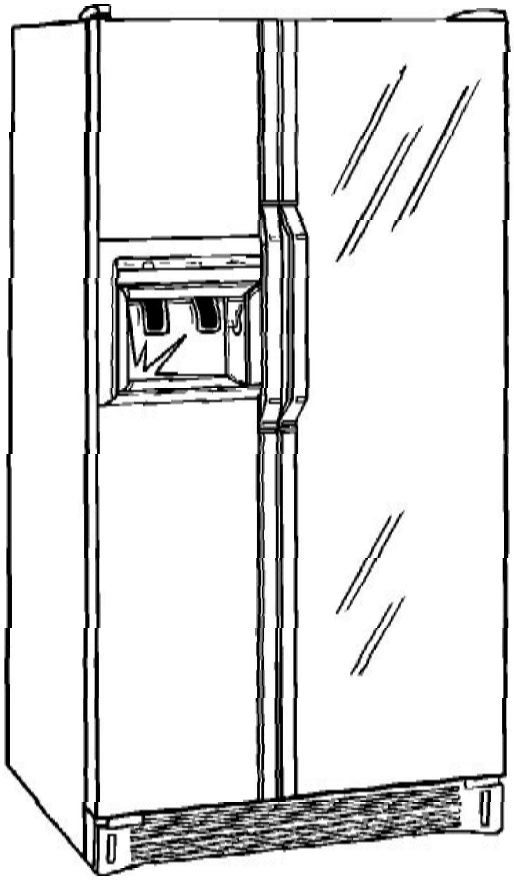
This Base Manual covers all
"V" series SxS Refrigerators
with foam-in-place doors.
Refer to individual Technical Sheet
for information on specific models.

Service

“V” Series
Side-by-Side Refrigerators
with Foam-in-Place Doors



This manual is to be used by qualified appliance technicians only. Amana does not assume any responsibility for property damage or personal injury for improper service procedures done by an unqualified person.

Amana

RS1300004
Revision 1
September 2001

Important Information

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 manual. **REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL BEFORE BEGINNING REPAIRS.**

Important Notices for Consumers and Servicers

⚠ WARNING

To avoid risk of serious injury or death, repairs should not be attempted by an unauthorized personal, dangerous conditions (such as exposure to electrical shock) may result.

⚠ CAUTION

Amana will not be responsible for any injury or property damage from improper service procedures. If performing service on your own product, assume responsibility for any personal injury or property damage which may result.

To locate an authorized servicer, please consult your telephone book or the dealer from whom you purchased this product. For further assistance, please contact:

CONSUMER AFFAIRS DEPT. AMANA APPLIANCES, INC. AMANA, IOWA 52204	**OR** **CALL**	1-319-622-5511 and ask for Consumer Affairs

If outside the United States contact:

AMANA
ATTN: CONSUMER AFFAIRS DEPT
AMANA, IOWA 52204, USA
Telephone: (319) 622-5511
Facsimile: (319) 622-2180
TELEX: 4330076 AMANA
CABLE: "AMANA", AMANA, IOWA, USA

Recognize Safety Symbols, Words, and Labels

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

Table of Contents

Table of Contents

Product Design

Refrigeration System

A compressor forces hot refrigerant vapor into a fan cooled condenser made of aluminum tubing and wire. Air circulated across the condenser cools and condenses hot vapor into high-pressure liquid (See Refrigerant Flow Diagram).

From the condenser, liquid refrigerant passes through a molecular-sieve drier and into a capillary tube. The small inside diameter of the capillary offers resistance to refrigerant flow. The resistance increases pressure on liquid in the capillary and causes relatively lower pressure inside the evaporator. The difference in pressure improves evaporation.

Also inside the capillary, temperature of the liquid refrigerant is reduced because the capillary is routed through a heat exchanger. In the heat exchanger, hot refrigerant in the capillary is cooled by refrigerant vapor of relatively low temperature that flows through the suction line. The length of the capillary and heat exchanger are carefully designed for each system.

The evaporator coil is made of aluminum tubing and sheet metal. The capillary enters the evaporator at top rear. Refrigerant in the form of liquid and gas flows through the coil and into the suction line.

The evaporator coil is inside the back wall of the freezer compartment. There an evaporator fan circulates air from the freezer and fresh-food compartments, through the evaporator coil and out, again, into the freezer and fresh-food compartments.

The large surface area of the evaporator coil facilitates heat absorption from both fresh-food and freezer compartments. Temperature of the evaporator at the end of the cooling cycle varies from -13° to -26°F.

Temperature Controls

Electromechanical

Freezer compartment temperature is regulated by means of an air-sensing thermostat located at top rear of the fresh-food compartment. The thermostat senses freezer compartment temperature by means of a control capillary that is routed from the thermostat, through a well, and into the freezer compartment. The thermostat control should be set to maintain freezer temperature between 0° and +2°F.

Fresh-food compartment temperature is also thermostatically controlled. In this case, an air-sensing thermostat regulates a damper which controls the amount of cold air that flows into the refrigerator from the freezer. Fresh-food compartment temperature should be kept between 38° and 40°F.

Electronic

See “Electronic Controls”.

Defrost Controls

Electromechanical

After every 8 hours of compressor run time, a defrost timer activates the radiant electric defrost heater that is suspended from the evaporator. After 33 minutes of defrost time, the timer restores power to the compressor.

A defrost terminator (thermostat) is wired in series with the defrost heater and evaporator fan motor. The terminator opens the defrost circuit when the temperature of the evaporator reaches a preset high temperature. When the defrost thermostat opens, it remains open until the end of the defrost cycle. When the cooling cycle starts, the terminator senses a preset low temperature in the evaporator chamber and closes.

The defrost heater is suspended across the bottom of the evaporator coil so it warms the defrost drain as it defrosts the evaporator. Defrost water is caught in the trough under the evaporator coil and flows through a drain hole and drain tubing, into the drain pan under the cabinet. Heated air circulated by condenser fan over drain pan evaporates water.

Electronic

See “Electronic Controls”.

Other Features

Deli Drawer™

The Deli Drawer™ is a drawer that is mounted in an extra-cold sleeve within the fresh-food compartment. A control on the inner wall of the fresh-food compartment allows freezer air to circulate inside the sleeve, keeping temperature in the drawer up to 5°F colder than the fresh-food compartment.

NOTE: Vinyl boot directs freezer air from inlet port to deli drawer sleeve. Boot must be in place and in good condition if deli drawer is to work properly.

Beverage Chiller

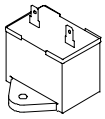
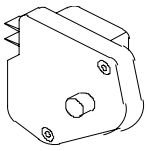
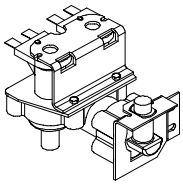
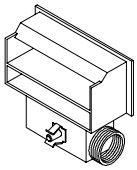
A control on the left, inner wall of the fresh food compartment allows freezer air to circulate into beverage chiller, keeping temperature inside the chiller up to 4°F colder than the fresh food compartment.

NOTE: Fresh food compartment temperature can be affected by cold air in beverage chiller and deli drawer. Refrigerator temperature control may need adjustment after temperature of deli drawer or beverage chiller is set.

Component Testing

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling.

Component	Description	Test Procedure
Capacitor 	Run capacitor connects to relay terminal 3 and L side of line. Auger motor capacitor is in series with auger motor. Auger motor capacitor does not have identified terminals and can be wired without regard to polarity.	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 "X1K" 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).
Capillary tube	Capillary is sized in diameter and length to feed proper amount of refrigerant to evaporator. Capillary is soldered to suction line to transfer heat from capillary and add additional superheat to gas refrigerant in compressor suction line. Capillary discharges into evaporator.	Restricted or clogged capillary tube must be replaced with tube of same inner diameter and length. Follow all procedures for evacuation and charging of sealed system and for safe handling of refrigerant.
Timer, defrost 	Timer motor operates only when freezer temperature control is closed. After specified amount of actual compressor run time, cam in timer throws the contacts from terminal 4 (compressor circuit) to terminal 2 (defrost terminator and defrost heater). After 33 minutes of defrost time, timer cam restores power to terminal 4 (compressor).	1. To check timer-motor winding, look for continuity between terminals 1 and 3 of timer. 2. Depending on position of cam, timer terminal 1 is common to terminal 2, (defrost mode) or terminal 4 (compressor mode). There must be no continuity between terminals 2 and 4. 3. With continuity between terminals 1 and 4, rotate timer knob clockwise until audible click is heard. When click is heard, reading between terminals 1 and 4 should be infinite and there should be continuity between terminals 1 and 2. 4. Rotate timer knob until second click is heard. This should restore circuit between terminals 1 and 4.
Valve, water 	Controls water flow to icemaker and cavity.	Check resistance across coil windings.
Damper Control 	Damper control balances cold-air delivery between refrigerator and freezer compartments. In non-electronic units, integral capillary activates damper control to close or open door, regulating airflow from freezer compartment into fresh-food compartment. In electronic units, temperature control and thermistor together determine if damper-control heater switch is open or closed. Damper controls on non-electronic units have no electrical connections.	Subject capillary to appropriate temperature (see tech sheet for model being serviced). Damper door should close to within ¼" (6 mm) of completely shut. Non-electronic units: If altitude adjustment is required, turn altitude adjustment screw 1/8 turn clockwise for each 1,000 feet (305 meters) increase in altitude above sea-level.

Component Testing

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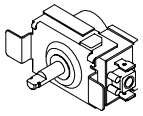
Control, freezer temperature (Non-electronic units) 	Freezer temperature control is a capillary tube operating a single-pole, single-throw switch.	Check control calibration with thermocouple capillary correctly located in air-supply well. Perform check by recording cut-in and cut-out temperatures with control in middle setting (tech sheet for model being serviced has correct cut-in/cut-out temperatures). Check operation of control contacts by disconnecting electrical leads to control. Then turn control knob to coldest setting and check for continuity across terminals. Altitude Adjustment: In most cases altitude adjustment can be avoided by turning temperature control to a colder setting. When altitude adjustment is required, turn adjustment screw 1/7-turn clockwise for each 1,000 feet (305 M) above sea level, up to 10,000 feet (3050 M).
Condenser	Condenser is tube-and-wire construction and is located in compressor compartment, on high-pressure side of compressor. Condenser transfers heat from refrigerant to atmosphere. Hot, high-pressure gas is routed to condenser where, as gas becomes relatively cooler, it condenses into high-pressure liquid. Heat transfer takes place because refrigerant gas is warmer than air blown across condenser by the condenser fan. Proper airflow over condenser is important. If efficiency of heat transfer from condenser to atmosphere is impaired, temperature of liquid refrigerant grows higher. Hotter liquid refrigerant, when it boils in the evaporator, absorbs less heat than relatively cooler refrigerant. Higher than normal head pressures, long run times, and high energy use together indicate a dirty condenser. Normal airflow across a condenser prevents such problems. Remove lint, dust and other debris from condenser whenever you service a refrigerator. From the condenser, refrigerant flows into a post-condenser loop. Then it moves through drier and evaporator and back to the compressor through the suction line. The loop controls condensation on flange, center mullion, and around freezer door.	Leaks in condenser can usually be detected by using an electronic leak detector or soap solution. Because a small amount of compressor oil always circulates with refrigerant, the presence of oil on condenser also indicates a leak. 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 16 bars (235 PSI) with a refrigerant and dry-nitrogen mixture. 2. Recheck for leaks and/or watch for pressure drop. **⚠ WARNING** To avoid risk of severe personal injury or death, observe the following statements: 1. If high pressures are required for leak checking, protect against sudden eruptions. 2. Do not use high pressure gases in refrigeration systems without a reliable pressure regulator and pressure relief valve in the lines.

Component Testing

⚠ WARNING

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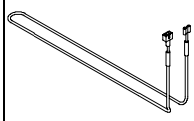
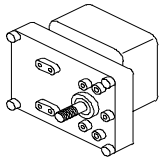
Drier 	Drier is located in machine compartment at outlet of post-condenser loop. It removes moisture from liquid refrigerant while passing refrigerant to capillary.	Drier must be replaced when system is opened for any reason. Before opening system, recover refrigerant for safe disposal. Do not debraze drier. Applying heat to remove drier drives moisture out of drier into system. Cut drier out of system using the following procedure: 1. Score capillary tube close to drier and break. 2. Reform tubes so you have space in which to use a large tubing cutter on the drier. 3. Cut circumference of drier 1-1/4" (3 cm) below point at which condenser inlet tube joins drier. Remove drier, leaving only its top brazed to tubing. **⚠ WARNING** To avoid risk of severe personal injury or death; cut drier at correct location. Cutting drier in wrong place allows desiccant beads to scatter, creating a fall hazard. Clean up beads if spilled. 4. Apply heat-trap paste on post-condenser tubes above drier to protect grommets from high heat. 5. Debraze remaining part of drier and remove it from system. 6. Discard drier in safe place. Do not leave drier with customer. 7. If unit is in warranty, old drier accompanies warranty claim.
Evaporator	Inner volume of evaporator allows liquid refrigerant to expand into refrigerant gas. Expansion cools evaporator, transferring heat from freezer to refrigerant. Passing through heat exchanger on its way to compressor, refrigerant gas picks up superheat from liquid refrigerant. Exchange assures complete vaporization of liquid refrigerant inside evaporator. Compressor pulls refrigerant gas through suction line to complete cycle.	Use electronic leak detector or solution of soap and water to check for leaks from evaporator. Presence of oil on evaporator also indicates a leak because some compressor oil always circulates with refrigerant. **For minute leaks:** 1. Separate evaporator from rest of system and pressurize condenser up to a maximum of 10 bars (140 PSI) with a refrigerant and dry nitrogen combination. 2. Recheck for leaks and/or watch for pressure drop.
Heater, cavity	Applied to back of ice and water cavity to prevent condensation on face of cavity.	Some models have spare heater foamed in place at factory. See tech sheet for model being serviced. Check resistance across heater (for resistance values see tech sheet for model being serviced).
Heater, evaporator (defrost) 	Activated when defrost thermostat or adaptive defrost control completes circuit through the heater.	Check resistance across heater. To check defrost system: 1. Thermocouple defrost thermostat and plug refrigerator into wattmeter. 2. Force unit into defrost mode (see "Electronic Testing"). Wattmeter should read according to tech sheet. 3. When thermostat reaches specified temperature (see tech sheet), it should interrupt power to heater.
Motor, auger 	Located behind ice bucket. Drives helix auger and cube crusher. PSC (Permanent Split Capacitor) motor requiring a run capacitor. Controlled by ice-actuator switch in series with freezer-door auger-interlock switch and cube/crushed ice switch. Internal overload trips after about 90 seconds of continuous run. Resets in about 3 minutes.	Disconnect power, check windings with ohmmeter and verify ground. **Crushed/Cube Dispensing Models:** With unit at room temperature, check resistance between wire leads (see tech sheet for your model). **Cube Dispensing Models:** With unit at room temperature, check resistance between wire leads (see tech sheet for your model).

Component Testing

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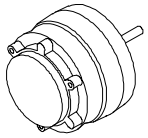
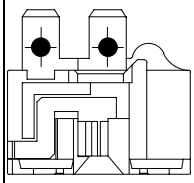
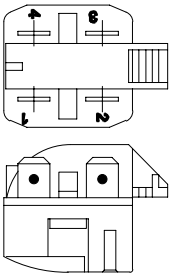
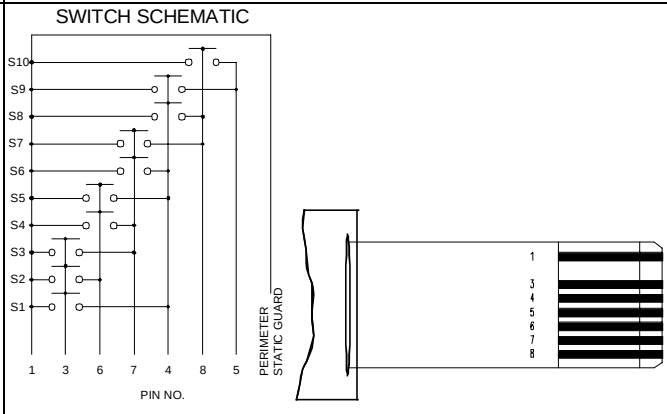
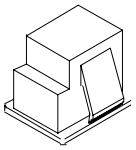
Motor, condenser 	Condenser fan moves cooling air across condenser coil and compressor body. Condenser-fan motor wired parallel with compressor.	Check resistance across winding (for resistance value see tech sheet for model being serviced).
Motor, evaporator fan	Evaporator motor moves air across evaporator coil and throughout refrigerator. Evaporator fan is wired in series with temperature control, defrost terminator, and defrost heater.	1. Disconnect power to unit. 2. Disconnect fan motor leads. 3. Check resistance from earth connection solder. Trace to motor frame must not exceed .05 ohms. 4. Check for voltage at connector to motor with terminator and temperature control closed.
Overload 	Overload is a temperature and current sensing device. Overload opens when high current or high compressor temperature is sensed. If overload opens, reset can require up to two hours, depending on ambient temperature, ventilation, and heat of compressor. Relay (See PTC Relay)	1. Disconnect power to the refrigerator. 2. Remove relay cover and pull relay off compressor. Pull overload protector off compressor common terminal. 3. With ohmmeter, check resistance between male terminal and female receptacle of compressor common terminal. At room temperature, overload protector should have less than 1 ohm resistance. An open overload protector will have infinite resistance.
Relay, PTC 	When voltage is connected and relay is cool, current passes through relay to start winding. After a short time, current heats resistor in relay. Resistance rises, blocking current flow through relay. Start winding remains in circuit through run capacitor. Relay plugs directly onto 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.	With power off, check resistance across terminals 2 and 3: Normal = 3 to 12 ohms Shorted = 0 ohms Open = Infinity
Switch, keyboard	Semiconductor switch for control panel keyboard. **Switch Functions** / **Pin Nos.** Enable Key S1 1, 3 & 4 Freezer Temp S2 1, 3 & 6 Refrig Temp S3 1, 3 & 7 Warmer S4 1, 6 & 7 Colder S5 1, 4 & 6 Vacation S6 1, 4 & 7 Max Cool S7 1, 7 & 8 Fast Freeze S8 1, 4 & 5 Alarm Off S9 1, 4 & 8 Display Off S10 1, 5 & 8	SWITCH SCHEMATIC 
Switch, SPDT icemaker interlock 	Interrupts connection to auger motor and icemaker when freezer door opens. Turns freezer light on when door opens. In series with auger motor, freezer light and cube/crushed switch.	Check resistance across terminals. Continuity across terminals 1 and 2 – light Continuity across terminals 1 and 3 – auger motor

Component Testing

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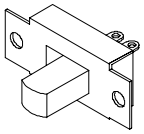
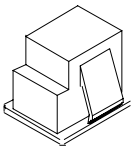
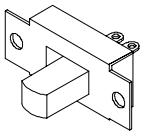
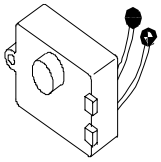
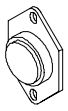
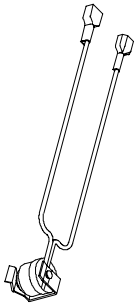
Switch, crushed/cubed 	Selects between cubed or crushed ice features.	Check resistance across terminals. **Switch left** Middle terminal to left terminal — 0 ohms Middle terminal to right terminal — Infinity **Switch right** Middle terminal to right terminal — 0 ohms Middle terminal to left terminal — Infinity	
Switch, refrigerator light, freezer light, refrigerator fan 	Completes circuit to allow indicated function. See tech sheet and wiring diagram for individual switch.	Check resistance across terminals. **Switch arm down:** "NC" terminals closed "NO" terminals open **Switch arm up:** "NC" terminals open "NO" terminals closed	
Switch, power 	SPDT Electronic models only. Disconnects high-voltage board from power when off (open). Unit ships with switch ON.	Check resistance across terminals. Switch OFF — Infinity (open) Switch ON — 0 ohms (short)	
Switch, photosensitive 	In series with cavity light switch and cavity light. Senses light. Disables cavity light during bright-light conditions. Switch must not generate line conducted noise or radiate inference more than three feet on the AM, FM, VHF, or USH Frequency bands.	1. To check light sensor with cavity light switch on, cover light sensor eye. Cavity lamp should light at 50% illumination. 2. If lamp fails to light, activate water or ice-dispenser switch. Lamp should shine at full power and water or ice should be dispensed. 3. If light works with dispenser switch, disconnect power and replace photosensitive switch. 4. If lamp does not illuminate, disconnect power and check cavity lamp and socket.	
Thermistor 	Electronic units only. Senses temperatures in refrigerator and freezer compartments.	Check resistance across terminals. See tech sheet for resistance at specific temperatures.	
Thermostat (Defrost Terminator) 	Clipped to top of evaporator coil. Wired in series with freezer temperature control, defrost heater and evaporator-fan motor. Circuit is complete if evaporator-fan motor operates when cold. Controls circuit from freezer temperature control, through evaporator fan to defrost heater. Opens and breaks circuit when terminator senses preset high temperature. After terminator opens, it remains open until defrost cycle ends. When evaporator cools to preset low temperature, terminator closes again.	Test continuity across terminals. Volts ..... Watts ..... Current ..... Resistance across terminals Above 48° ±5°F..... Below 15° ±7°F ..... Between 48° ±5°F and 15° ±7°F ..	With power off and evaporator below freezing, thermostat should show continuity when checked with ohmmeter. See "Heater, evaporator (defrost)" entry for additional tests. 120/240 VAC 1000 watts 10/5 amps Open Closed Will stay in current state (open or closed) until either 48° ±6°F or 15° ±8°F is reached.
Icemaker	See Appendix B for information.		

Component Testing

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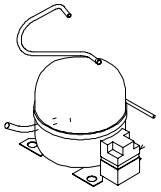
Compressor

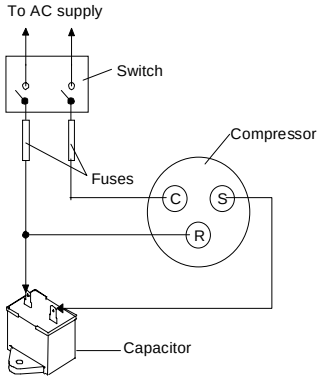


When compressor electrical circuit is energized, the start winding current causes relay to heat. After an amount of starting time, the start winding circuit turns off. The relay will switch off the start winding circuit even though compressor has not started (for example, when attempting to restart after 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 wiring it across a resistor for 1 minute.
3. Remove leads from compressor terminals.
4. Set ohmmeter to lowest scale.
5. Check for resistance between
   Terminals "S" and "C"
   Terminals "R" and "C"

   If either compressor winding reads open (infinite or very high resistance) or dead short (0 ohms), replace compressor.

Grounding test

1. Disconnect power to refrigerator.
2. Discharge capacitor by wiring it across a resistor for 1 minute.
3. Remove compressor leads and use an ohmmeter set on highest scale.
4. Touch one lead to compressor body (clean point of contact) and the other probe to each compressor terminal.

   If a 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 using power switch.
2. Discharge capacitor by wiring it across a resistor for 1 minute.
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. (See individual Technical 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.
9. Plug test cord into volt-watt meter to determine start and run wattage as well as check for low voltage, which can also be a source of trouble.
10. With power to voltmeter, 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 system at high side. After system is recovered, repeat compressor direct wire test. If compressor runs after recovery but would not run when direct wired before recover, a restriction in sealed system is indicated.

    If compressor does not run when wired direct after recover, replace compressor.

Troubleshooting Procedure

⚠ WARNING

To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Troubleshooting Chart: Refrigerator Symptoms Related to Problems

Symptom	Possible Causes	Corrective Action
Unit does not run.	No power to unit.	Check for power at outlet. Check fuse box or circuit breaker for blown fuse or tripped breaker. Replace or reset.
	Power switch either off or faulty.	Check switch at high-voltage board (electronic models only).
	Faulty service cord.	Check with test light at unit. If no circuit when current is present at outlet, replace or repair.
	Low voltage.	Check input voltage for proper level. Take appropriate action to correct voltage supply problem.
	Faulty freezer temperature control.	Make sure all connections are tight and solid. Jumper across control. If unit runs, replace control.
	Faulty timer.	Check with test light. Replace if necessary.
	Faulty high-voltage board or compressor/condenser-fan relay (electronic models only) or defrost timer (non-electronic models).	Check board, relay, or timer. Replace if necessary.
	Faulty compressor.	Check compressor motor windings for open/short. Perform compressor direct wiring test. Replace if necessary.
	Faulty overload or relay.	Check overload for continuity. NOTE: Ensure compressor and overload are below trip temperature before testing. Check relay resistance across terminals 2 and 3 (consult tech sheet for correct value). Replace if necessary.
Refrigerator section too warm.	Excessive door opening.	Consumer education.
	Shelves overloaded.	Consumer education.
	Hot food placed in cabinet.	Consumer education.
	Refrigerator temperature control set too warm.	Adjust control to colder setting.
	Poor door seal.	Level cabinet. Adjust hinges. Replace door gasket if necessary.
	Refrigerator airflow restricted or stopped.	Check damper operation; replace damper if faulty. Check temp-control; adjust or replace as required. Check evaporator fan; replace if necessary.
	Interior light stays on.	Check switch. Replace if necessary, or adjust door for proper switch engagement.
	Faulty evaporator fan.	Check fan switch, fan and wiring. Replace if necessary.
	Faulty compressor.	Replace compressor.

