8.1.4.12 Service Test 163 - Water Dispense Test.

This test is used to test the dispenser actuator or Sports Fill keypad for water. When selected, the refrigerator display will show “Off” when the actuator or Sports Fill are not activated. When the actuator or Sports Fill are pressed, the refrigerator display will show “On”. A service technician should evaluate proper operation of the dispenser by pressing the actuator. Also evaluating the proper operation of the Sports Fill Feature by pressing the Front Fill keypad.

ACTUATOR IS NOT ACTIVE - FRONT FILL IS NOT ACTIVE



ACTUATOR IS ACTIVE - FRONT FILL IS ACTIVE

8.1.4.13 Service Test 164 - Ice Chute Test.

This test is used to test the dispenser ice chute door. When selected, the refrigerator display will show “cl” when the actuator is not activated. When the actuator is pressed, the refrigerator display will show “Op”. A service technician should evaluate proper operation of the ice chute door by activating the actuator and observing the ice chute door opening.

ACTUATOR IS NOT ACTIVE. ICE CHUTE DOOR CLOSED

ACTUATOR IS ACTIVE. ICE CHUTE DOOR OPEN

8.1.4.14 Service Test 165 - Dispenser Light Test.

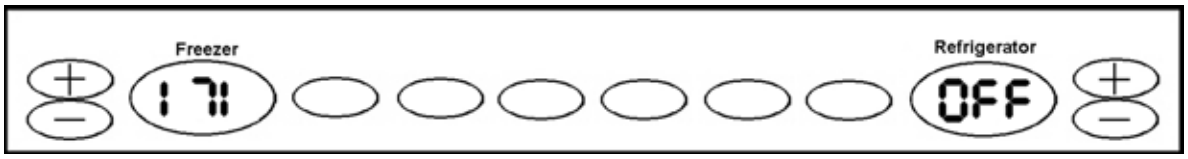
This test is used to test the dispenser light. When selected, the refrigerator display will show “Off” when the actuator is not activated. When the actuator is pressed, the refrigerator display will show “On”. A service technician should evaluate proper operation of the light by activating the actuator and observing the operation of the dispenser light.

ACTUATOR IS NOT ACTIVE. DISPENSER LIGHT OFF

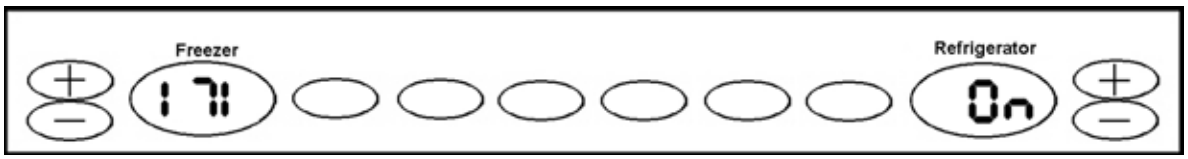
ACTUATOR IS ACTIVE. DISPENSER LIGHT IS ON

8.1.4.15 Service Test 171 - Actuator Pad Test.

This test is used to test the actuator pad. When selected, the refrigerator display will show “Off” when the actuator is not activated. When the actuator is pressed, the refrigerator display will show “On”.



ACTUATOR IS NOT ACTIVE



ACTUATOR IS ACTIVE

8.1.4.16 Service Test 172 - Sports Fill Test.

This test is used to test the dispenser Sports Fill feature. When selected, the refrigerator display will show “Off” when the Sports Fill keypad is not pressed. When the Sports Fill keypad is pressed, the refrigerator display will show “On”.

SPORTS FILL IS NOT ACTIVE

SPORTS FILL IS ACTIVE

8.1.4.17 Service Test 173 - Ambient Light Test.

This test is used to test the Auto Light feature. When selected, the refrigerator display will show “Lo” or “hi” depending on the ambient light sensed by the light sensor. A service technician should evaluate the proper operation of the ambient light by covering the light sensor for approximately 10 seconds and verify a “Lo” on the display.

LOW AMBIENT LIGHT

HIGH AMBIENT LIGHT

8.1.4.18 Service Test 174 - Dispenser Water Actuator (Bottom Mount units only).

This test is used to test the dispenser actuator in Bottom Mount units. When selected, the refrigerator display will show “Off” when the actuator is not activated. When the actuator is pressed, the refrigerator display will show “On”. A service technician should evaluate proper operation of the actuator.

ACTUATOR IS NOT ACTIVE

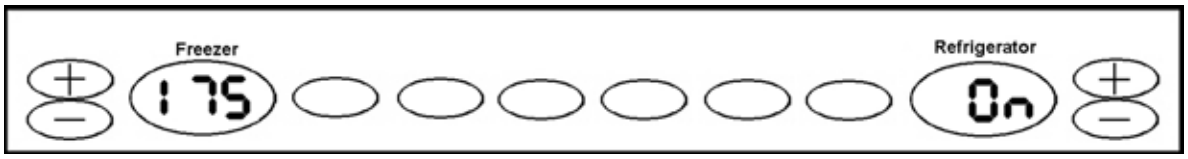
ACTUATOR IS ACTIVE

8.1.4.19 Service Test 175 - Dispenser Line Test.

This test is used to test the dispenser feedback input. When selected, the refrigerator display will show “Off”. When the actuator or Sports Fill keypad are pressed, the refrigerator display should change to “On”.

When the display shows “On”, it means that the main control board has received a DISP signal. This test is used to further troubleshoot dispensing problems. This test should follow tests in any of the previous dispenser tests.

ACTUATOR/FRONT FILL IS NOT ACTIVE



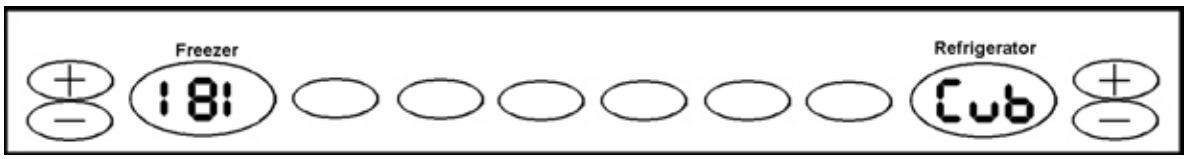
ACTUATOR/FRONT FILL IS ACTIVE (DISP INPUT IS ACTIVE)

8.1.4.20 Service Test 181 - Keypad Operation Test.

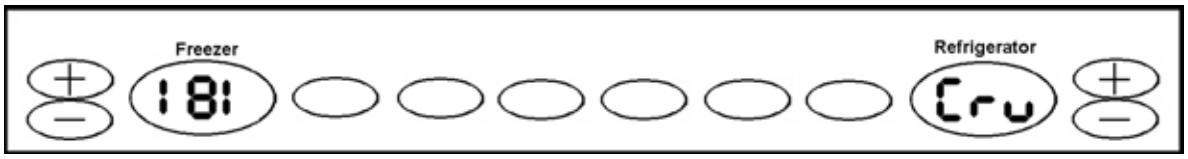
This test is used to verify all the keypads on the display keypad and the fountain keypad (if available). The Refrigerator Up/Down, Freezer Up/Down, and Front Fill keypads are excluded from this test.

A service technician should press any membrane keypad on the display or fountain and verify the keypad feature on the refrigerator display.

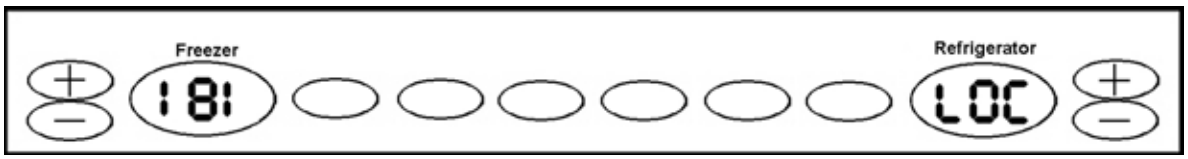
NOTE: The feature keypads on the display will show a unique number that corresponds to each keypad. These numbers are different for each model based on the personality of the refrigerator.



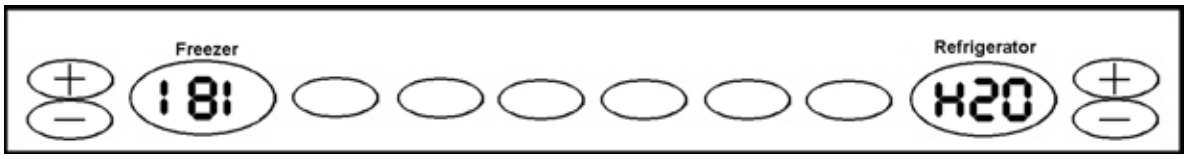
CUBED ICE KEYPAD IS ACTIVE



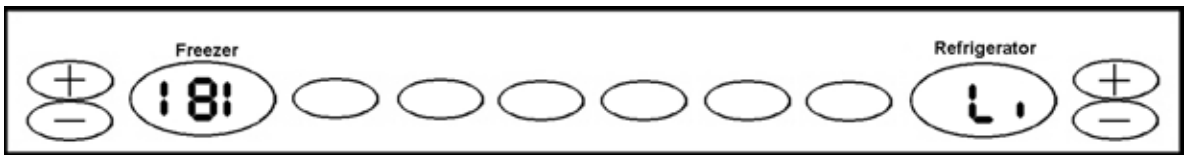
CRUSHED ICE KEYPAD ACTIVE



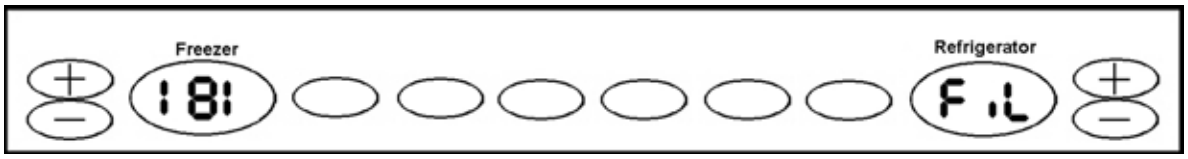
LOCK DISPENSER KEYPAD IS ACTIVE



WATER KEYPAD IS ACTIVE



LIGHT MODE SELECTION IS ACTIVE



FRONT FILL IS ACTIVE

8.1.4.21 Service Test 182 - Indicator Operation Test.

This test is used to verify all the LEDs on the Fountain and Display panels. When this test is activated using the Refrigerator Temperature Up/Down keypads ⊕/⊖, all the LEDs will flash.

8.1.4.22 Service Test 191 - Valve State Test.

This test will display the status of the water valve.

WATER VALVE IS OFF

WATER VALVE IS ON

8.1.4.23 Service Test 241 - Main Control Software.

This test will display the software revision for the main control board.

Main Control
Software Revision

8.1.4.24 Service Test 242 - Main Display Software.

This test will display the software revision for the main display board.

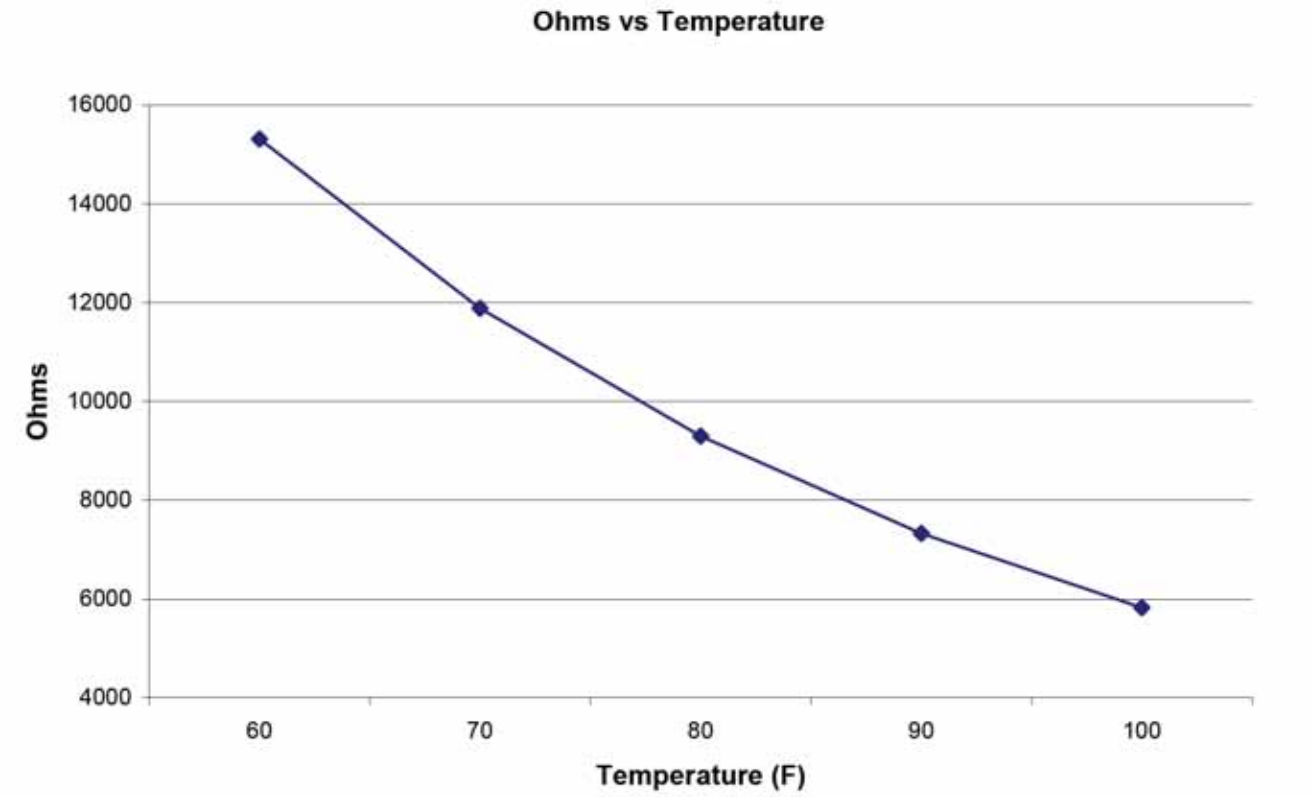
Main Display
Software Revision

8.1.4.25 Service Test 243 - Main Fountain Software.

This test will display the software revision for the main fountain board.

Main Fountain
Software Revision

8.1.4.26 Thermistor Reference Chart



8.1.5 Show Room Mode

Enter or exit the Show Room Mode by performing the following sequence of events:

1. Open the fresh food compartment door and press and hold the **DOOR ALARM** keypad.
2. Press and hold the **FREEZER TEMPERATURE UP** keypad.
3. Release the **DOOR ALARM** keypad and wait 3 seconds. "SH" appears in the freezer display.

4. Press the **FREEZER TEMPERATURE UP** keypad again. "On" or "Off" appears in the right display.
5. Press the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad or **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad to toggle the showroom feature on or off.

NOTE: Show Room Mode will always be off when first entered.

6. Press the **FREEZER TEMPERATURE UP** keypad to confirm the setting. The display will flash the selected setting.

8.1.6 Sabbath Mode

Enter the Sabbath Mode by performing the following sequence of events:

1. Open the fresh food compartment door and press and hold the **DOOR ALARM** keypad for 6 seconds.
2. Press the **FREEZER TEMPERATURE UP** keypad until "Sab" is in the freezer display.
3. Press the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad or **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad to toggle between on and off in the fresh food compartment display.
4. The selection activates immediately.

8.1.7 Fahrenheit or Celsius Mode

Enter the Fahrenheit or Celsius Mode by performing the following sequence of events:

1. Open the fresh food compartment door and press and hold the **DOOR ALARM** keypad for 6 seconds.
2. Press the **FREEZER TEMPERATURE UP** keypad until "F_C" is in the freezer display.
3. Press the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad or the **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad to toggle between "^{O}F" and "^{O}C" in the fresh food compartment display.
4. Close the door or toggle the door switch to activate the selection.

8.1.8 Cooling Fan Mode

Enter the Cooling Fan Mode by performing the following sequence of events:

1. Open the fresh food compartment door and press and hold the **DOOR ALARM** keypad for 6 seconds.
2. Press the **FREEZER TEMPERATURE UP** keypad until "CC" is in the freezer display.
3. Press the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad or the **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad to toggle between ON and OFF in the fresh food compartment display.
4. Close the door or toggle the door switch to activate the selection.

8.1.9 Alarm Enable Mode

Enter the Alarm Enable Mode by performing the following sequence of events:

1. Open the fresh food compartment door and press and hold the **DOOR ALARM** keypad for 6 seconds.
2. Press the **FREEZER TEMPERATURE UP** keypad until "AL" is in the freezer display.
3. Press the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad or the **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad to toggle between ON and OFF in the fresh food compartment display.
4. Close the door or toggle the door switch to activate the selection.

8.1.10 Light Level Mode

Enter the Light Level Mode by performing the following sequence of events:

1. Open the fresh food compartment door and press and hold the **DOOR ALARM** keypad for 6 seconds.
2. Press the **FREEZER TEMPERATURE UP** keypad until "LL" is in the freezer display.
3. Press the **FRESH FOOD COMPARTMENT TEMPERATURE UP** keypad or **FRESH FOOD COMPARTMENT TEMPERATURE DOWN** keypad to raise or lower the light level of the dispenser light from 1 (darkest light level setting) to 9 (lightest light level setting) in the fresh food compartment display.
4. Close the door or toggle the door switch to activate the selection.

8.1.11 Filter Status Light

This feature reminds users to replace the water filter after 1 year has passed or after 500 gallons of water are filtered, whichever happens first.

NOTE: The filter status light turns red after 1 year has passed or after 500 gallons of water are dispensed, even if a bypass is installed and the unit is used without a filter cartridge.

The green light indicates the filter is in good condition. The red light indicates the filter replacement is needed. The filter monitor works by keeping track of time:

- Six months is approximately 16 million seconds.
- The refrigerator's water system requires about 53,000 seconds to pass 500 gallons of water.
- Each second that water is dispensed counts as 1.20 ounces of water.
- An additional 3.20 ounces of water is counted every 30 minutes that water is dispensed. This attempts to account for ice usage.

8.1.12 Filter Status Light Reset

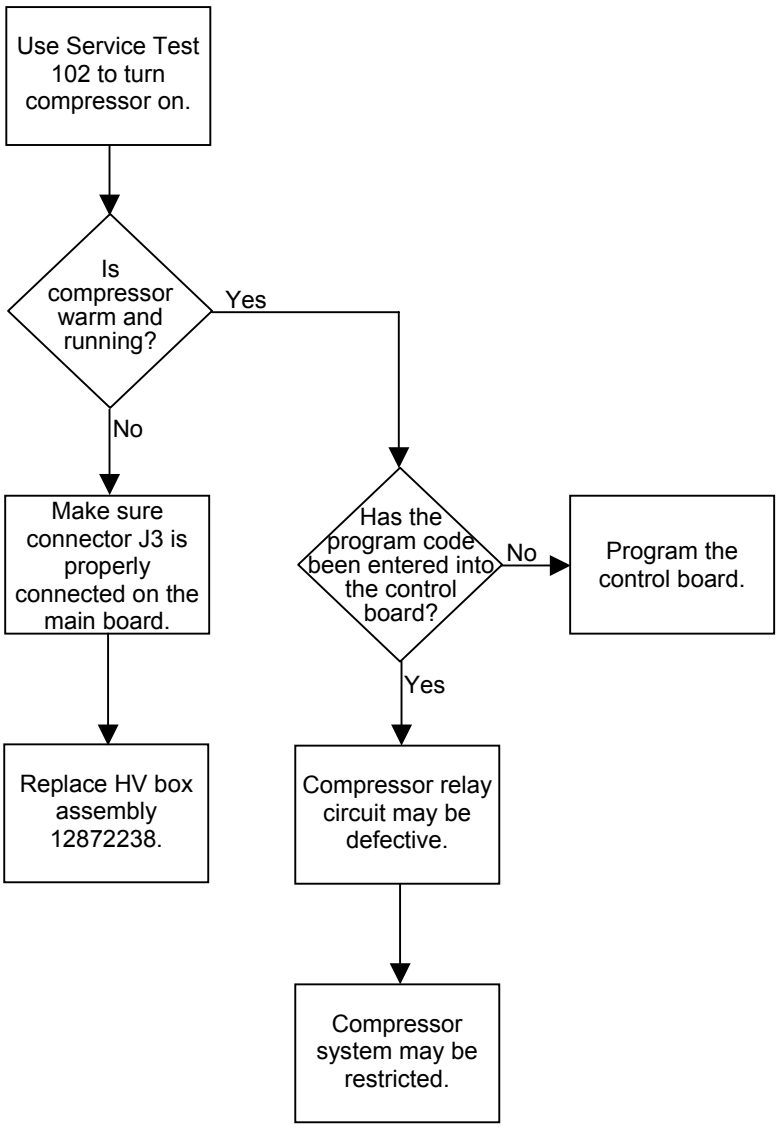
Once the filter light turns red, it remains red until reset. To reset the filter indicator, press both the **DISPENSER LOCK** and **WATER** keypads simultaneously and hold for 4 seconds. Make sure the green light flashes 3 times when the indicator resets.