Troubleshooting Procedure

⚠ WARNING

To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Symptom	Possible Causes	Corrective Action
Refrigerator section too cold.	Refrigerator temperature control set too cold.	Adjust as needed.
	Refrigerator airflow not properly adjusted.	Adjust beverage chiller and chiller fresh temperature controls. Make sure deli boot seals against air-supply orifice.
Freezer and refrigerator sections too warm.	Temperature controls set too warm.	Adjust as needed.
	Poor door seals.	Level cabinet; adjust hinges. Replace door gasket(s) if necessary.
	Dirty condenser or obstructed grille.	Clean.
	Faulty temperature controls.	Check; replace if necessary.
	Defrost malfunction.	Check evaporator for heavy frost.
	Refrigerant shortage or flow restriction.	Check for leak or restriction. Repair, evacuate, and recharge system.
Freezer section too cold.	Temperature control set too cold.	Adjust.
	Faulty freezer temperature control.	Test control. Replace if necessary.
Unit runs continuously.	Temperature control set too cold.	Adjust.
	Faulty temperature control.	Test. Replace if defective.
	Dirty condenser or obstructed grille.	Clean.
	Poor door seal.	Level cabinet; adjust hinges. Replace door gasket(s) if necessary.
	Interior light stays on.	Check switch. Make sure door activates switch. Adjust, replace as necessary.
	Faulty condenser fan or evaporator fan.	Check fan switch, fan and wiring. Replace if necessary.
	Refrigerant shortage or flow 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 air leak. Repair, evacuate, and recharge system.
Unit runs continuously. Temperature normal or warm.	Ice on evaporator.	See “Ice on Evaporator.”
Unit runs continuously. Temperature too cold or too warm.	Faulty defrost timer. Faulty cold control. Faulty defrost terminator. Faulty high-voltage board (electronic units).	Check timer, cold control, terminator and/or high-voltage board. Replace faulty components.

Troubleshooting Procedure

⚠ WARNING

To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Symptom	Possible Causes	Corrective Action
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.
	Drain pan vibrating.	Adjust drain pan.
	Fan hits another component.	Ensure fan is properly aligned, associated hardware is tight and not worn. Tighten or replace as necessary.
	Fan motor bearings worn.	Check fan motor for loss of lubricant and worn bearings. Replace if necessary.
	Compressor grommets worn or missing. Mounting hardware loose or missing.	Replace grommets. Tighten hardware as required.
	Free or loose parts cause noise during operation.	Inspect unit for parts that may have worked loose. Check for loose or missing screws. Replace, repair as necessary.
Frost or ice on evaporator.	Defrost thermostat faulty.	Check thermostat. Replace if necessary.
	Evaporator fan faulty.	Check. Replace if necessary.
	Defrost heater remains open.	Check defrost heater continuity. Replace if faulty.
	Defrost timer faulty.	Check timer. Replace if necessary.
	Open wire or connector.	Check wiring and connectors. Repair as necessary.
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 spec.	Check input voltage. Correct supply problems.
	Overload protector open.	Check overload protector for continuity. If open, replace overload. NOTE: Ensure overload and compressor are below trip temperature before testing.
	Faulty compressor motor capacitor.	Check capacitor for open/short. Replace if necessary. NOTE: Discharge capacitor before handling.
	Restricted condenser air flow.	Check condenser and grille for dirt. Clean as required.
	Refrigerant shortage or restriction.	Check for leak or restriction. Repair, evacuate, and recharge system.

Troubleshooting Procedure

⚠ WARNING

To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Troubleshooting Chart: Sealed-System Conditions

Condition	Variation from Normal					
	Suction Press	Head Press	T1 Inlet Temp	T2 Outlet Temp	T3 Suction Temp	Wattage
Refrigerant Overcharge	Increase	Increase	Warmer	Warmer	Colder	Increase
Refrigerant Shortage	Decrease	Decrease or Increase	Colder	Warmer	Warmer	Decrease
Partial Restriction	Decrease	Decrease or Increase	Colder	Warmer	Warmer	Decrease
Air in System	Near Normal	Increase	Warmer	Warmer	Warmer	Increase
Low Ambient Installation	Decrease	Decrease	Colder	Warmer	Warmer	Decrease
High Ambient Installation	Increase	Increase	Warmer	Warmer	Warmer	Increase
Additional Heat Load	Increase	Increase	Warmer	Warmer	Warmer	Increase
Inefficient Compressor	Increase	Normal or Decrease	Warmer or Colder	Warmer	Warmer	Decrease

Troubleshooting Procedure

⚠ WARNING

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System Diagnosis

Symptoms of Overcharge:

a. Above normal freezer temperatures
b. Longer than normal or continuous run
c. Freezing in refrigerator
d. Above normal suction and head pressures
e. Above normal wattage
f. Evaporator inlet and outlet abnormally warm
g. Suction tube temperature below ambient

NOTE: Always check for separated heat exchanger when suction temperature is below ambient.Other problems can also mimic the symptoms of an overcharge. Defrost system failure is one example: If the evaporator does not defrost at regular intervals, refrigerant will "flood out" and cause frost or sweat on the suction line. Instead of purging refrigerant from the system, the cause of the problem should be corrected. Running the freezer colder than necessary (temperatures of 0 to +2°F are considered normal) causes similar symptoms to appear. So does any condition that makes the compressor run continuously or prevents the evaporator fan from running.

Symptoms of Refrigerant Shortage

a. Rising food temperature in both compartments
b. Long or continuous run time
c. Evaporator starvation – only partial frosting on evaporator rather than even frosting of entire coil
d. Appearance of oil on outer surface of any sealed-system component
e. Below normal wattage
f. Compressor hot to the touch
g. Condenser at or near ambient temperature; capillary tube warmer than normal
h. Evaporator hisses
i. High-side leak causes both gauges to read lower than normal. Gauges will read progressively lower as charge is reduced. Suction gauge will probably show a vacuum.
j. Low-side leak causes suction gauge to show a vacuum. Head pressure gauge reads higher than normal and probably reads progressively higher as air drawn in at the leak is compressed and accumulates in high side of system.

NOTE: The first sign of refrigerant shortage that users typically notice is warm temperatures in the refrigerator. Because frozen meat and vegetables do not thaw immediately, customers do not associate the problem with the freezer and instead are upset because milk and other beverages are not cold enough.
In some models (especially those with forced-air meatkeepers) refrigerant shortage may at first cause some freezing in the food compartment due to additional compressor run time. Leaks always get worse, however. The freezing soon stops because temperatures continue to rise as the refrigerant charge is diminished.
With a shortage of refrigerant, the capillary line will not have a full column of liquid. A distinct hissing sound from the evaporator is one result. The hissing should not be mistaken for the sound of refrigerant boiling normally.

Symptoms of Restriction

A restriction reduces the rate of refrigerant flow and consequently reduces the rate of heat transfer. Complete restrictions may be caused by moisture, solid contaminants in the system or a poorly soldered joint. Moisture freezes at the evaporator end of the capillary tube. Solid contaminants collect in the drier-filter. Wattage is reduce because the compressor is not circulating the normal amount of refrigerant.

No cooling takes place when a total restriction exists because refrigerant cannot circulate. Where a partial restriction exists, refrigeration (cooling) occurs on the low-pressure side of the restriction. For that reason, you should physically feel along the refrigeration lines whenever a partial restriction is suspected.

Most restrictions occur at the drier-filter or at either end of the capillary tube. Any kinked refrigerant line will cause a restriction, so the entire system should be visually checked.

If the restriction is not total, there will be a temperature difference at the point of restriction. The low-pressure side will be cooler. In many cases, frost and/or condensation will be present. When the unit is turned off, the system requires an abnormally long time (10 minutes is "normal") to equalize.

A slight restriction gives the same symptoms as a refrigerant shortage: lower-than-normal suction pressure, head pressure and wattage readings, and warmer food temperatures.

Troubleshooting Procedure

⚠ WARNING

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NOTE: If a total restriction occurs on the discharge side of the compressor, head-pressure and wattage readings may be higher than normal – but only while the compressor pumps the low side out and the restriction resides between the compressor and the first half of the condenser.

To diagnose for a restriction versus a refrigerant shortage, first discharge the system. Then replace the drier-filter, evacuate, and recharge with the specified quantity of the correct refrigerant.

If, after doing so, the unit performs normally, three possibilities exist: 1) refrigerant loss; 2) partially restricted drier-filter; 3) moisture in system.

If, after doing so, the symptoms do not change, you may have a restricted capillary, condenser or possibly a kinked line. You must find the restriction and correct it.

What about gauge readings? If the restriction is on the low side, suction pressure will probably be in vacuum and head pressure will be near normal. If the restriction is on the high side, suction pressure, again, will probably be in vacuum. Head pressure will be higher than normal – but only during the pump-out period, as noted above. In any case it takes longer than normal (10 minutes) for pressures to equalize after the compressor stops.

Symptoms of Air in System

The presence of air in a sealed system causes inefficient cooling. Longer-than-normal compressor run times result. Where enough air is present, the compressor runs continuously and the system doesn't cool at all. Head pressure readings are abnormally high because air does not mix with refrigerant but nevertheless takes up space inside the system.

One way to determine if air is in the system is to read the head pressure gauge when the unit is shut down and evaporator and condenser are at the same temperature. When these conditions have been achieved, take the temperature of the condenser outlet tube. Condenser-outlet temperature should be within 3° or 4°F of what the Pressure-Temperature Relation (PTR) chart shows for the given idle head pressure. If the condenser-outlet temperature is substantially lower than the PTR chart says it ought to be, air is present in the system.

When air in the system is suspected, a thorough leak-check is necessary. The leak, if it exists, must be identified and properly sealed. Once the leak has been sealed, the system must be discharged; the drier must be replaced; the system must be evacuated and then recharged with a correct amount of the specified refrigerant.

Do not attempt to save time by merely purging air from the system. Should you do so, you will have an inefficient, incorrectly charged unit that will soon give more trouble.

Symptoms Due to Improper Ambient Temperature

Lower ambient air temperature reduces the condensing temperature and therefore reduces the temperature of liquid entering the evaporator. The increase in refrigeration effect due to operation in a low ambient results in decreased power consumption and run time. Lower ambients also reduce cabinet heat leak, a fact partially responsible for reduced power consumption and run time.

An increase in refrigeration effect cannot be expected below a certain minimum ambient temperature. That minimum temperature varies with the type and design of the product. Generally, ambient temperatures cannot be lower than 55°F without reducing operational efficiency.

Refrigerators installed in ambients below 55°F do not perform as well because pressures within the system are generally reduced and unbalanced. This means that lower head pressures force less refrigerant through the capillary, resulting in symptoms like those produced by a refrigerant shortage. The lower the ambient temperature, the more pronounced these symptoms become. At a point where ambient temperature is lower than the cut-in of the temperature control, the compressor won't run. Defrost drain taps freeze up where ambient temperatures are below 32°F.

Conversely, the higher the ambient temperature, the higher system head pressure must be in order to raise high-side refrigerant temperature above that of the ambient, condensing medium. In other words: head pressures must rise as the ambient temperature rises. Where ambient temperatures are too high, operating efficiency is again reduced.

Heavy Heat Load

Increased heat loads result when an abnormally large supply of foods is laid in, as is typical after the weekly shopping. Other factors contributing to an increased heat load include excessive door openings, poor door sealing, failure of an interior light to shut off, etc.

An increase in heat absorbed by refrigerant in the evaporator affects the temperature and pressure of 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 a heavy heat load.

Service Procedures

⚠ WARNING

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Service Equipment

Bulleted below are items needed for proper service of HFC134a systems. Before attempting service of HFC134a systems, make sure that all equipment you intend to use is certified by the manufacturer to be compatible with HFC134a and ester oil systems.

NOTE: Items shown in italics must be used exclusively with HFC134a systems.

- Evacuation pump
  Check with vacuum pump supplier to verify equipment is compatible for HFC134a. Robinair, Model 15600, 2 stage, 170 litres (6 cubic feet) per minute pump is recommended.
- *Four-way manifold gauge set, with low-loss hoses*
- Leak detector
- Charging cylinder
- Refrigerant scale
- *Line piercing saddle valve (Schroeder valve)*
- *Swagging tools*
- *Flaring tools*
- *Tubing cutter*
- Flux
- Sil-Fos
- Silver solder
- Heat-trap paste
- *Oil for swagging and flaring*
  Use only part #R0157532
- *Copper tubing*
  Use only part #R0174075 and #R0174076
- Dry nitrogen
  99.5% minimum purity, with -40°C (-40°F) or lower dew point.
- Crimp tool
- Tubing bender
- Micron vacuum gauge
- *Process tube adaptor kit*
- *ICI appliance-grade HFC134a*

Line Piercing Valves (Schroeder valves)

Seals must be HFC134a and ester-oil compatible. Line piercing valves can be used for diagnosis but are not suitable for evacuation or charging because they poke holes in tubing. Do not leave access valves on system because they leak. HFC134a molecules are smaller than other refrigerant molecules, so 134a will leak where other refrigerants would not.

Open Lines

During any procedure on sealed system, never leave lines open to atmosphere. Open lines allow water vapor to enter system, making proper evacuation more difficult.

Brazing

⚠ CAUTION

To avoid risk of personal injury or property damage, protect yourself and the unit from heat when brazing.

- Protect yourself by wearing goggles, gloves and other personal protective equipment.
- Protect components by using heat-trap paste, heat sinks and other means to isolate heat.
- 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.

Acceptable Brazing Materials:

- **Copper-to-copper:** SIL-FOS (alloy of 15 percent silver, 80 percent copper, and 5 percent phosphorous). Use without flux. Recommended brazing temperature is approximately 760°C (1400°F).

NOTE: Do not use SIL-FOS for copper-to-steel joints.

- **Copper-to-steel:** SILVER SOLDER (alloy of 30 percent silver, 38 percent copper, 32 percent zinc). Use with fluoride based flux. Recommended brazing temperature is approximately 649°C (1200°F).
- **Steel-to-steel:** SILVER SOLDER (see copper-to-steel).
- **Brass-to-copper:** SILVER SOLDER (see copper-to-steel).
- **Brass-to-steel:** SILVER SOLDER (see copper-to-steel).

Service Procedures

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

HFC134a Service Information

HFC134a refrigerant is an alternative to CFC12 refrigerant. HFC134a has an ozone depletion potential (ODP) factor of 0.0 and a global warming potential (GWP) factor of 0.27. HFC134a has acceptable toxicity levels and is not flammable.

Health, Safety, & Handling	CFC12	HFC134a
Allowable 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 in contact with flames and heating elements. Container may explode if heated due to resultant pressure rise. Produces toxic byproducts when burned.	Same
Disposal procedures	Recycle or reclaim.	Same

Table 1

Properties/Characteristics	CFC12	HFC134a
Ozone Depletion Potential	1.0	0.0
Global Warming Potential	3.2	0.27
Molecular weight	121	102
Boiling point at 1 atmosphere	-22°F (-30°C)	-15°F (-26°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	

Table 2

Health, Safety, and Handling

Health, safety and handling considerations for HFC134A are virtually no different than those for CFC12 (See Table 1). Still, HFC134a is not interchangeable with CFC12. Significant differences between HFC134a and CFC12 exist (See Table 2) and must be considered when servicing refrigeration systems.

Service Precautions

- Allow no trace of other refrigerants in HFC134a systems. Chlorinated molecules in other refrigerants (such as CFC12) plug the capillary.
- Ester oil is used in HFC134a systems. Do not use mineral oil. HFC134a and mineral oil do not mix. If mineral oil is used with HFC134a, lubricant will not return to compressor and compressor will fail as a result. If significant amount of oil is lost from compressor, do not add oil but replace it instead.
- Take every care to keep moisture out of HFC134a system. Never leave compressor or system open to atmosphere for more than 10 minutes. Moisture in HFC134a system reacts with compressor oil and generates acid.
- Ester oil in HFC134a systems is so receptive to moisture that by the time poor system performance is detected, oil is saturated with moisture.
- HFC-134a compatible copper tubing, Amana part No. R0174075 (1/4" O.D x 18" length) and part No. R0174076 (5/16" O.D. x 24" length), must be used when replacement tubing is required.
- To avoid system contamination, Towerdraw E610 evaporating oil (Amana part No. R0157532) must be used when flaring, swaging or cutting refrigeration tubing.
- CFC12 has high tolerance for system processing materials such as drawing compounds, rust inhibitors and cleaning compounds. HFC134a has none. Such materials are not soluble in HFC134a. When washed from system surfaces by ester oils, they accumulate and plug capillary tube.
- Always replace compressor when performing low-side leak repair.
- Always replace drier filter with service drier filter, part No. B2150504. Never use any other drier.

NOTE: Before attempting removal of drier, read "Drier" procedure in this manual.

- HFC134a compatible copper tubing, part #R0174075 and part #R0174076 must be used when replacing tubing.
- Avoid system contamination by using Towerdraw E610 evaporating oil, part # R0157532, when flaring, swagging, or cutting refrigeration tubing.

Service Procedures

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Sealed-System Service

Expelling the Charge

When diagnosis is complete and a need to open the sealed system is positively identified, safe capture and disposal of the refrigerant becomes the first operation.

NOTE: According to federal law, effective July 1, 1992, it is the responsibility of the service technician to capture refrigerant for safe disposal.

Dehydration

When moisture gets into a sealed refrigeration system, heat from compressor and motor causes the moisture to react chemically with refrigerant and oil. Hydrochloric and hydrofluoric acids are formed by the process. The acids break down insulation on motor windings and corrode compressor working parts.

Compressor failure can be one result. In addition, sludge (a residue of the chemical reaction) coats all surfaces inside the sealed system. Eventually, sludge buildup restricts refrigerant flow through the capillary tube and ruins system performance.

To prevent component damage and preserve system performance, sealed systems contaminated with moisture must be thoroughly dehydrated. Proper system dehydration entails three steps:

a. Test for leaks and restrictions, and repair as necessary.
b. Evacuate the system.
c. Charge the system.

Leaks

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.

⚠ DANGER

To avoid risk of severe personal injury or death caused by explosion. Never use oxygen or acetylene to pressure test or clean out a refrigeration sysem. Free oxygen explodes on contact with oil. Acteylene will explode spontaneously when put under pressure.

Leak-testing Charged Systems

Refrigerant leaks are best detected with halide or electronic leak detectors. Proceed as follows:

1. Stop the operation (turn refrigerator off).
2. Disconnect unit from power.
3. Hold leak detector's refrigerant "sniffer" as close to system tubing as possible while you check all piping, joints, and fittings.
4. Use soap suds to check areas leak detector cannot reach or reliably test.

Leak-testing Systems with No 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 soap suds.

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

If a leak is detected in a brazed joint, do not to attempt to repair by applying more braze. Instead, the joint must be debrazed and disassembled, cleaned, reassembled and rebrazed. Capture refrigerant charge (if system is charged) before starting your repair.

Restrictions

Symptoms

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

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

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

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

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

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

Service Procedures

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Slight or partial restrictions can give the same symptoms as refrigerant shortage, including lower-than-normal back pressure, head pressure and wattage readings. Inside the unit, temperatures are above normal.

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

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 both sides 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 kink(s) in refrigeration tubing that could cause the restriction. Correct kink(s) and repeat step 2.
4. Turn unit off and determine how long it takes high-pressure 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 for safe disposal.

6. Disconnect unit from power.
   - Protect yourself by wearing goggles, gloves and other personal protective equipment.
   - Protect components by using heat-trap paste, heat sinks and other means to isolate heat.
7. Remove and replace restricted device.
8. Evacuate and charge system per the following instructions:

Evacuation

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

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

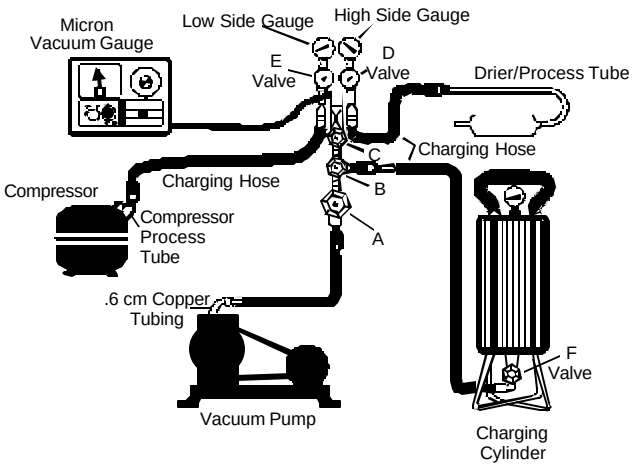
NOTE: Before opening any refrigeration system, EPA regulations require refrigerant in system to be captured for safe disposal.

Procedure:

1. Connect vacuum pump, vacuum-tight manifold set with high-vacuum hoses, thermocouple vacuum gauge and charging cylinder as shown in illustration.

NOTE: Evacuation should be done through I.D. opening of tubes and not through a line-piercing valve.

2. Connect low-side line to compressor process tube.
3. Connect high-side line to drier process tube.
4. Evacuate both sides simultaneously. With valves “C” and “F” closed, open all other valves and start vacuum pump.



Evacuation & Charging Setup

5. After compound gauge (low side) drops to approximately 29 inches gauge, open valve “C” to micron vacuum gauge and take micron reading.

NOTE: A high-vacuum pump can produce good vacuum only if oil in pump is not contaminated. Pumps contaminated from use with other refrigerants must not be used on HFC134a systems.

WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

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 micron level stabilizes at 1000 microns or below within 2 minutes, 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 exists in the system.
8. If system leaks, proceed as follows:
   a. Close valve “A” and valve “C”. Invert charging cylinder and open valve “F” to add partial charge for purpose of leak checking.
   b. Using a leak detector or other means, check system throughly to identify leak(s).
   c. After locating leak(s), capture refrigerant, repair leak(s), and begin at Step 1.

Charging

NOTE: Size of refrigerant charge in capillary-tube systems is critical. Exact amount is required for proper system performance. See tech sheet or unit serial plate for correct refrigerant charge. Do not use refrigerant other than that shown on serial plate.

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

Procedure:

1. Evacuate system thoroughly per instructions above.
2. Referring to illustration at left, close valves “A” (vacuum pump), “C” (vacuum gauge) and “E” (low-side manifold gauge).
3. Set charging cylinder on a refrigerant scale.
4. Open valve “F” (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.
5. If pressure equalizes, open valve “E” (low-side manifold gauge) and pinch off high-side drier process tube.
6. Start compressor and draw remaining refrigerant from charging hoses and manifold into compressor through compressor process tube.
7. To check high side, pinch off drier process tube. Close valve “D” (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.
8. Pinch off compressor process tube and remove charging hose. Braze stub closed while compressor is operating.
9. Disconnect power. Remove charging hose and braze high-side drier process tube closed.
10. Recheck for refrigerant leaks.

Drier Replacement

Drier must be replaced when system is opened for any reason. Before opening system, recover refrigerant for safe disposal.

Do not debraze drier. Applying heat to remove drier drives moisture out of drier into system. Cut drier out of system using the following procedure.

1. Score capillary tube close to drier and break.
2. Reform tubes so you have space in which to use a large tubing cutter on the drier.

WARNING

To avoid risk of severe personal injury or death; cut drier at correct location. Cutting drier in wrong place allows dessicant beads to scatter, creating a fall hazard. Clean up beads if spilled.

3. Cut circumference of drier 1-1/4” (3 cm) below point at which condenser inlet tube joins drier.
4. Remove drier, leaving only its top brazed to system tubing.
5. Apply heat-trap paste on post-condenser tubes above drier to protect grommets from high heat.
6. Debraze remaining part of drier and remove it from system.
7. Discard drier in safe place. Do not leave drier with customer.
8. If unit is in warranty, old drier accompanies warranty claim.

Service Procedures

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

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.

Testing Replacement Compressor

See “Temperature and Relationship Chart” for operating watts, test points, and temperature relationship test.

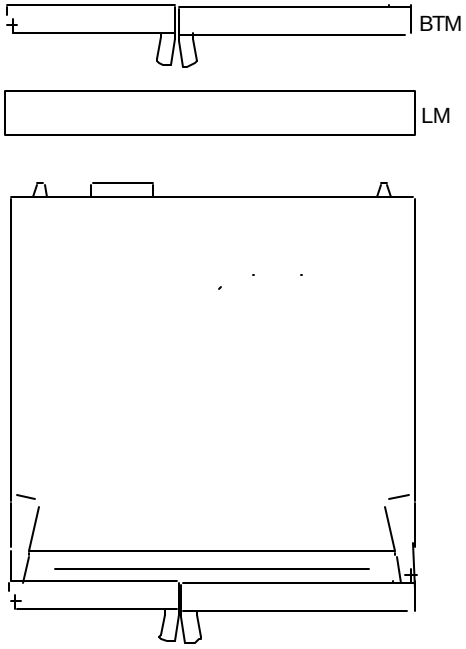
- Temperature testing is accomplished by using 3 lead thermocouple temperature tester in specific locations. Test point T-1 is outlet on evaporator coil and T-2 is inlet. Test point T-3 is suction tube temperature midway between where armaflex ends and suction port of compressor (approximately 12 inches 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.

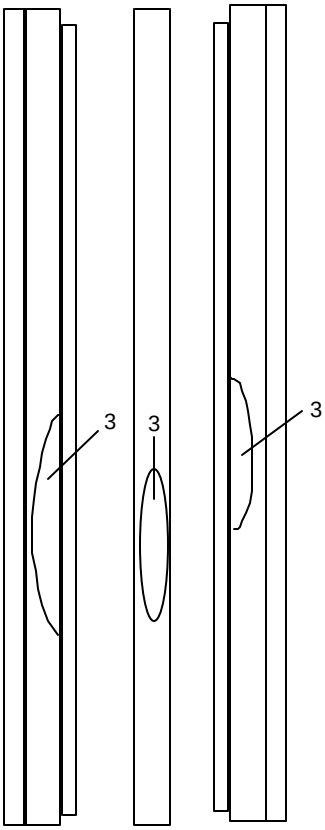
Service Procedures

Condensation Test

Classification of condensation:

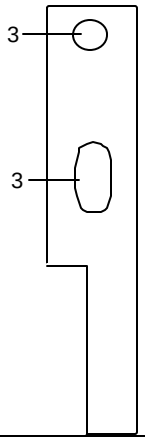
1 = Haze or Fog
2 = Beading
3 = Beads or Small Drops
4 = Drops Running Together

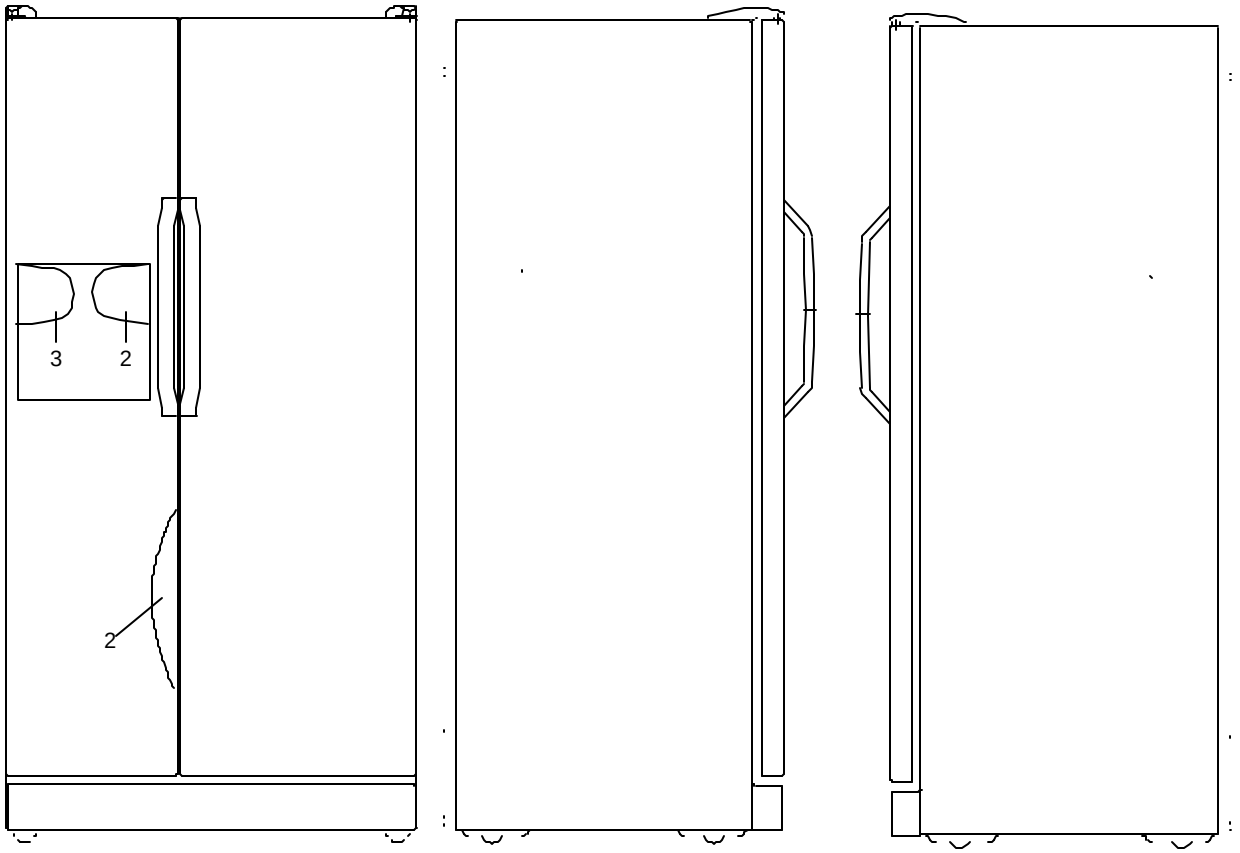




Conditions during test:

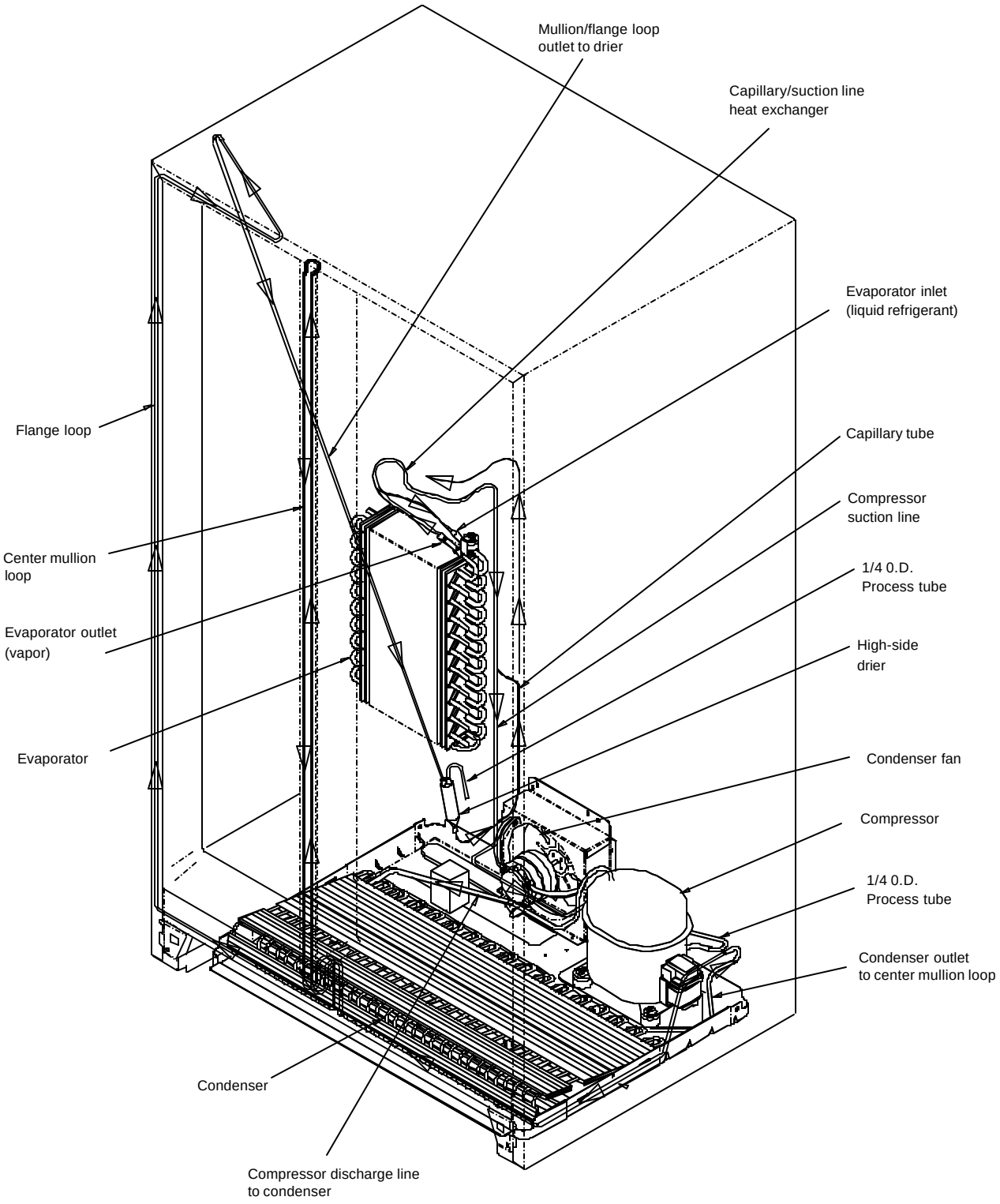
Ambient: 90°F, 84% relative humidity
Refrigerator compartment at 40°F
Freezer compartment at 0°F





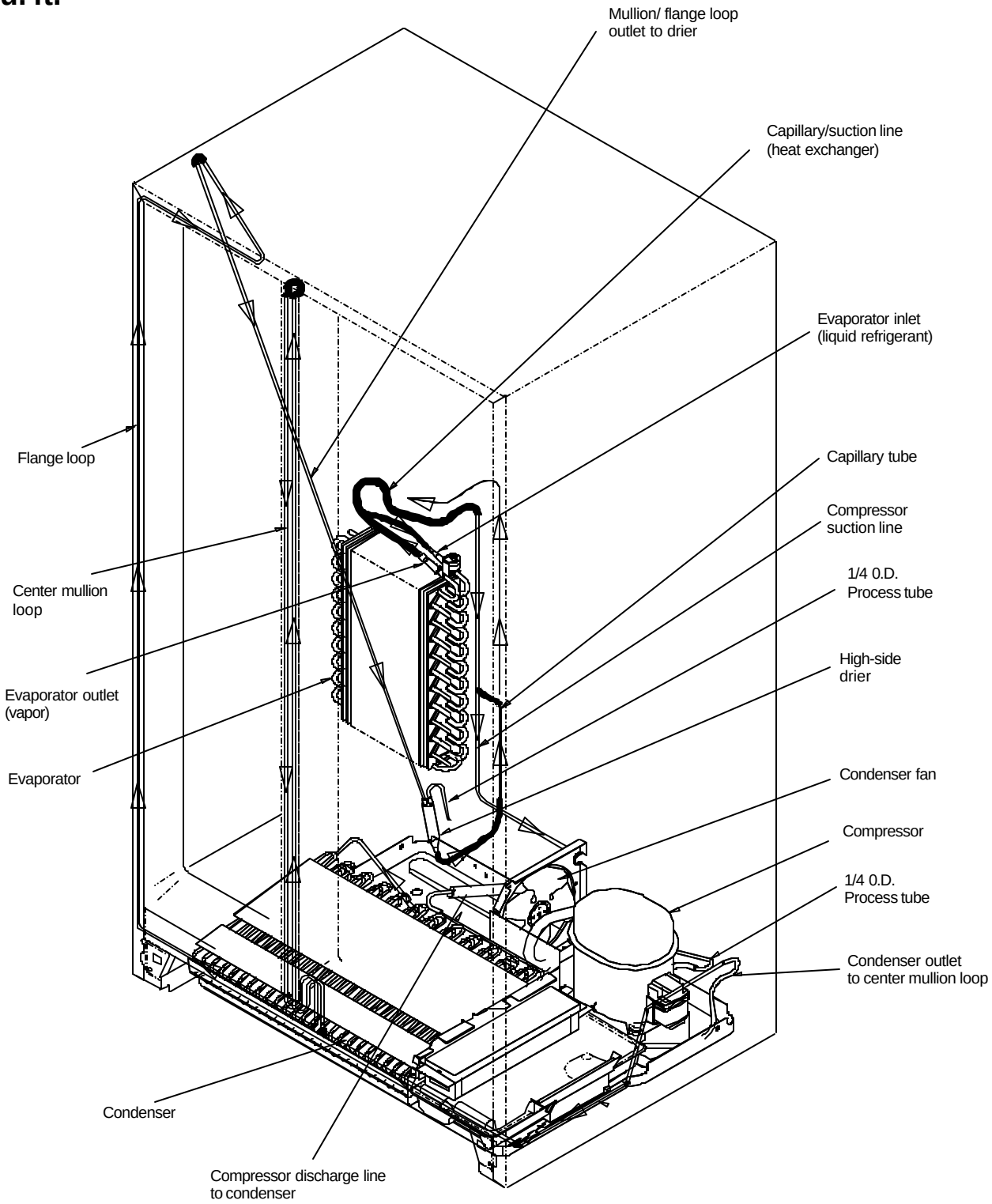
Service Procedures

Refrigerant Flow, 23/26 cu. ft.



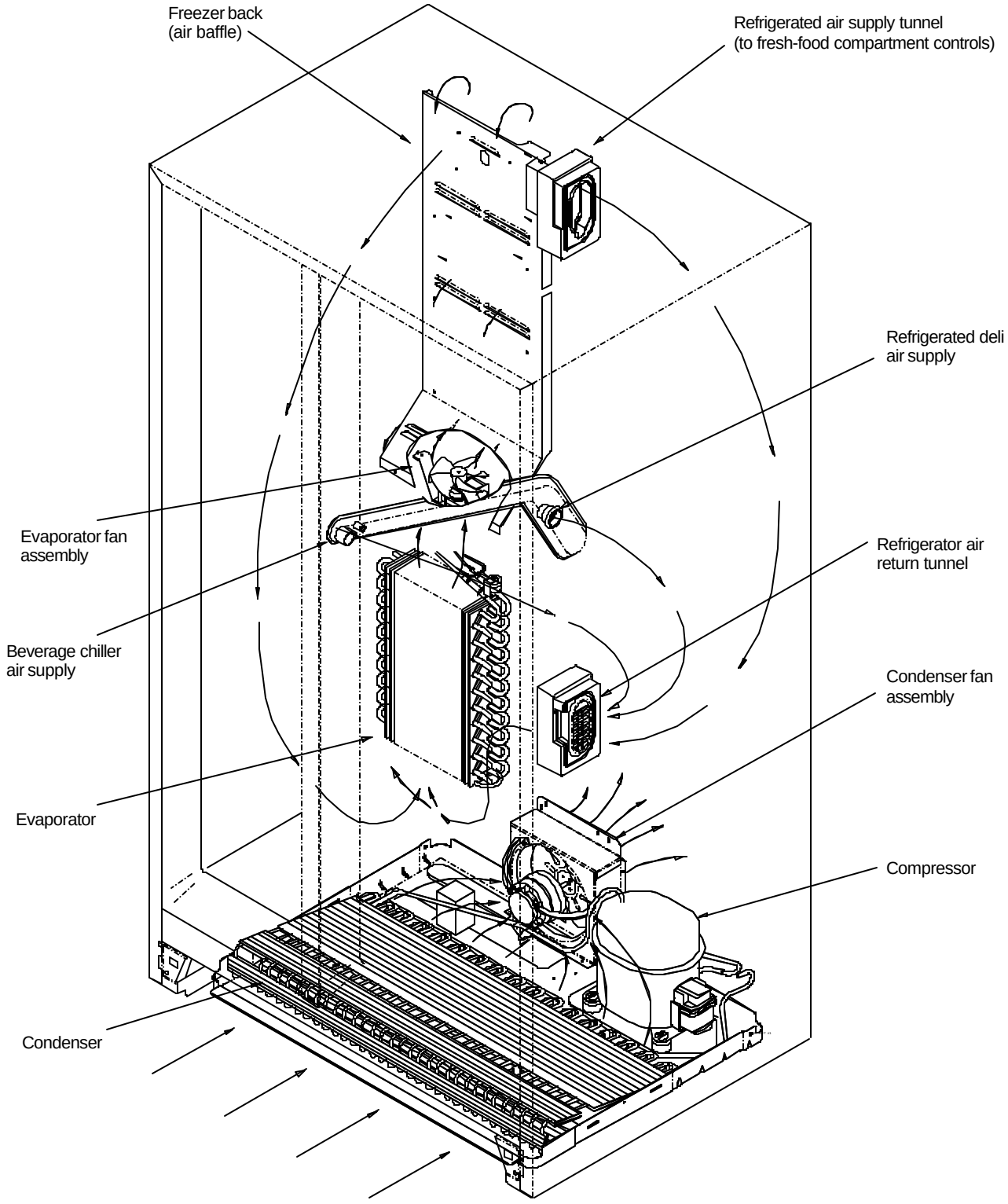
Service Procedures

Refrigerant Flow, 21 cu. ft.



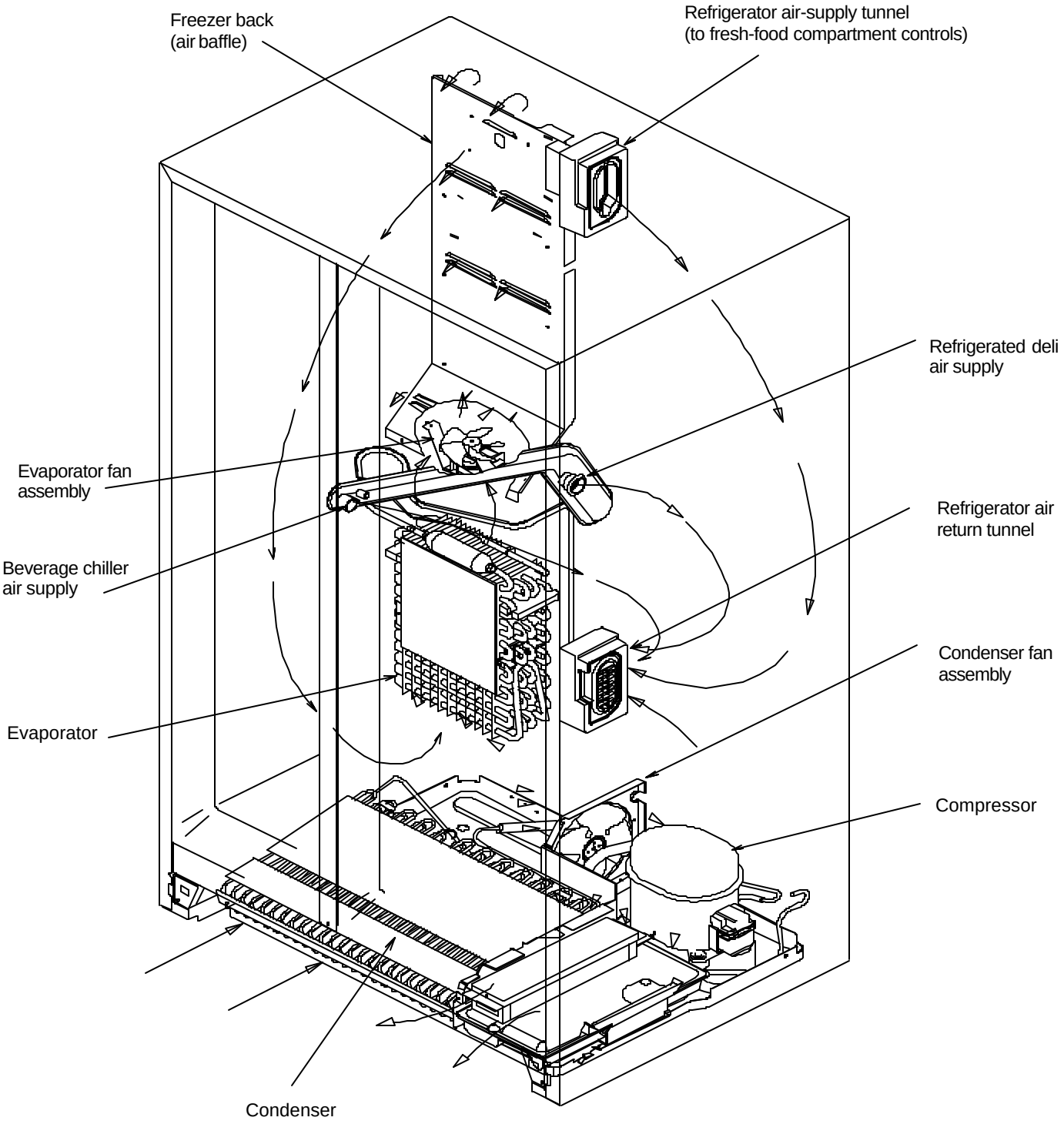
Service Procedures

Air Flow
23/26 cu.ft.



Service Procedures

Air Flow
21 cu.ft.



Disassembly

⚠ WARNING

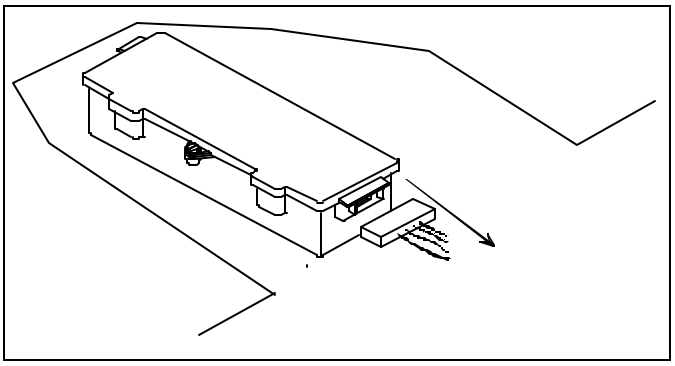
To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Refrigerator Door

NOTE: On models covered by this manual, doors are foamed as assemblies at the factory. Inner door liners and outer door pans are not replaceable. If either is damaged, door must be replaced.

Remove Refrigerator Door (electronic unit)

1. Open door and remove storage buckets.
2. Remove toe grille.
3. On electronic units, disconnect door wiring harness from high-voltage box behind toe grille.



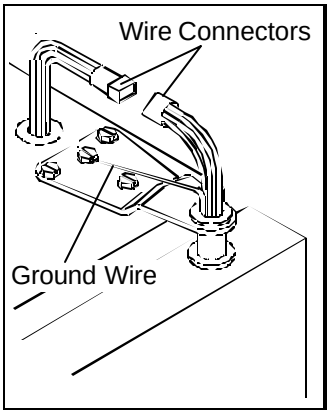
High-Voltage Box

4. Remove screw that mounts door closure to bottom hinge.
5. Close door.
6. On built-in units, remove screws that hold trim strip to top of door and remove trim strip.
7. Remove screw that holds cover on top hinge and remove hinge cover.
8. Unplug wiring harness; remove ground screw and ground wire from hinge.

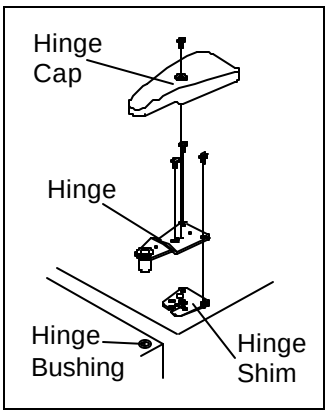
⚠ CAUTION

To avoid risk of personal injury or property damage due to door falling, always secure door to cabinet with strapping tape before top hinge is removed.

Electronic Models



Non-Electronic Models



Top Hinge Nomenclature,
Side x Side Refrigerator Doors

9. Remove three mounting screws from top hinge. Remove top hinge and hinge bushing and pull them off wiring harness.

NOTE: Hinge shim is glued to top of cabinet and must be left in place.

10. Open door carefully and lift about 3 inches to bring lower hinge bushing up, off hinge pin.
11. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab and wiring harness) from bottom hinge bracket.
12. Reverse procedure to rehang door.

Remove Refrigerator Door (electromechanical unit)

1. Open door and remove storage buckets.
2. Remove screw that mounts door closure to bottom hinge.
3. Close door.
4. On built-in units, remove screws that hold trim strip to top of door and remove trim strip.
5. Remove screw that holds cover on top hinge and remove hinge cover.
6. Remove three mounting screws from top hinge. Remove top hinge and hinge bushing.

NOTE: Hinge shim is glued to top of cabinet and must be left in place.

7. Open door carefully and lift about 3 inches to bring lower hinge bushing up, off hinge pin.
8. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab) from bottom hinge bracket.
9. Reverse procedure to rehang door.

Disassembly

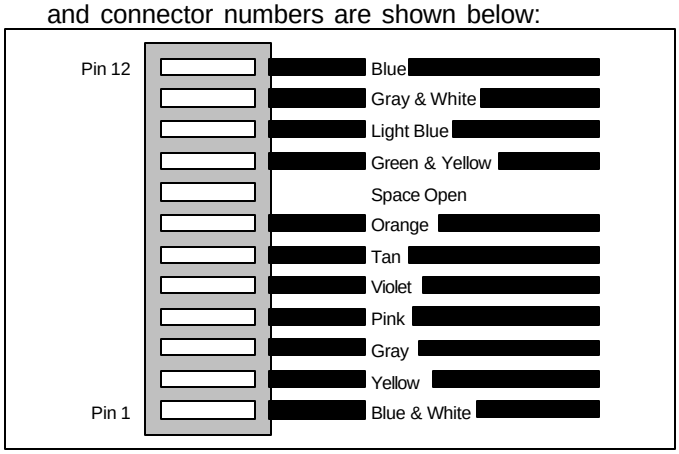
WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Disassemble Refrigerator Door (electronic controls)

NOTE: Door wiring harness in electronic units is not replaceable and there is no spare wire for service use.

1. Lay door liner-side down on firm, flat, protected surface.
2. If you want to replace lower hinge pin, you must extract wiring from harness connector. Wire coding and connector numbers are shown below:



NOTE: A straightened, standard-size paper clip can be used to push pins down and out of connector. When reinstalling pins, make certain they lock into connector. It may be necessary to pry up on pins before reinsertion to make them lock into connector.

3. Slide hinge pin (with door closure) off wiring harness.
4. Remove screws from door stop and remove door stop.
5. Remove screws from bottom trim panel. Remove trim panel and plastic support strip from bottom of door.
6. Use rubber mallet on bottom edge of door handle. Drive handle up, toward top of door about 1 inch, until you can lift handle off mounting clips.

NOTE: Ribbon strip under door handle connects keyboard on door handle to printed circuit (PC) board in door. Be careful not to damage components as you lift handle off clips.

7. Carefully disconnect keyboard ribbon strip from PC board in door. Lift handle away from door.
8. Remove screws holding door-handle clips in place. Remove door-handle clips.

NOTE: If your purpose is to replace the door gasket, you are now ready to do so. Follow instructions in gasket kit.

9. Remove four screws that hold PC board in place. Then lift PC board out of socket and unplug from wiring harness connector.

NOTE: Keyboard mounts on door handle with adhesive backing, and faceplate adheres to keyboard. Both parts are damaged when either one is peeled off. Unless you want to replace both keyboard and faceplate, skip to Step 12.

10. Peel keyboard and faceplate off door handle and discard. They cannot be re-used.

NOTE: Get tape residue off door without harming paint. Rub nonabrasive toothpaste into the residue with your fingers until adhesive dissolves.

11. Slide decorator panel off door.
12. If unit is built-in, remove screws holding plastic extrusion to top end of door. Remove extrusion.
13. Peel decorator strip off right side of door and discard. It cannot be reapplied.

NOTE: Get tape residue off door without harming paint. Rub nonabrasive toothpaste into the residue with your fingers until adhesive dissolves.