8.1.13 Thermistor Resistance Chart

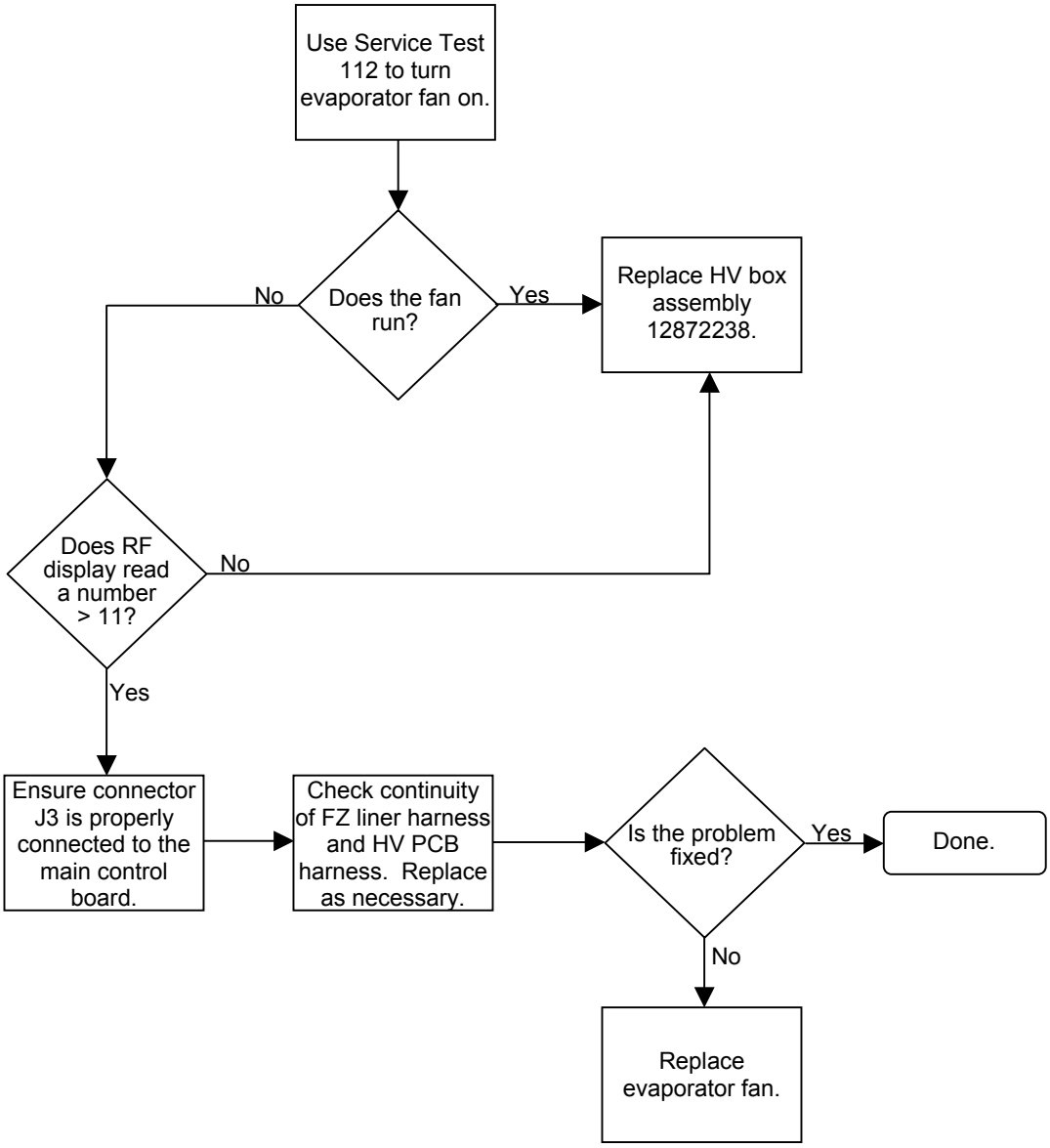
TEMPERATURE ^{O}F	NOMINAL OHMS RESISTANCE
70	119430
60	157133
50	199016
40	266820
30	343535
20	445849
10	616353
0	815074
-5	968073
-10	1153669

8.2 Troubleshooting Flow Chart (RX256DT7X1)

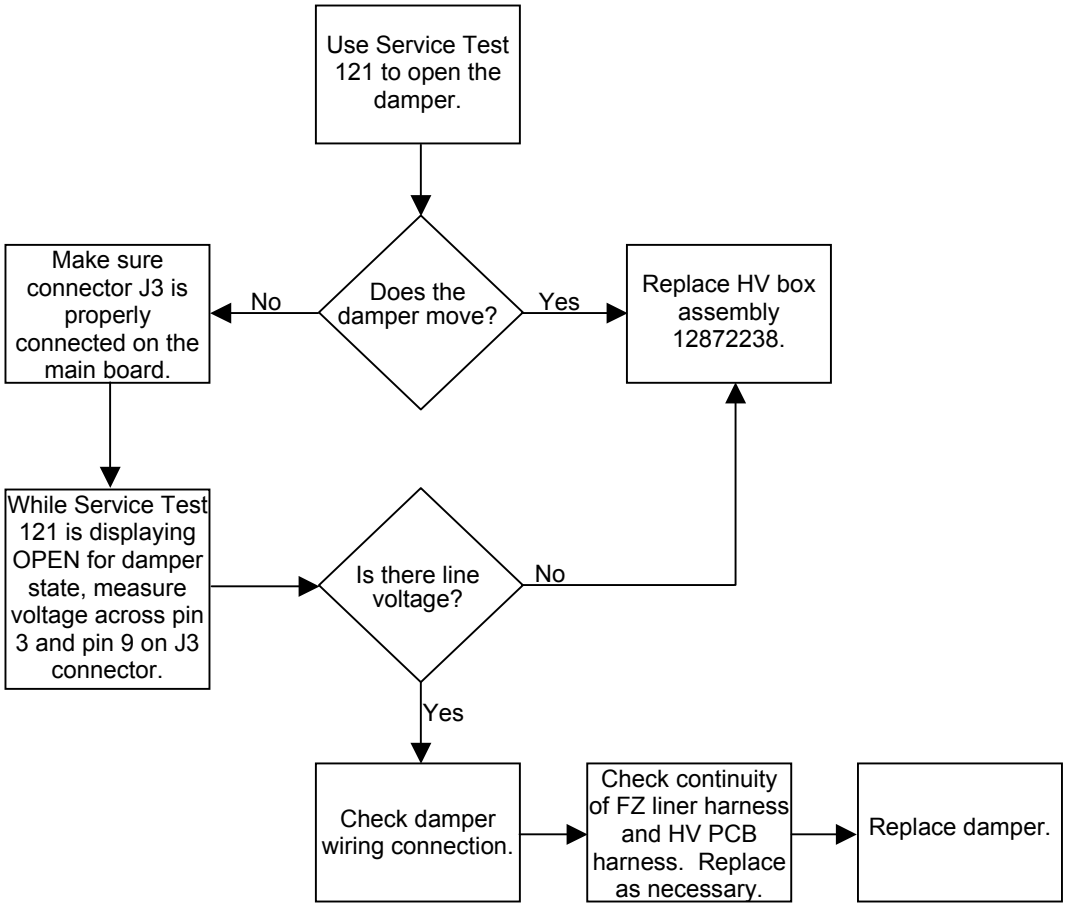
8.2.1 Compressor Does Not Turn On



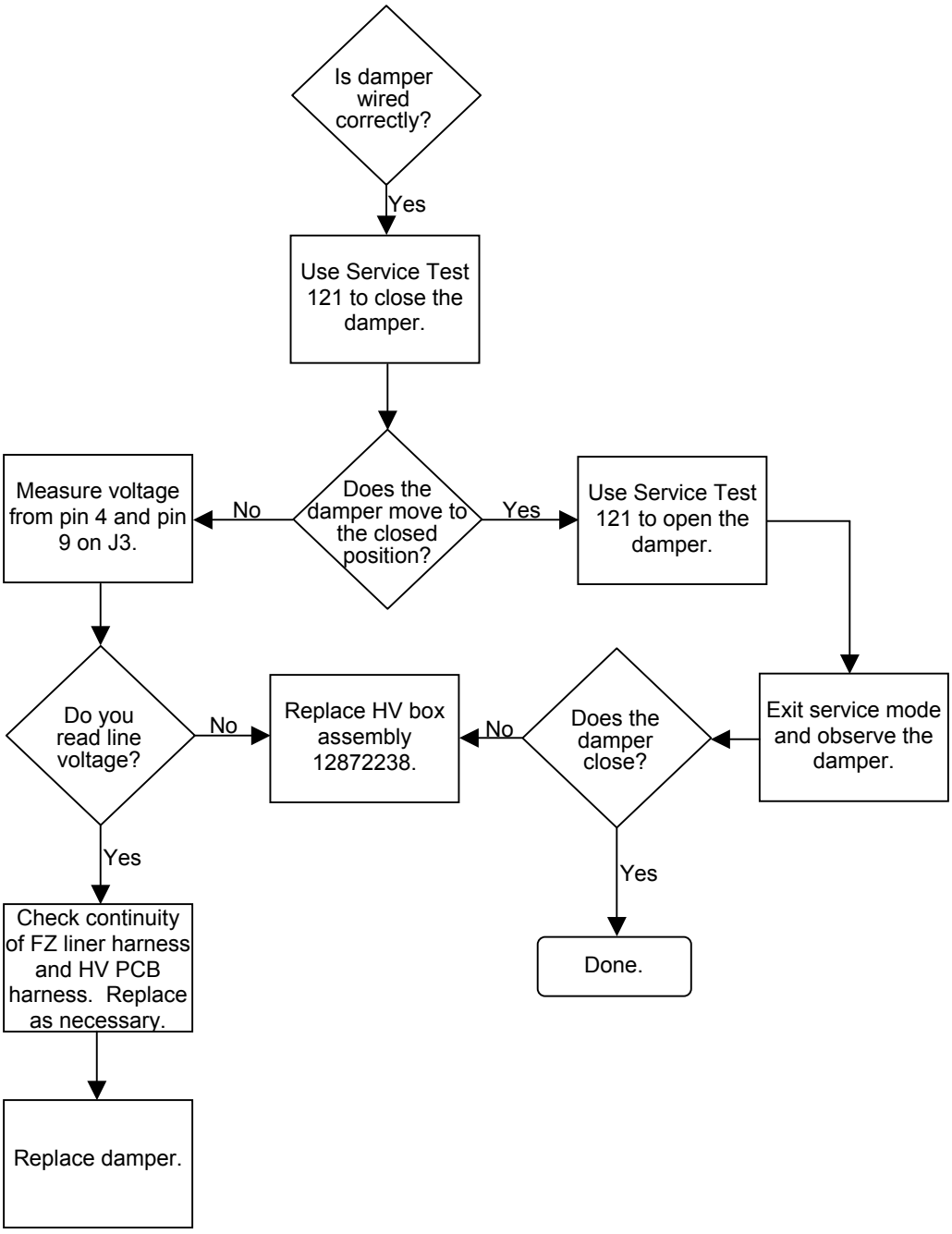
8.2.2 Evaporator Fan Does Not Turn On



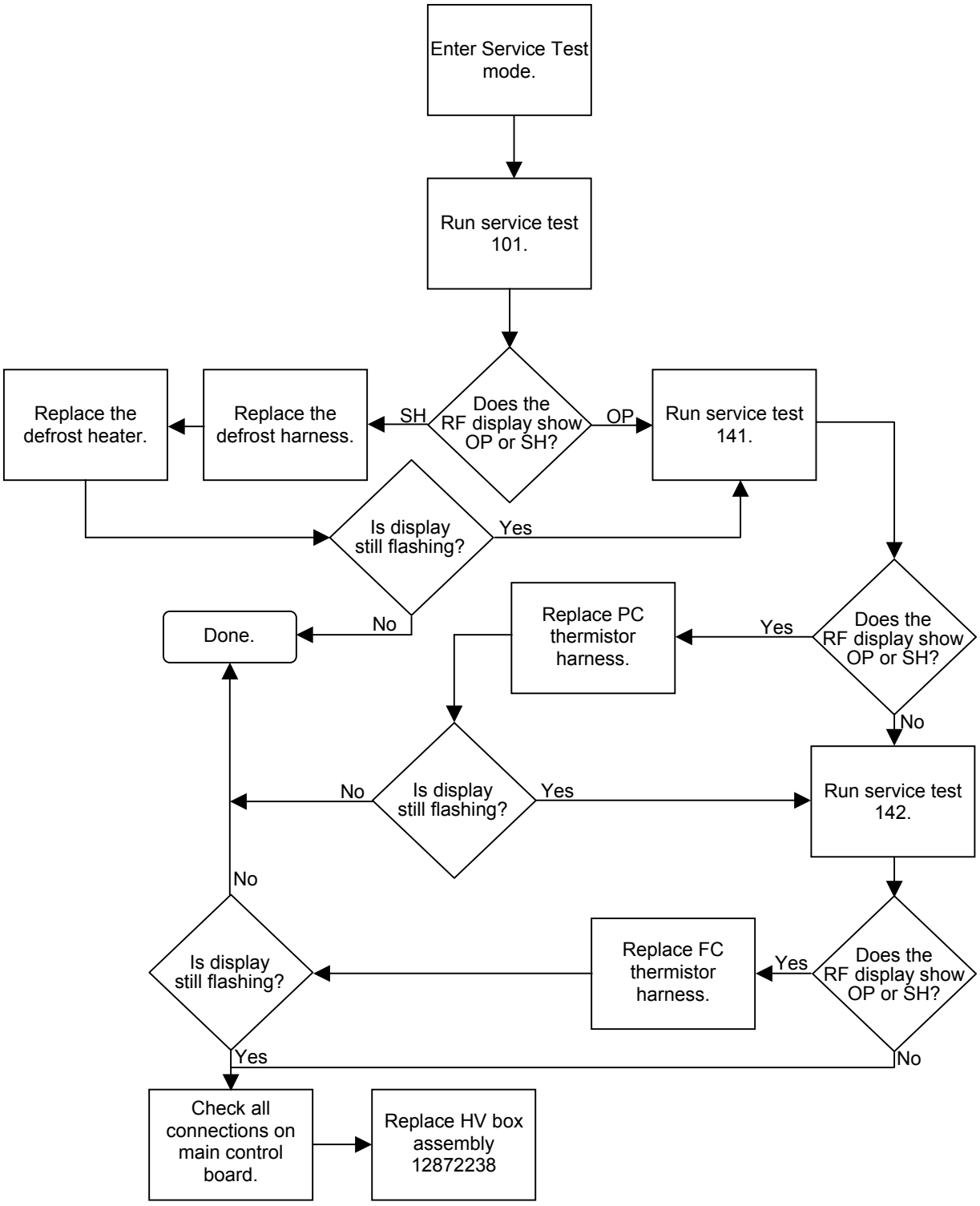
8.2.3 Damper Does Not Move



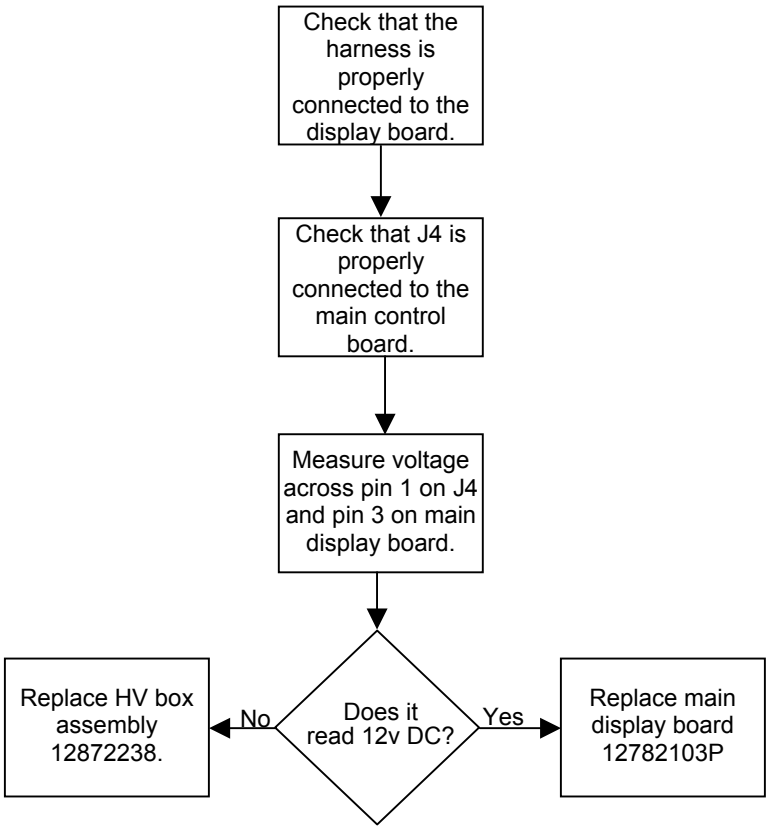
8.2.4 Damper Opens and Never Closes



8.2.5 Flashing Display at Power Up



8.2.6 Blank Display



8.3 Mid Electronic Specification Control Board (RX256DT4X1, RX256ET2B1, RX256ET2W1)

8.3.1 Programming Mode

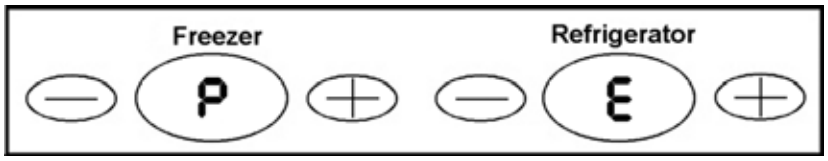
A manual method of entering program code is available for use when replacing controls in the field for repair. Improper use of this feature may result in performance problems. Great care should be exercised when setting program codes.

NOTE: The 4-digit program code is located on the refrigerator's serial plate after the word "Code".

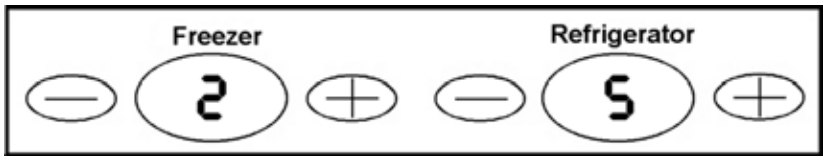
Entering Program Code Programming Mode.

The program code programming function is performed using the refrigerator display and keypad. Enter the program code programming mode by performing the following sequence of events:

- Open the Refrigerator door and hold the Refrigerator door light switch closed while pressing the Freezer Temperature Down keypad (—) 3 times consecutively.
  NOTE: The 3 keystrokes must be done consecutively and within 10 seconds of holding the light switch closed.
- Release the refrigerator door light switch.
- The control will display PE to confirm entry into the program code programming mode.



- Entry is confirmed by pressing the Freezer Temperature Down keypad (—) once more.
- The control will display the current program code. (i.e. program code 25 shown here). This value should be validated with the program code printed on the unit serial plate.



- If the program code is correct, the program code programming mode is exited by closing the refrigerator door(s).
- To set the desired program code number, press the Freezer and Refrigerator Temperature Up keypads (+). The corresponding digit will be advanced with each key press (a 9 will roll-over to 0).
- Once the desired program code is displayed, press the Freezer Temperature Down keypad (—) until the program code begins flashing indicating it has been saved.
  NOTE: If an attempt is made to enter an invalid program code, the control will not save the new code, but will flash the old code. (The unit will NOT run with a program code of 00).
- Once the code has been saved, the program code programming mode is exited by closing the refrigerator door(s).
- If the new code is incorrect, this process should be repeated after closing the refrigerator door(s).

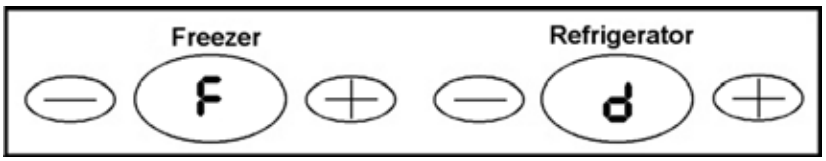
The program code programming mode can be exited at any time by closing the refrigerator door(s).

8.3.2 Forced Defrost Mode

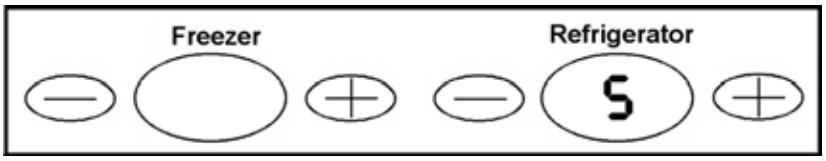
A manual method to force defrosts for use in testing and production is provided. This mode can be used to force an immediate defrost followed by either a short period (8 - 12 hours) or a long period (> 72 hours) to the next defrost.

Entering Forced Defrost Mode.
The forced defrost function is performed using the refrigerator display and keypad. Enter the Forced Defrost Mode by performing the following sequence of events:

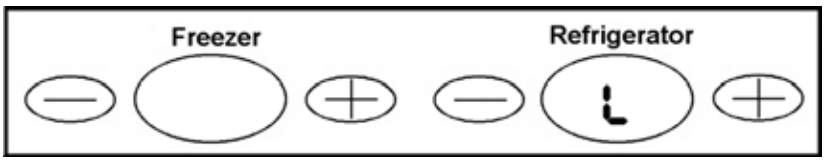
- Hold the refrigerator door light switch closed.
- Press the Refrigerator Temperature Down keypad ⊖ 3 times consecutively.
  NOTE: The 3 keystrokes must be consecutive and within 10 seconds.
- Release the refrigerator door light switch.
- The control will display Fd to confirm entry into the Forced Defrost Mode.



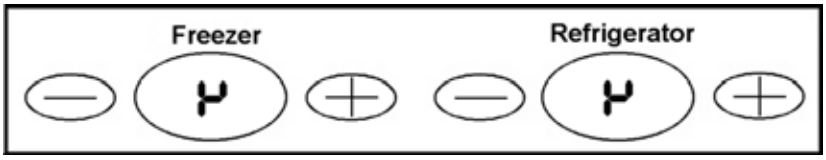
- Entry is confirmed by pressing the Refrigerator Temperature Down keypad ⊖ once more. The unit is off and in the Defrost Mode.
  NOTE: All control functions will be turned off (compressor, defrost, evaporator fan, and the damper will remain in its current position).
- The control will default to the short run period test as shown here.



NOTE: It is possible to toggle between the (S)hort and (L)ong test mode by pressing the Refrigerator Temperature Up keypad ⊕. The Long Test mode is for engineering use and should not be used in the field.



- Once the desired mode is displayed, confirm the forced defrost by pressing the Refrigerator Temperature Down keypad once. The display will return to a normal operating display with set point values.



The Forced Defrost mode can be exited at any time by closing the refrigerator door(s).

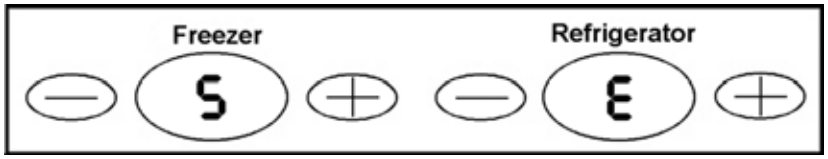
8.3.3 Service Test Mode

There are several test modes available through the diagnostic system. Use of these test modes can greatly decrease the time needed for troubleshooting. It is to the technician's advantage to be able to perform many tests in a very short period of time.

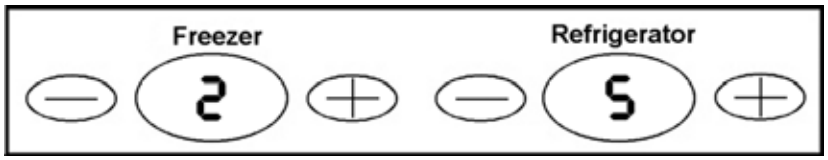
Entering Service Test Mode.

The service test functions are performed using the refrigerator display and keypad. Enter the Service Test Mode by performing the following sequence of events:

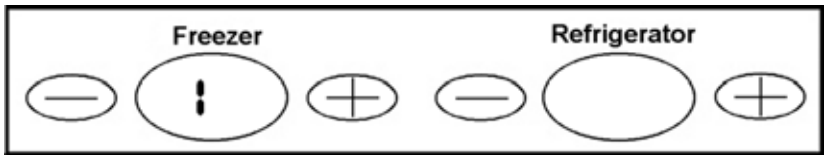
- Hold the refrigerator door light switch closed.
- Press the Refrigerator Temperature Up keypad ⊕ 3 times consecutively.
  NOTE The 3 keystrokes must be consecutive and within 10 seconds.
- Release the refrigerator door light switch.
- The control will display SE allowing the technician to confirm entry into the service mode.



- Entry to the Service Menu is confirmed by pressing the Refrigerator Temperature Up keypad ⊕ once more.
- The control will display its software version for 3 seconds (i.e. Revision 25 shown here).



- Following the software revision display, the freezer display will read the first test number in the diagnostic tree. The refrigerator display will be blank.



- All control functions will be turned off (compressor, defrost, evaporator fan, and the damper will remain in its current position).

The refrigerator is now in the Service Test mode and the diagnostic tests may be carried out.

The Service Test mode can be exited at any time by closing the refrigerator door(s).

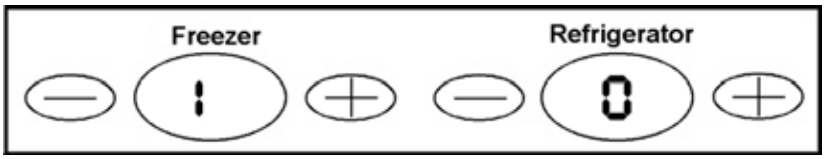
8.3.4 Service Test Mode – Navigation

Within the Service Test mode, the control keys have alternate functions. The Freezer Temperature Up/Down keypads ⊕/⊖ will move to the next or the previous service test, confirm a test selection and begin performing the selected test, or toggle between functional states as described in each test listed.

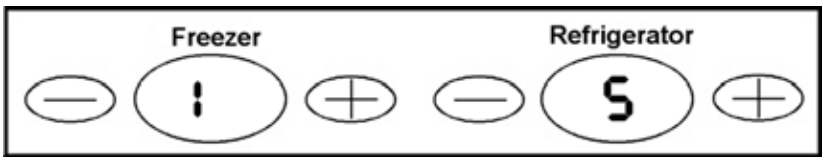
8.3.4.1 Service Test 1 – Defrost Thermostat & Defrost Circuit Test.

When selected, this test will display the state of the defrost thermostat. In order to perform this test, the defrost heater will be energized.

- The test is activated and deactivated using the Refrigerator Temperature Up keypad ⊕. Once activated, this test must be de-activated to move to another test number.
- This test also allows observation and measurement of proper defrost function. The service technician must observe defrost heat and voltages while the test is activated.



DEFROST THERMOSTAT OPEN

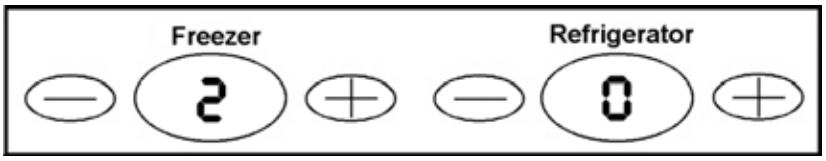


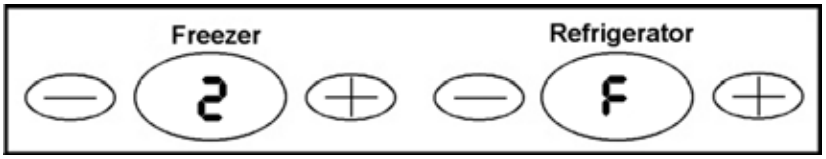
DEFROST THERMOSTAT SHORTED (CLOSED)

8.3.4.2 Service Test 2 - Compressor/Condenser Fan Test.

When selected and activated, this test will operate the compressor/condenser fan circuit. A service technician should evaluate proper operation of the compressor and condenser fan.

- The Refrigerator Temperature Up key ⊕ will toggle the compressor drive circuit between "0"/"F" (ON & OFF). The test must be "deactivated" or in the OFF position to move to another test selection.



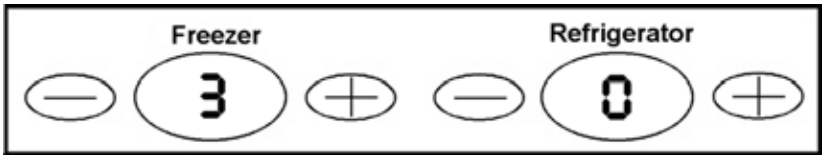


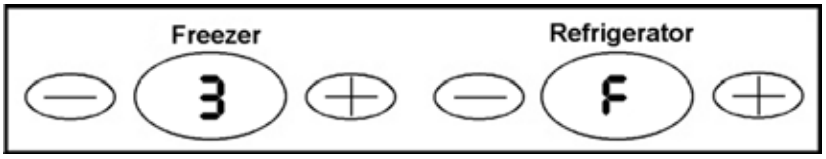
OBSERVE COMPRESSOR & CONDENSER FAN FUNCTION

8.3.4.3 Service Test 3 - Evaporator/Freezer Fan Test.

When selected and activated, this test will operate the freezer fan.

- The Refrigerator Temperature Up keypad ⊕ will toggle the fan drive circuit between "0"/"F" (ON & OFF). The technician will have to inspect the fan for proper function. The test must be "deactivated" or in the OFF position to move to another test selection.



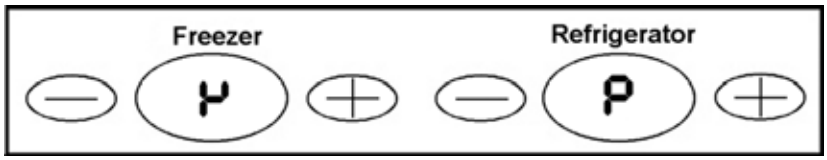


OBSERVE FAN FUNCTION

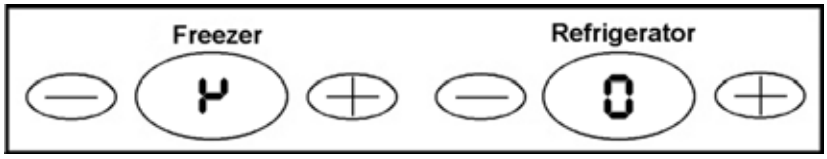
8.3.4.4 Service Test 4 - Refrigerator Thermistor Test.

When selected and activated, this test will display Pass, Open, Short result for a test on the refrigerator thermistor circuit as show below.

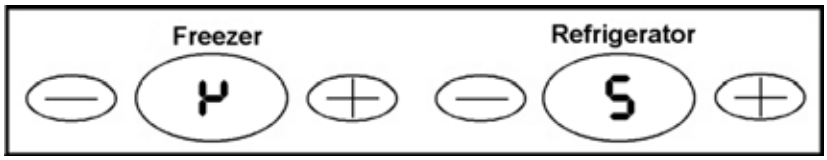
- The test is activated via the Refrigerator Temperature Up keypad ⊕, and must be de-activated to move to another test selection.



PASS RESULT



OPEN RESULT

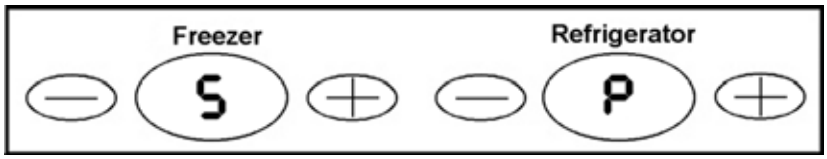


SHORT RESULT

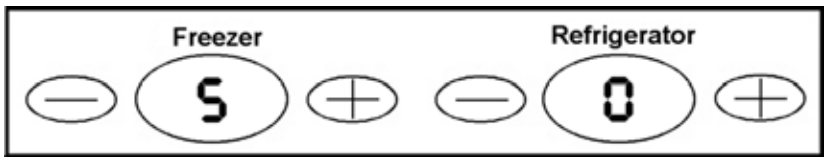
8.3.4.5 Service Test 5 - Freezer Thermistor Test.

When selected, this test will display Pass, Open, Short result for a test on the freezer thermistor circuit as show below.

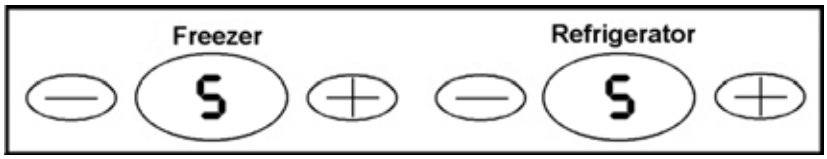
- The test is activated via the Refrigerator Temperature Up keypad ⊕, and must be de-activated to move to another test selection.



PASS RESULT



OPEN RESULT

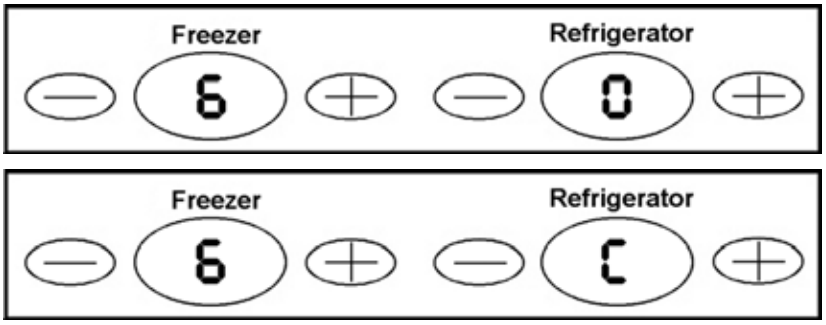


SHORT RESULT

8.3.4.6 Service Test 6 - Open Damper Test.

When selected, this test will indicate the current position "0"/"C" (OPEN/CLOSED) of the refrigerator damper.

- The Refrigerator Temperature Up keypad ⊕ will toggle the damper open and closed. The technician must allow 1 minute for each attempt to change the damper position. The technician should observer proper damper function.

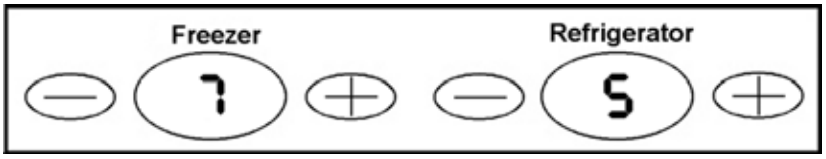


OBSERVE DAMPER FUNCTION

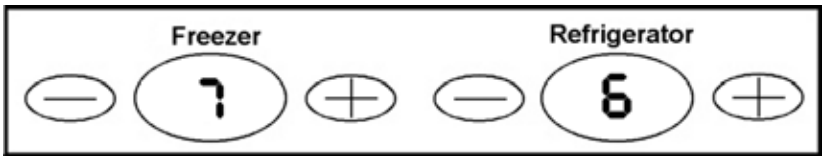
8.3.4.7 Service Test 7 - Refrigerator Performance Adjustment.

This test will allow the service technician to adjust the control performance points. Each step will incrementally change the refrigerator performance warmer (towards 1) or colder towards (9) as adjusted. The default value is 5.

- The Refrigerator Temperature Up/Down keypads ⊕/⊖ are used to adjust the Performance Offset value. WARMER ← (1 2 3 4 **5** 6 7 8 9) → COLDER.



DEFAULT



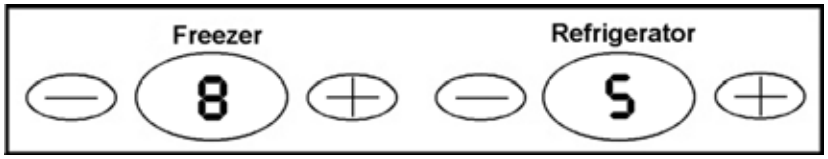
COLDER

- The last Refrigerator Performance Offset value displayed before leaving test 7 will be saved when the refrigerator door(s) is closed.

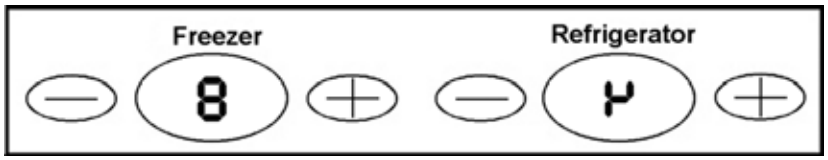
8.3.4.8 Service Test 8 - Freezer Performance Adjustment.

This test will allow the service technician to adjust the control performance points. Each step will incrementally change the freezer performance warmer (towards 1) or colder towards (9) as adjusted. The default value is 5.

- The Refrigerator Temperature Up/Down keypads ⊕/⊖ are used to adjust the Performance Offset value. WARMER ← (1 2 3 4 **5** 6 7 8 9) → COLDER.



DEFAULT



COLDER

- The last Freezer Performance Offset value displayed before leaving test 8 will be saved when the refrigerator door(s) is closed.

8.3.5 Show Room Mode

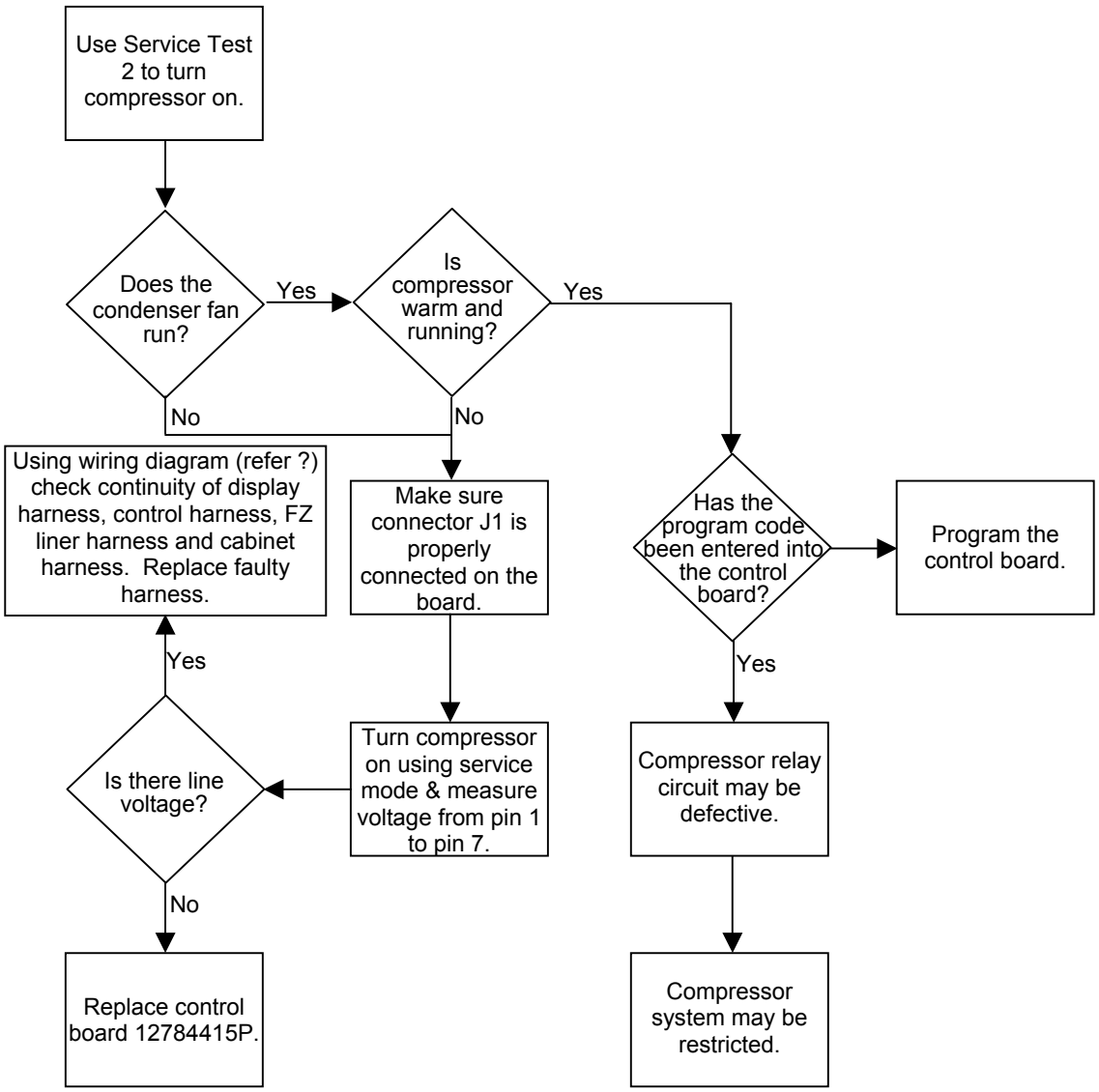
A manual method to put the electronic control into a Show Room Mode has been provided. In this mode, the control display and keypad will operate normally, but all all of the cooling and air moving devices will remain off. The unit will remain in Show Room Mode until power is removed from the unit.