14. Reverse procedure to reassemble door.

Disassemble Refrigerator Door (electromechanical controls)

1. Lay door liner-side down on firm, flat, protected surface.
2. If unit is decorator model:
   a. Use rubber mallet on bottom edge of door handle. Drive handle up, toward top of door about 1 inch, and lift handle off mounting clips.
   b. Remove screws holding door-handle clips in place. Remove door-handle clips.
   c. Slide decorator panel off door.

NOTE: If your purpose is to replace the door gasket, you are now ready to do so. Follow instructions in gasket kit.

   d. Remove screws from bottom trim panel. Remove trim panel and plastic support strip from bottom of door.
   e. Remove screws from door stop and remove door stop.
   f. Peel decorator strip off right side of door and discard.

NOTE: Get tape residue off door without harming paint. Rub nonabrasive toothpaste into the residue with your fingers until adhesive dissolves.

   g. Reverse procedure to reassemble door.

Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

3. If unit is standard model:
   a. Use putty knife to pry top and bottom trim strips off door handle. Be careful not to mar door finish.
   b. Remove retainer screws from door handle and remove handle from door.
   c. Remove screws holding top and bottom handle-trim retainers and remove retainers from door.

NOTE: If your purpose is to replace the door gasket, you are now ready to do so. Follow instructions packed in gasket kit.

   d. Remove screws from door stop and remove door stop.
   e. Reverse procedure to reassemble door.

Freezer Door

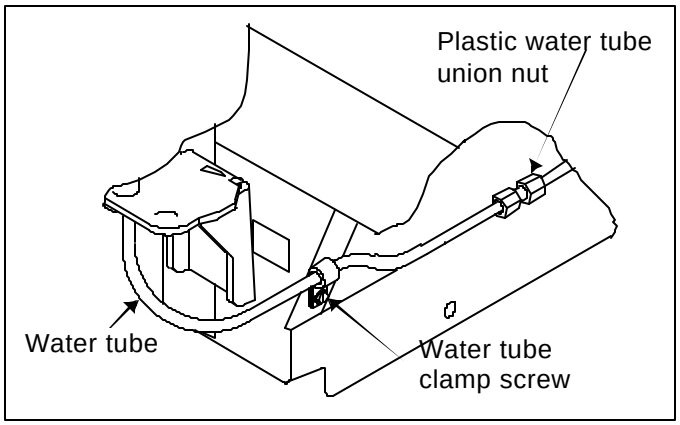
NOTE: On models covered by this manual, doors are foamed as assemblies at the factory. Inner door liners and outer door pans are not replaceable. If either is damaged, door must be replaced.

Remove Freezer Door (dispenser)

1. Open door and remove all storage buckets.
2. Remove toe grille.

NOTE: Shut off water supply before performing Step 3. Have a bucket ready to catch spillage from tube.

3. Loosen water-tube clamp screw. Loosen plastic water-tube union nut. Pull water tube away from union nut and through tube clamp.
4. Remove screw that mounts door closure to top surface of bottom hinge.
5. Close door.
6. Remove screw holding top hinge cover in place. Remove top-hinge cover.

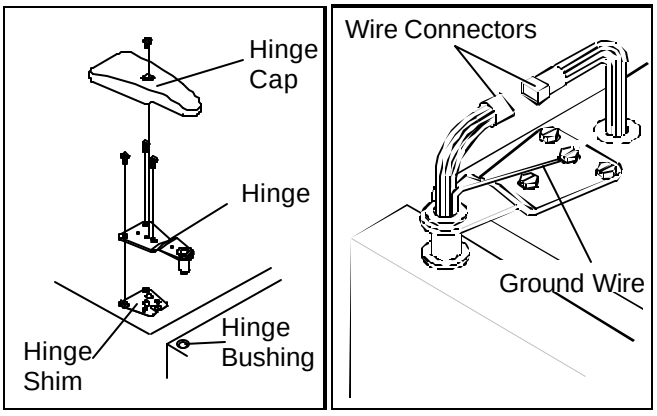


7. Unplug wiring harness connectors. Remove ground screw and ground wire from top hinge.
8. Remove top hinge and hinge bushing. Pull hinge and bushing off wiring harness.

NOTE: Hinge shim is glued to top of cabinet and must be left in place.

9. Lift door about 3 inches to bring lower hinge bushing up, off hinge pin.
10. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab) from bottom hinge bracket.
11. Reverse procedure to rehang door.

Non-Dispensing Models | Dispenser Models



Top Hinge Nomenclature,
Side x Side Freezer Doors

Remove Freezer Door (nondispensing)

1. Remove screw that mounts door closure to bottom hinge.
2. Close door.
3. Remove screw holding top hinge cover in place. Remove top hinge cover.
4. Remove three mounting screws from top hinge. Remove top hinge and hinge bushing.

NOTE: Posi-pin hinge shim adheres to top of cabinet and should be left in place. It helps to properly locate top hinge when rehanging door.

5. Lift door about 3 inches to bring lower hinge bushing up, off hinge pin.
6. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab) from bottom hinge bracket.
7. Reverse procedure to rehang door.

Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Disassemble Freezer Door (decorator)

NOTE: Freezer door wiring harness is not replaceable. Pink wire in freezer door harness is a spare wire for service use only.

1. Lay door liner-side down on firm, flat, protected surface.
2. If unit has Ice 'n' Water™ door:
   a. Apply masking tape to the blade of a putty knife or screwdriver. Use your masked tool to remove plastic Crush/Cube selector button from dispenser escutcheon.
   b. Use masked screwdriver or putty knife to pry bottom edge of escutcheon up, away from door. Be careful not to mar door finish.
   c. Pull remaining three sides of escutcheon up, away from door, and set escutcheon aside.
3. Use rubber mallet on bottom end of door handle. Drive handle up, toward top of door about 1 inch, and lift handle off mounting clips.
4. Slide decorator panels off front of door.
5. Remove screws holding door-handle clips in place. Remove door-handle clips.

NOTE: If your purpose is to replace the door gasket, you are now ready to do so. Follow instructions in gasket kit.

6. Remove screws holding door stop in place and remove door stop.
7. Remove screws from bottom trim strip. Remove bottom trim strip and plastic support from door.
8. At top of door, remove three screws that anchor plastic extrusion. Remove extrusion from door.
9. Peel decorator strip off left side of door and discard. It cannot be re-used.
10. Get tape residue off door without harming paint. Rub nonabrasive toothpaste into the residue with your fingers until adhesive dissolves.
11. Reverse procedure to reassemble door.

Disassemble Freezer Door (nondecorator)

NOTE: Freezer door wiring harness is not replaceable. Pink wire in freezer door harness is for service use only.

1. Lay door liner-side down on firm, flat, protected surface.
2. If unit has Ice 'n' Water™ door:
   a. Apply masking tape to the blade of a putty knife or screwdriver. Use your masked tool to remove plastic Crush/Cube selector button from dispenser escutcheon.
   b. Use masked screwdriver or putty knife to pry bottom edge of escutcheon up, away from door. Be careful not to mar door finish.
   c. Pull remaining three sides of escutcheon up, away from door, and set escutcheon aside.
3. Use masked screwdriver or putty knife to pry top and bottom trim strips off door handle. Be careful not to mar door finish.
4. Remove retainer screws from door handle and remove handle from door.
5. Remove screws from top and bottom handle-trim retainers and remove retainers from door.

NOTE: If your purpose is to replace the door gasket, you are now ready to do so. Follow instructions in gasket kit.

Disassemble Ice 'n' Water™ Cavity

1. Apply masking tape to blade of putty knife or screwdriver. Use masked tool to remove plastic Crush/Cube selector button from dispenser-cavity escutcheon.
2. Use masked tool to pry bottom edge of escutcheon up, away from door. Pull remaining three sides of escutcheon up, away from door and set escutcheon aside.
3. Remove two screws that anchor electrical bracket cover. Separate cover and bracket to access ice, water and cavity-light switches.
4. Remove two screws and clips that anchor water actuator arm and return spring.

NOTE: In reassembly, return spring straddles arm and rides up against top section of arm.

5. If you want to replace the water tube, remove water-tube retainer clip. Pull water tube out of door and thread new tube through.
6. Remove four screws and clips from ice door. Remove ice door delay-retainer screw and retainer. Remove ice door and delay mechanism.

Disassembly

⚠ WARNING

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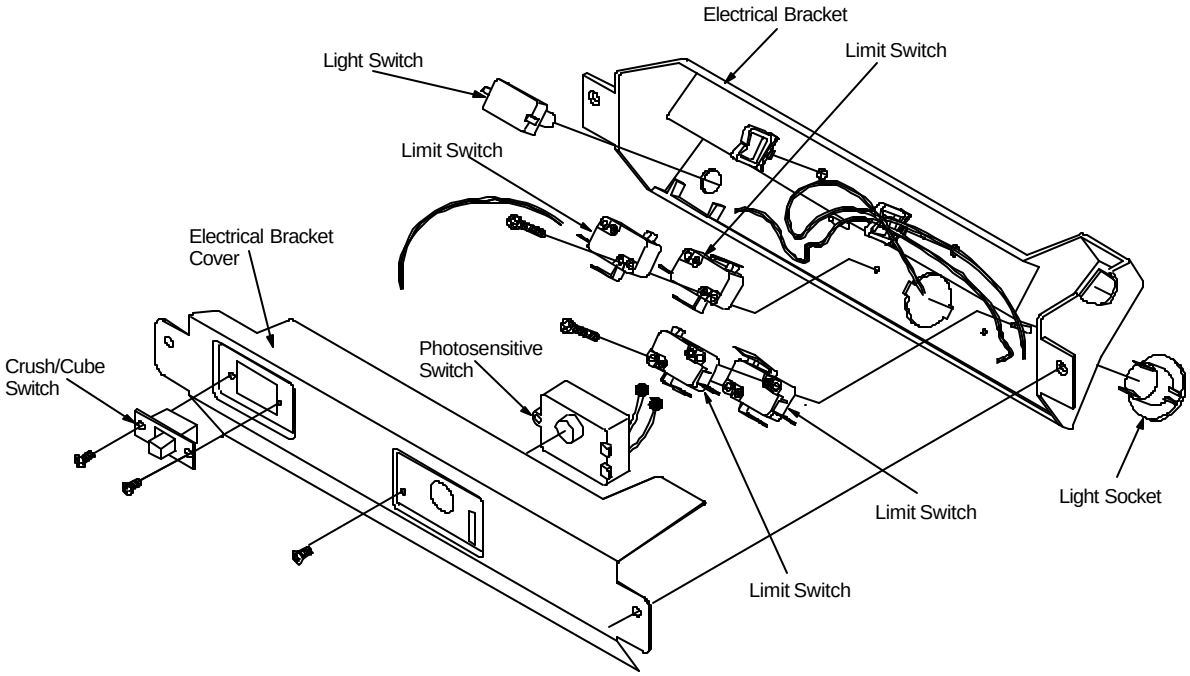
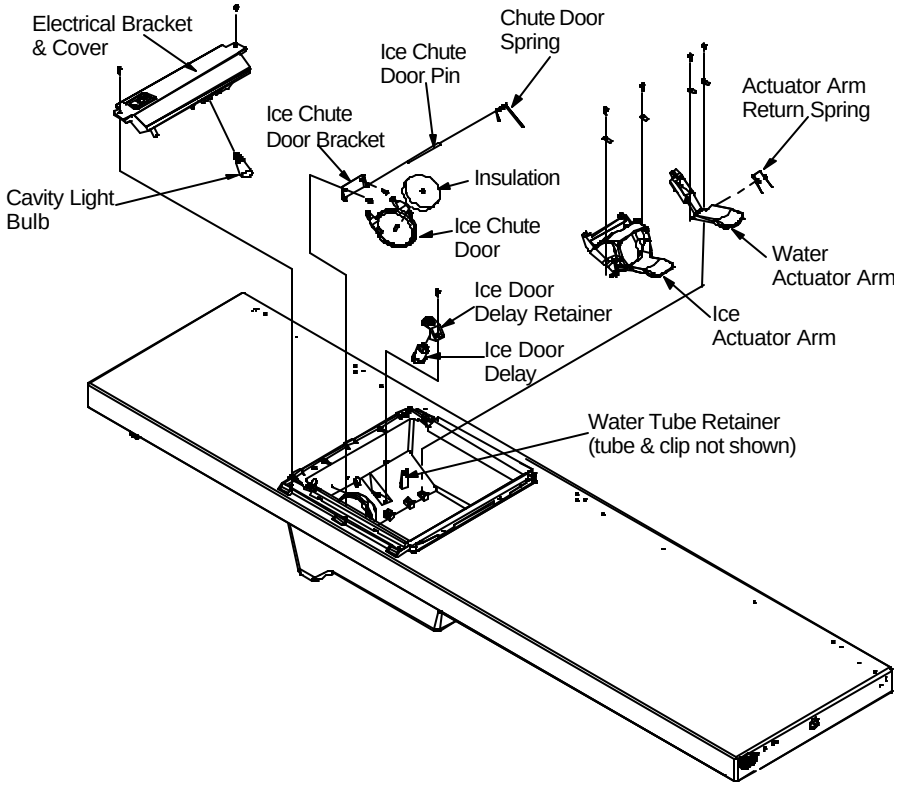


Electrical Bracket Blow-Up



Dispenser Cavity Blow-Up

Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Refrigerator Cabinet

Before disassembling the refrigerator cabinet, open the refrigerator door and remove all shelves, bins, etc. Remove additional components per instructions below.

Upper Refrigerator Light

1. Across top of compartment, in front, remove four light-shield mounting screws and remove light shield.

⚠ CAUTION

To avoid risk of burns, allow bulb to cool before removing.

2. Remove mounting screws at rear corners of lens. Remove lens and bulb.
3. Slide light housing rearward until it comes free of cabinet. Disconnect fixture from wiring harness and remove it from unit.
4. Slide light switch cover rearward until it comes free of cabinet. Disconnect switch from wiring harness and remove it from unit.
5. Separate switch from switch plate by pressing in on switch mounting tabs and while you press switch out through front of plate.
6. Reverse procedure to reassemble.

Temp-Assure™ Control Unit (electronic)

1. Remove front-cover retainer screw and clip (See top, right).
2. Pull bottom edge of front cover out. Work tabs on top edge free of compartment liner. Remove front cover.
3. Unplug wires from control box to damper control. Remove anchor screws from control-box top assembly. Free control-box top of all wires and remove assembly from unit.
4. Remove screws that anchor control-box bottom and remove control-box bottom, being careful to free it of all wires.
5. Peel up lower half of front damper-control gasket. Do not destroy the gasket. Remove damper-control insert (one or two foam plugs) from behind gasket.
6. Behind insert are two damper-control mounting screws. Remove mounting screws, and remove damper control.
7. At left end of air duct, remove air-duct mounting screws and clamp. Then remove air duct.
8. Remove damper spacers and air-duct gasket.
9. Reverse procedure to reasssemble.

Temp-Assure™ Control Unit (electromechanical)

1. Pull control knobs off front cover (See bottom, right).
2. Remove front-cover retainer screw and clip.
3. Pull bottom edge of front cover out and up. Work tabs on top edge free of compartment liner. Remove front cover.

At this point you have a choice. If you intend to replace the freezer control only, proceed with Step 4. If the refrigerator control is your interest, skip to Step 5.

4. To replace the freezer control:
   a. Remove two freezer-control mounting screws.
   b. Remove sealer from capillary well.

NOTE: Replace sealer during reassembly.

   c. Pull freezer control out of bracket. Disconnect wiring from rear of control.
   d. Remove capillary from well and remove freezer control from unit.
5. To replace the refrigerator control:
   a. Peel up lower half of front damper-control gasket. Do not destroy the gasket. Remove damper-control insert (one or two foam plugs) from behind gasket.
   b. Behind insert are two damper-control mounting screws. Remove mounting screws, and remove damper-control unit.

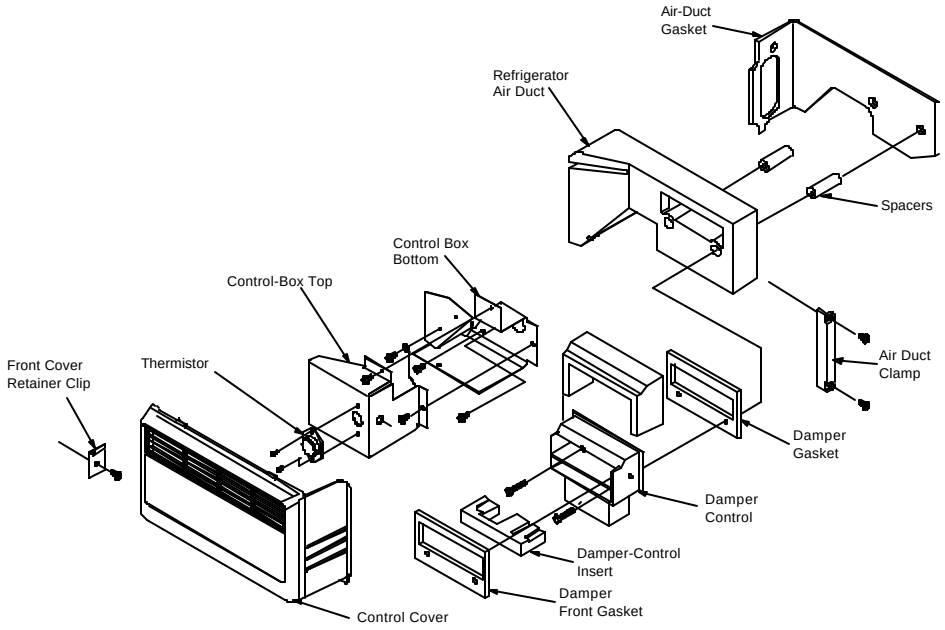
NOTE: Damper control is a calibrated component and sold as a single piece. Do not disassemble it unless you aim to replace the entire assembly.

   c. At left end of air duct, remove air-duct mounting screws and clamp. Then remove air duct.
   d. Remove two damper spacers and air-duct gasket.
   e. Reverse procedure to reassemble.

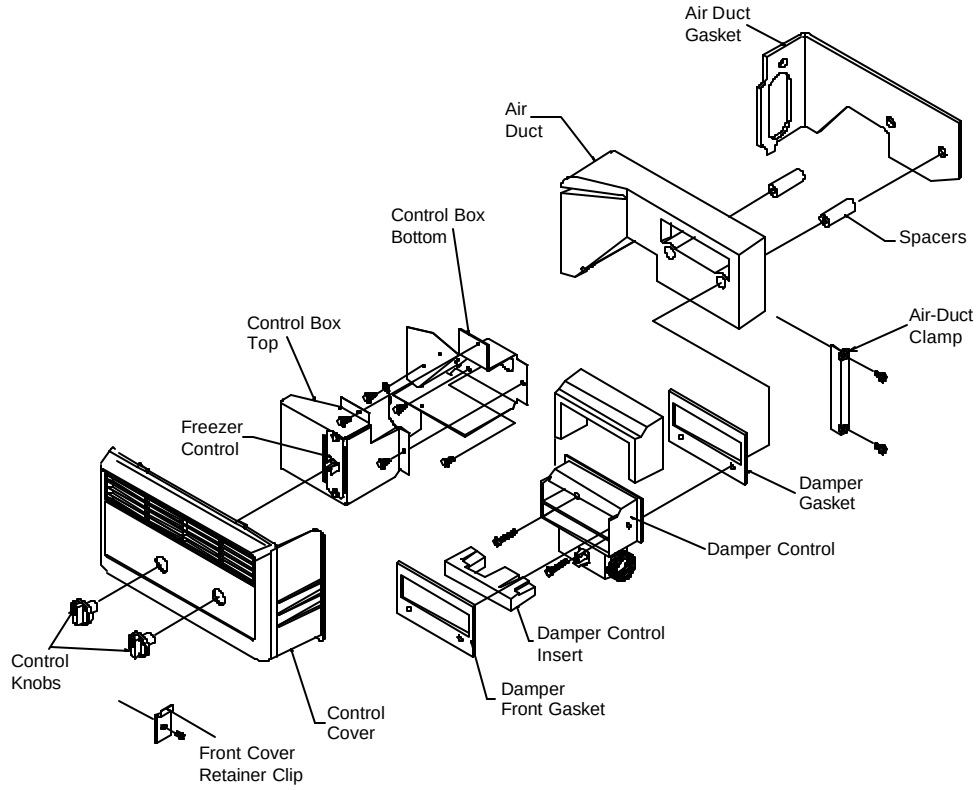
Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.



Electronic Damper Control



Electromechanical Damper Control

Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Water Filter and Tubing

1. If you intend to replace filter cartridge only:
   a. Remove top shelf from refrigerator compartment.
   b. Twist cartridge a quarter-turn left, until it stops.
   c. Pull cartridge down, off filter head.
2. If you intend to replace filter head, check your unit serial number. If your serial number prefix is 9808 or earlier, proceed as follows:
   a. Turn off water supply from household plumbing
   b. Perform Step 1, above.
   c. Grasp cover firmly near outer edges.
   d. Pull strongly toward front of refrigerator until filter bracket slides off mounting plate.

NOTE: It may require considerable force to remove cover.

   e. Remove screws that anchor filter head to bracket.
   f. Detach water tubes from filter head by pushing down on collars while pulling out on tubes.
3. If you intend to replace filter head on unit with serial number prefix of 9809 or later:
   a. Turn off water supply from household plumbing.
   b. Perform Step 1, above.
   c. Loosen two screws that anchor water filter bracket to compartment liner.
   d. Pull cover and filter head about 1/2" toward front of unit. Assembly will drop down when screw heads reach keyhole slots.
   e. Detach water tubes from filter head by pushing down on couplers while pulling out on tubes.
   f. Carefully pull coiled metal anti-kink inserts from water tubes. Save inserts for re-use.
4. If you intend to replace filter inlet tube:
   a. According to the serial number of your unit, perform Step 1 and Step 2 or Step 3, above.
   b. Remove four screws from water-tube cover. Water tubes and tube cover fall into your hands. Separate cover from tubes.
   c. Being careful not to damage water supply tube, pull unit away from wall.
   d. Remove machine compartment cover (See bottom, right).
   e. Dismount primary water valve by removing screws that anchor primary water-valve plate to rear edge of machine tray.
   f. Loosen two plastic sleeve nuts that hold inlet tube to primary water valve. Disconnect inlet tube. Carefully pull metal tube inserts from water tubes. Soak inserts in solution of water and chlorine bleach until ready to reassemble.
   g. From back of unit, pull filter tube down and out of refrigerator cabinet.
   h. Reverse procedure to reassemble.
5. If you intend to replace filter outlet tube:
   a. Perform steps 1 and 2 and Step 3, “a” through “d”.
   b. Reach through space vacated by primary water valve. Remove mounting screws and dismount secondary water valve. Leave tubes and wires attached to secondary valve, but pull it out where it’s accessible.

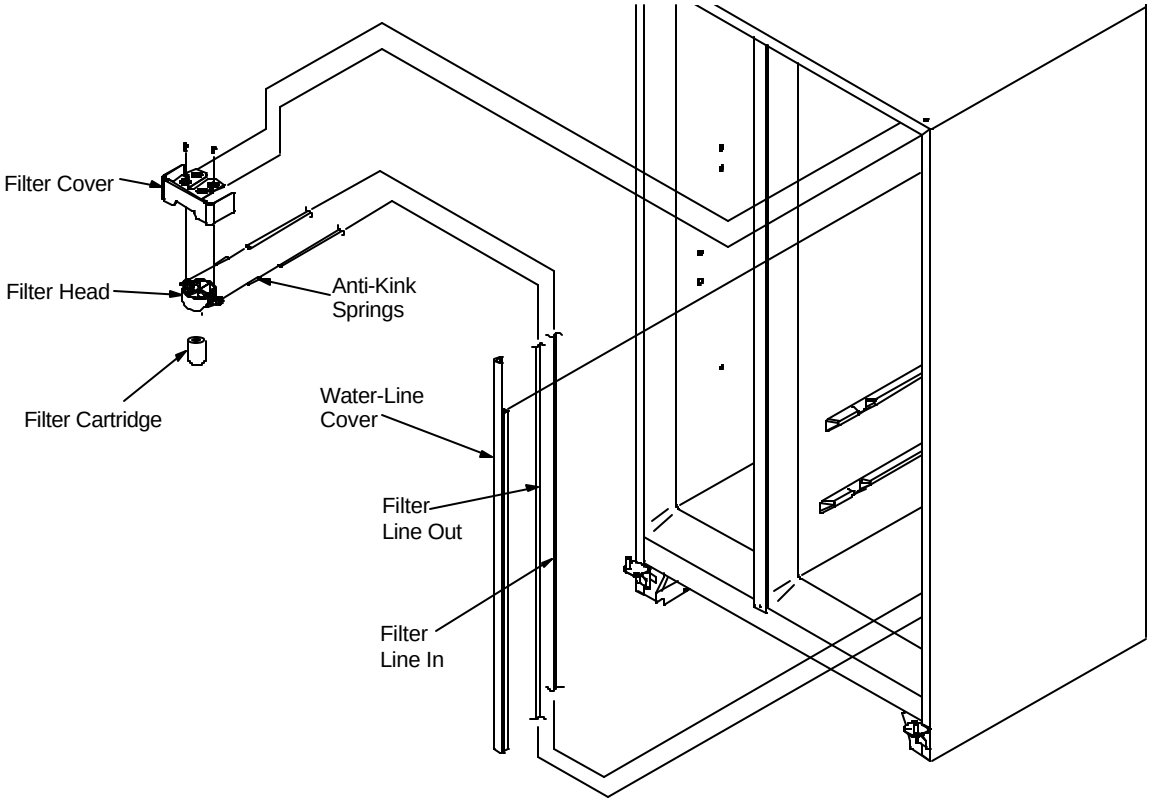
One side of the secondary water valve has two tubes connected. The other side has just one tube connected to it. That single tube is the filter-outlet tube.

   c. Disconnect filter outlet tube from secondary water valve. Remove coiled metal anti-kink inserts from water tubes. Save inserts for re-use.
   d. From back of unit, pull tube down and out of refrigerator cabinet.
   e. Reverse procedure to reassemble.