The Show Room Mode is set using the refrigerator display and keypad. Enter the Show Room Mode by performing the following sequence of events:

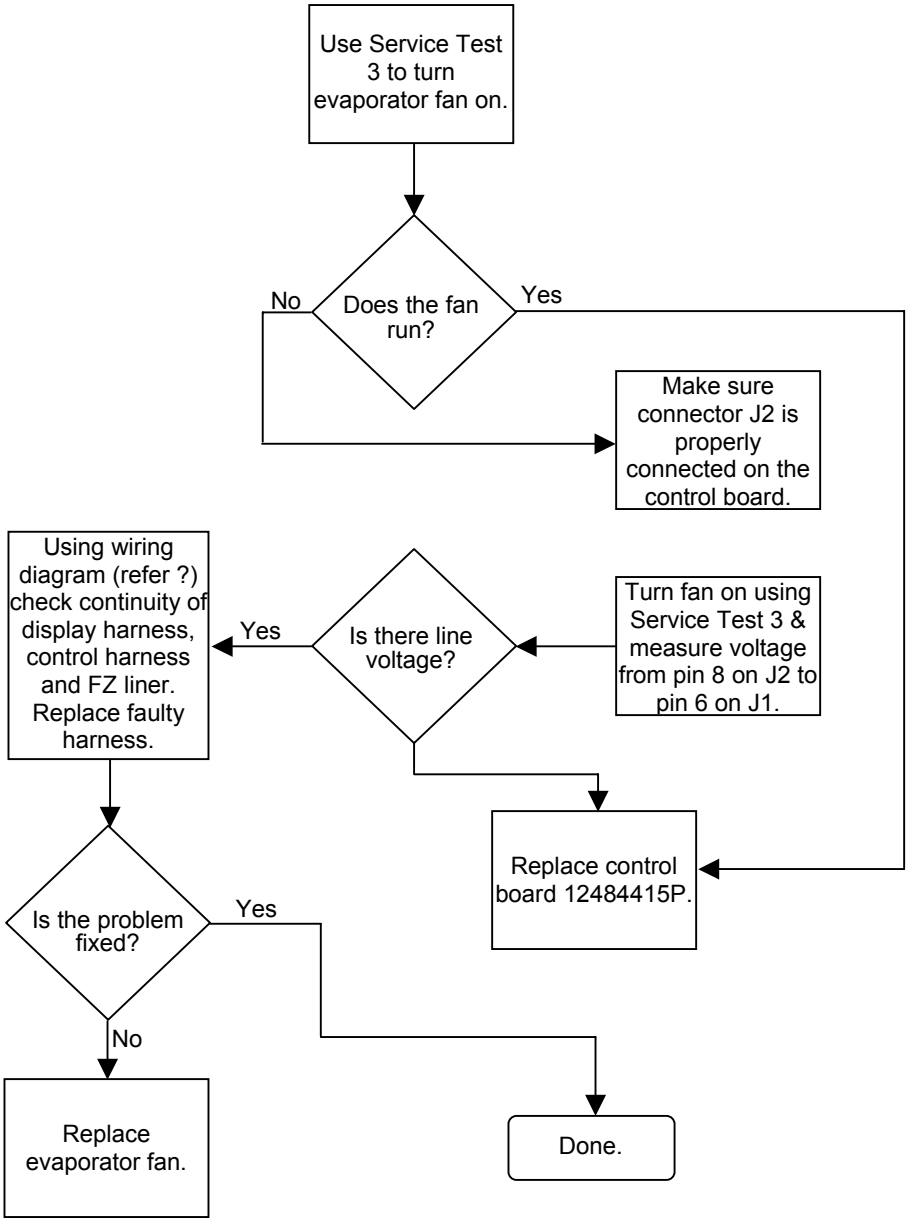
1. Hold the fresh food compartment door light switch closed.
2. Press the **FREEZER TEMPERATURE UP** keypad 3 times consecutively. **NOTE:** The three keystrokes must be done consecutively within 10 seconds.
3. Release the fresh food compartment door light switch.
4. The control will display “S” in the freezer display and “H” in the fresh food compartment display to confirm entry into Show Room Mode.
5. Entry to the Show Room Mode is confirmed by pressing the **FREEZER TEMPERATURE UP** keypad once more.
6. Once the Show Room Mode is confirmed, the display will return to a normal operating display with set point values.

8.4 Troubleshooting Flow Chart (RX256DT4X1, RX256ET2B1, RX256ET2W1)

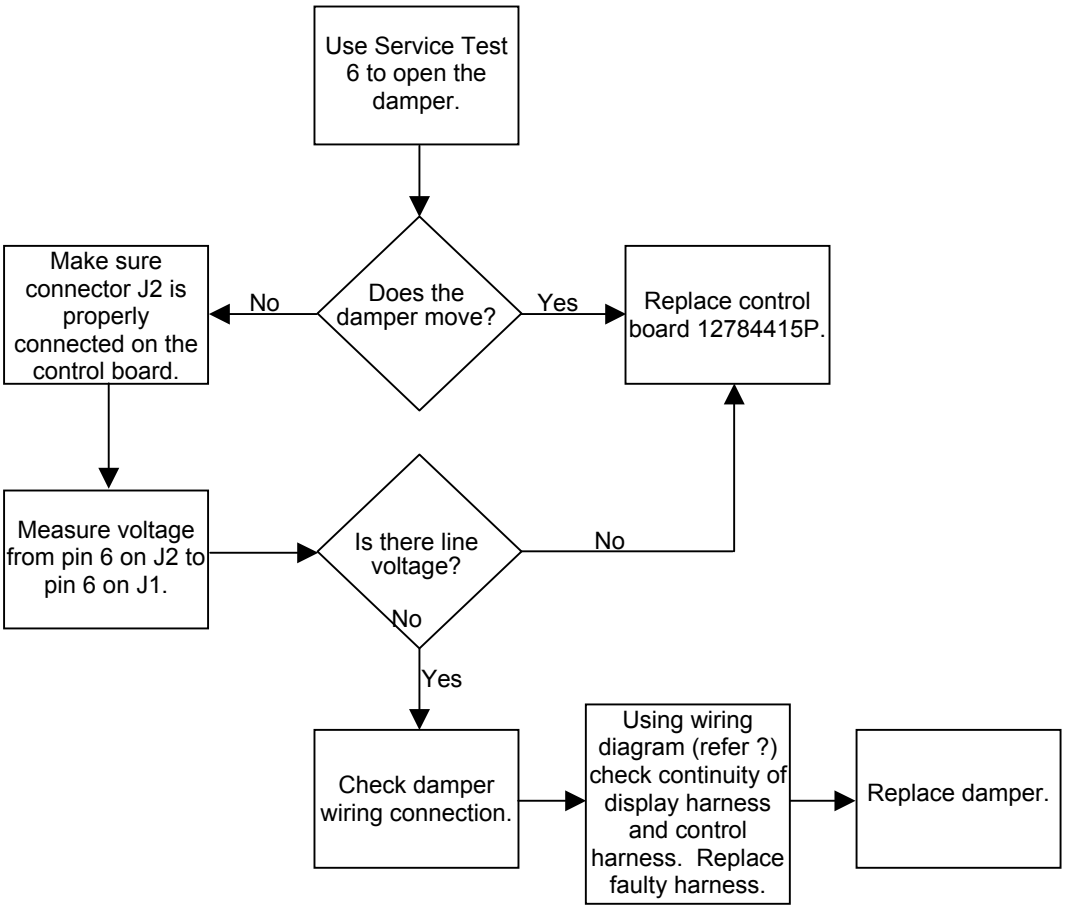
8.4.1 Compressor Does Not Turn On



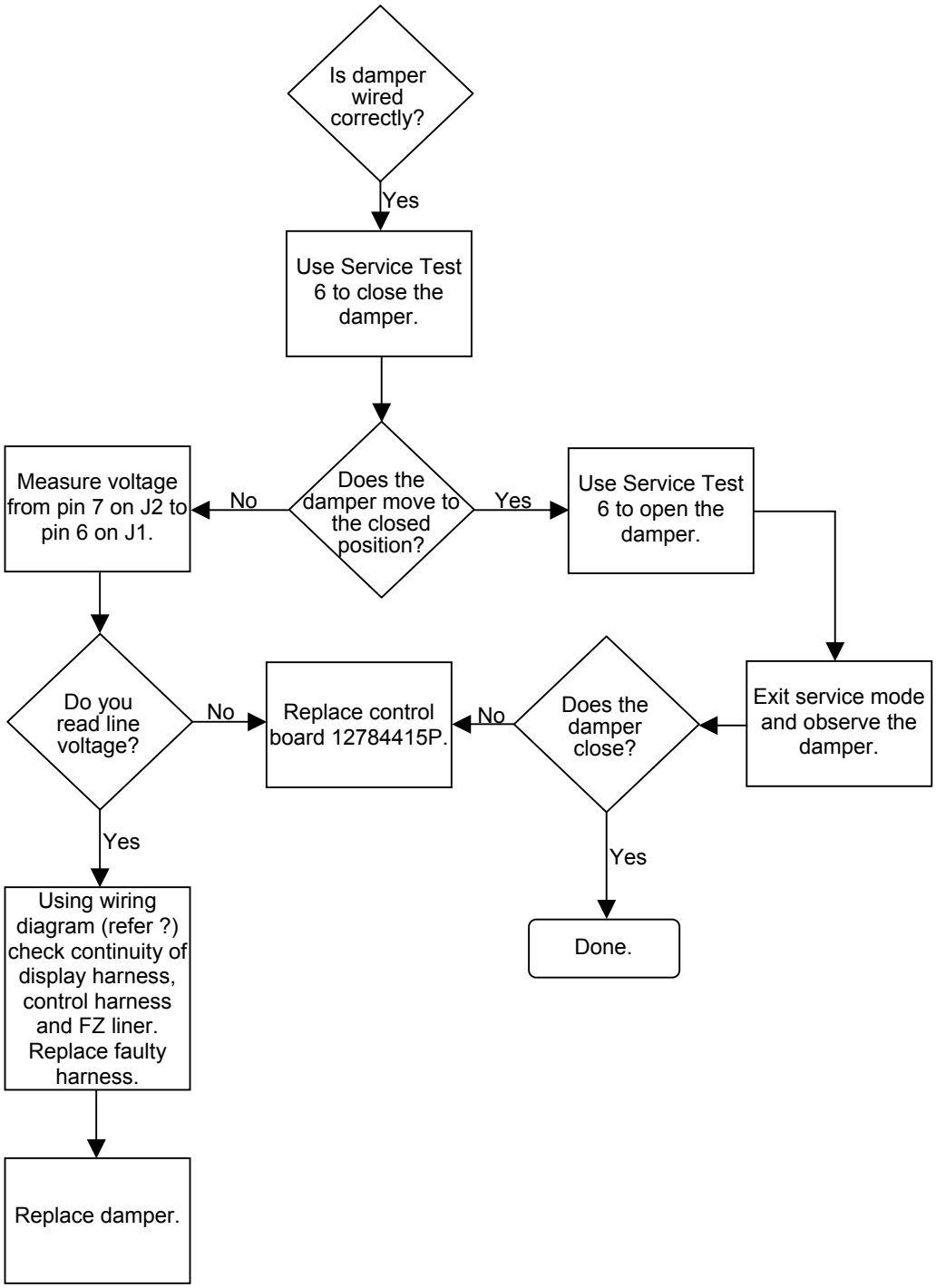
8.4.2 Evaporator Fan Does Not Turn On



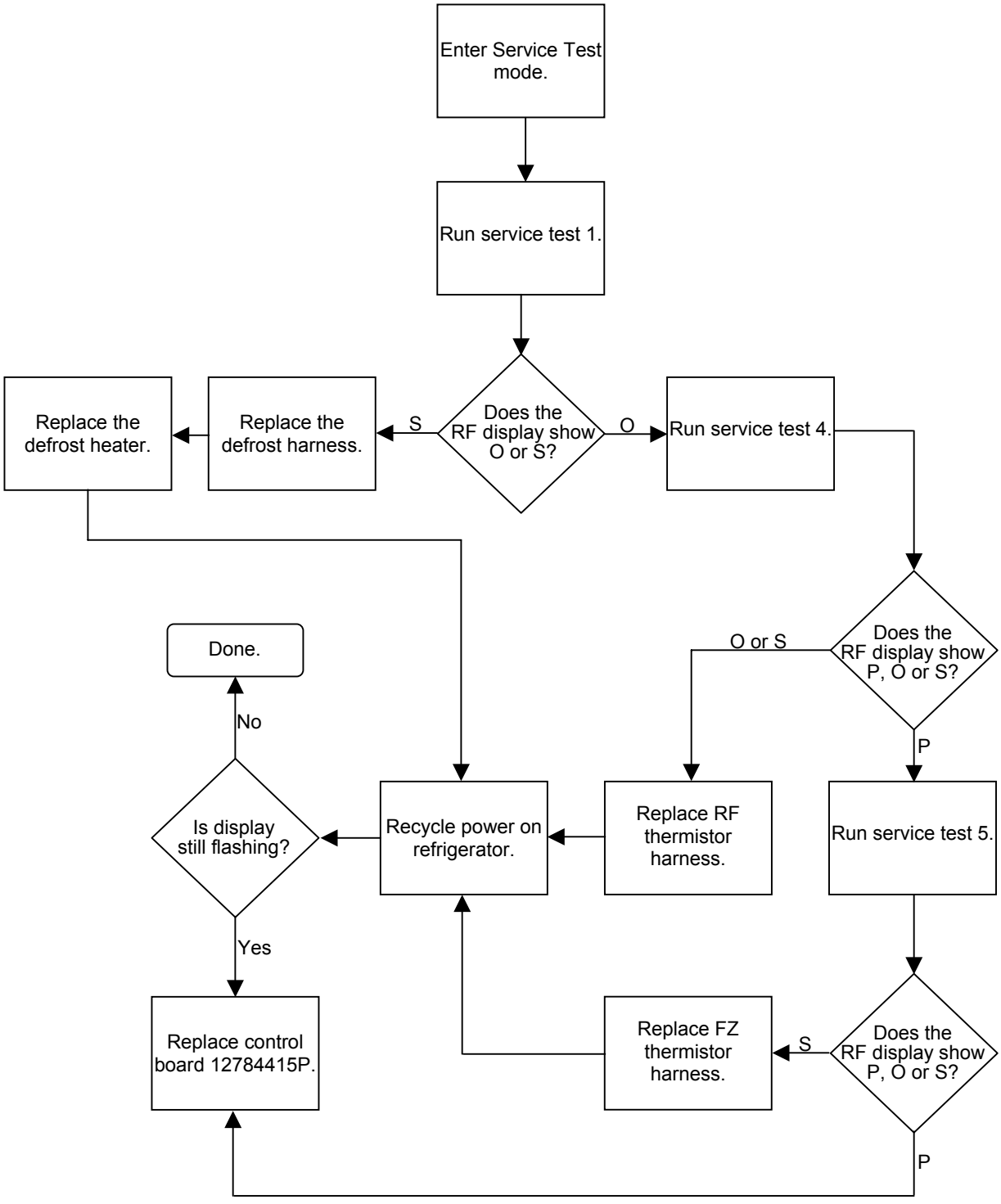
8.4.3 Damper Does Not Move



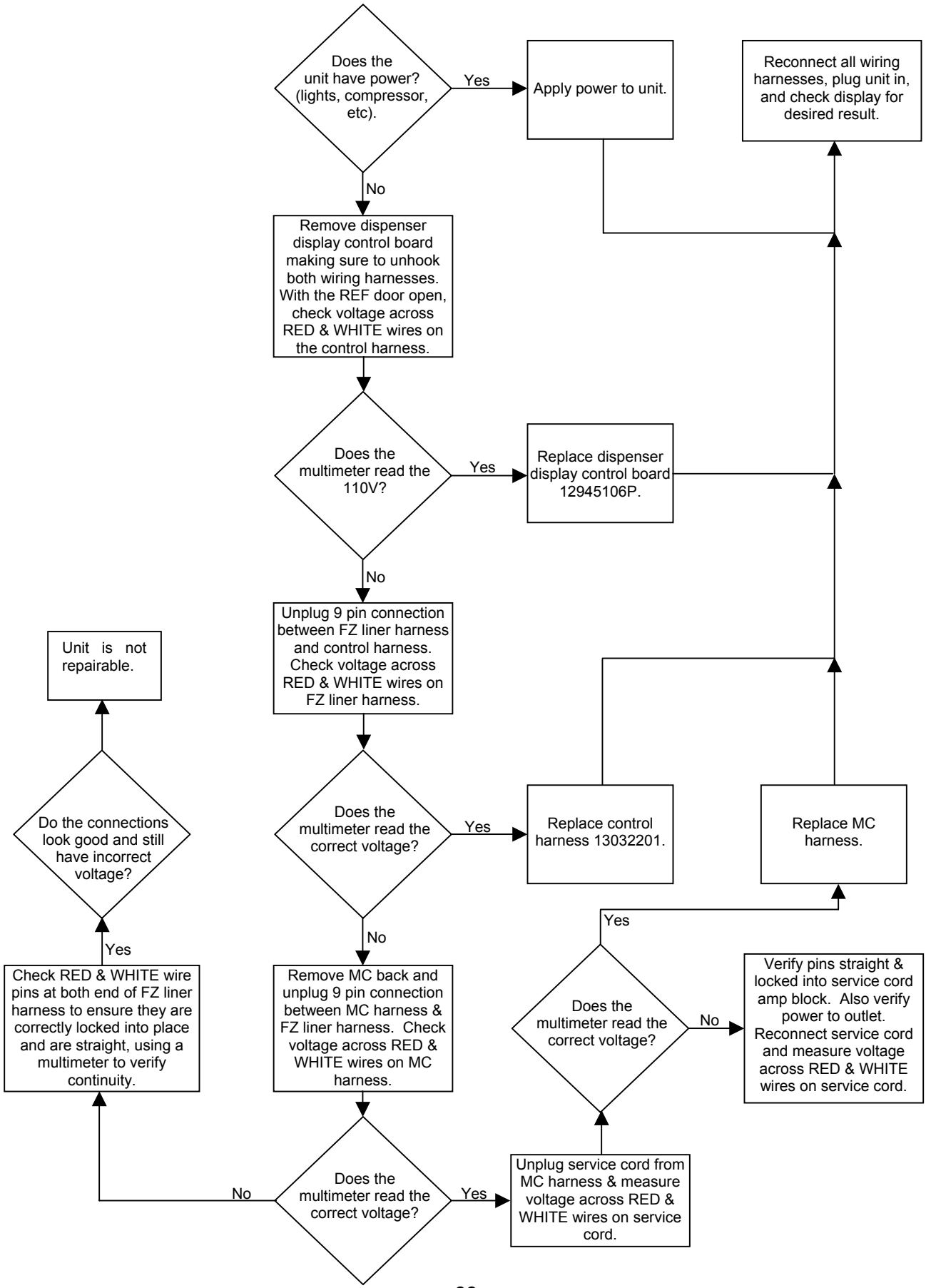
8.4.4 Damper Opens and Never Closes



8.4.5 Flashing Display at Power Up



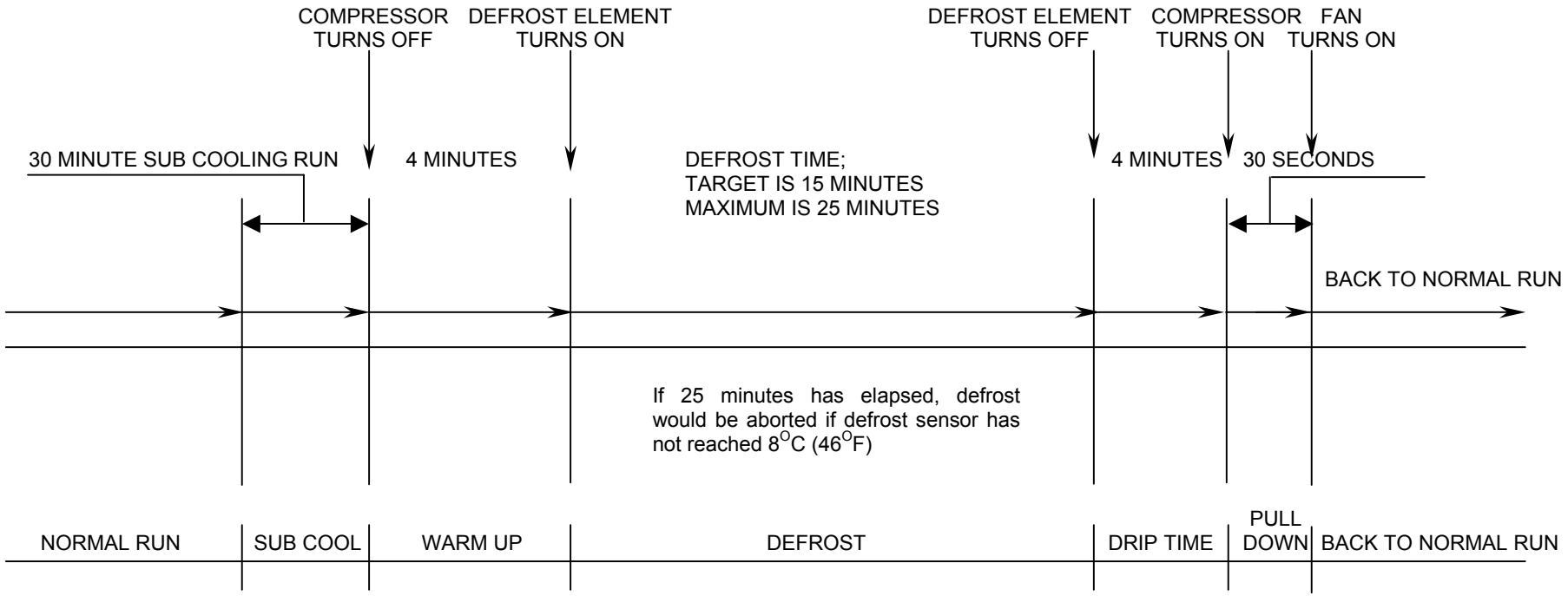
8.4.6 Blank Display



8.5 Defrost Cycle

The following table outlines the defrost cycle of the refrigerator.