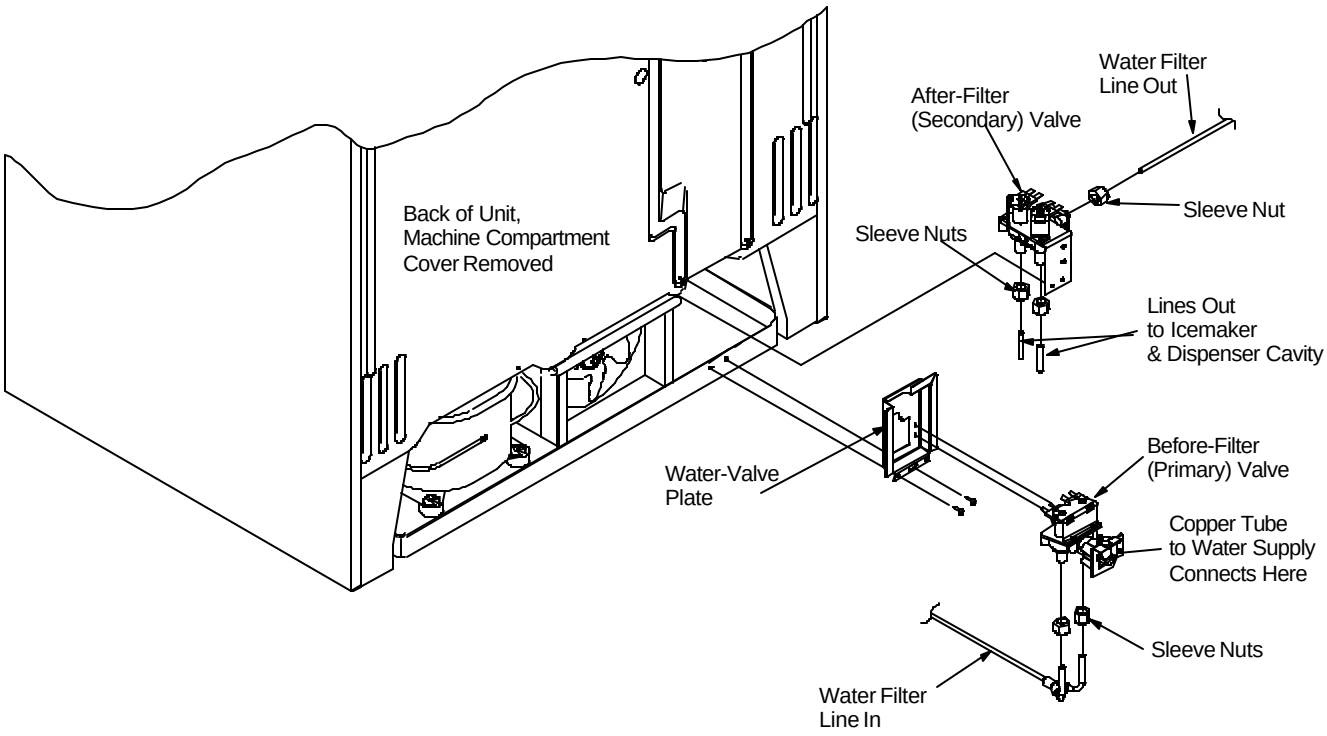
Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.



Water Filter Nomenclature



Water Valve Nomenclature

Disassembly

⚠ WARNING

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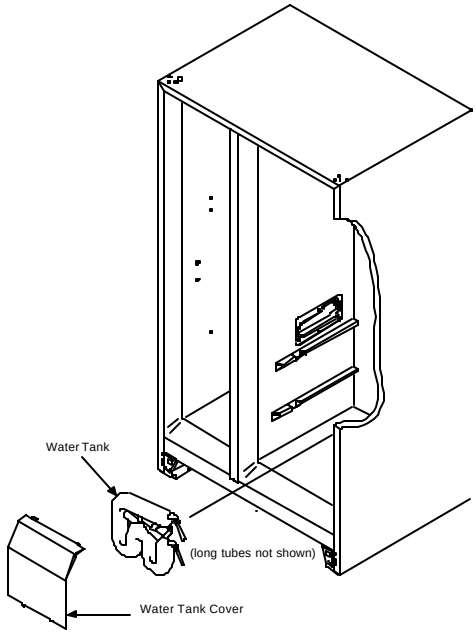
Water Tank and Tubing

Water tubes are permanently attached to water tanks. When you remove a water tank, therefore, you must either cut the tubes or pull them with the tank.

If your unit has a leaky water tube, replace tank and tubes as a single part. If your unit has a leaky tank, it is easier to cut the tubes and splice them to a new tank.

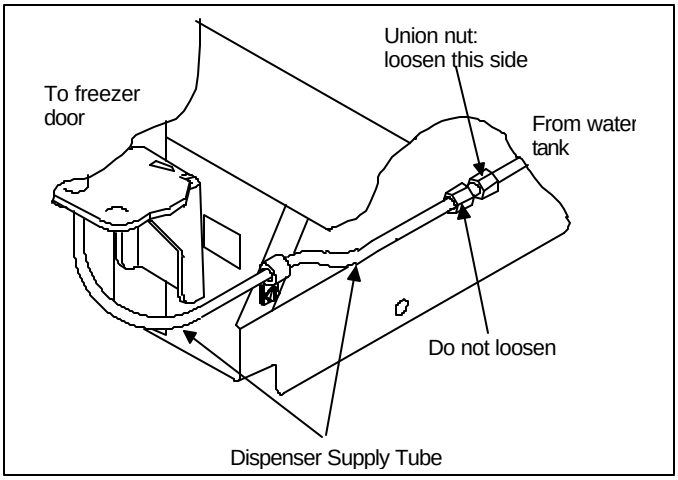
Amana® service part No. R0181175 is a replacement water tank kit. The kit includes a tank with tubes attached, three tube-to-tube union splices and all necessary instructions.



Tank & cover positioned at bottom of refrigerator cabinet against back wall.

NOTE: Before attempting removal of water tank, have container ready to receive contents of tank.

1. If you intend to replace water tank only:
   a. Shut off water supply from household plumbing.
   b. Remove shelves and drawers from refrigerator cabinet.
   c. Press down on top of water tank cover as you pull lock tabs out of cabinet liner's rear wall. Then lift water tank cover and remove it.
   d. Remove water-tank retainer screw. Leave tank in place for now.
   e. Disregard the rest of this procedure and follow instructions in water-tank replacement kit (see above).
2. If you intend to replace both tank and tubes:
   a. Remove toe grille.
   b. Under left front corner of unit, on refrigerator side of splice, loosen water-tube union nut. Pull union nut off water tube.



   c. Reach through space vacated by primary water valve to remove mounting screws and dismount secondary water valve. Leave tubes and wires attached to secondary valve, but pull it out where it's accessible.

One side of the secondary water valve has two tubes connected. Of those two tubes: one supplies icemaker in freezer cabinet; the other fills the water tank.

   d. Leave ice-maker tube attached to valve. Disconnect water-tank fill tube. Remove coiled metal anti-kink inserts from water tubes. Save inserts for re-use.
   e. Working from back of unit, pull dispenser supply tube (water-tank-to-freezer-door, disconnected in Step 2-b) out of its conduit.
   f. From inside refrigerator cabinet, remove water tank. Pull two tank tubes up, through floor of cabinet liner as you bring tank out.

NOTE: Water tubes connected to tanks are of two different sizes — 1/4" and 5/16". The 1/4" tube is always the inlet tube.

Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Freezer Cabinet

Before disassembling freezer cabinet, open door and remove all shelves, door buckets, etc. Then proceed:

Freezer Light/Auger Motor Interlock Switch

1. Remove two mounting screws from light switch cover at top front of cabinet.
2. Pull rear edge of switch plate down until tabs on front edge release cabinet liner.
3. Taking note of their correct location, pull wires off back of switch.
4. Separate switch from switch plate by pressing in on switch mounting tabs and while you press switch out through front of plate.
5. Reverse procedure to replace switch.

Freezer Light Bulb & Light Socket

1. Remove ice bucket (if present).
2. Remove mounting screw at top of lens. Remove lens by lifting up.

⚠ CAUTION

To avoid risk of burns, allow bulb to cool before removal.

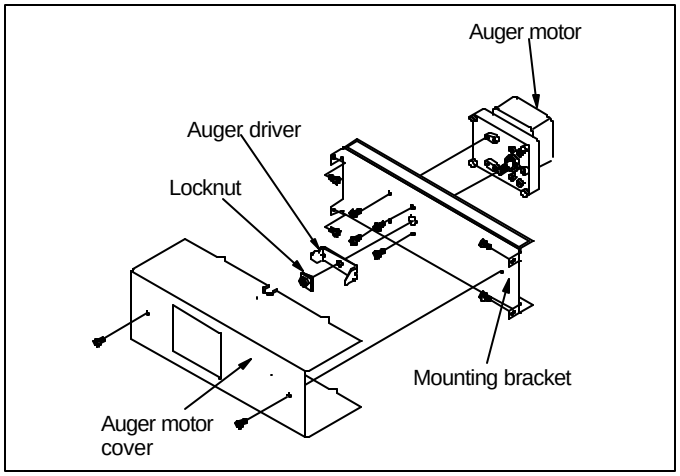
3. Remove light bulb.
4. Remove two anchor screws from mounting plate and pull mounting plate away from cabinet liner.
5. Behind mounting plate, and taking note of their correct location, disconnect wires from light socket.
6. Press on tabs at either side of socket to pull socket and mounting plate apart.
7. Reverse procedure to reassemble light.

Auger Motor

1. Remove ice bucket.
2. Remove two screws from auger motor-mount bracket cover and remove cover.
3. Remove four screws from mounting bracket and dismount bracket.
4. Disconnect mounting bracket from wiring harness and remove bracket from unit.

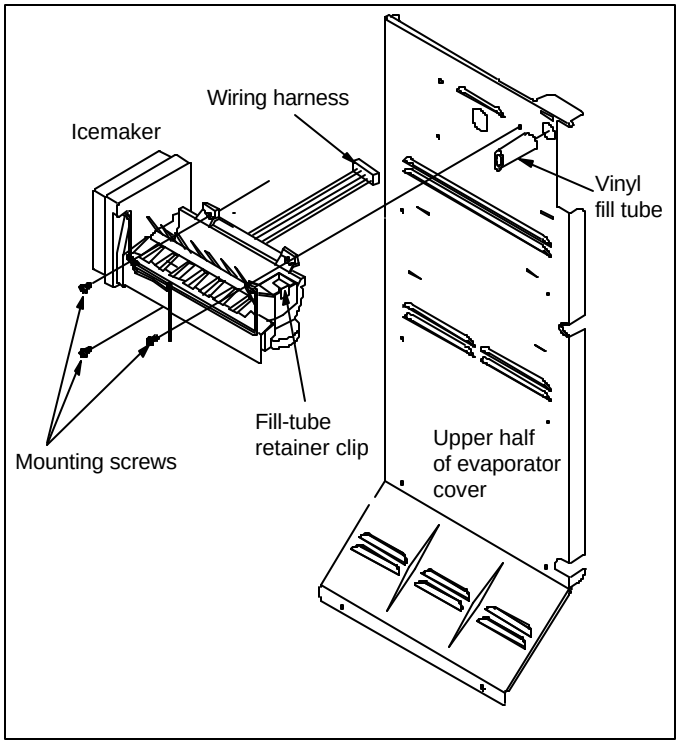
NOTE: Locknut on motor shaft is left-hand thread.

5. Remove locknut from motor shaft.
6. Remove four motor-mount screws and remove motor from bracket.
7. Reverse procedure to reassemble.



Icemaker

1. Remove ice bucket.
2. Remove auger motor-mount bracket cover (if present).
3. Remove three mounting screws from icemaker.
4. Pull icemaker off of back wall and away from vinyl fill tube. Unplug icemaker from wiring harness and remove ice maker from unit.
5. Reverse procedure to reinstall icemaker.



Disassembly

⚠ WARNING

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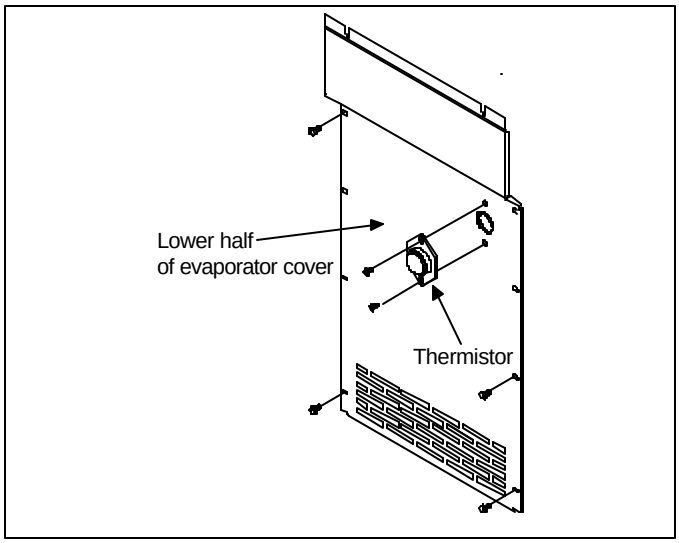
Evaporator Disassembly

Thermistor (electronic only)

1. Remove shelves to access thermistor.
2. Remove two mounting screws from thermistor.
3. Being careful of wires attached, pull thermistor out of evaporator cover. Disconnect wires and remove thermistor.
4. Reverse procedure to replace thermistor.

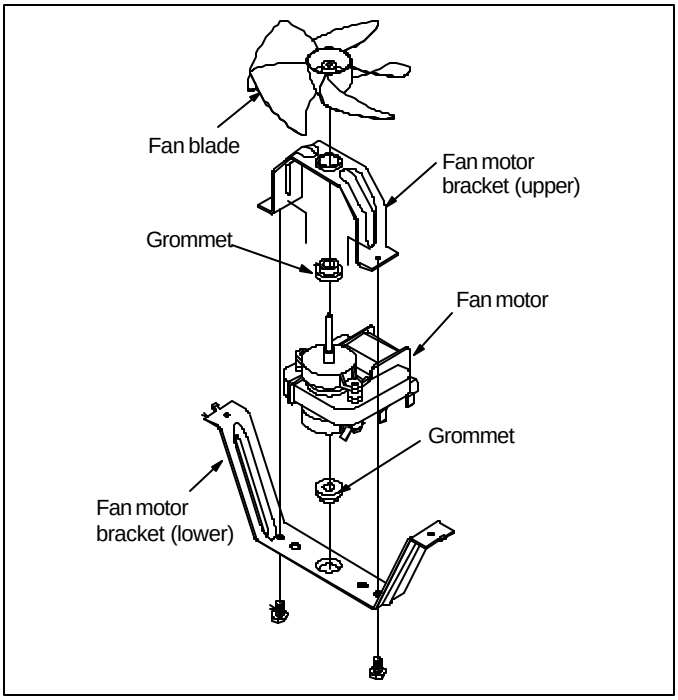


Evaporator Cover

1. Remove all shelves and shelf brackets, ice bucket, auger motor and ice maker.
2. Remove hex-head screws from upper and lower sections of evaporator cover.
3. Being careful not to damage wiring harness, remove upper portion of evaporator cover.
4. Reach behind lower section of evaporator cover and disconnect wires from thermistor (if present).
5. Remove lower half of evaporator cover.
6. Reverse procedure to replace evaporator cover.

Evaporator Fan

1. Remove ice bucket and freezer shelves.
2. Remove back panel and evaporator cover.
3. Remove four mounting screws from fan shroud.
4. Disconnect wires to fan and to shroud.
5. Remove motor and shroud from housing as a unit.
6. Remove two screws that mount bracket to shroud.
7. Remove motor and bracket from shroud.
8. Remove two screws that hold upper and lower brackets together. Pull bracket halves apart.



NOTE: Fan blade is plastic and fits tightly on motor shaft. Fan blades sometimes break during disassembly if sufficient care is not taken. For that reason, you should have a new fan blade available before removing an old one.

9. Taking note of which way the blades are facing, pull fan off motor shaft.
10. Reverse procedure to reassemble.

NOTE: Fan should be pressed onto shaft so that, when motor and fan are mounted on shroud, half of fan protrudes through either side of shroud.

Defrost Terminator (thermostat)

1. Remove back panel and evaporator cover.
2. Unclip thermostat from outlet on evaporator coil (see illustration below).
3. Cut plastic strap that holds wires bundled against evaporator inlet tubes.

NOTE: The two wires that lead from defrost thermostat through back of freezer cabinet are test leads for use during factory assembly only. Once cut, they need not be replaced or repaired.

4. Unplug the two spade connectors that link thermostat leads to cabinet wiring harness. Two other leads (used by assemblers to bypass the defrost terminator during manufacture) run through back wall of cabinet. Cut them short where they disappear into wall.
5. Remove thermostat.

Disassembly

⚠ WARNING

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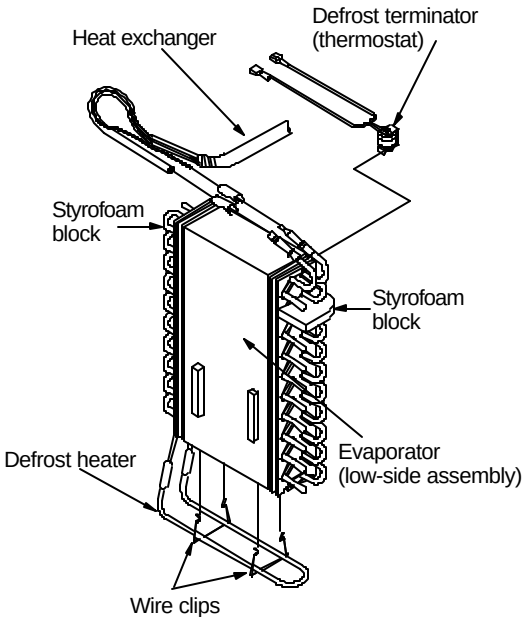
6. Reverse procedure to replace thermostat.

NOTE: Replacement thermostats come with instructions for securing bypass leads in out-of-the-way place so they cannot foul the fan.



⚠ WARNING

To avoid risk of severe personal injury, always wear hand and arm protection when working near the evaporator.

Defrost Heater

1. Remove back panel, evaporator cover and thermistor, if present.

NOTE: Be careful not to bend evaporator tubing when you perform the following steps:

2. Pull evaporator coil free from plastic mount clips.

NOTE: Styrofoam blocks nest between coils at sides of evaporator. The blocks act as air dams, forcing air to pass through evaporator coils rather than around them. Carefully preserve the blocks and be sure to replace them as you found them (see illustration above).

3. At bottom of coil, look closely to locate two wire clips that hold heater against evaporator coil. Use needle-nose pliers to remove clips.
4. Unplug heater leads.

NOTE: Pay attention to the way heater leads thread through evaporator coil. Reinstall leads in the same position.

5. Pull heater and leads down, out of evaporator coil.
6. Reverse procedure to reinstall heater.

Evaporator Coil

NOTE: Components of low-side assembly (evaporator and heat exchanger) are replaced as a unit.

NOTE: Read “Service Procedures” section of this manual before attempting this procedure.

1. Remove evaporator cover and thermistor, if present.
2. Remove defrost thermostat.
3. Remove defrost heater.
4. Remove machine compartment cover and heat-exchanger cover.
5. Remove mounting screws at left-rear and right-rear corners of machine tray.
6. Being mindful of all tubes, wires and other components, pull machine tray 6 to 8 inches rearward. This allows easy access to compressor.

NOTE: Pulling machine tray more than 8 inches rearward will pull tray off front guide rail.

7. Capture refrigerant charge.
8. Following instructions in “Service Procedures” section of this manual, remove filter drier from unit.
9. Shield other components from heat source as you debraze suction tube and pull it off compressor.
10. Straighten heat exchanger and pull evaporator out of plastic clips that hold it on back wall of unit. Pull low-side assembly forward, through the back wall and out of freezer compartment.
11. To reinstall evaporator, reverse this procedure while paying close attention to “Service Procedures” section of this manual.

NOTE: Mastic seal in back wall will be damaged or destroyed when heat exchanger is pulled through it. Seal must be repaired or replaced when low-side assembly is reinstalled.

Disassembly

⚠ WARNING

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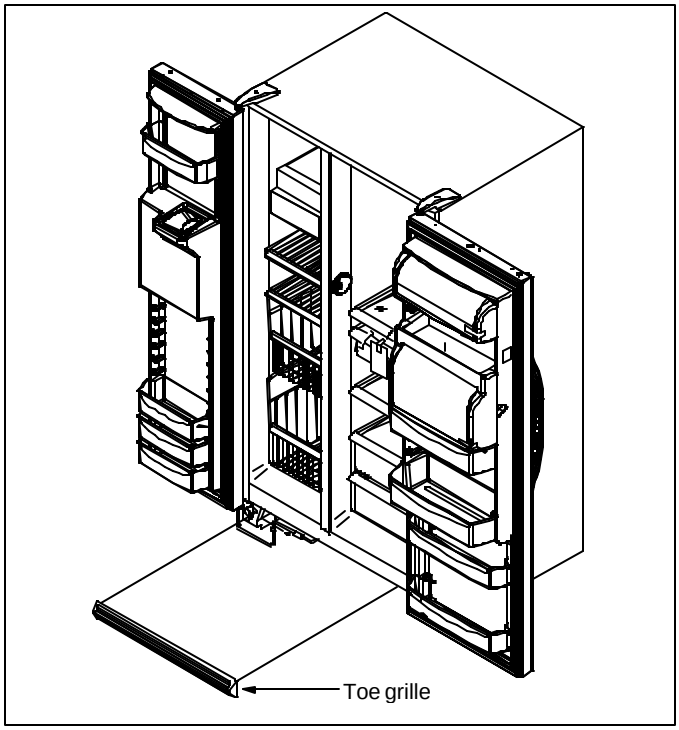
Toe Grille

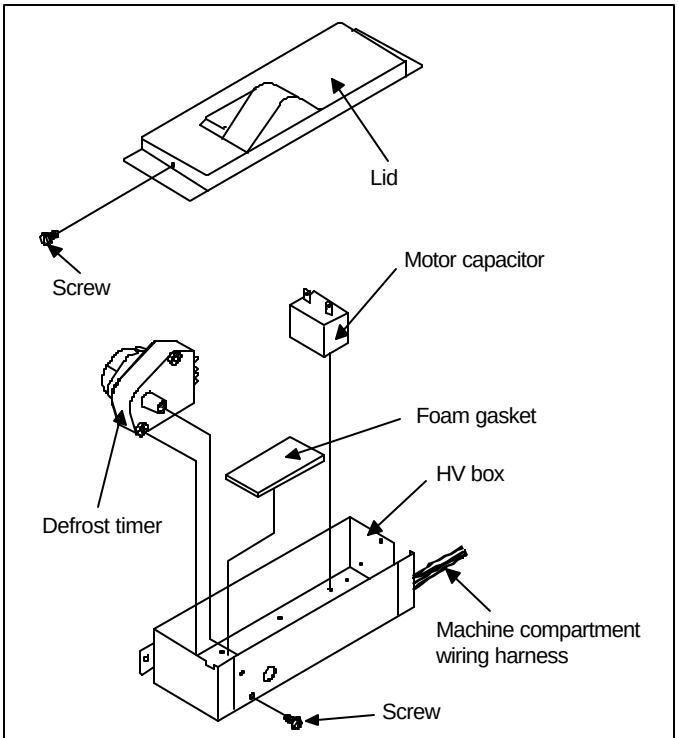
1. Grip grille firmly at both ends.
2. Pull straight out, away from unit.
3. Reinstall by pushing toe grille straight back into its mounting clips.



Defrost Timer (21 cu. ft.)

NOTE: Electronic units have no defrost timer.

1. Remove toe grille.
2. High-voltage (HV) box is screw-mounted at right side of condenser coil. Remove mounting screw and pull HV box out so it's accessible.
3. At top front of HV box, remove screw that secures lid.
4. At right side of HV box, remove defrost timer mounting screw.
5. Disconnect wires from defrost timer and remove timer from HV box.
6. Reverse procedure to reinstall defrost timer.



Contents of high-voltage box;
21 cu ft, non-electronic side x sides

Defrost Timer (23/26 cu. ft.)

1. Remove toe grille. Find timer box mounted in front of condenser, just left of center.
2. Remove screws from timer-box lid and remove lid.
3. Remove defrost-timer mounting screws from lid of timer box.
4. Disconnect wires from timer and remove timer.
5. Reverse procedure to replace timer.

Lower Door Hinges

1. Remove refrigerator and/or freezer door.
2. Remove toe grille.
3. Remove two lower-hinge mounting bolts from each hinge.
4. Remove hinge(s).
5. Reverse procedure to replace hinges.