Adaptive Defrost Cycle of the Refrigerator



9 ELECTRONIC TROUBLESHOOTING

9.1 Models RX256DTX1, RX256ET2B1, RX256ET2W1

Table A: Harness 10-pin Connector Configuration

Pin	Colour	Signal
10	BU	Crushed
9	OR	Cubed
8	BR	Dispenser Light
7	YL	Water Valve
6	RD	Line Out
5	PK	Main Actuator
4	GY	Ice Door Chute Solenoid
3	BK	Line In
2		
1	WH	Neutral

Note: All voltage measurements are referenced to line neutral or pin 1 (WH wire) of 10-pin connector.

Symptom	Possible Cause	Test Procedure	Repair
No LED lit.	Switch failure in freezer door.	With unit powered, open freezer door. Press freezer door switch in. If freezer light does not turn off, switch is defective.	Replace switch.
	Incorrect harness wiring.	Verify wire colour on 10-pin connector. Refer to Table A above.	Correct wiring.
	No power to the PCB.	With unit powered, measure voltage between pin 1 (WH wire) and pin 3 (BK wire) of 10-pin connector. Meter should read 120VAC.	Replace PCB if meter reads 120VAC.
No dispenser light when main or Water dispenser switch is pressed in Water, Crush or Ice Mode.	No continuity.	Disconnect power. Measure continuity between pin 8 (BR wire) of 10-pin connector and dispenser lamp terminal.	Repair open connection.
	Failed light bulb or PCB.	With unit powered, press the Main dispenser switch. Measure voltage on pin 8 (BR wire) of 10-pin connector. Voltage should read 120 VAC.	Replace dispenser light bulb if voltage reads 120 VAC.
Dispenser light is on without pressing the main or Water switch in Water, Crush or Ice Mode.	Failed main dispenser switch (failed short)	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read less than 1 Ω in this position and higher than 10 MΩ when switch is open.	Replace switch
	Failed PCB	With PCB powered, measure voltage on pin 10 (BU wire) of 10-pin connector. Voltage should read 0 VAC.	Replace PCB.
Water LED is illuminated but does not dispense water when main dispenser switch is pressed.	Failed main dispenser switch (failed open)	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read less than 1 Ω in this position and higher than 10 MΩ when switch is open.	Replace switch.
	No continuity	Disconnect power. Remove the cover of freezer door hinge located on top of the unit and disconnect the connectors. Check pin 9 (OR wire) of 10-pin connector for continuity.	Repair open connection.

Symptom	Possible Cause	Test Procedure	Repair
Water starts to dispense as soon as Water Mode is selected without pressing the main dispenser switch.	Failed main dispenser switch (failed short)	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read less than 1 Ω in this position and higher than 10 MΩ when switch is open.	Replace switch.
	Failed PCB	With PCB powered, measure voltage on pin 7 (YL wire) of 10-pin connector. Voltage should read 0 VAC.	Replace PCB.
Ice LED is illuminated but does not dispense cubed ice when main dispenser switch is pressed.	Failed main dispenser switch (failed open).	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read less than 1 Ω in this position and higher than 10 MΩ when switch is open.	Replace switch.
	No continuity.	Disconnect power. Remove the cover of freezer door hinge located on top of the unit and disconnect the connectors. Check pin 9 (OR wire) of 10-pin connector for continuity.	Repair open connection.
	Failed auger motor or PCB.	With PCB powered, press the Main dispenser switch. Measure voltage on pin 9 (OR wire) of 10- pin connector. Voltage should read 120VAC.	Replace auger motor if voltage reads 120VAC. If not, replace PCB.
Ice starts to dispense as soon as Ice Mode is selected without pressing the main dispenser switch.	Failed main dispenser switch (failed short).	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read higher than 10 MΩ when switch is open and less than 1 Ω when switch is closed.	Replace switch.
	Failed PCB.	With PCB powered, measure voltage on pin 9 (OR wire) of 10-pin connector. Voltage should read 0 VAC.	Replace PCB.
Dispenser operates continuously even when Dispenser Lock Mode is activated.	Failed PCB.	With PCB powered, measure voltage on pin 5 (PK wire) of 10-pin connector. Voltage should read 0 VAC.	Replace PCB.
Auto Light Mode does not operate.	Failed PCB.	With PCB powered and Auto Light activated, cover the light sensor. Measure voltage on pin 8 (BR wire) of 10-pin connector. Voltage should read 1/2 the AC power supply (120 VAC).	Replace PCB.
Ice or Water dispenser mechanism runs continuously.	Failed PCB.	With PCB powered, measure voltage on pin 5 (PK wire) of 10-pin connector. Voltage should read 0 VAC.	Replace PCB.
Filter Status LED never changes to red.	Failed PCB.	Verify with the user if unit has been unplugged for a long period. Demonstrate reset operation to customer.	Replace water filter and reset Filter Status. Replace PCB if problem continues. Customer education.
Auger motor operates in Ice or Crush Mode but ice door chute never opens.	Failed solenoid.	Disconnect power. Remove both leads from the solenoid and measure the resistance across solenoid terminals. Resistance should read 101.2 ± 10%.	Replace solenoid.
Auger motor operates in Ice or Crush Mode but ice door chute never closes.	Failed PCB.	Measure voltage on pin 10 (BU wire) of 10-pin connector. Voltage should read approximately 55VDC when ice chute door is open (solenoid energized) or 0VDC when closed (solenoid not energized).	Replace PCB.

Symptom	Possible Cause	Test Procedure	Repair
No LED lit, Water dispenser operates, auger motor operates only in Ice Mode and ice chute door does not open or remains open.	Failed PCB.		Replace PCB.
No LED lit, Water dispenser operates, auger motor operates only in Ice Mode and dispenser light is on continuously.	Failed PCB.		Replace PCB.
Neither Water, Crush or Ice LED will illuminate but Water, Crush or Ice Mode operates properly when selected.	Failed PCB.		Replace PCB.
Crush LED is illuminated but does not dispense crushed ice when main dispenser switch is pressed.	Failed main dispenser switch (failed open).	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read less than 1 Ω in this position and higher than 10 MΩ when switch is open.	Replace switch.
	No continuity.	Disconnect power. Remove the cover of freezer door hinge located on top of the unit and disconnect the connectors. Check pin 10 (BU wire) of 10-pin connector for continuity.	Repair open connection.
	Failed auger motor or PCB.	With PCB powered, press the Main dispenser switch. Measure voltage on pin 10 (BU wire) of 10- pin connector. Voltage should read 120VAC.	Replace auger motor if voltage reads 120VAC. If not, replace PCB.
Crushed ice starts to dispense as soon as Crush Mode is selected without pressing the main dispenser switch.	Failed main dispenser switch (failed short).	Disconnect power. Remove both leads from the switch and measure resistance across switch terminals. Resistance should read less than 1 Ω in this position and higher than 10 MΩ when switch is open.	Replace switch.
	Failed PCB.	With PCB powered, measure voltage on pin 10 (BU wire) of 10-pin connector. Voltage should read 0 VAC.	Replace PCB.

Seconds to dispense 10 oz. of water

Supply pressure	35 psi 240 kpi	45 psi 310 kpi	55 psi 380 kpi	75 psi 520 kpi
Filter model Bypass installed	9.0	8.0	7.0	6.0
Filter model New filter installed	11.0	10.0	8.0	7.0

Fisher & Paykel specifies a minimum supply pressure of 240 kpi (35 psi) for water filter units. Minimum pressure requirement ensures that water valves close and sufficient water volume is available to fill icemaker. Proper fill is 140 cc. of water in 7.5 seconds. Failure of water valves to close because of low pressure will result in fill-tube freeze-up or dripping at cavity.

10 GENERAL TROUBLESHOOTING

This troubleshooting chart on the following pages contains symptoms that may be seen in malfunctioning units. Each symptom is accompanied by one or more possible causes and by a possible remedy or test to determine if components are working properly.

Symptom	Possible Causes	Corrective Action
Unit does not run.	No power to unit.	Check for power at outlet. Check fuse box/circuit breaker for blown fuse or tripped breaker. Replace or reset.
	Faulty power cord.	Check with test light at unit. If no circuit and current is indicated at outlet, replace or repair.
	Low voltage.	Check input voltage for proper voltage. Take appropriate action to correct voltage supply problem.
	Faulty motor or freezer temperature control.	Check all connections are tight and secure. Jumper across terminals of control. If unit runs, replace control.
	Faulty relay.	Check relay. Replace if necessary.
	Faulty compressor. Is the cabiinet in defrost Mode?	Check compressor motor windings for opens/shorts. Wait 8 minutes 30 seconds with power on to cabinet. Perform compressor direct wiring test. Replace if necessary.
	Faulty overload.	Check overload for continuity. **NOTE:** Ensure compressor/overload are below trip temperature before testing. Replace if necessary.
Fresh food compartment too warm.	Excessive door opening.	Consumer education.
	Overloading of shelves.	Consumer education.
	Warm or hot foods placed in cabinet.	Consumer education.
	Cold control set too warm.	Set control to colder setting.
	Poor door seal.	Level cabinet. Adjust hinges. Replace gasket.
	Fresh food compartment airflow.	Check damper is opening by removing grille. With door open, damper should open. Replace if faulty. Turn control knob to colder position or can be tested in diagnostics.
	Interior light remains on.	Check switch. Replace if necessary.
	Faulty condenser fan or evaporator fan.	Check fan and wiring. Replace if necessary.
	Faulty compressor.	Replace compressor.
Fresh food compartment too cold.	Fresh food compartment temperature control set too cold.	Adjust fresh food compartment temperature control.
	Fresh food compartment airflow not properly adjusted.	Check air flow.
Freezer and provision sections too warm.	Temperature controls set too warm.	Reset temperature controls.
	Poor door seal.	Level cabinet. Adjust hinges. Replace gasket.
	Dirty condenser or obstructed grille.	Check condenser and grille. Clean.
	Faulty control.	Test control. Replace if failed.
	Refrigerant shortage or restriction.	Check for leak or restriction. Repair, evacuate and recharge system.
Freezer section too cold.	Freezer temp control set too cold.	Adjust freezer temperature control.
	Faulty control.	Test control. Replace if failed.
	Cold control capillary not properly clamped to evaporator.	Reposition clamp and tighten.

Symptom	Possible Causes	Corrective Action
Unit runs continuously.	Temperature control set too cold.	Adjust temperature control.
	Dirty condenser or obstructed grille.	Check condenser and grille. Clean.
	Poor door seal.	Level cabinet. Adjust hinges. Replace gasket.
	Interior light remains on.	Check switch. Replace if necessary.
	Faulty condenser fan or evaporator fan.	Check fan and wiring. Replace if necessary.
	Faulty control.	Test control. Replace if failed.
	Refrigerant shortage or restriction.	Check for leak or restriction. Repair, evacuate and recharge system.
	Refrigerant overcharge.	Check for overcharge. Evacuate and recharge system.
	Air in system.	Check for low side leak. Repair, evacuate and recharge system.
Unit runs continuously. Temperature normal.	Ice on evaporator.	See “Ice on evaporator”.
Unit runs continuously. Temperature too cold.	Faulty defrost thermostat.	Check thermostat. Replace if necessary.
Noisy operation.	Loose flooring or floor not firm.	Repair floor or brace floor.
	Cabinet not level.	Level cabinet.
	Tubing in contact with cabinet, other tubing, or other metal.	Adjust tubing.
	Drip pan vibrating.	Adjust drain pan.
	Fan hitting another part.	Ensure fan properly aligned and all attaching hardware and brackets are tight and not worn. Tighten or replace.
	Worn fan motor bearings.	Check motor for loss of lubricant or worn bearings. Replace if necessary.
	Compressor mounting grommets worn or missing. Mounting hardware loose or missing.	Tighten hardware. Replace grommets if necessary.
	Free or loose parts causing or allowing noise during operation.	Inspect unit for parts that may have worked free or loose or missing screws. Repair as required.
Frost or ice on evaporator.	Defrost thermostat faulty.	Check defrost thermostat. Closes at $-10^{O}C$ / $14^{O}F$. Replace if failed.
	Evaporator fan faulty.	Check fan motor. Replace if failed.
	Defrost heater remains open.	Check defrost heater continuity. Replace if failed.
	Defrost control faulty.	Check control and replace if failed.
	Open wire or connector.	Check wiring and connections. Repair as necessary.
	Refrigerant shortage or restriction.	Check for leak or restriction. Repair, evacuate and recharge system.
Unit starts and stops frequently (cycles on and off).	Loose wire or thermostat connections.	Check wiring and connections. Repair as necessary.
	Supply voltage out of specification.	Check input voltage. Correct any supply problems.
	Overload protector open.	Check overload protector for continuity. If open, replace overload. NOTE: Ensure overload/compressor are below trip temperature before testing.
	Faulty compressor motor capacitor (some compressors do not require motor capacitor).	Check capacitor for open/short. Replace if necessary. NOTE: Discharge capacitor before testing.
	Faulty fan motor.	Check fan motor. Replace if failed.
	Restricted air flow.	Check condenser and grille for dirt. Clean.
	Refrigerant shortage or restriction.	Check for leak or restriction. Repair, evacuate and recharge system.
	Compressor hot.	Check compressor current draw.

11 DISASSEMBLY PROCEDURES

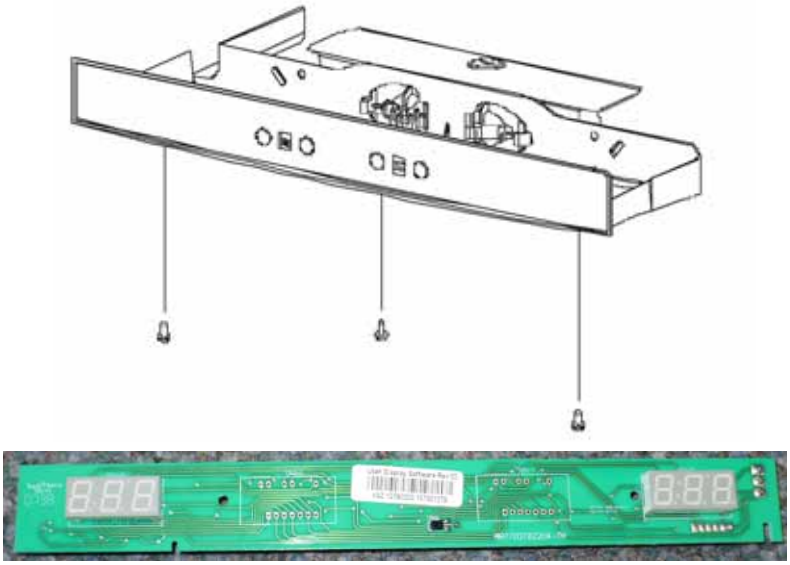
11.1 Fresh Food Compartment

11.1.1 Light Switch

Use a taped putty knife to carefully pry the light switch out of the liner. When the light switch is free of the compartment liner, remove the wires from the light switch. Remove the light switch from the unit.

11.1.2 Electronic Control (Full Electronic Specification Model (RX256DT7X1))

1. Remove the hex head screws holding the control to the cabinet.
2. Unplug the connectors from the cabinet harness and remove the control assembly.
3. Remove the cover of the board by squeezing the tabs on the cover to release the cover from the assembly to expose the electronic control.
4. Unplug the wires from the electronic control board and unclip it from the control assembly.



Full Electronic Specification Control (RX256DT7X1)

Full Electronic Specification Control Panel (RX256DT7X1)

11.1.3 Ice And Water Dispenser Board

1. Remove the drip tray by pulling it straight out from the door.
2. Remove the two hex screws at the bottom of the façade that were hidden by the drip tray.
3. Push down on the façade to release the retainer clips.
4. Remove the façade and disconnect the ten-pin connector from the dispenser board.
5. Reverse the procedure to reassemble.

Ice & Water Dispensing Board

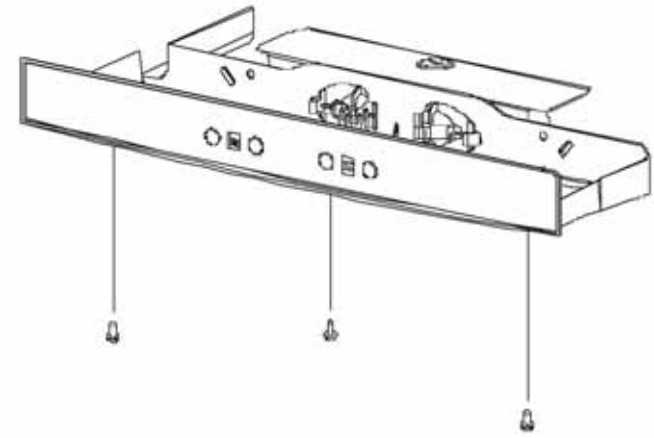
11.1.4 Main Control Board (Full Electronic Specification Model (RX256DT7X1))

Located at the rear of the cabinet alongside the compressor.

Main Control Board

11.1.5 Electronic Control (Mid Electronic Specification Models (RX256DT4X1, RX256ET2B1, RX256ET2W1))

1. Remove the hex head screws holding the control to the cabinet.
2. Unplug the connectors from the cabinet harness and remove the control assembly.
3. Remove the cover of the board by squeezing the tabs on the cover to release the cover from the assembly to expose the electronic control.
4. Unplug the wires from the electronic control board and unclip it from the control assembly.



Mid Electronic Specification Control (RX256DT4X1, RX256ET2B1, RX256ET2W1)

Mid Electronic Specification Control Panel (RX256DT4X1, RX256ET2B1, RX256ET2W1)

11.1.6 Electronically Controlled Damper

1. Remove the damper cover by removing the hex head screw and lifting off the damper.
2. Remove the foam insert by pulling it off the damper control.
3. Depress the two clips that hold the front of the damper in place to release the damper from the assembly. Lift the damper out.
4. Disconnect the wires from the damper and remove the damper.
5. Reverse the procedure to reassemble.

11.1.7 Fresh Food Thermistor

1. Remove the damper cover by removing the hex head screw to expose the thermistor.
2. Unclip the thermistor from the assembly.
3. Cut the wires at the thermistor to remove.

11.1.8 Water Filter Assembly

1. Remove the filter cover by opening the cover and pulling the rear left side of the cover to the left to release the cover from the holding pin.
2. The filter head can be released from the holding bracket by opening the tabs on the left side filter head and pulling downward and to the left to release the filter head.
3. The tubing needs to be disconnected from the water valves in the machine compartment (refer to Section 11.3.1).
4. After the tubing is disconnected from the water valves, pull the filter head and tubing out the front of the unit.
5. Reverse the procedure to reassemble.