Disassembly

⚠ WARNING

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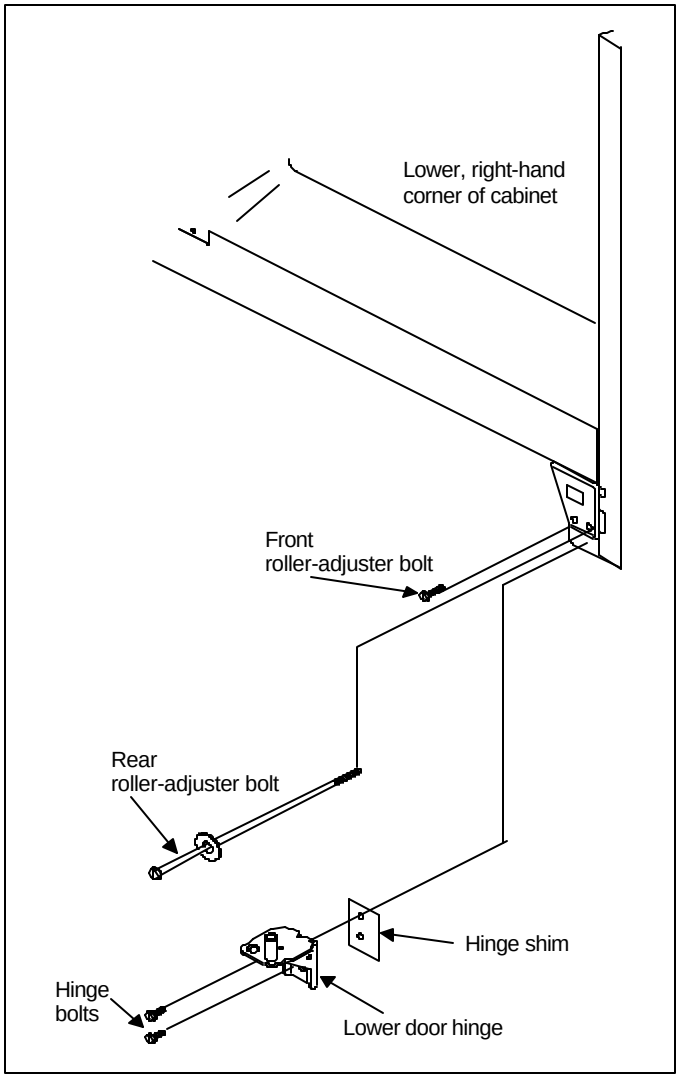


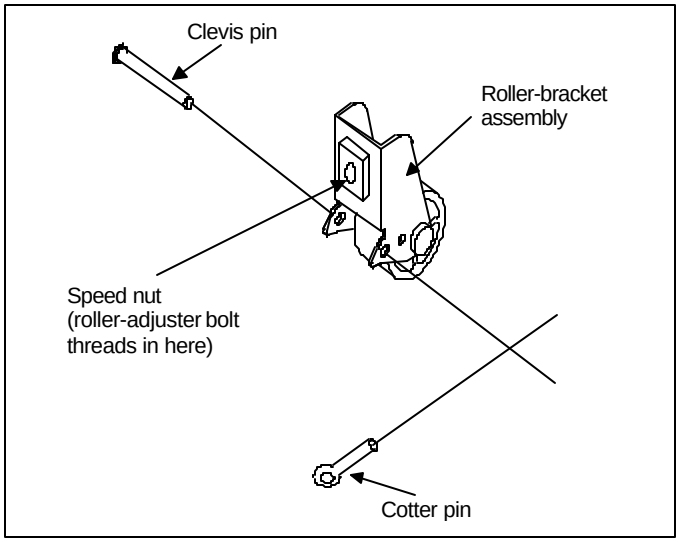
Front Rollers

1. Remove toe grille.

⚠ WARNING

To avoid risk of severe personal injury or death; make sure cabinet is securely blocked so it cannot fall over before attempting the next step.

2. Raise front of unit 4 to 6 inches off floor and block it so it cannot fall on you or away from you.
3. Remove cotter pins from roller clevis pins and remove clevis pins.
4. Remove roller adjuster bolts (See illustration above) and remove roller-bracket assemblies.
5. Reverse procedure to replace rollers.



Rear Rollers

1. Remove toe grille

⚠ WARNING

To avoid risk of severe personal injury or death; make sure cabinet is securely blocked so it cannot fall over before attempting the next step.

2. Raise rear of unit 4 to 6 inches off floor and block it so it cannot fall on you or away from you.
3. Remove cotter pins from roller clevis pins.
4. Remove mounting screws at left-rear and right-rear corners of machine tray.

⚠ WARNING

To avoid risk of severe personal injury or death; make sure cabinet is securely blocked so it cannot fall over before attempting the next step.

5. Raise rear edge of machine tray far enough to allow removal of rear clevis pins.
6. At front of unit, remove rear roller-adjuster bolts.
7. Remove rear rollers.
8. Reverse procedure to replace rollers.

Disassembly

⚠ WARNING

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Drain Pan (21 cu. ft.)

NOTE: Before removing drain pan, have towels ready to soak up spills.

1. Remove toe grille.
2. Locate drain pan at right side of condenser.
3. Being careful to avoid spillage, pull pan straight foward and out.

Drain Pan (23/26 cu. ft.)

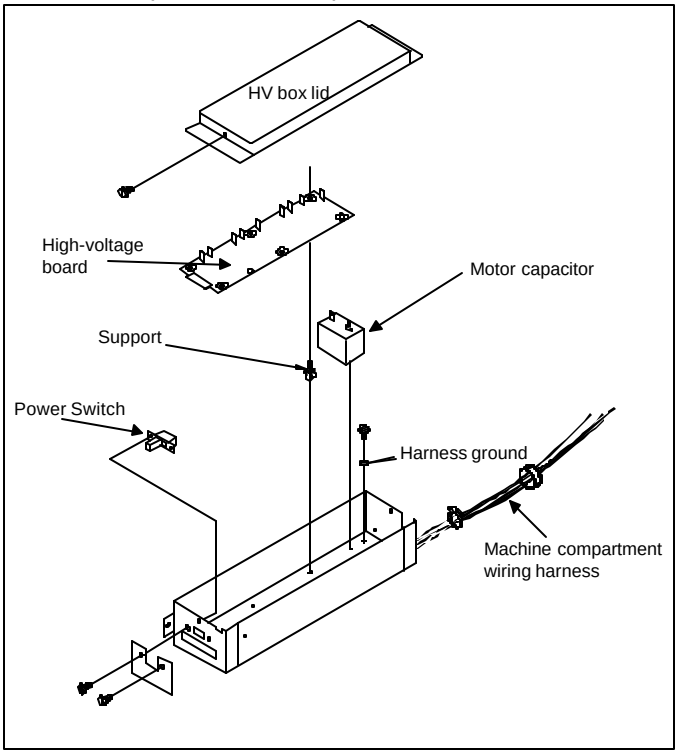
See Machine Compartment.

High-Voltage Box (21 cu. ft. only)

1. Remove toe grille.
2. Remove condensate drain pan.
3. High-voltage (HV) box is screw-mounted at right side of condenser coil. Remove mounting screw and pull HV box out so it's accessible.
4. Slide box forward and out of unit.

High-Voltage Board (electronic only)

1. Remove high-voltage box.
2. At top front of HV box, remove screw that secures lid.
3. Disconnect harness wires from high-voltage board.
4. Remove mounting screws that secure HV board to HV box (See illustration below).
5. Reverse procedure to replace HV board.



Power Switch (electronic only)

1. Remove condensate drip pan.
2. Remove high-voltage box.
3. Remove lid from HV box.
4. Remove switch mounting screws from HV box (See illustration above).
5. Disconnect leads from switch and remove switch.
6. Reverse procedure to replace switch.

Machine Compartment

Primary Water Valve (before filter)

NOTE: Before starting this procedure, have a pan ready for water draining from open lines and a towel ready for spillage.

1. Shut off water supply from household plumbing.
2. Disconnect water supply line from water valve at back of unit.
3. Remove machine compartment cover.
4. Remove screws that mount water-valve plate to machine tray.
5. Remove screws that mount water valve to water-valve plate and remove water-valve plate.
6. Disconnect water valve from wiring harness.
7. Remove sleeve nuts that hold inlet line to water valve, pull inlet line out of valve.
8. Remove water valve from unit.
9. Reverse procedure to replace valve.

Secondary Water Valve (after filter)

NOTE: Before starting this procedure, have a pan ready for water draining from open lines and a towel ready for spillage.

1. Perform Primary Water Valve steps 1 through 5.
2. Move primary water valve (with plate and lines and wires attached) out of the way.
3. Disconnect wiring harness from secondary water valve.
4. Remove sleeve nuts and water lines from secondary water valve. Carefully pull metal tube inserts from water tubes. Soak inserts in solution of water and chlorine bleach until ready to reassemble.
5. Remove mounting screws from secondary water valve and remove valve from machine compartment.
6. Reverse procedure to replace valve.

Disassembly

⚠ WARNING

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Machine Tray

1. If you have an electronic model:
   a. Remove toe grille.
   b. Unplug door wiring harness from high-voltage box.
2. At rear of unit, remove machine compartment cover, heat-exchanger cover and condenser-fan grille (if present).
3. Remove screws anchoring condenser-fan shroud to cabinet, drier to cabinet, and power cord to cabinet.
4. Remove mounting screws at left-rear and right-rear corners of machine tray.
5. Pull machine tray 6 to 8 inches rearward. As you do so, carefully manipulate all tubes to avoid kinking and pinching. Pulling tray 8 inches permits leak check of all sealed-system components, cleaning or removal of condensate drain pan (23 & 26 cu ft units) and removal or replacement of components other than the condenser itself.

NOTE: Pulling machine tray more than 8 inches rearward will pull tray off front guide rail, making replacement of tray difficult.

Drain Pan (23 & 26 cu. ft.)

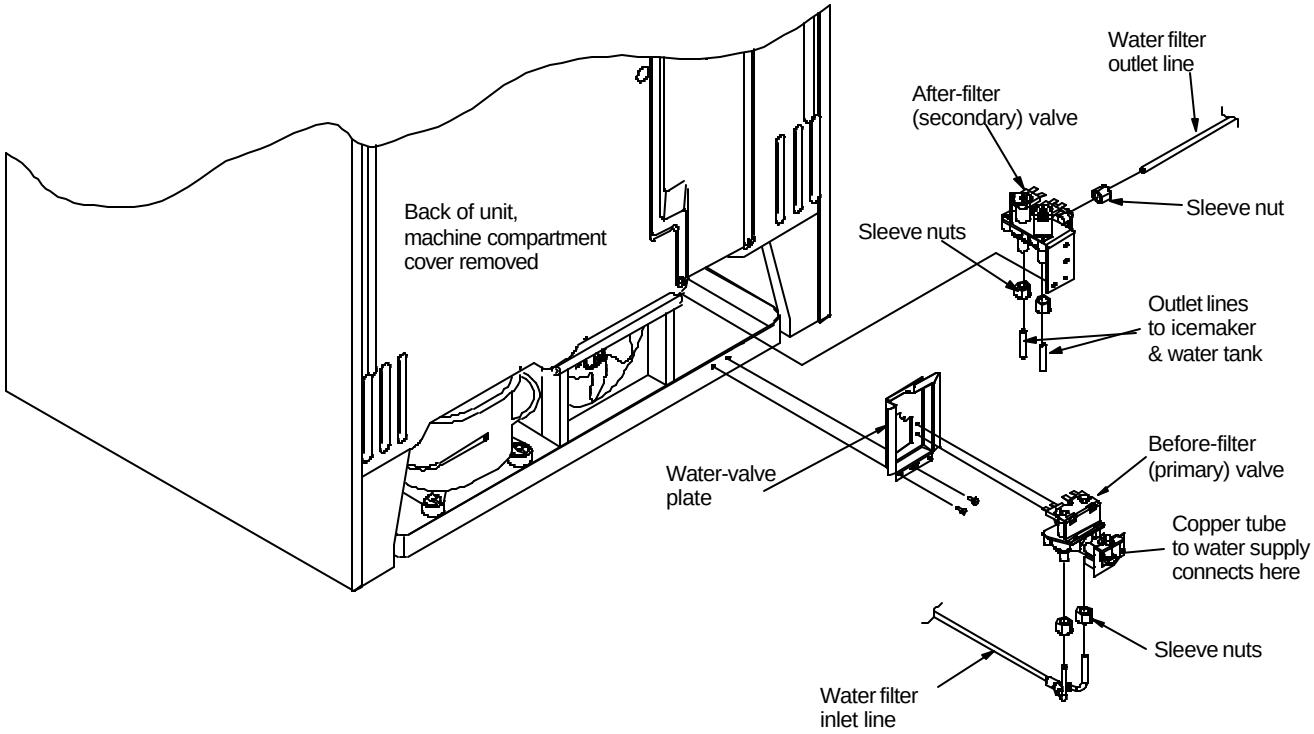
NOTE: Before removing drain pan, have a towel ready to soak up spills.

1. Pull machine tray per directions above. Notice drain pan located on top of condenser.
2. To avoid spillage, soak up moisture in drain pan with towels.
3. Using putty knife or screwdriver, pop plastic drain pan up, off metal mounting tabs, and remove it.

Condenser Fan (21 cu. ft.)

1. Pull machine tray per directions above.
2. Remove screws that mount condenser-fan shroud to machine tray.
3. Disconnect fan motor from wiring harness.
4. Remove motor, fan and shroud, as a unit, from machine tray.
5. Remove screws to separate fan motor and fan from shroud.
6. Remove nut from motor shaft.
7. Remove fan blade and rubber washer from shaft.
8. Reverse procedure to replace condenser fan.

NOTE: Place new rubber washer behind fan blade during reassembly.



Water-valve nomenclature

Disassembly

⚠ WARNING

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Condenser Fan (23/26 cu. ft.)

NOTE: If you want to replace fan motor or shroud, follow instructions for 21 cu. ft. model. If you want to service fan blade only, proceed as follows:

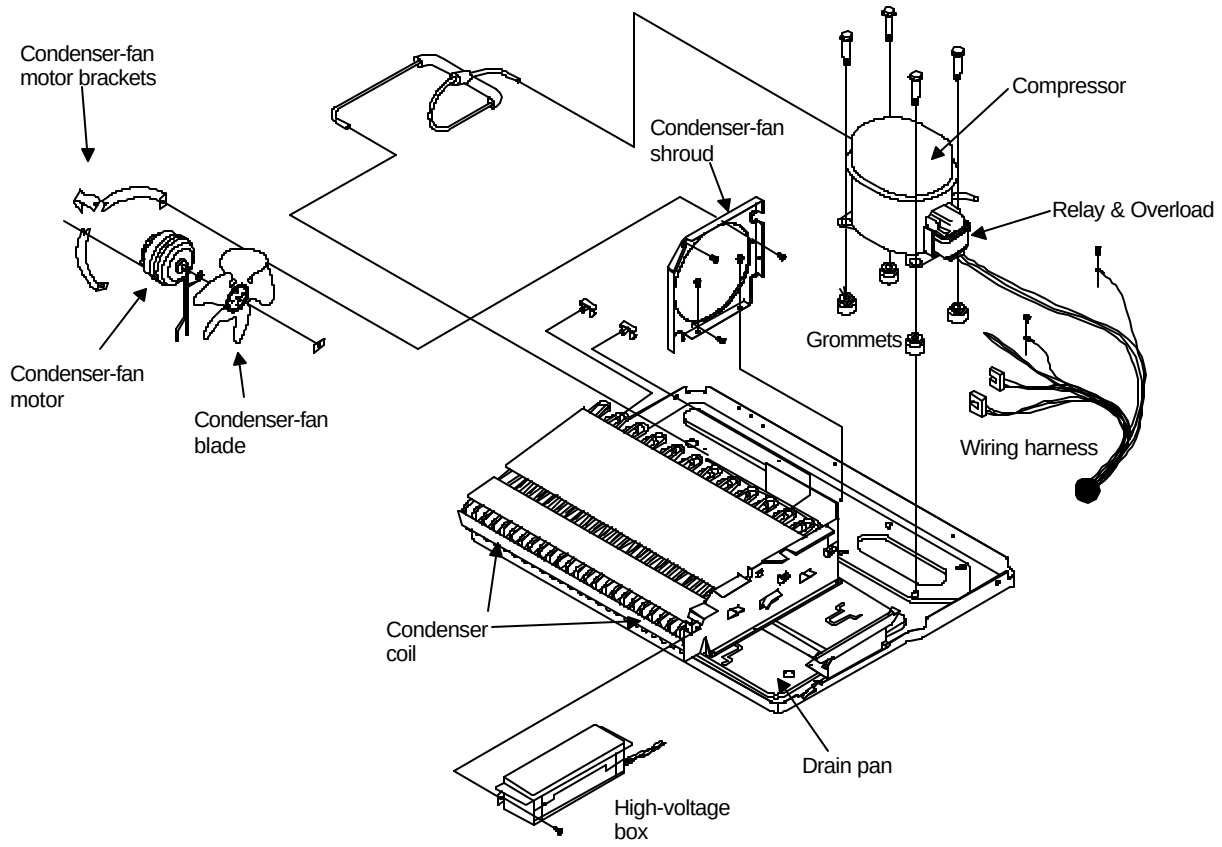
1. Remove condenser-fan grille.
2. Remove nut from motor shaft.
3. Remove fan blade and rubber washer from shaft.
4. Reverse procedure to replace fan blade.

NOTE: Place new rubber washer behind fan blade during reassembly.

Compressor Run Capacitor

NOTE: Some V-model side-by-sides carry the run capacitor on the machine tray. On others, the capacitor is inside the high-voltage box. Some units have no run capacitor. Consult the tech sheet and/or the parts book for your model.

1. Unit with run capacitor inside high-voltage (HV) box:
   a. Remove toe grille.
   b. Remove HV box.
   c. Remove lid from HV box.
   d. Discharge capacitor to ground through a 10,000-ohm resistor.
   e. Disconnect electrical leads from capacitor.
   f. Remove mounting screw and capacitor from HV box.
2. Unit with run capacitor mounted on machine tray.
   a. Pull machine tray.
   b. Discharge capacitor to ground through a 10,000-ohm resistor.
   c. Disconnect electrical leads from capacitor.
   d. Remove mounting screw and capacitor from machine tray.
3. Reverse procedure to replace run capacitor.



Machine-Tray Nomenclature

Disassembly

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Overload & Relay

1. Pull machine tray.
2. Expose overload and relay by removing cap from terminal box on side of compressor. Overload is inside box at top center and plugs onto one motor connector (COMMON). Relay is inside box, below overload, and plugs onto two motor connectors (START and RUN).
3. Pull relay first. Then, if necessary, pull overload.
4. Reverse procedure to replace.

Compressor

NOTE: Read "Service Procedures" section of this manual before attempting this procedure.

1. Pull machine tray.
2. Capture refrigerant charge.
3. Following instructions in "Service Procedures" section of this manual, remove filter drier from unit.
4. Shield other components from heat source as you debraze suction tube and discharge tube and pull them off compressor.
5. Remove compressor mounting bolts.
6. Disconnect electrical leads at overload and relay. Disconnect compressor ground wire.
7. Remove compressor from machine tray.
8. Reverse procedure to replace compressor.

Drier

To remove filter-drier, follow instructions in "Service Procedures" section of this manual.

Condenser

NOTE: Read "Service Procedures" section of this manual before attempting this procedure.

1. Remove toe grille.
2. Remove high voltage box and condensate drain pan from 21 cu. ft. units. Remove defrost-timer box from other units.
3. Capture refrigerant charge.
4. Following instructions in "Service Procedures" section of this manual, remove filter drier from unit.
5. Pull machine tray and strip it of all components except condenser:
   a. Dismount water valves.
   b. Remove compressor per instructions above.
   c. Remove drier per instructions above.
   d. Dismount condenser fan, motor and shroud as a unit.
   e. Remove motor capacitor (if present on machine tray).
   f. Remove and/or disconnect all wires and other components from machine tray.
6. Machine tray and condenser are a single piece. Remove them from the unit.
7. Reverse procedure to replace condenser.

Drain Tube

1. Pull machine tray.
2. Find drain tube secured to bottom of cabinet with "P" clips and screws. Remove screws and "P" clips.
3. Pull drain tube off freezer-compartment drain nipple, down and out of unit.
4. Reverse procedure to reinstall.

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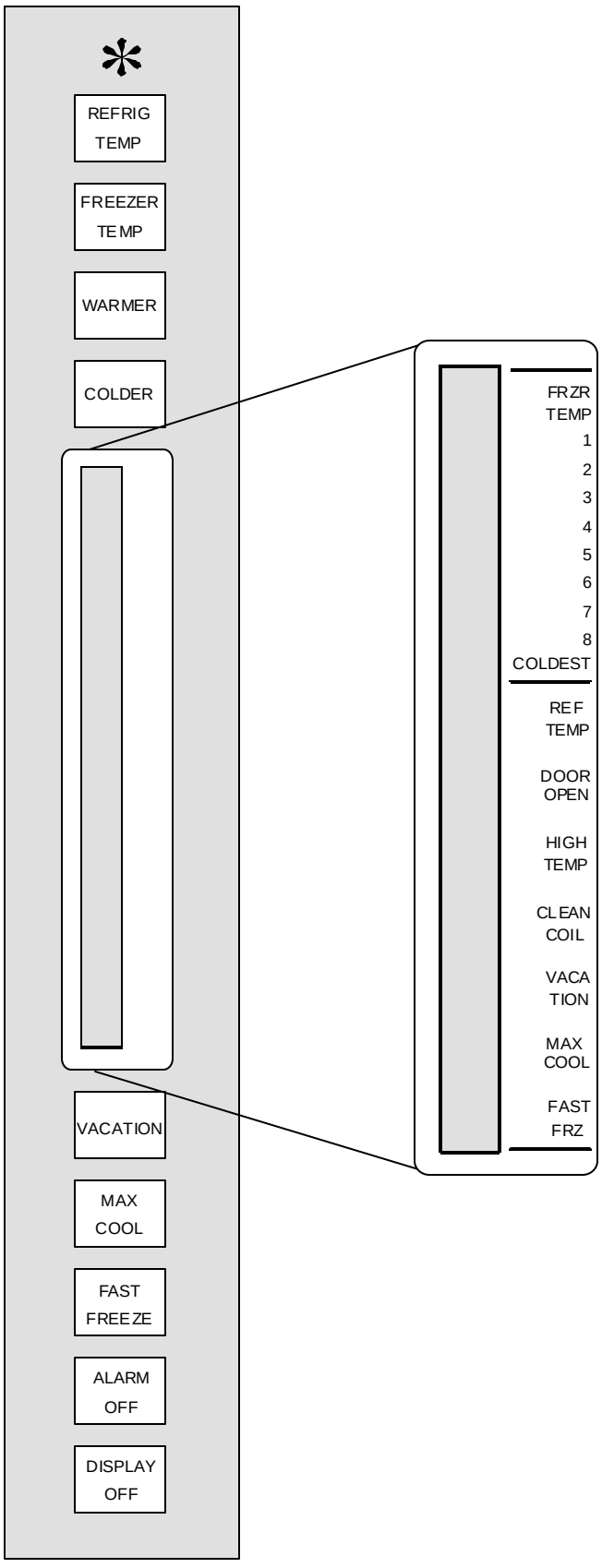
Appendix A

Electronic Controls



Display Panel Keyboard

Keyboard Pad Functions

ENTRY tone
Indicates a pad was pressed, command read and accepted. Turn off entry tone by pressing and holding ✻ pad for 3 to 5 seconds.

COMMAND ACCEPTED tone
Three short tones indicate command accepted.

✻

1. Activates control panel. Control panel remains active at least 10 minutes.
2. Turns off Power Up Alarm (flashing lights) after power is first plugged in or after power outage.

NOTE: All pads except ALARM OFF are inactive until ✻ is pressed.

FREEZER TEMP pad
Activates freezer temperature setting mode.

1. Freezer indicator light will glow. Freezer temperature setting will be displayed. Factory setting is 5.
2. Change freezer temperature setting by pressing WARMER or COLDER pad.

REFRIG TEMP pad
Activates refrigerator temperature setting mode.

1. Refrigerator indicator light will glow. Refrigerator temperature setting will be displayed. Factory setting is 5.
2. Change refrigerator temperature setting by pressing WARMER or COLDER pad.

WARMER pad
Raises temperature setting one bar at a time. If entry tone is on, tone will sound at each bar level until top level is reached.

1. Turn on temperature setting function of control panel by pressing ✻ pad.
2. Press and hold WARMER pad to raise temperature setting at a faster rate.

COLDER pad
Lowers temperature setting one bar at a time. If entry tone is on, tone will sound at each bar level until bottom level is reached.

1. Turn on temperature setting function of control panel by pressing ✻ pad.
2. Press and hold COLDER pad to lower temperature setting at a faster rate.

Electronic Controls

FAST FREEZE Pad
Activates maximum freezer mode, setting freezer temperature to coldest setting for 24 hours or until FAST FREEZE pad is pressed again.

1. FAST FREEZE indicator light will glow.
2. To adjust maximum freezer mode time refer to Program Mode B functions.

MAX COOL Pad
Activates maximum refrigerator mode setting refrigerator to coldest setting for 10 hours or until MAX COOL pad is pressed again.

1. MAX COOL indicator light will glow.
2. To adjust maximum refrigerator time refer to Mode B functions.

ALARM OFF Pad
Turns off alarm signals. See “Alarms” to interpret alarm signals.

1. Press and hold ALARM OFF pad for 3 seconds to deactivate Door Open alarm. To reactivate Door Open alarm, press and hold ALARM OFF pad for 3 seconds.
2. If ALARM OFF pad is pressed and condition causing alarm is not corrected, alarm will reset.

DISPLAY OFF Pad
1. Deactivates control panel.
2. Deactivates temperature indication area of control. panel.

Program Mode
✻ activates Program Mode. See “Program Mode” for description of functions available.

1. Press ✻ pad.
2. Open either door.
3. Press VACATION pad.
4. Within 6 seconds press the following pads in this sequence: MAX COOL, FAST FREEZE, MAX COOL, FAST FREEZE.
5. Tone will sound 3 times and control will be in Program Mode A.

VACATION pad
Sets unit to defrost less often during extended periods of non-use. To begin Vacation Mode:

1. Press ✻ pad.
2. Press VACATION pad.

To deactivate Vacation Mode, open either refrigerator or freezer door or press ✻ and VACATION pad.

NOTE: See “Adaptive Defrost Operation” and “Defrost Mode Selection” for more information on Vacation Mode.