NOTE: Make sure to note the tubing end colours when installing the new head and tubing assembly.

11.1.9 Water Tank Assembly

1. Remove the crisper drawers from the fresh food compartment.
2. Remove the hex screw holding the water tank to the rear bulkhead.
3. On the rear of cabinet, remove the hex screws holding the water valve cover plate.
4. Remove the plate and tubing away from the cabinet to expose the water valves and tubing.
5. Disconnect the water tube coming from the water tank from the secondary valve. Remove the compression nut from the tubing.
6. On the front of the unit, remove the toe grill and disconnect the water coupler going to the water dispenser.
7. Remove the compression nut from the water tubing on the cabinet side of the connection.
8. From the rear of cabinet, pull the water tube out of the conduit going to the dispenser.
9. From the inside of the fresh food compartment, pull the tubing up and out of the cabinet to complete removal of the water tank.
10. Reverse the procedure to reassemble.

11.1.10 Crisper Light Cover and Socket

1. Push down and forward on the light cover and lift off the tabs.
2. Remove the light bulb and pry the socket with a taped putty knife to release the socket from the liner.
3. Disconnect the wires from the socket.
4. Reverse the procedure to reassemble.

11.2 Freezer Compartment

11.2.1 Freezer Light Socket

1. Remove the auger ice bucket.
2. Remove the auger motor assembly (refer to Section 11.2.2).
3. Remove the light bulbs.
4. Disconnect the wiring from the light sockets.
5. Squeeze the retaining tab to release the sockets.
6. Reverse the procedure to reassemble.

11.2.2 Auger Motor Assembly

1. Remove the auger ice bucket and the fast freeze shelf.
2. Remove the light bulbs
3. Remove the two hex head screws, one from each side of the cover.
4. Lift and slide the assembly toward the front. Disconnect the wiring harness and remove the assembly.

11.2.3 Auger Motor

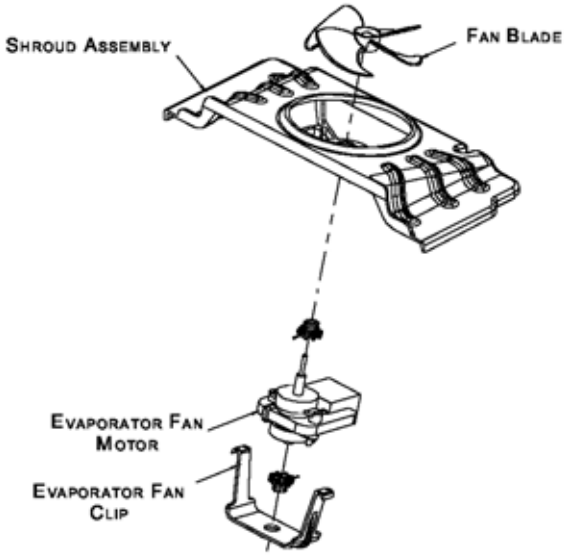
1. Remove the auger drive hex nut.
2. Remove the three hex nuts holding the auger motor to the assembly.
3. Disconnect the wires from the auger motor capacitor.
4. Reverse the procedure to reassemble.

11.2.4 Auger Motor Capacitor

1. Remove the auger ice bucket and the fast freeze shelf.
2. Remove the auger motor assembly (refer to Section 11.2.2).
3. Disconnect the leads from the capacitor. Remove the hex screw and remove the capacitor.
4. Reverse procedure to reassemble.

11.2.5 Evaporator Fan Motor Assembly

1. Remove all freezer shelving.
2. Remove the lower evaporator cover hex head screws.
3. Remove the evaporator cover.
4. Disconnect the evaporator fan wiring and ground from the motor.
5. Raise the top freezer cover about 50mm.
6. Grasp and pull the complete evaporator motor assembly forward.
7. Remove the assembly from the freezer.



11.2.6 Evaporator Fan Motor and Fan Blade

1. Remove the evaporator fan motor assembly (refer to Section 11.2.5).
2. Remove the evaporator fan blade by pulling the blade off the evaporator fan shaft.
3. Remove the fan motor by squeezing the motor retainer clips together to release the retainer.
4. Remove the retainer and slide the motor out.
5. Reverse the procedure to reassemble. The evaporator fan blade should be pushed down on the shaft until it is seated.

11.2.7 Freezer Thermistor

1. Remove the icemaker bucket.
2. Remove the icemaker by removing the hex head screws and unplugging the icemaker harness.
3. Remove the upper freezer shelves to access the freezer back.
4. Remove the freezer back hex head screws.
5. Rotate the back to expose the freezer thermistor.
6. Cut the wire at the thermistor and remove the thermistor.

11.2.8 Evaporator Removal

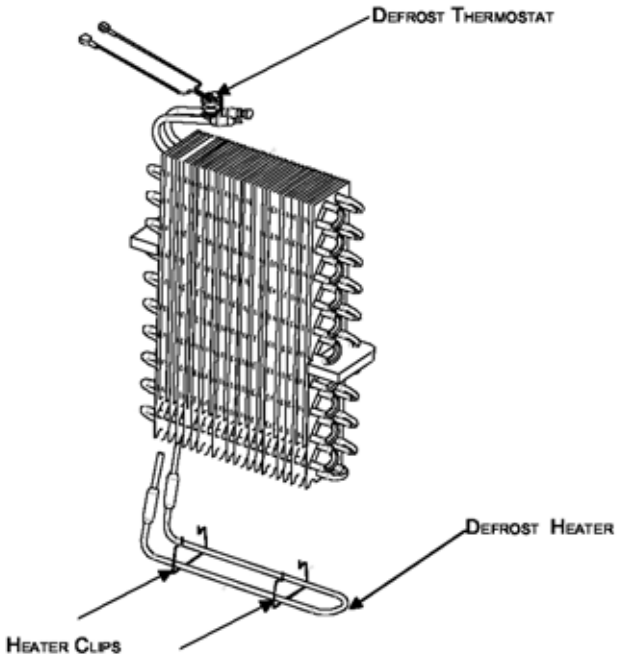
NOTE: Reclaim the refrigerant per instructions in “Service Procedures” before attempting evaporator removal. To avoid system contamination, do not leave the system open for more than 10 minutes.

1. Remove all freezer shelving.
2. Remove the lower evaporator cover hex head screws.
3. Remove the evaporator cover.
4. Remove the defrost thermostat and defrost heater from the coil (refer to Sections 11.2.9 and 11.2.10).
5. Release the evaporator coil from the clips by pulling the coil off the clips.
6. Unsweat the evaporator coil after completing reclaiming procedures found in Section 12 of this manual.
7. Reverse the procedure to reassemble.

11.2.9 Defrost Terminator (Thermostat)

1. Remove all freezer shelving.
2. Remove the lower evaporator cover hex head screws.
3. Remove the evaporator cover.
4. Disconnect the orange lead from the defrost heater.
5. Cut the brown lead close to the defrost terminator.
6. Unclip the defrost terminator from the evaporator coil.

7. Replace the terminator and use wire nut(s) included in the defrost terminator kit.
8. Reverse the procedure to reassemble.
9. Ensure the thermostat is fitted to the suction line.



11.2.10 Defrost Heater

1. Remove all freezer shelving.
2. Remove the lower evaporator cover hex head screws.
3. Remove the evaporator cover.
4. Grasp the evaporator by the left side to release the coil from the retainer clips.
5. Turn the evaporator slightly to expose the heater leads.
6. Disconnect the heater leads from the harness.
7. Release the heater clips holding the heater to the evaporator coil.
8. Remove the heater.
9. Reverse the procedure to reassemble.
10. Ensure that the defrost thermostat is not directly exposed to the heat from the defrost element.

11.2.11 Ice Maker Removal

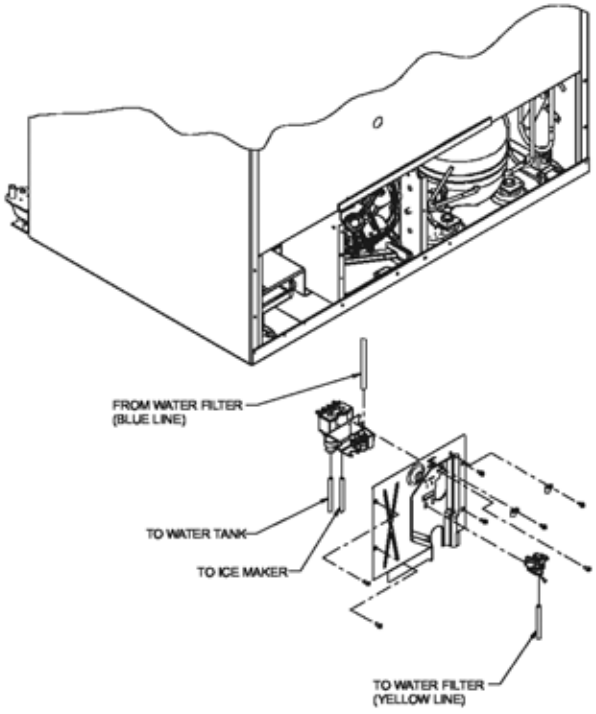
1. Remove the auger ice bucket.
2. Disconnect the icemaker harness from the rear bulkhead.
3. Remove the front two screws from the left ice bucket rail.
4. Remove the screws supporting the icemaker from the side bulkhead.
5. Remove the icemaker.
6. Reverse the procedure to reassemble.

NOTE: Make sure to get the fill tube inserted fully into the fill cup when reassembling.

11.3 Machine Compartment

11.3.1 Water Valve

1. Remove the water valve cover plate on the left side of the machine compartment.
2. Disconnect the wiring from the water valve. Reference the colour/size of the connector to the correct solenoid.
3. Disconnect the water tubing from the water valve. Reference or mark the tubing to ensure correct hook-up upon reassembly.
4. Remove the hex screw attaching the valve to the water valve cover plate.
5. Reverse the procedure to reassemble.



11.3.2 Condenser Fan Motor and Blade

1. Remove the machine compartment hex screws.
2. Remove the cover.
3. Disconnect the wiring harness connector from the condenser motor.
4. Remove the hex screws from the mounting brackets attached to the motor.
5. Remove the motor and fan blade out the rear of the shroud.
6. Remove the retainer nut to remove the fan blade.
7. Reverse the procedure to reassemble.

11.3.3 Compressor

1. Remove the machine compartment hex screws.
2. Remove the cover.
3. Remove the bale strap that retains the overload/relay/capacitor.
4. Pull the overload/relay/capacitor assembly off the compressor terminals.
5. Disconnect the ground wires attached to the compressor.
6. Follow the reclaiming procedures in Section 13 of this manual.
7. Remove the drier.
8. Unbraze the low and high pressure lines at the compressor.
9. Remove the compressor mounting bolts.
10. Lift the compressor out of the unit.

NOTE: Install the new drier and compressor as per instructions in Section 13. Evacuate and recharge the sealed system as per instructions in Section 13.

11.3.4 Condensate Drain Tube

1. Remove the machine compartment hex screws.
2. Remove the cover.
3. Locate and remove the hex screw holding the drain tube in place.
4. Remove the drain tube by pulling down on the tube.
5. Reverse the procedure to reassemble

11.3.5 Condensate Drain Pan

NOTE: The condensate drip pan may spill when steps 1 thru 4 are performed. Have a towel ready to mop up any spillage.

1. Remove the machine compartment and water valve cover hex screws.
2. Remove the covers.
3. Remove the screws holding the condenser shroud to the base pan.
4. Raise the rear of unit up about 75mm and block up.
5. Remove the two rear torx head screws holding the rear of the base pan to the cabinet (located under the base pan).
6. Lower the cabinet back to the floor after removing the blocks.
7. Raise the cabinet off the base pan enough to allow removal of the condenser shroud. Disconnect any wiring attached to the shroud to ease removal of the shroud.
8. After the shroud is removed, bend the copper tubing up out of the condensate pan to allow removal of the condensate pan.
9. Reverse the procedure to reassemble.

11.3.6 Overload/Relay

1. Remove the machine compartment hex screws.
2. Discharge the capacitor (if unit is so equipped) through a 10.000-ohm resistor.
3. Using fingers and a standard screwdriver, press and pry the bale strap off the overload/relay/capacitor assembly.
4. Reverse the procedure to reassemble.

11.3.7 Condenser Removal

NOTE: The condenser is removed by laying the unit on its back, and requires at least two people to carry out this procedure.

1. Remove the machine compartment hex screws.
2. Remove the cover.
3. Remove the condenser fan motor and shroud.
4. Disconnect the harness plug connecting the machine compartment to the cabinet.
5. Follow reclaiming procedures in Section 13 of this manual.
6. Remove the drier and unbraze the tubing connecting the machine compartment to the cabinet.
7. Disconnect all cabinet wiring from the machine tray.
8. With the help of second person, lay the unit on its back on a raised surface.
9. Remove the four torx head screws holding the base pan to the cabinet.
10. Lift and remove the base pan to access the condenser coil.
11. Unbraze the condenser coil from the connecting tubing.
12. Remove the condenser coil by unsnapping it from retainers in the base pan.
13. Reverse the procedure to reassemble.

11.4 Bottom of Cabinet

11.4.1 Front Levelling Rollers

1. Remove the toe grill and hinge caps.
2. Raise and block the unit up 75mm off the floor.
3. Screw the front leveller bolts until they are loose from the levelling roller.
4. Slide the levelling roller out the rear of the slot to remove the roller.
5. Reverse the procedure to reassemble.

11.4.2 Rear Levelling Rollers

1. Remove the machine compartment and water valve cover hex screws.
2. Remove the covers.
3. Tilt the unit forward lifting the rear of unit up about 75mm.
4. Block the unit up to keep weight off the rear levelling rollers.
5. Unscrew the levelling bolts from the rear levelling rollers.
6. Push the levelling roller out the slots in the bottom of the unit.
7. Reverse the procedure to reassemble.

11.5 Cabinet Doors

11.5.1 Door Gaskets

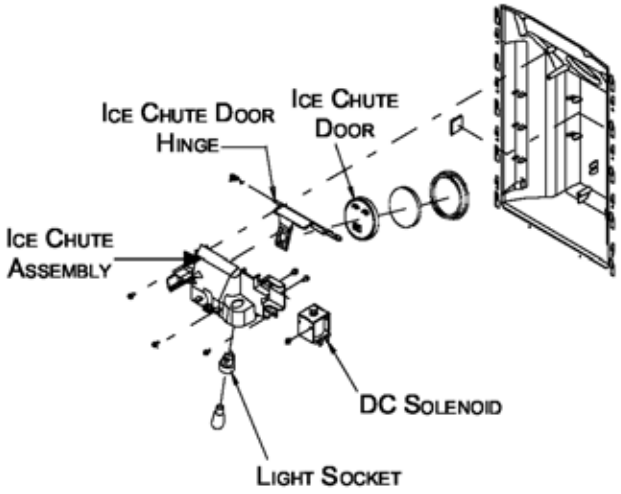
1. Grasp the gasket in the upper corners and pull the gasket out of the dart retainer.
2. When reinstalling the door gaskets, start at the corners, pushing the dart edge into the retainer and make sure to seat the gasket flush to the door.

11.5.2 Dispenser Façade

1. Remove the drip tray by pulling it straight out from the door.
2. Remove the two hex screws at the bottom of the façade that were hidden by the drip tray.
3. Push down on the façade to release the retainer clips.
4. Remove the façade and disconnect the ten-pin connector from the control board.
5. Reverse the procedure to reassemble.

11.5.3 Dispenser Ice Chute Door

1. Remove the dispenser façade (refer to Section 11.5.2).
2. Remove the ice chute assembly (refer to Section 11.5.5).
3. After the ice chute assembly is removed, unsnap the ice chute dispenser door from the assembly.
4. Retain the spring if good, replace if bad.
5. Remove the rubber seal from the door and replace if bad.
6. Reverse the procedure to reassemble.



11.5.4 Dispenser Light Socket

1. Remove the dispenser façade (refer to Section 11.5.2).
2. Remove the light bulb.
3. Disconnect the wires to the socket assembly.
4. Squeeze the tabs located by the terminals to release the socket.
5. Reverse the procedure to reassemble.

11.5.5 Dispenser D/C Solenoid

1. Remove the dispenser façade (refer to Section 11.5.2).
2. Remove the dispenser water tube clip.
3. Remove the water tube from the assembly collar.
4. Remove the wires from the dispenser light socket.
5. Disconnect the ground wire from the solenoid assembly.
6. Disconnect the wires from the D/C solenoid.
7. Remove the screws holding the D/C solenoid and ice chute assembly.
8. Remove the complete assembly.
9. Rotate to the backside and remove the screws holding the D/C solenoid to the ice chute assembly.
10. Lift the ice chute door to release the plunger from the retainer.
11. Slide the D/C solenoid out of the side of the ice chute assembly.
12. Reverse the procedure to reassemble.

11.5.6 Dispenser Water Tube

1. Remove the toe grill and left hinge cap to expose the dispenser water line coupler.
2. Disconnect the water line coupler.
3. Remove the compression nut and sleeve from the door side of the coupler.
4. Remove the dispenser façade (refer to Section 11.5.2).
5. Pull the water tube up from the conduit in the cavity to remove the water tube.
6. Reverse the procedure to reassemble.

12 SEALED SYSTEM DIAGNOSIS

CONDITION	Suction pressure variation from normal	Head pressure variation from normal	T1 inlet temperature variation from normal	T2 outlet temperature variation from normal	T3 suction temperature variation from normal	Wattage variation from normal
Refrigerant Overcharge	Increase	Increase	Warmer	Warmer	Colder	Increase
Shortage of Refrigerant	Decrease	Decrease or Increase See Text	Colder	Warmer	Warmer	Decrease
Partial Restriction	Decrease	Decrease or Increase See Text Note 2	Colder	Warmer	Warmer	Decrease
Air in System	Near Normal	Increase	Warmer	Warmer	Warmer	Increase
Low Ambient Installations (High Ambients the	Decrease	Decrease	Colder	Warmer	Warmer	Decrease
Additional Heat Load	Increase	Increase	Warmer	Warmer	Warmer	Increase
Inefficient Compressor	Increase	Normal or Decrease	Warmer or Colder	Warmer	Warmer	Decrease

12.1 Symptoms of an Overcharge

- Above normal freezer temperatures.
- Longer than normal or continuous run.
- Freezing in fresh food compartment, especially on forced air meat keeper models.
- Higher than normal suction and head pressure.
- Higher than normal wattage.
- Evaporator inlet and outlet temperatures warmer than normal.
- Suction tube temperature below ambient. Always check for separated heat exchanger when suction temperature is colder than ambient.

Various conditions could indicate an overcharge. For example, if the cooling coil is not defrosted at regular intervals, due to a failure of the defrost system, the refrigerant will "flood out" and cause the suction line to frost or sweat. The cause of this problem should be corrected rather than to purge refrigerant from the system. Running the freezer section colder than necessary (-2 to -1^{O}F is considered normal package temperatures) or continuous running of the compressor for a variety of reasons, or the freezer fan motor not running, may give the indication of an overcharge.

12.2 Symptoms of Refrigeration Shortage

- Rise in food product temperature in both compartments. (See Note 1 below.)
- Long or continuous run time.
- Look for obvious traces of oil that would occur due to a leak or cracked refrigerant line.
- Lower than normal wattage.
- Compressor will be hot to touch because of the heat generated by the motor windings from long continuous running. It will not be as hot as it would be with a full charge and long run times for some other reason such as a dirty condenser.

- Depending on the amount of the shortage, the condenser will not be hot, but closer to room temperature. The capillary tube will be warmer than normal from a slight shortage.
- If the leak is on the high side of the system, both gauges will show lower than normal readings and will show progressively lower readings as this charge becomes less. The suction pressure gauge will probably indicate a vacuum.
- If the leak is on the low side of the system, the suction pressure gauge will be lower than normal (probably in a vacuum) and the head pressure gauge will be higher than normal. It will probably continue to become higher because air drawn in through the leak is compressed by the compressor and accumulates in the high side (condenser) of the system.
- Only partial frosting of evaporator instead of even frosting of entire coil.

NOTE 1: Usually the first thing that is noticed by the user is a rise in food temperatures. Although temperatures will rise in both the freezer section and the food compartment, the frozen meats and vegetables will not thaw immediately. The customer doesn't associate the problem with the freezer section and will first notice that milk and other food beverages are not cold enough.

Under some circumstances, such as in the case of forced air meat keeper model with a slight shortage of refrigerant, freezing in the food compartment may be experienced due to the additional running time. With a refrigerant leak, however, it always gets worse and as the refrigerant charge decreases the temperature will continue to rise.

With a shortage of refrigerant the capillary line will not have a full column of liquid. As a result, there is a noticeable hissing sound in the evaporator. This should not be mistaken for the regular refrigerant boiling sounds that would be considered normal.

12.3 Symptoms of a Restriction

Always remember refrigeration (cooling) occurs on the low pressure side of a partial restriction (obviously a total restriction will completely stop the circulation of refrigerant and no cooling will take place).

Physically feel the refrigeration lines when a restriction is suspected. The most common place for a restriction is at the drier-filter or at the capillary tube inlet or outlet. If the restriction is not total there will be a temperature difference at the point of restriction, the area on the evaporator side will be cooler. In many cases frost and/or condensation will be present. A longer time is required for the system to equalize.

Any kinked line will cause a restriction, so the entire system should be visually checked.

A slight restriction will give the same indications as a refrigerant shortage with lower than normal backpressure, head pressure, and wattage, warmer product temperatures.

NOTE 2: If a total restriction is on the discharge side of the compressor, higher than normal head pressures and wattages would result. This is true only while the low side is being pumped out and if the restriction was between the compressor and the first half of the condenser.

To diagnose for a restriction versus a refrigerant shortage, discharge the system, replace the drier-filter, evacuate and recharge with the specified refrigerant charge. If the unit performs normally three possibilities exist:

1. refrigerant loss.
2. partially restricted drier/filter.
3. moisture in system.

if the unit performs as it previously did, you may have a restricted capillary line or condenser or kinked line. Find the point of restriction and correct it.

A restriction reduces the flow rate of the refrigerant and consequently reduces the rate of heat removal. Complete restriction may be caused by moisture, solid contaminants in the system, or a poorly soldered joint.

Moisture freezes at the evaporator inlet end of the capillary tube or solid contaminants collect in the drier/filter. The wattage drops because the compressor is not circulating the usual amount of refrigerant.

As far as pressure readings are concerned, if the restriction, such as a kinked line or a joint soldered shut is anywhere on the low side, the suction pressure would probably be in a vacuum while the head pressure will be near normal. If the restriction is on the high side, the suction pressure, again, will probably be in a vacuum while the head pressure will be higher than normal during the pump out period described earlier. In either case, it will take longer than the normal ten minutes or so for the head pressure to equalize with the low side after the compressor stops.

12.4 Symptoms of Air in System

This can result from a low side leak or improper servicing. If a leak should occur on the low side, the temperature control would not be satisfied; thus continuous running of the compressor would result. The compressor would eventually pump the low side into a vacuum, drawing air and moisture into the system. Air and R134A do not mix, so the air pressure would be added to the normal head pressure, resulting in higher than normal head pressures.

One way to determine if air is in the system is to read the head pressure gauge with the product off and evaporator and condenser at the same temperature and then take the temperature on the condenser outlet tube. This temperature should be within 3° or 4° of what the Pressure-Temperature Relation chart shows for given idle head pressure. If the temperature is considerably lower than the idle head pressure of the gauge this would indicate there is air in the system.

Thorough leak checking is necessary. Correct the source of the leak. Do not attempt to purge off the air because this could result in the system being undercharged. It is best to discharge, replace drier, evacuate and recharge with the specified refrigerant charge.

12.5 Symptoms of Low or High Ambient Temperature Installation

Lower ambient air temperature reduces the condensing temperature and therefore reduces the temperature of the liquid entering the evaporator. The increase in refrigeration effect due to operation in a lower ambient results in a decrease in power consumption and run time. At lower ambients there is a reduction in cabinet heat leak which is partially responsible for lower power consumption and run time.

An increase in refrigeration effect cannot be expected below a certain minimum ambient temperature. This temperature varies with the type and design of the product.

Generally speaking, ambient temperatures cannot be lower than 60°F without affecting operating efficiency. Conversely, the higher the ambient temperature the higher the head pressure must be to raise the high side refrigerant temperature above that of the condensing medium. Therefore, head pressure will be higher as the ambient temperature rises. Refrigerators installed in ambient temperatures lower than 60°F will not perform as well because the pressures within the system are generally reduced and unbalanced. This means that the lower head pressure forces less liquid refrigerant through the capillary line. The result is the symptoms of a refrigerant shortage. The lower the ambient temperature the more pronounced this condition becomes.

When a point where the ambient temperature is below the cut-in of the Temperature Control is reached, the compressor won't run.

The drain traps will freeze in ambient temperatures of 32°F or below.

Heat Load

A greater heat load can result from the addition of more than normal supply of foods, such as after doing the weekly shopping. Other items contributing to an additional heat load would be excessive door openings, poor door sealing, interior light remaining on, etc.

An increase in heat being absorbed by the refrigerant in the evaporator will affect the temperature and pressure of the gas returning to the compressor. Compartment temperatures, power consumption, discharge, and suction pressures are all affected by heat load.

Pressures will be higher than normal under heavy heat load.

13 SEALED SYSTEM SERVICE PROCEDURES

13.1 Service Equipment

Listed below is equipment needed for proper servicing of HFC134a systems. Verify equipment is confirmed by manufacturer as being compatible with H FC134a and ester oil system.

Equipment must be exclusively used for HFC134a. Exclusive use of equipment only applies to italic items.

- **Evacuation pump**
  Check with vacuum pump supplier to verify equipment is compatible for HFC134a. Robinair, Model 15600 2 stage, 6 cubic feet per minute pump is recommended.
- ***Four-way manifold gauge set, with low loss hoses***
- **Leak detector**
- ***Charging cylinder***
- ***Line piercing saddle valve***
  (Schroeder valves). Seals must be HFC134a and ester oil compatible. Line piercing valves may be used for diagnosis but are not suitable for evacuation or charging, due to minute holes pierced in tubing. Do not leave mechanical access valves on system. Valves eventually will leak. Molecules of HFC134a are smaller than other refrigerants and will leak where other refrigerants would not.
- ***Swagging tools***
- ***Flaring tools***
- ***Tubing cutter***
- **Flux**
- **Sil-Fos**
- **Silver solder**
- ***Oil for swagging and flaring***
- ***Copper tubing***
- **Dry nitrogen**
  99.5% minimum purity, with –40^{O}F or lower dew point
- **Crimp tool**
- **Tube bender**
- **Micron vacuum gauge**
- ***Process tube adaptor kit***
- **Heat trap paste**
- ***ICI appliance grade HFC134a***

13.2 Drier Replacement

Before opening refrigeration system, recover H FC 134a refrigerant for safe disposal.

Every time sealed HFC134a system is repaired, drier filter must be replaced.

Cut drier out of system by completing the following steps. Do not unbraze drier filter. Applying heat to remove drier will drive moisture into system.

⚠ WARNING

To avoid death or severe personal injury, cut drier at correct location. Cutting drier at incorrect location will allow desiccant beads to scatter. If spilled, completely clear area of beads.

1. Score capillary tube close to drier and break.
2. Reform inlet tube to drier allowing enough space for large tube cutter.
3. Cut circumference of drier at 32mm below condenser inlet tube joint to drier.

4. Remove drier.
5. Apply heat trap paste on post condenser tubes to protect grommets from high heat.
6. Unbraze remaining part of drier. Remove drier from system.
7. Discard drier in safe place. Do not leave drier with customer. If refrigerator is under warranty, old drier must accompany warranty claim.

13.3 Refrigerant Precautions

⚠ WARNING
To avoid risk of personal injury, do not allow refrigerant to contact eyes or skin.

⚠ CAUTION
To avoid risk of property damage, do not use refrigerant other than as shown on unit serial number identification plate.

NOTE: All precautionary measures recommended by refrigerant manufacturers and suppliers apply and should be observed.

13.4 Line Piercing Valves

Line piercing valves can be used for diagnosis, but are not suitable for evacuating or charging due to holes pierced in tubing by valves.

NOTE: Do not leave line piercing valves on system. Connection between valve and tubing is not hermetically sealed. Leaks will occur.

13.5 Open Lines

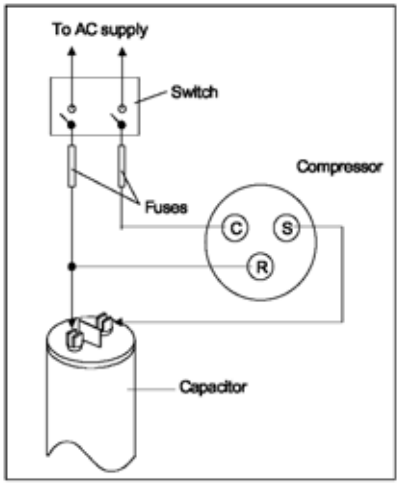
During any processing of refrigeration system, never leave lines open to atmosphere. Open lines allow water vapour to enter system, making proper evacuation more difficult.

13.6 Compressor Operational Test

(Short term testing only)

If compressor voltage, capacitor, overload, and motor winding tests are successful (do not indicate a fault), perform the following test:

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a resistor.
   NOTE: Not all units have run capacitor.
3. Remove leads from compressor terminals.
4. Attach test cord to compressor windings.
   - Common lead on test cord attaches to C terminal on compressor.
   - Start lead on test cord attaches to S terminal on compressor.
   - Run lead on test cord attaches to M terminal on compressor.



Attaching Capacitor for Compressor Test

5. Connect a known good capacitor into circuit as shown above. For proper capacitor size and rating, see technical data sheet for unit under test.

NOTE: Ensure test cord cables and fuses meet specifications for unit under test (see Technical Sheet for unit under test).

6. Replace compressor protector cover securely.
7. Plug test cord into outlet, then press and release start cord switch.

> **⚠ CAUTION**
> To avoid risk of damage to compressor windings, immediately disconnect (unplug) test cord from power source if compressor does not start. Damage to compressor windings occurs if windings remain energised when compressor is not running.

If compressor runs when direct wired, it is working properly. Malfunction is elsewhere in system.

If compressor does not start when direct wired, recover system at high side. After the system is recovered, repeat compressor direct wire test.

If compressor runs after system is recovered (but would not operate when wired direct before recovery) a restriction in sealed system is indicated.

If motor does not run when wired direct after recovery, replace faulty compressor.

13.7 Dehydrating Sealed Refrigeration System

Moisture in a refrigerator sealed system exposed to heat generated by the compressor and motor reacts chemically with refrigerant and oil in the system and forms corrosive hydrochloric and hydrofluoric acids. These acids contribute to breakdown of motor winding insulation and corrosion of compressor working parts, causing compressor failure.

In addition, sludge, a residue of the chemical reaction, coats all surfaces of sealed system, and will eventually restrict refrigerant flow through capillary tube.

To dehydrate sealed system, evacuate system (see paragraph *Evacuation).*

13.8 Leak Testing

> **⚠ DANGER**
> To avoid risk of serious injury or death from violent explosions, NEVER use oxygen or acetylene for pressure testing or cleaning out of refrigeration systems. Free oxygen will explode on contact with oil. Acetylene will explode spontaneously when put under pressure.

It is important to check sealed system for refrigerant leaks. Undetected leaks can lead to repeated service calls and eventually result in system contamination, restrictions, and premature compressor failure.

Refrigerant leaks are best detected with halide or electronic leak detectors.

13.8.1 Testing Systems Containing a Refrigerant Charge

1. Stop unit operation (turn refrigerator off).
2. Holding leak detector exploring tube as close to system tubing as possible, check all piping, joints, and fittings.

NOTE: Use leak detection fluid on areas leak detector cannot reach or reliably test.

13.8.2 Testing Systems Containing No Refrigerant Charge

1. Connect cylinder of nitrogen, through gauge manifold, to process tube of compressor and liquid line strainer.

2. Open valves on nitrogen cylinder and gauge manifold. Allow pressure to build within sealed system.
3. Check for leaks using leak detection fluid.

If a leak is detected in a joint, do not to attempt to repair by applying additional brazing material. Joint must be disassembled, cleaned and rebrazed. Capture refrigerant charge (if system is charged), unbraze joint, clean all parts, then rebraze.

If leak is detected in tubing, replace tubing. If leak is detected in either coil, replace faulty coil.

13.9 Restrictions

13.9.1 Symptoms

Restrictions in sealed system most often occur at capillary tube or filter drier, but can exist anywhere on liquid side of system.

Restrictions reduce refrigerant flow rate and heat removal rate. Wattage drops because compressor is not circulating normal amount of refrigerants.

Common causes of total restrictions are moisture, poorly soldered joints, or solid contaminants. Moisture freezes at evaporator inlet end of capillary tube. Solid contaminants collect in filter drier.

If restriction is on low side, suction pressure will be in a vacuum and head pressure will be near normal.

If restriction is on high side, suction pressure will be in a vacuum and head pressure will be higher than normal during pump out cycle.

Refrigeration occurs on low-pressure side of partial restriction. There will be a temperature difference at the point of restriction. Frost and/or condensation will be present in most case at the point of restriction. Also, system requires longer to equalize.

Slight or partial restriction can give the same symptoms as refrigerant shortage, including lower than normal backpressure, head pressure, wattage, and warmer temperatures.

Total restriction on the discharge side of compressor, when restriction is between compressor and first half of condenser, results in higher than normal head pressure and wattage while low side is being pumped out.

13.9.2 Testing for Restrictions

To determine if a restriction exists:

1. Attach gauge and manifold between suction and discharge sides of sealed system.
2. Turn unit on and allow pressure on each side to stabilize. Inspect condenser side of system. Tubing on condenser should be warm and temperature should be equal throughout (no sudden drops at any point along tubing).
   - If temperature of condenser tubing is consistent throughout, go to step 4.
   - If temperature of condenser tubing drops suddenly at any point, tubing is restricted at point of temperature drop (if restriction is severe, frost may form at point of restriction and extend down in direction of refrigerant flow in system). Go to step 5.
3. Visually check system for kinks in refrigeration line which is causing restriction. Correct kink and repeat step 2.
4. Turn unit off and time how long it takes high and low pressure gauges to equalize.
   - If pressure equalization takes longer than 10 minutes, a restriction exists in the capillary tube or drier filter. Go to step 5.
   - If pressure equalization takes less than 10 minutes, system is not restricted. Check for other possible causes of malfunction.
5. Recover refrigerant in sealed system.
   NOTE: Before opening any refrigeration system, capture refrigerant in system for safe disposal.
6. Remove power from unit.

⚠ CAUTION

To avoid risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

7. Remove and replace restricted device.
8. Evacuate sealed system.
9. Charge system to specification.

NOTE: Do not use captured or recycled refrigerant in units. Captured or recycled refrigerant voids any compressor manufacturer's warranty.

NOTE: Charge system with exact amount of refrigerant. Refer to unit serial plate for correct refrigerant charge. Inaccurately charged system will cause future problems.

13.10 Evacuation and Charging

13.10.1 Evacuation

⚠ CAUTION

To avoid risk of fire, sealed refrigeration system must be air free. To avoid risk of air contamination, follow evacuation procedures exactly.

NOTE: Before opening any refrigeration system, EPA regulations require refrigerant in system to be captured for safe disposal.

Proper evacuation of sealed refrigeration system is an important service procedure. Usable life and operational efficiency greatly depends upon how completely air, moisture and other non-condensables are evacuated from sealed system.

Air in sealed system causes high condensing temperature and pressure, resulting in increased power requirements and reduced performance.

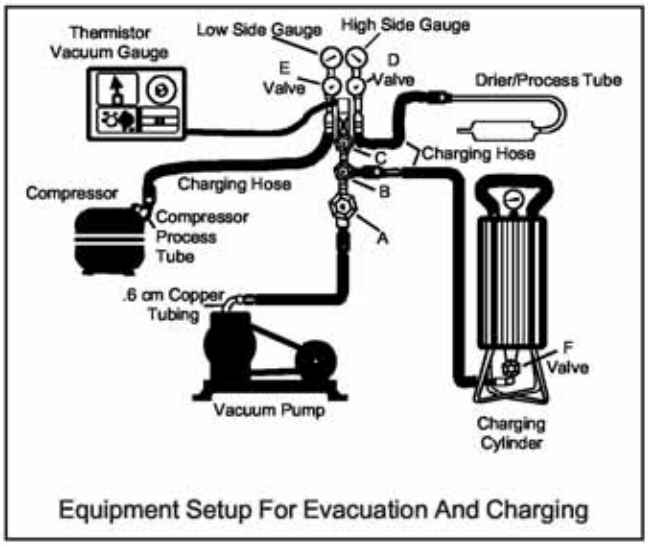
Moisture in sealed system chemically reacts with refrigerant and oil to form corrosive hydrofluoric and hydrochloric acids. These acids attack motor windings and parts, causing premature breakdown.

Before opening system, evaporator coil must be at ambient temperature to minimize moisture infiltration into system.

Evacuation

To evacuate sealed refrigeration system:

1. Connect vacuum pump, vacuum tight manifold set with high vacuum hoses, thermocouple vacuum gauge and charging cylinder as shown in illustration.
   Evacuation should be done through I.D. opening of tubes, not through line piercing valve.
2. Connect low side line to compressor process tube.
3. Connect high side line to drier/process tube.
4. Evacuate both simultaneously. With valve “C” and “F” closed, open all other valves and start vacuum pump.



Equipment Setup For Evacuation And Charging

5. After compound gauge (low side) drops to approximately 29 inches gauge, open valve “C” to vacuum thermocouple gauge and take micron reading.
   NOTE: A high vacuum pump can only produce a good vacuum if oil in pump is not contaminated.
6. Continue evacuating system until vacuum gauge registers 600 microns.

7. At 600 microns, close valve “A” to vacuum pump and allow micron reading in system to balance. Micron level will rise.
   - If in 2 minutes, micron level stabilizes at 1000 microns or below, system is ready to be charged.
   - If micron level rises above 1000 microns and stabilizes, open valve “A” and continue evacuating.
   - If micron reading rises rapidly and does not stabilize, a leak still exists in system.
     - Close valve “A” to vacuum pump and valve “C” to vacuum gauge. Invert charging cylinder and open charging cylinder valve “F” to add partial charge for leak checking. With leak detector, check manifold connections and system for leaks. After locating leak, capture refrigerant, repair leak, and begin at step 1.

13.10.2 Charging

NOTE: Do not use captured or recycled refrigerant in units. Captured or recycled refrigerant voids any warranty.

NOTE: Charge system with exact amount of refrigerant. Refer to unit serial plate for correct refrigerant charge. Inaccurately charged system will cause future problems.

To charge system:

1. Close valves “A” to vacuum pump and “C” to vacuum gauge and “E” to low side manifold gauge.
2. Set scale on dial-a-charge cylinder for corresponding HFC134a pressure reading.
3. Open valve “F” to charging cylinder and let exact amount of refrigerant flow from cylinder into system.

Close valve.

Low side gauge pressure should rise shortly after opening charging cylinder valve as system pressure equalizes through capillary tube.

If pressure does not equalize, a restriction typically exists at capillary/drier braze joint.

4. If pressure equalizes, open valve “E” to low side manifold gauge and pinch off high side drier process tube.
5. Start compressor and draw remaining refrigerant from charging hoses and manifold into compressor through compressor process tube.
6. To check high side pinch-off drier process tube, close valve “D” to high side gauge. If high side pressure rises, repeat high side pinch-off and open valve “D”. Repeat until high side pinch-off does not leak.
7. Pinch-off compressor process tube and remove charging hose. Braze stub closed while compressor is operating.
8. Disconnect power. Remove charging hose and braze high side drier process tube closed.
9. Recheck for refrigerant leaks.

13.10.3 Refrigerant Charge

Refrigerant charge in all capillary tube systems is critical and exact amount is required for proper performance. Factory charges are shown on serial plate.

NOTE: Do not use a refrigerant other than that shown on serial plate.

13.10.4 HFC134a Service Information

HFC134a has an ozone depletion potential (ODP) factor of 0.0 and a global warming potential (GWP) factor of 0.27. HFC134a is not flammable and has acceptable toxicity levels.

13.10.5 Health, Safety, and Handling

Health, safety and handling considerations for HFC134A are virtually no different than those for older CFC12/R12.