Alarms

Power Up Alarm
After power is initially plugged in, after a power loss or if power switch is turned off, all temperature indicator lights flash until ALARM OFF or ✻ is pressed.

NOTE: All settings return to default factory settings.

DOOR OPEN Alarm
Alarm tone sounds and indicator lights blink if either door is open more than 3 minutes.

1. Turn off Door Open alarm by pressing ALARM OFF pad or by closing door.
2. Deactivate Door Open alarm by pressing ✻ pad and then press and hold ALARM OFF pad for 3 seconds.
3. Adjust Door Open alarm delay in Program Mode B.

HIGH TEMP Alarm
Alarm sounds and indicator light shows if freezer or refrigerator temperature has gone above critical level and remained so for 2 hours. Alarm stops if temperature decreases again.

1. Critical temperature in freezer is 15° F (-9° C); critical temperature in refrigerator is 60° F (15.5° C).
2. Press ALARM OFF pad to turn off alarm.

Thermistor Alarm
Alarm sounds and freezer or refrigerator indicator turns on and temperature indicators 4 through 7 flash in sequence if either thermistor circuit opens. See Temperature Control Operation Section and Electronic Testing Section.

1. Press ALARM OFF pad to turn off alarm.
2. Alarm will retest for normal operation. If condition has not been corrected, alarm will sound again.

CLEAN COIL Light
CLEAN COIL indicator light comes on after 3 months of elapsed time as a reminder to clean condenser coil.

Press ALARM OFF pad to turn off Clean Condenser indicator light.

NOTE: CLEAN COIL light will turn off by itself after 72 hours.

Electronic Controls

Temperature Control Operation

For any temperature setting, outputs will be turned off or on based upon cut-in/cut-out temperatures that are determined by resistance levels of freezer and refrigerator thermistors.

- As the temperature decreases, resistance increases. As the temperature increases, resistance decreases.

Refrigerator and Freezer Thermistor

Temp °F (°C)	Resistance Ohms	Temp °F (°C)	Resistance Ohms
-20 (-29)	495600	36 (2)	87510
-15 (-26)	418200	38 (3)	82740
-9 (-23)	354000	39 (4)	78300
-6 (-21)	300600	43 (6)	74100
-4 (-18)	256200	45 (7)	70170
5 (-15)	218850	46 (8)	66450
10 (-12)	187170	49 (9)	62970
16 (-9)	161040	50 (10)	59670
19 (-7)	138690	55 (13)	52290
25 (-4)	119460	61 (16)	45900
30 (-1)	103680	64 (18)	40410
32 (0)	97920	70 (21)	36540
34 (1)	92550	77 (25)	30000

- An open thermistor or thermistor circuit will result in failure of refrigerator to cool.
- Shorted thermistor will cause refrigerator to run 100 percent of time except for defrost.
- Freezer temperature setting and thermistor value together determine if compressor/condenser fan and evaporator fan switches are open or closed. Compressor/condenser fan switch must be open for 6 minutes before switch can close again (compressor dwell time).
- Cut-out and cut-in temperature values must be reached and maintained for 15 seconds before output state will change (digital delay).
- Refrigerator and freezer control calibration can be adjusted in Program Mode B.

Factory Freezer & Refrigerator Settings

Frozen Food		Fresh Food		Level
Cut-Out °F ±1.5 (°C ±1)	Cut-In °F ±1.5 (°C ±1)	Cut-Out °F ±1.5 (°C ±1)	Cut-In °F ±1.5 (°C ±1)	
-10 (-23)	2 (-16.6)	29 (-1.6)	34 (1.1)	9
-8 (-22)	4 (-15.5)	31 (-0.1)	36 (2.2)	8
-6 (-21)	6 (-14)	33 (0.5)	38 (3.3)	7
-5 (-20.5)	7 (-13.8)	34 (1.1)	39 (3.8)	6
-4 (-20)	8 (-13.3)	35 (1.6)	40 (4.4)	5
-3 (-19)	9 (-12.7)	36 (2.2)	41 (5)	4
-2 (-18.8)	10 (-12.2)	37 (2.7)	42 (5.5)	3
0 (-17.7)	12 (-11.2)	39 (3.8)	44 (6.6)	2
2 (-16.6)	14 (-10)	41 (5)	46 (7.7)	1
-10 (-23)	2 (-16.6)	--	--	Fast Freeze
		39 (3.8)	44 (6.6)	Max Cool

Damper Control

Refrigerator temperature setting and thermistor value together determine if damper control heater switch is open or closed.

Adaptive Defrost Operation

Defrost occurs after predetermined length of compressor run time. Compressor run time between defrosts changes, or adapts, depending upon recent history of defrost lengths (time it takes for defrost terminator to open after defrost heater has been turned on).

- Defrost terminator opens at 48° F (9° C) and closes at 15° F (-9° C).
- Compressor run time between defrosts (CRTD) will be one of 3 values under normal operation: CRTD 1 (6 hours) or CRTD 2 (9 hours) or CRTD 3 (12 hours).

  If defrost length is low (DT-LO defined as 21 minutes) indicating small frost load, CRTD for next defrost cycle is advanced to next level.

  If defrost length is high (DT-HI defined as 24 minutes) indicating large frost load, CRTD for next defrost cycle is lowered to next level.

  If defrost length is between 21 and 24 minutes, CRTD for next defrost cycle remains the same.

  Initial value at power up CRTD 0 is 3 hours.
- Vacation Mode CRTD equals 72 hours. Vacation Mode CRTD is interrupted with door openings. Defrost interval will revert back to interval before Vacation Mode. Three things must occur before unit will reach Vacation Mode CRTD:
  - Defrost interval must be CRTD 3 (12 hours).
  - Both refrigerator and freezer doors must have remained closed since last defrost cycle.
  - Defrost thermostat must have opened in fewer than 21 minutes during last defrost cycle.
- After defrost terminator opens, six-minute dwell time occurs before compressor and condenser fan motor will operate. After defrost terminator opens, ten-minute dwell time occurs before evaporator fan motor will operate. Dwell time can be bypassed by disconnecting unit from power for at least 30 seconds.
- Select conventional defrost in Program Mode B.

Electronic Controls

Program Mode

Accessing Program Mode

Two programming modes are available. Mode A allows reading refrigerator and freezer thermistor temperatures. Mode B is used for all other programmable functions.

1. Press ✻ pad.
2. Open either door.
3. Press VACATION pad.
4. Press the following sequence of pads within 6 seconds: MAX COOL, FAST FREEZE, MAX COOL, FAST FREEZE.
5. When access is granted, tone will sound three times and control will be in Program Mode A. Indicator light will illuminate.
6. Toggle to Program Mode B by pressing ✻ pad. Indicator light is off.

EEPROM Update in Control Memory

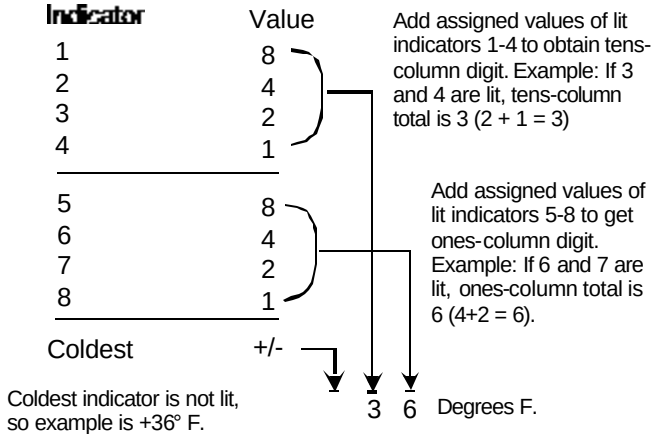
EEPROM is permanent programmable memory of the control panel.

- Entry tone, door audio alarm and status are stored in EEPROM after control panel is deactivated.
- Clean coil status is stored in EEPROM after every defrost cycle as time until clean coil alarm is activated.
- Information stored in EEPROM memory is not affected by power loss.

Program Mode A Functions

Reading Temperature Display

Temperature display will show thermistor temperature in binary coded decimal format. Indicator lights 1 through 4 represent the “tens” digit with 1 being the most significant bit. Indicator lights 5 through 8 represent the “ones” digit with 5 being the most significant bit. Positive and negative are shown by indicator light 9, which glows to show negative value.



NOTE: Temperature reads degrees Fahrenheit only. Use conversion formula °C = 5/9(°F - 32).

Freezer Thermistor Temperature

1. Choose freezer thermistor temperature display by pressing FREEZER TEMP pad.
2. Freezer thermistor temperature displays.

Refrigerator Thermistor Temperature

1. Choose refrigerator thermistor temperature display by pressing FRESH FOOD TEMP pad.
2. Refrigerator thermistor temperature displays.

Program Mode B Functions

Automatic Keyboard Function

Activate and deactivate keyboard by toggling DISPLAY OFF pad. If high temperature indicator glows, keyboard will disable after 10 minutes. If high temperature indicator is off, keyboard is always enabled.

NOTE: Do not leave keyboard enabled after programming is complete.

Door Alarm Delay

1. Press ALARM OFF pad. DOOR OPEN indicator will glow. One temperature indicator should glow indicating present delay setting in minutes (indicator 1 means 1 minute, 2 means 2 minutes, etc.) Default delay is 3 minutes.
2. Press WARMER pad to decrease delay by 1 minute.
3. Press COLDER pad to increase delay by 1 minute.

Max Cool Run-Time Duration

1. Press MAX COOL pad. MAX COOL light will glow. One temperature indicator should glow indicating present MAX COOL run time duration in 2 hour increments (indicator 1 means 2 hours, 2 means 4 hours, etc.) Default duration is 10 hours.
2. Press WARMER pad to decrease MAX COOL duration by 2 hours.
3. Press COLDER pad to increase MAX COOL duration by 2 hours.

Fast Freeze Run-Time Duration

1. Press FAST FREEZE pad. FAST FREEZE light will glow. One temperature indicator should glow indicating present FAST FREEZE run time duration in 4 hour increments (indicator 1 means 4 hours, 2 means 8 hours, etc.) Default duration is 24 hours.
2. Press WARMER pad to decrease FAST FREEZE duration by 4 hours.
3. Press COLDER pad to increase FAST FREEZE duration by 4 hours.

Temperature Offset Calibration

Offset amount adjusts temperatures for refrigerator cut-ins and cut-outs by the amount of offset. The following chart indicates the amount of offset from the factory default setting.

Electronic Controls

INDICATOR	OFFSET
1	+8
2	+6
3	+4
4	+2
5	0
6	-2
7	-4
8	-6
Coldest	-8

- Setting Refrigerator Temperature Offset:
  Press REFRIG TEMP. REF TEMP indicator and one temperature indicator will glow. Press WARMER to move offset to the next warmer setting. Press COLDER to move offset to the next colder setting. Default refrigerator offset is +2.
- Setting Freezer Temperature Offset:
  Press FREEZER TEMP. FRZR TEMP indicator and one temperature indicator will glow. Press WARMER to move offset to the next warmer setting. Press COLDER pad to move offset to the next colder setting. Default freezer offset is 0.

Defrost Mode Selection
Toggle VACATION to select adaptive or conventional defrost mode. VACATION indicator glows when adaptive defrost has been selected. If VACATION indicator is off, conventional defrost is selected. Conventional defrost uses 6 hour CRTD value.

Forced Defrost
Defrost can be forced to start by pressing and holding ALARM OFF for 3 seconds. Program changes will be saved permanently in EEPROM and unit will exit Program Mode and go into Run Mode.

Forced Pulldown (Compressor Start)
Compressor start can be forced by pressing and holding FAST FREEZE pad for 3 seconds. Program changes will be saved permanently in EEPROM. Compressor, evaporator fan, damper heater, and condenser fan will come on.

Exit Program Mode

Press ✻ pad for 3 seconds to exit Program Mode. Tone will sound three times. Changes made in Program Mode will be permanently saved in EEPROM.

NOTE: If no pad is pressed for 10 minutes, unit will exit Program Mode automatically. No changes will be saved if unit exits Program Mode automatically.

Electronic Testing

Forced Defrost Start

1. Press ✻ pad to activate control panel.
2. Simultaneously press and hold MAX COOL and DISPLAY OFF for 3 seconds.

Forced Compressor Start

1. Press ✻ pad to activate control panel.
2. Simultaneously press and hold FAST FREEZE pad and DISPLAY OFF pad for 3 seconds.

Open Thermistor Detect
Alarm sounds and freezer or refrigerator indicator light shows and temperature indicators 4 through 7 will turn on in sequence if either thermistor circuit opens. See "TEMPERATURE CONTROL OPERATION".

1. Press ALARM OFF pad to turn off alarm.
2. Alarm will retest for normal operation. If condition has not been corrected, alarm will sound again.

Evaporator Fan Suppression
Evaporator fan is supposed to stop when either refrigerator or freezer door is open. To test this function:

1. Force compressor start as directed above, evaporator fan should start.
2. Open refrigerator or freezer door, evaporator fan should stop.
3. With door open, push the light switch off, fan should start again.

If evaporator fan does not start and stop when either refrigerator light or freezer light switch toggles off and on, and if fan motor is known to be operational, perform the following tests to determine cause:

⚠ DANGER

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit and discharge capacitor before servicing.

1. Check for voltage at terminal E7 on high-voltage board. With refrigerator door open, refrigerator light is on and meter should indicate 115 VAC. With refrigerator door closed, refrigerator light is off and meter should indicate approximately 0 VAC.
   a. If light switch turns light off and on but E7 voltage does not toggle with switch. Red/white wire is broken between switch and HV board.
   b. If E7 voltage toggles with light switch but evaporator fan does not, check voltage at Pin 7 (orange wire) on 12-pin connector at HV board. If E7 voltage toggles with light switch but voltage at Pin 7 does not, HV board has failed.
   c. If Pin 7 voltage toggles with light switch but evaporator fan does not, then either orange wire to low-voltage board Pin 10 is broken, or LV board has failed.

Electronic Controls

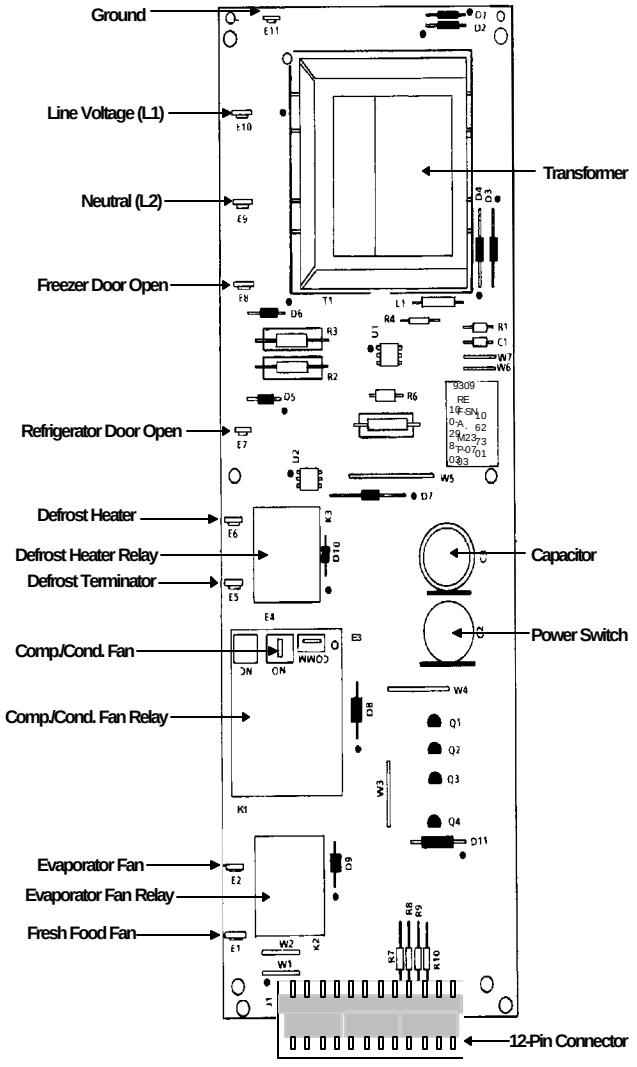
2. Check for voltage at terminal E8 on high-voltage board. With freezer door open, freezer light is on and meter should indicate 115 VAC. With freezer door closed, freezer light is off and meter should indicate approximately 0 VAC.
   a. If E8 voltage does not change with light switch and if switch turns light off and on. Violet/white wire is broken between switch and HV board.
   b. If E8 voltage toggles with light switch but evaporator fan does not, check voltage at Pin 7 (orange wire) on 12-pin connector at HV board. If E8 voltage toggles with light switch but voltage at Pin 7 does not, HV board has failed.
   c. If Pin-7 voltage toggles with light switch but evaporator fan does not, then either orange wire to low-voltage board (Pin 10) is broken, or LV board has failed.

Electronic Control Board (High-Voltage Board)

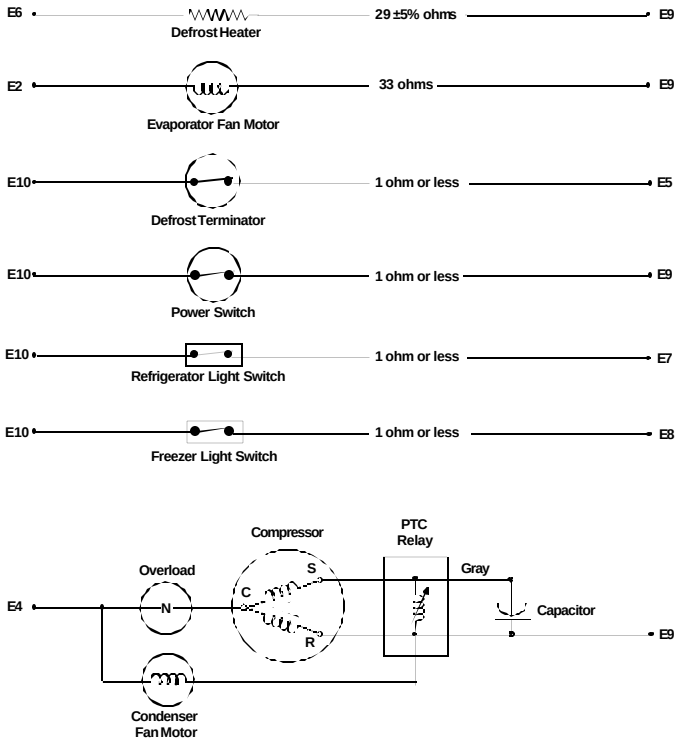
Electronic control boards are not repairable. If any component on an electronic control board has failed, the board must be replaced.

NOTE: Repair or replace failed line-voltage components before testing or replacing electronic control board. Do not assume problems are caused by the electronic control board. Open, shorted, grounded or otherwise faulty line-voltage components (including power cord and wiring) can create problems that appear to be caused by a failed electronic control board.

High-Voltage Board Component Location



Resistance Checks made at High-Voltage Board



Electronic Controls

⚠ WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Refrigeration and Defrost Component Checks at High-Voltage Board

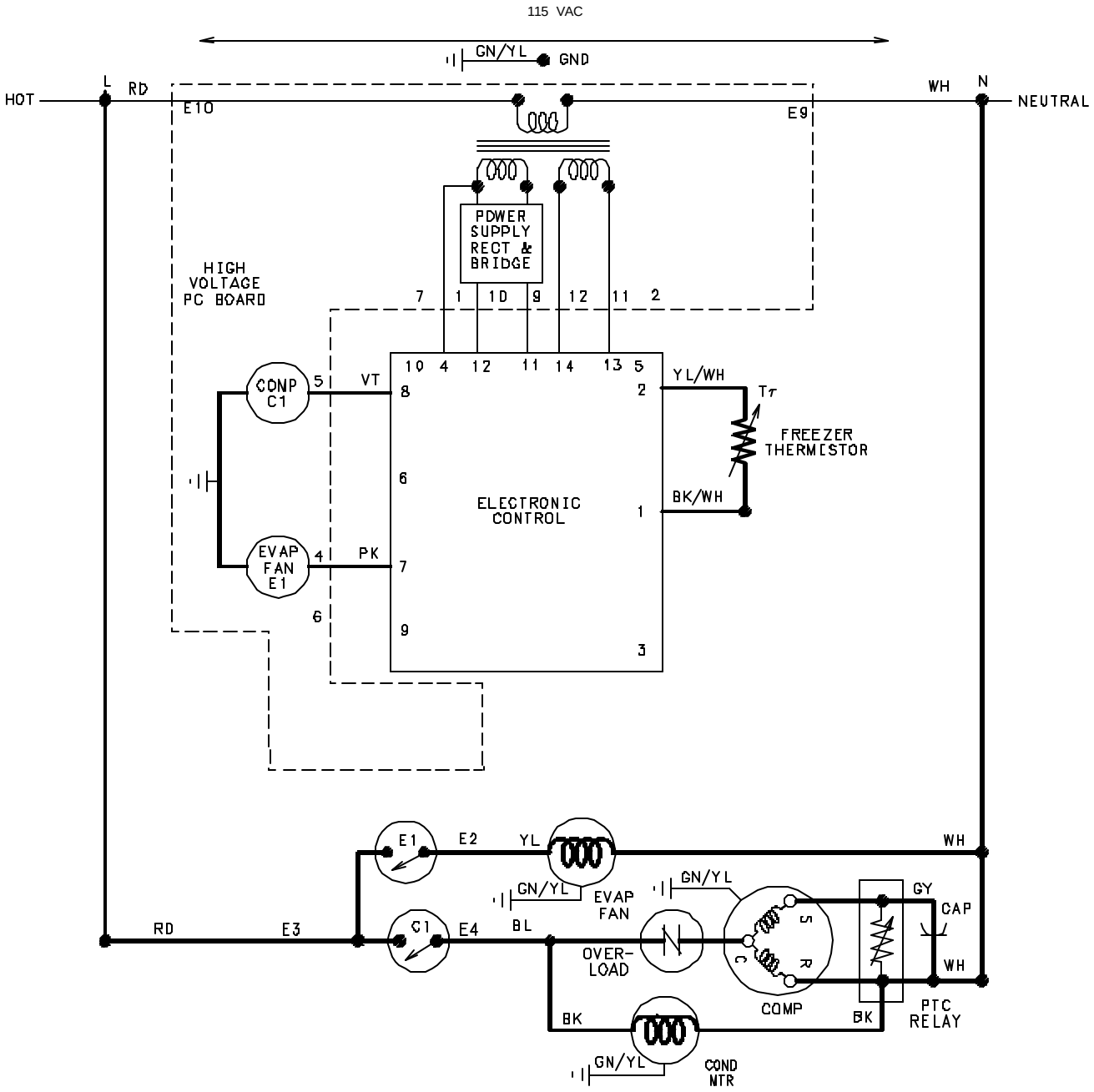
Voltage to Check	Measure Point-to-Point	Correct Readings
Low-voltage (LV board input)	W1 to D11	approximately –25 VDC
High-voltage (HV board input)	E10 to E9 (neutral) ground	approximately 120 VAC
Filament voltage (HV board output)	Pin 11 to Pin 12 (on HV board)	less than 5 VAC
Compressor/condenser fan motor	"ON" = E4 to E9 (neutral) ground "OFF" = E4 to E9 (neutral) ground	approximately 120 VAC 0 VAC
Compressor/condenser fan-motor relay*	"CLOSED" = R7 to ground "OPEN" = R7 to ground	approximately –11 VDC approximately –25 VDC
Evaporator fan-motor relay*	"CLOSED" = R8 to ground "OPEN" = R8 to ground	approximately –11 VDC approximately –25 VDC
Evaporator fan motor	"ON" = E2 to E9 (neutral) ground "OFF" = E2 to E9 (neutral) ground	approximately 120 VAC 0 VAC
Defrost heater	"ON" = E6 to E9 (neutral) ground "OFF" = E6 to E9 (neutral) ground	approximately 120 VAC 0 VAC
Defrost-heater relay*	"CLOSED" = R9 to ground "OPEN" = R9 to ground	approximately –11 VDC approximately –25 VDC
Defrost terminator	"CLOSED" = E5 to E9 (neutral) ground "OPEN" = E5 to E9 (neutral) ground	approximately 120 VAC 0 VAC
Fresh-food damper output voltage, HV board to damper-heater*	"ON" = E1 to ground "OFF" = E1 to ground	approximately –25 VDC -0 VDC
Fresh-food damper input-voltage signal to HV board from LV board	"ON" = R10 to ground "OFF" = R10 to ground	approximately –11 VDC approximately –25 VDC

*DC voltages are read from side of resistor closest to 12-pin connector.

Electronic Controls

WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.



Cycles of Operation

Freezer

As the freezer thermistor warms its resistance decreases, allowing a low-voltage signal to be sent to the electronic control. The electronic control sends two low-voltage signals, one to the compressor relay coil (C1) and one to the evaporator fan relay coil (E1).