Health, Safety, and Handling	CFC12	HFC134a
Allowable overall exposure limit	1,000 ppm	Same
Vapor exposure to skin	No effect	Same
Liquid exposure to skin	Can cause frostbite	Same
Vapor exposure to eye	Very slight eye irritant	Same
Liquid exposure to eye	Can cause frostbite	Same
Above minimum exposure limit	Can cause Asphyxiation, Tachycardia, and Cardia Arrhythmias	Same
Safety and handling	Wear appropriate skin and eye protection. Use with adequate ventilation.	Same
Spill management	Remove or extinguish ignition or combustion sources. Evacuate or ventilate area.	Same
Fire explosion hazards	May decompose if contact with flames and heating elements. Container may explode if heated due to resulting pressure rise. Combustion products are toxic.	Same
Disposal procedures	Recycle or reclaim.	Same

Comparison of CFC12 and HFC134a Properties

Properties/Characteristics	CFC12	HFC134a
Ozone Depletion Potential (ODP)	1.0*	0.0*
Global Warming Potential (GPW)	3.2*	0.27*
Molecular weight	121	102
Boiling point at 1 atmosphere	-22°F (-30°C)	-15°F (-126°C)
Vapor pressure at 77°F (25°C)	80 psig	82 psig
Liquid density at 77°F (25°C)	82 lb/ft^3	75 lb/ft^3
Flammability	No	No
High-side system operating Pressure at 65°F (18°C)	HFC134a approximately 3 psig higher than CFC12	
Low-side system operating Pressure at 65°F (18°C)	HFC134a approximately 2 psig lower than CFC12	

⚠ CAUTION

To minimize contamination, exercise extreme care when servicing HFC134A sealed systems.

- No trace of other refrigerants is allowed in HFC134a systems. Chlorinated molecules in other refrigerants such as CFC12, etc. will lead to capillary tube plugging.
- Ester oil is used in HFC134a systems. Do not use mineral oil. HFC134a and mineral oils cannot be mixed. If mineral oils were used in HFC134a systems, lubricant would not return to compressor and would cause early compressor failure. If significant amount of oil has been lost from compressor, replace oil rather than adding oil.
- Ester oils used in HFC134a systems are so hydroscopic that by the time an inadequate system performance is detected, oil will be saturated with moisture.
- CFC12 has much higher tolerance to system processing materials, such as drawing compounds, rust inhibitors, and cleaning compounds, than HFC134a. Such materials are not soluble in HFC134a systems. If materials were to be washed from system surfaces by ester oils, they could accumulate and eventually plug capillary tube.
- Care must be taken to minimize moisture entering HFC134a system. Do not leave compressor or system open to atmosphere for more than 10 minutes. Excessive moisture in HFC134a system will react with compressor oil and generate acid.

- Filter Drier must always be replaced when the system is open for service, dual evacuation is a must.

Important: Unbrazing drier filter from tubing will drive moisture from desiccant and into system, causing acids to form. Do not unbraze filter drier from tubing. If CFC12 service drier was installed in HFC134A system, drier could overload due to excessive moisture.

- HFC134a compatible copper tubing must be used when replacing tubing.

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- Avoid system contamination by using Towerdraw E610 evaporating oil when flaring, swagging, or cutting refrigeration tubing.

13.11 Replacement Service Compressor

HFC134a service compressors will be charged with ester oil and pressurized with dry nitrogen. Before replacement compressor is installed, pull out 1 rubber plug. A *pop* from pressure release should be heard. If a *pop* sound is not heard, do not use compressor. Positive pressure in compressor is vital to keep moisture out of ester oil. Do not leave compressor open to atmosphere for more than 10 minutes.

13.11.1 Compressor Testing Procedures

> **⚠ WARNING**
> To avoid death or severe personal injury, never use oxygen, air or acetylene for pressure testing or clean out of refrigeration system. Use of oxygen, air, or acetylene may result in violent explosion. Oxygen may explode on contact with oil and acetylene will spontaneously explode when under pressure.

Refer to Technical Data Sheet "Temperature Relationship Chart" for operating watts, test points, and temperature relationship test for unit being tested.

- Temperature testing is accomplished by using 3 lead thermocouple temperature tester in specific locations. Test point T-1 is outlet on evaporator coil and T-2 is inlet. Test point T-3 is suction tube temperature midway between where armaflex ends and suction port of compressor (approximately 300mm from compressor).
- Thermocouple tips should be attached securely to specified locations.
- Do not test during initial *pull down.* Allow one off cycle or balanced temperature condition to occur before proceeding with testing.
- Refrigerator must operate minimum of 20 minutes after thermocouples are installed.
- Turn control to colder to obtain required on time.
- Wattage reading must be recorded in conjunction with temperature test to confirm proper operation.
- Suction and head pressures are listed on "Temperature and Relationship Chart". Normally these are not required for diagnosis but used for confirmation on systems which have been opened.

13.12 Brazing

> **⚠ CAUTION**
> To avoid risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

Satisfactory results require cleanliness, experience, and use of proper materials and equipment.

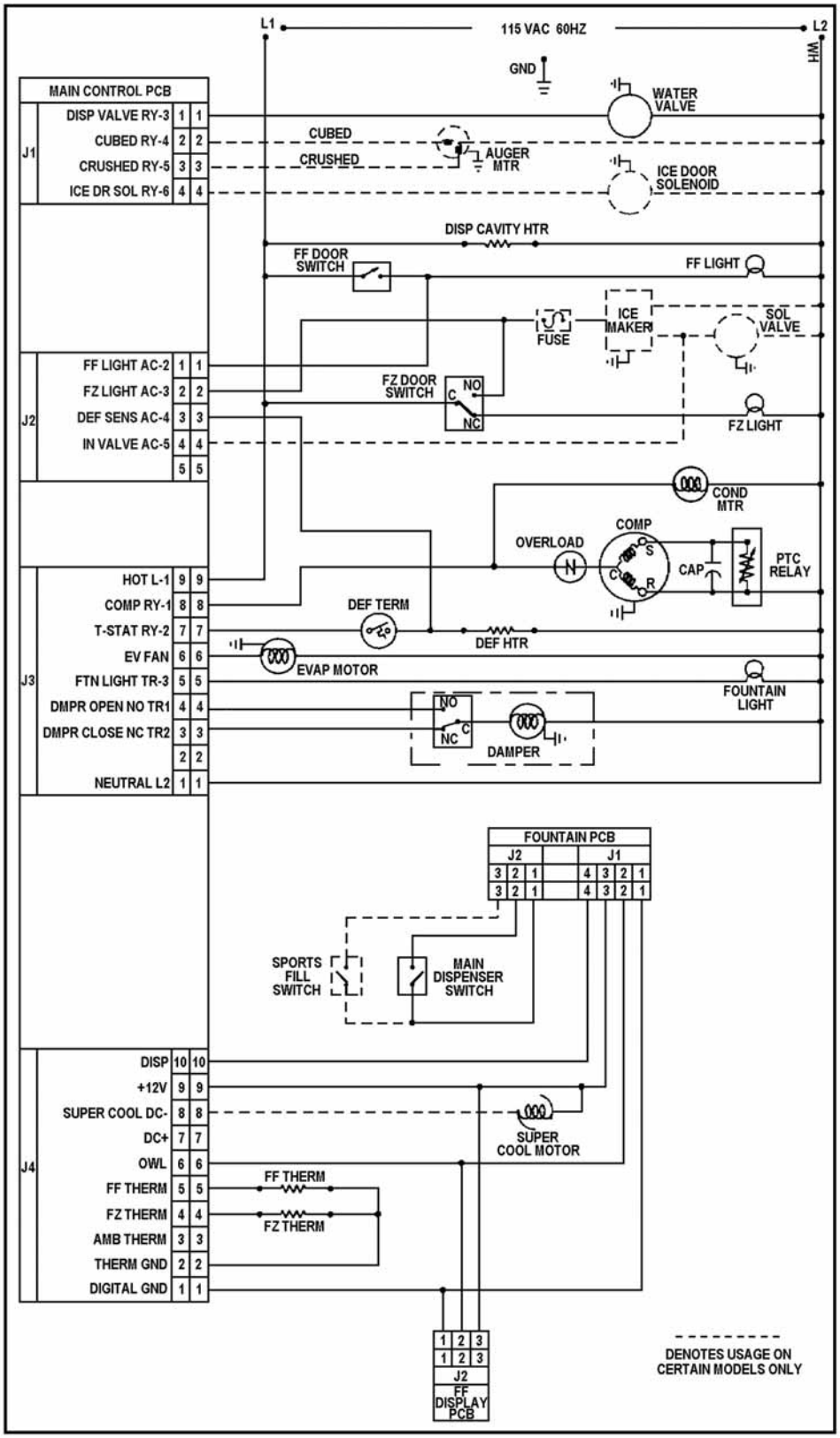
Connections to be brazed must be properly sized, free of rough edges, and clean.

Generally accepted brazing materials are:

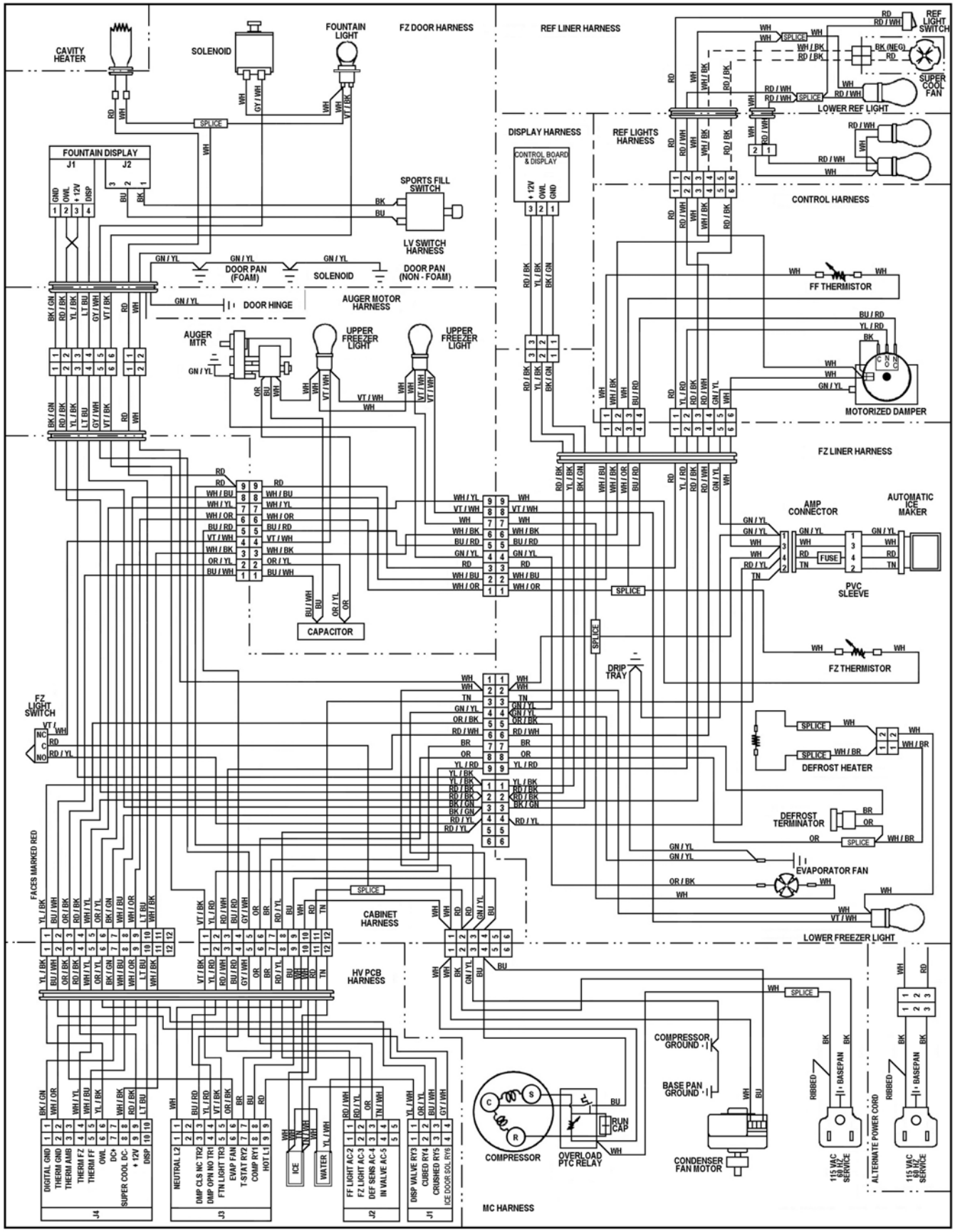
- **Copper to copper joints:** SIL-FOS (alloy of 15 percent silver, 80 percent copper, and 5 percent phosphorous). Use without flux. Recommended brazing temperature is approximately 760°C. Do not use for copper to steel connection.
- **Copper to steel joints:** SILVER SOLDER (Easy Flow. An alloy of 30 percent silver, 38 percent copper, 32 percent zinc). Use with fluoride based flux. Recommended brazing temperature is approximately 650°C.
- **Steel to steel joints:** SILVER SOLDER (Easy Flow. See copper to steel joints).
- **Brass to copper joints:** SILVER SOLDER (Easy Flow. See copper to steel joints).
- **Brass to steel joints:** SILVER SOLDER (Easy Flow. See copper to steel joints).

14 WIRING DIAGRAMS

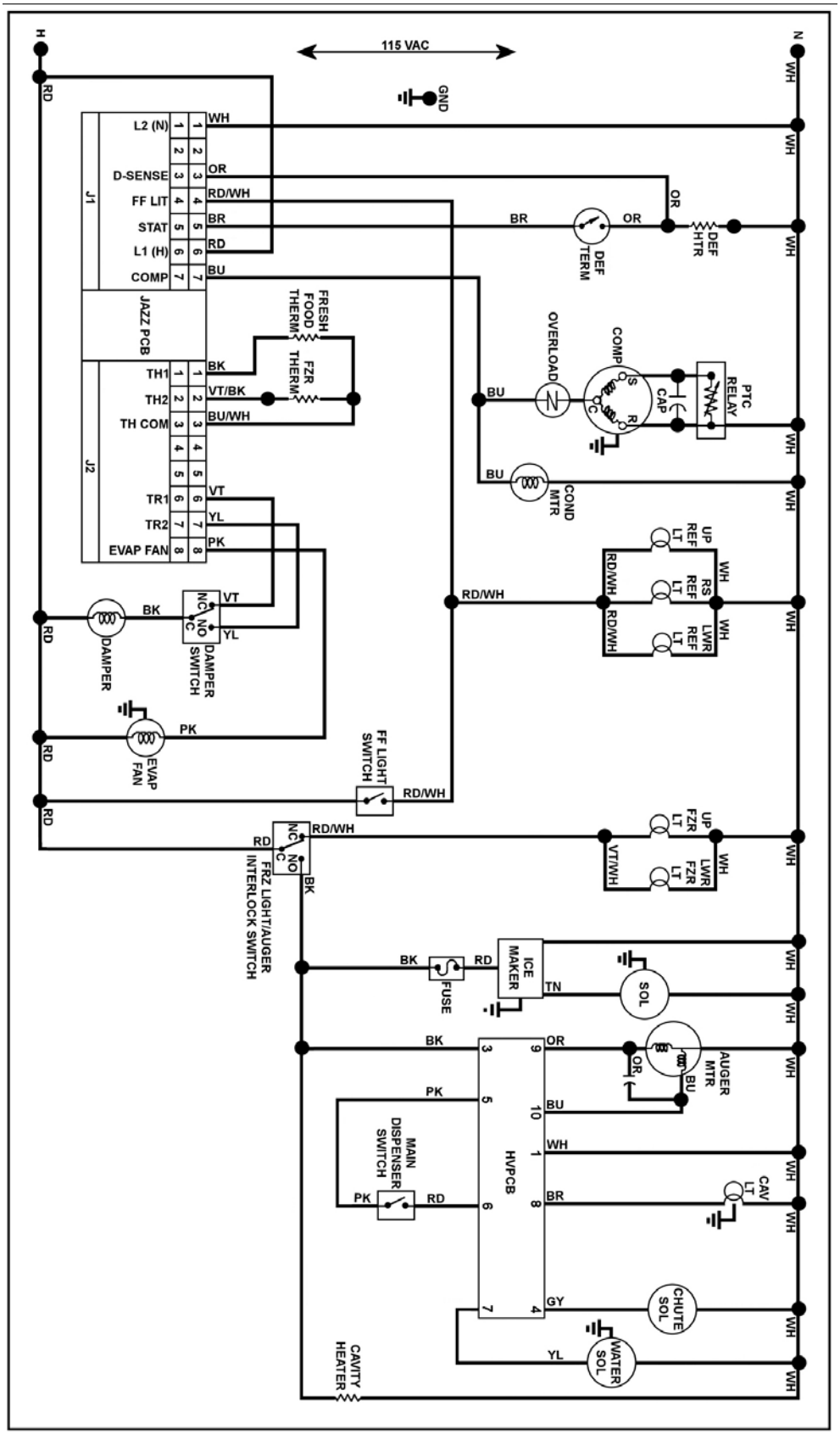
14.1 Wiring Schematic (RX256DT7X1)



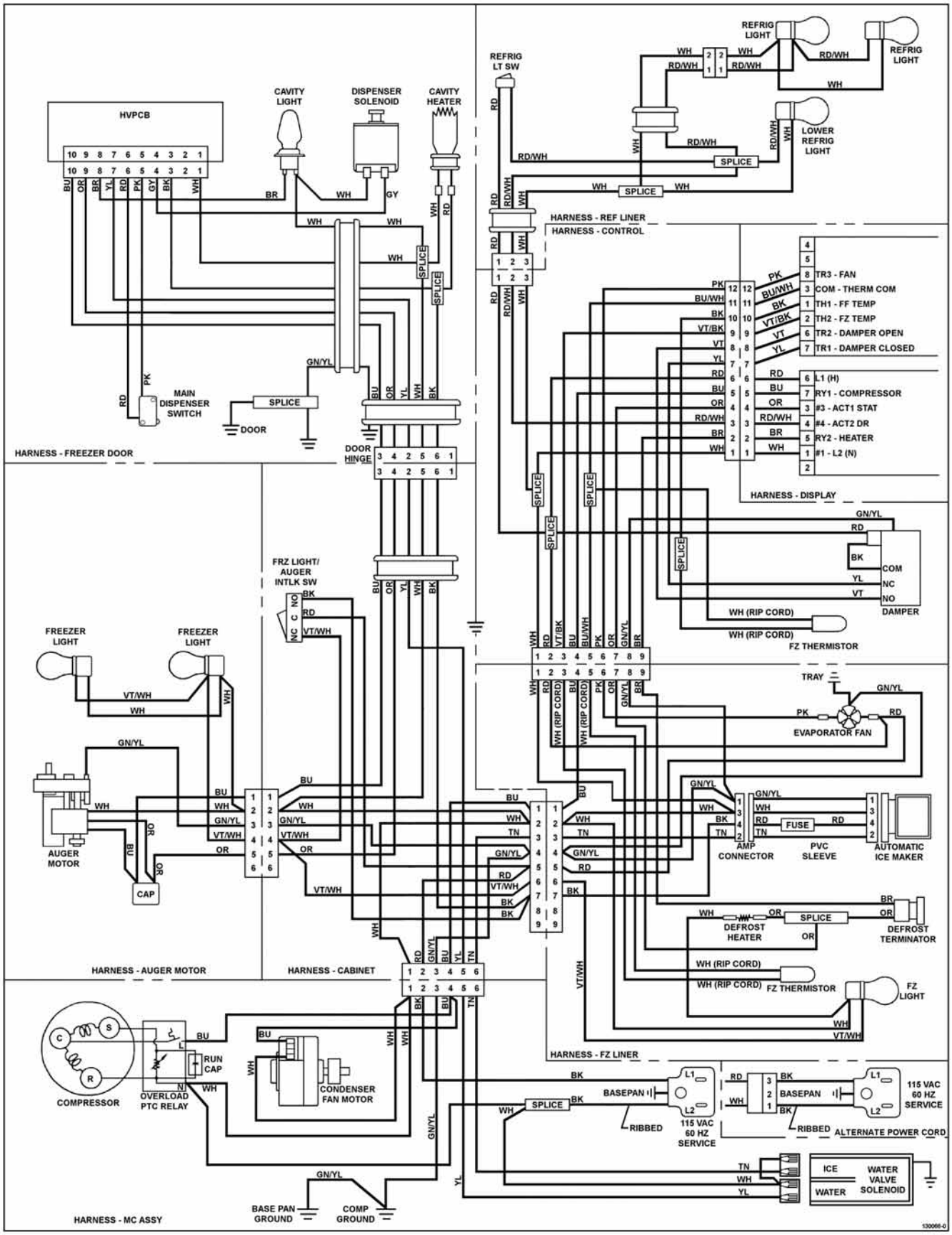
14.2 Wiring Diagram (RX256DT7X1)



14.3 Wiring Schematic (RX256DT4X1, RX256ET2B1, RX256ET2W1)



14.4 Wiring Diagram (RX256DT4X1, RX256ET2B1, RX256ET2W1)



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