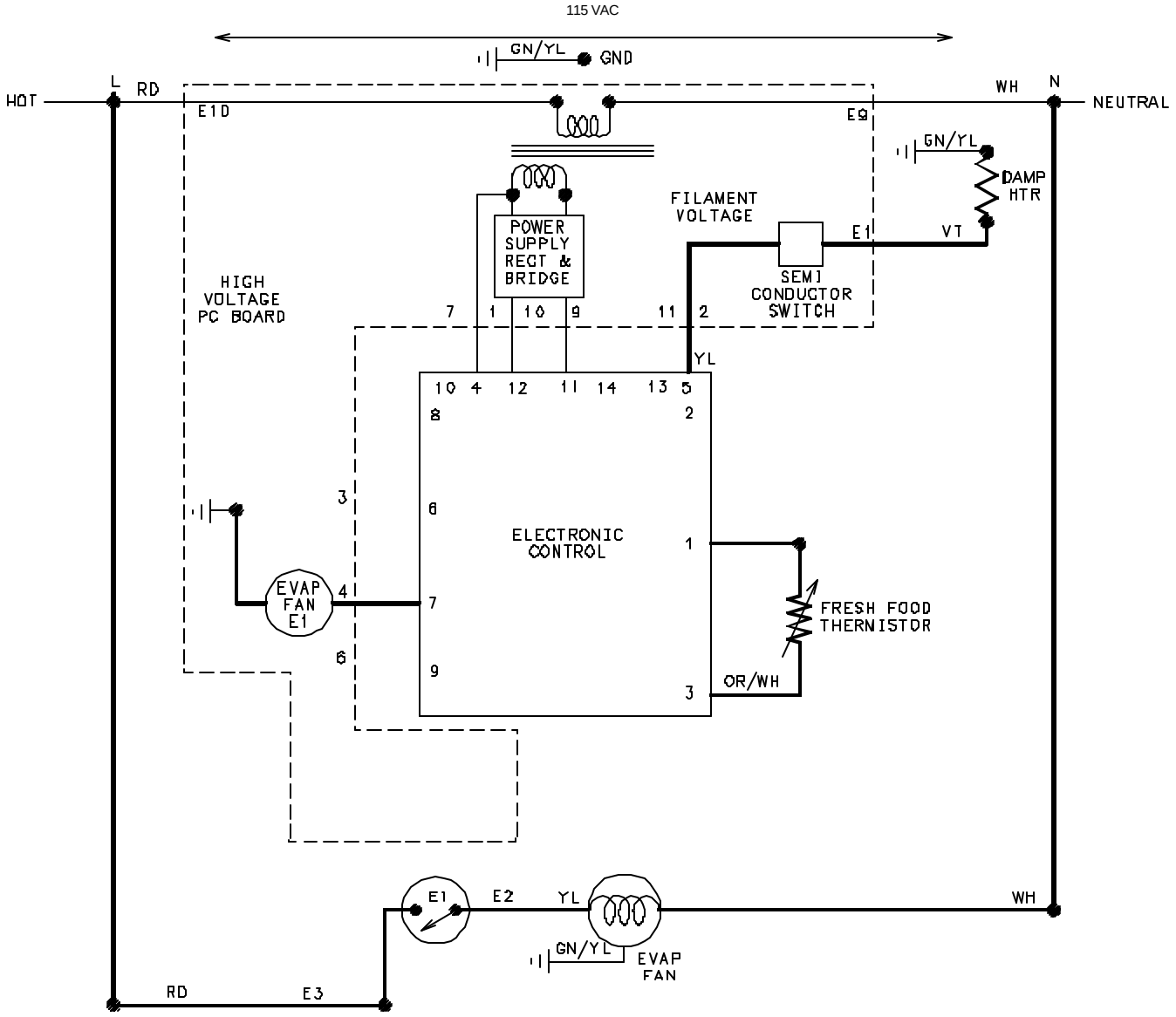
When both relay coils are energized and both relay contacts are closed, high-voltage circuits to the evaporator fan motor and compressor/condenser fan motor are complete.

As the thermistor cools during refrigeration cycle, its resistance increases until the low-voltage signal to the electronic control is blocked. That stops freezer operation by de-energizing coils C1 and E1.

Electronic Controls

WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.



Refrigerator

As the fresh food thermistor warms, its resistance decreases until it allows passage of a low-voltage signal to the electronic control. The electronic control, in response, sends two low voltage signals, one to the damper heater and one to evaporator fan relay coil (E1).

The damper heater warms the damper-control bellows, opening the damper door at the same time the relay coil closes high-voltage contacts to the evaporator fan motor.

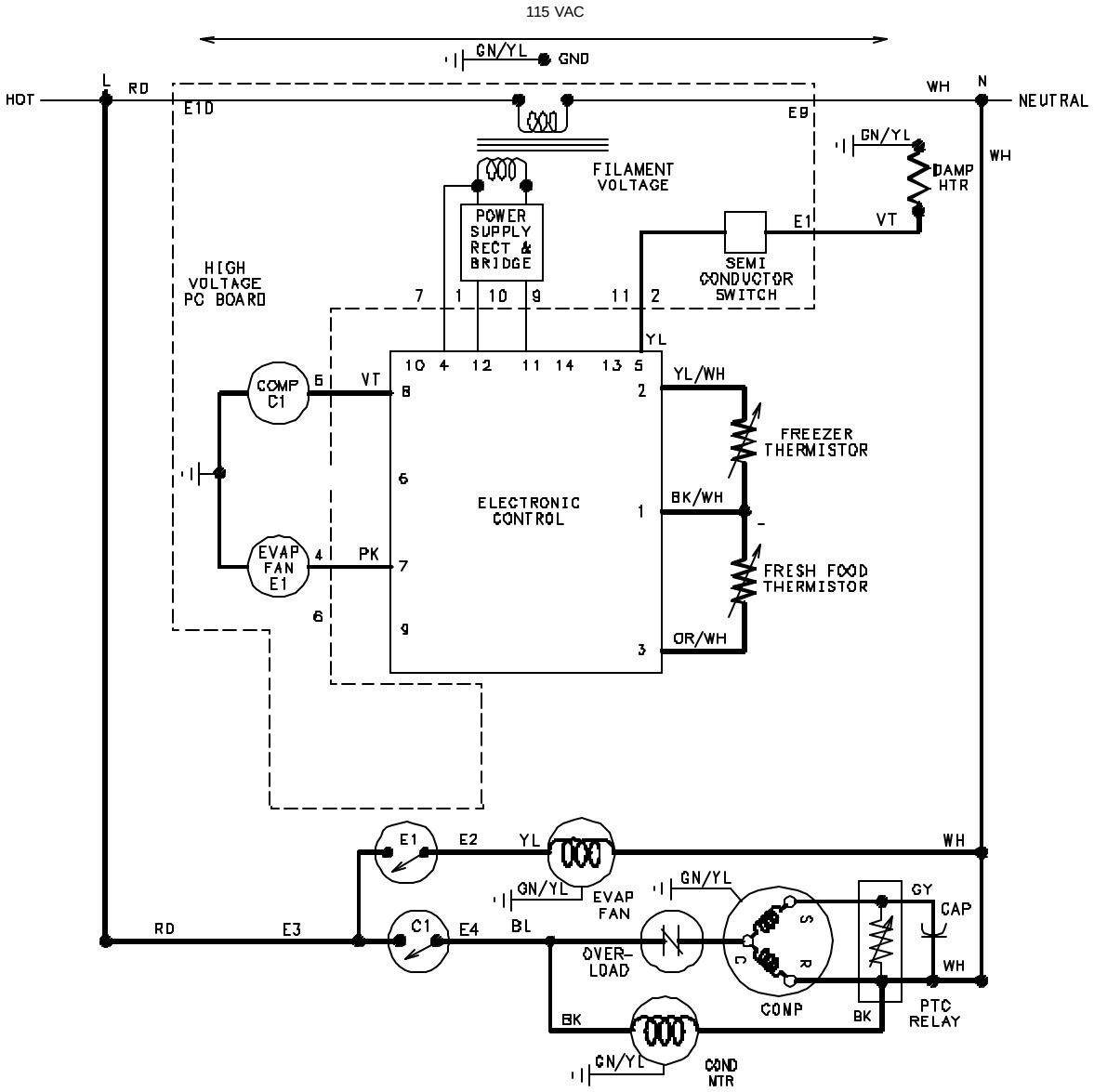
With the evaporator fan operating and the damper door open, freezer air circulates into the fresh food compartment. As the fresh food thermistor cools, its resistance increases until the low-voltage signal to the electronic control is blocked.

When the low-voltage signal is blocked, the evaporator fan motor relay and the damper heater are de-energized. The damper-control bellows closes the damper door as it cools, and the cycle begins again.

Electronic Controls

WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.



Refrigerator and Freezer

If both freezer and fresh food thermistors are warm, the electronic control signals for compressor and condenser fan operation, for the evaporator fan to run and for the damper door to open.

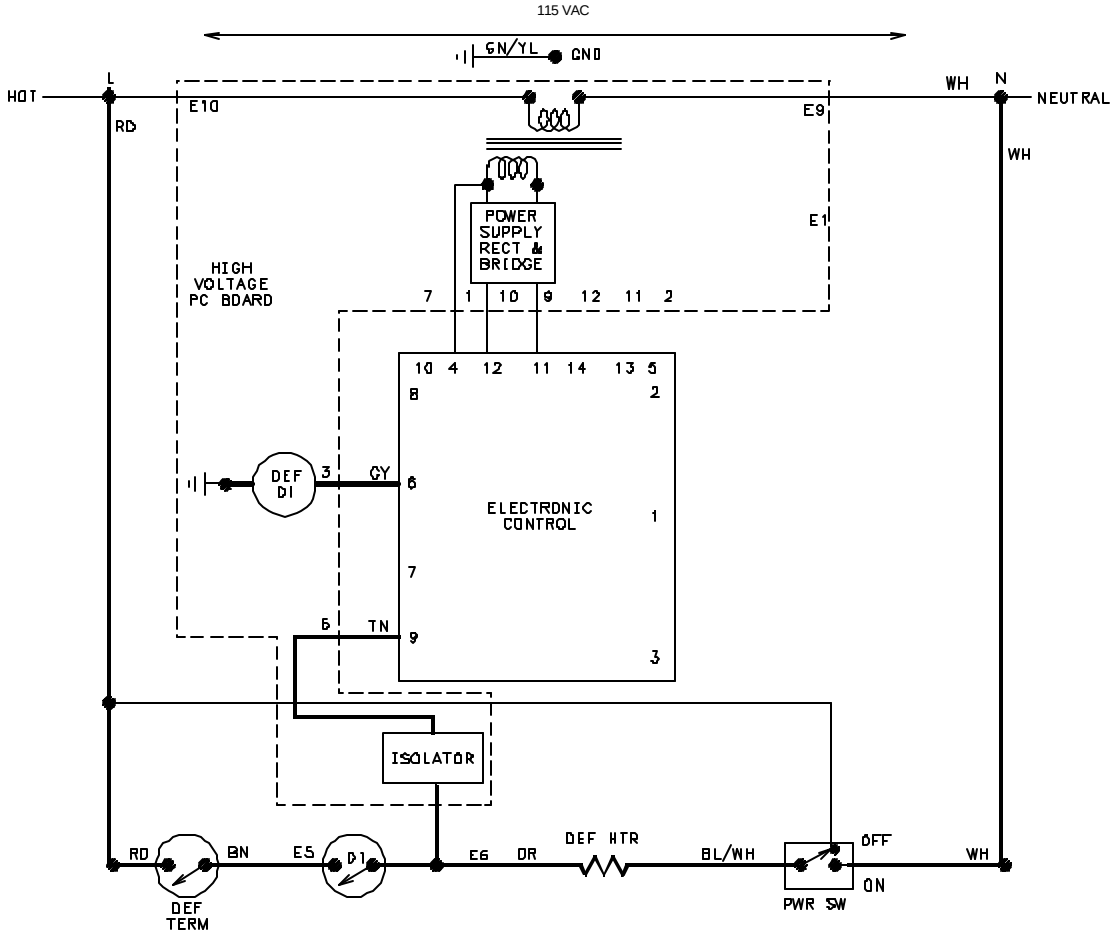
When the freezer thermistor cools enough to cut off its low-voltage signal to the electronic control, the compressor and the condenser fan will shut off. However, the evaporator fan and the damper heater continue to run until the fresh food thermistor cools and its signal to the electronic control is blocked.

If the fresh food thermistor cools before the freezer thermistor, the electronic control will interrupt the circuit to the damper heater and thereby close the damper door. But the evaporator fan motor goes on running under control of the freezer thermistor.

Electronic Controls

WARNING

To avoid risk of electrical shock, severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.



NOTE: When the power switch is off, the isolator sees line voltage. This keeps the electronic controller from signaling the evaporator fan motor or the compressor relay coils and also keeps the damper heater off.

Adaptive Defrost

After a designated compressor run time, the refrigeration cycle is interrupted and the electronic control sends a low-voltage signal to defrost relay coil (def D1).

Powering the relay coil closes relay contact (D1), completing a high-voltage circuit to the defrost heater through the closed defrost terminator (closes at -9°C).

The isolator, which is part of high-voltage PC board, recognizes the presence of line voltage to at the defrost heater and sends a low-voltage signal to the electronic control. The electronic control counts the number of minutes the defrost terminator is closed (opens at 9°C).

The length of time the defrost terminator is closed determines if the next defrost cycle advances by 3 hours of compressor run, stays at the same interval, or delays by 3 hours of compressor run.

If the defrost terminator does not open before 29 minutes have passed, the defrost cycle is automatically terminated by electronic control and refrigeration cycles resume after a 6-minute dwell time.

Appendix B

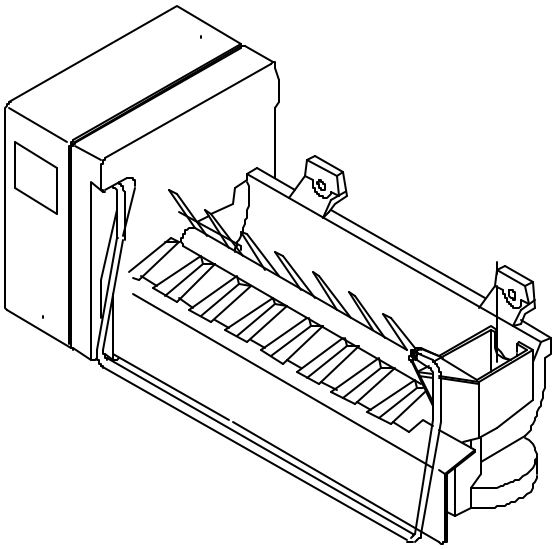
Icemaker

⚠ WARNING

To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

⚠ CAUTION

To avoid risk of personal injury or property damage; read the section completely before attempting any tests or adjustments.



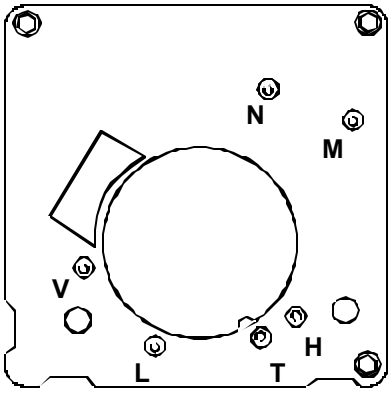
Operation

When the thermostat senses temperature of 17 ±3°F (-8 ±1°C), the thermostat closes. Current now has a path through the thermostat to the motor and turns the drive gear. Electrical contacts protruding from the module brush against copper strips on the backside of the drive gear. As the drive gear turns, the rotating copper strips make or break connections between the electrical contacts, controlling icemaker operations.

NOTE: Design of the ice maker allows testing of all components without removing the ice maker or having to access the water valve.

Remove cover to identify test points on the module as follows:

N: ..... Neutral side of line
M: .... Motor connection
H: ..... Heater connection
T: ..... Thermostat connection
L: ..... L1 side of line
V: ..... Water valve connection



Specifications

Mold Heater	- 185 Watts, 264 Ohms
Thermostat (Bimetal)	- Close 17 ±3°F (-8 ±1°C) - Opens 32 ±3°F (0 ±1°C)
Water Fill	- 140 cc, 7.5 Sec.
Motor Cycle	- Stamped in circuit; plug-in connectors - One revolution of blades take three minutes plug stall time on ice (Eject and Water Fill)

Icemaker

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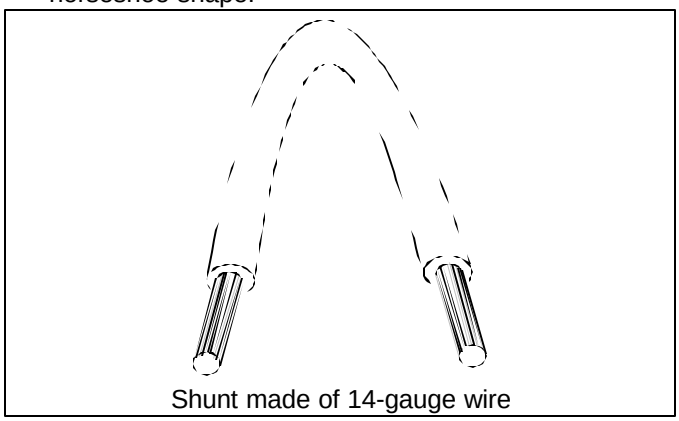
Test Procedures

Necessary preconditions: Ice maker plugged into power; shut-off arm in downposition; freezer not warmer than 2°F

1. Use voltmeter across test points *L* and *N* to verify 115 VAC for ice maker module. Verify test probes go into test points at least 1/2" (1.3 cm).
2. Make a shunt 6" long using 14-gauge wire. Strip 1/2" of insulation off both ends and bend the wire into a horseshoe shape.



Shunt made of 14-gauge wire

3. Test points *T* and *H* will verify the bimetal thermostat is open or closed.
   - Force motor run by shunting *T* to *H* together.
   - If motor does not run, motor has failed. Replace ice maker.
   - If motor does run, bimetal thermostat has failed. Replace ice maker.

NOTE: Verify freezer temperature is cold enough to close the bimetal thermostat.

4. Leave jumper in for half a revolution, then touch heater mold.
   - If mold feels warm, heater works properly.
   - If mold doesn't feel warm, heater has failed. Replace ice maker.
5. Remove jumper and water valve will energize in last half of revolution, if mold heater has not failed.

Module Ohmmeter Checks (No power to icemaker with ejector blades at End-of Cycle postion)

Test Points	Component	Module position	Ohms
L & H	Mold Heater	Attached to support	264
L & M	Motor	Separated from heater	16,100

Module Voltage Checks with meter or test light (Power supply to icemaker)

Test Points	Component	Line Voltage	O Volts
L & N	Module	Power OK	No Power
T & H	Bimetal	Open	Closed
L & H	Heater	On	Off
L & M	Motor	On	Off
N & V	Water valve	On	Off

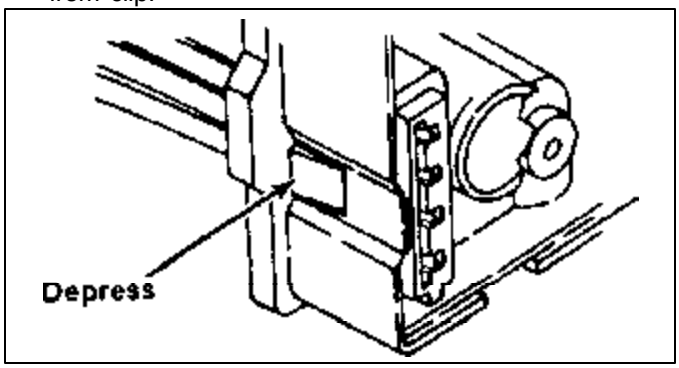
Disassembly

NOTE: Mold heater assembly, module assembly, support assembly, and thermostat are not replaceable. If any of these components have failed, ice maker must be replaced as a unit.

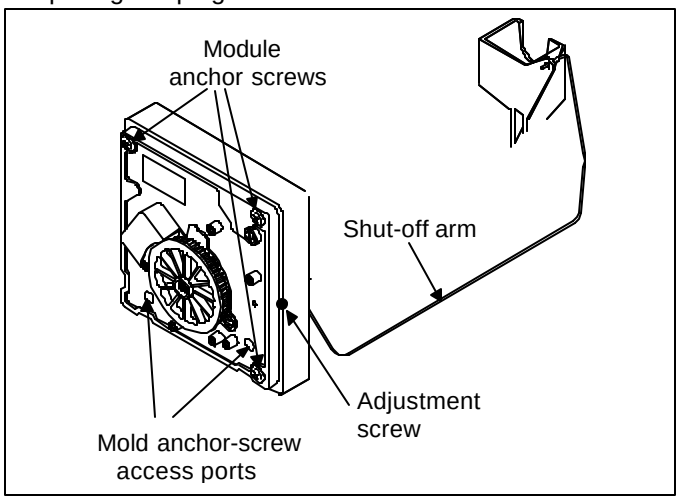
1. Remove plastic cover off module.
2. Remove shut-off arm from back of support assembly.

NOTE: When reassembling unit, push shut-off arm as far as it will go into bushing in back of support assembly.

3. At side of mold heater assembly, pull thermal fuse from clip.



4. Remove wiring harness, by releasing retainer tab and pulling the plug out.



Icemaker

WARNING

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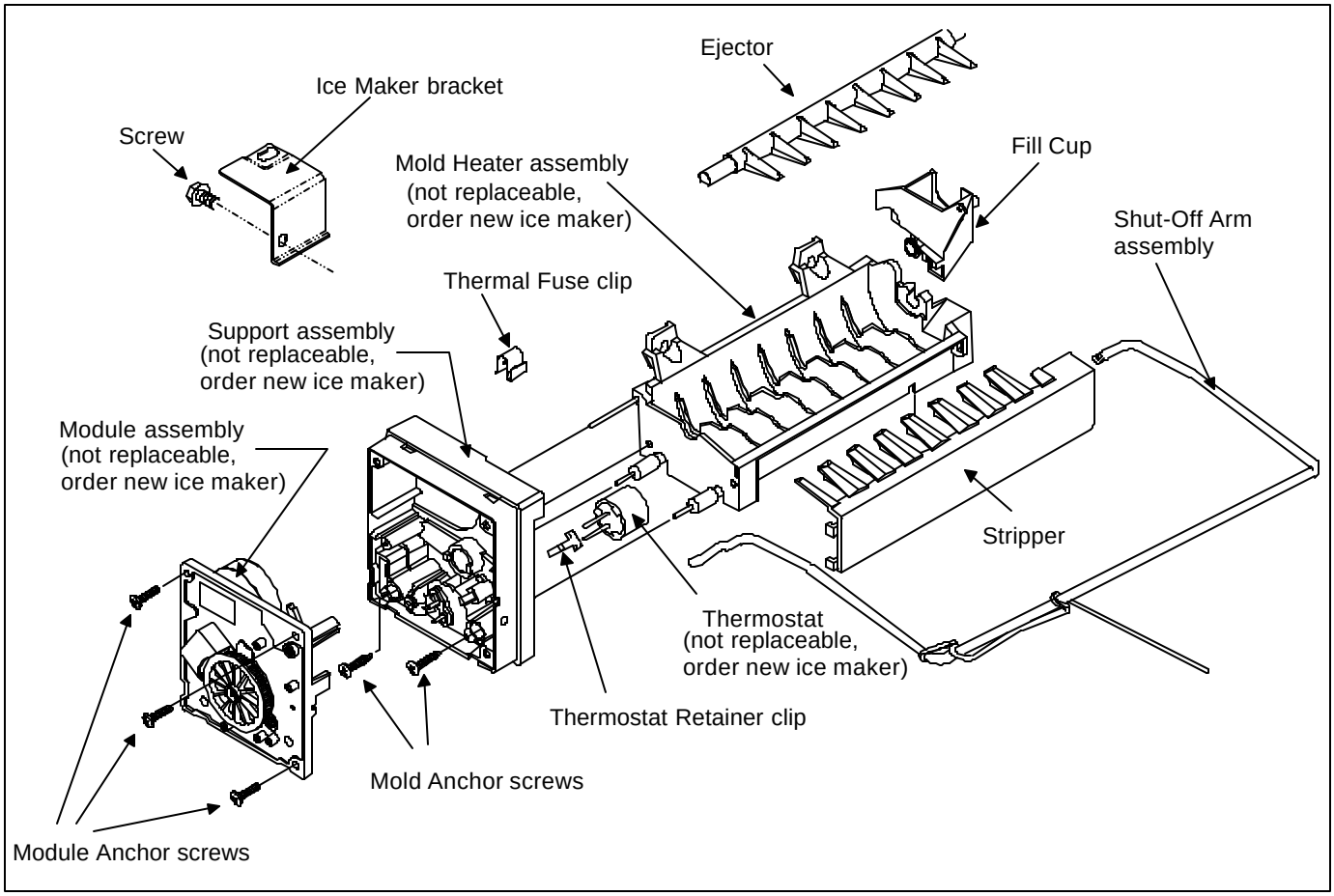


5. Reach into mold anchor-screw access ports with a Phillips screwdriver and loosen mold anchor screws. Then pull support assembly away from mold.
6. Remove module anchor screws and pull module out of support assembly.
7. Remove stripper and ejector from module.

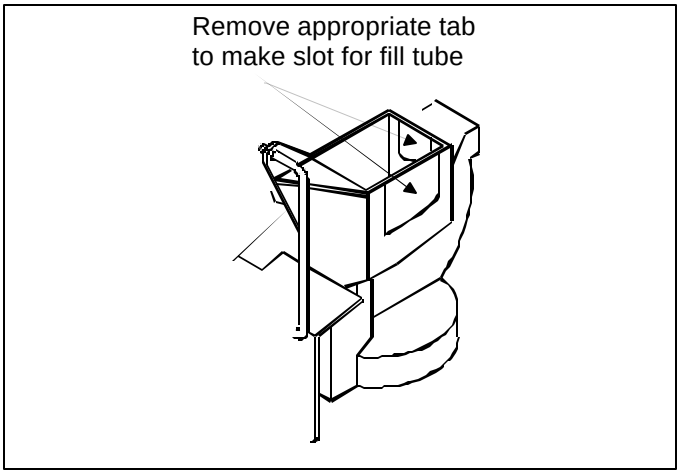
NOTE: During reassembly, align "D" shape of ejector shaft with "D" shaped socket in module cam.

8. Remove fill cup. Finally (if desired) remove thermal fuse clip and ice maker bracket.

NOTE: New fill cups are molded with two break-out slots for a fill tube. This is done so that the same cup can be used in several applications.

Installing a new fill cup:

1. Disassemble icemaker.
2. Using ordinary pliers on new fill cup, remove fill slot required by your application.
3. Mount new fill cup and reassemble icemaker.



Icemaker

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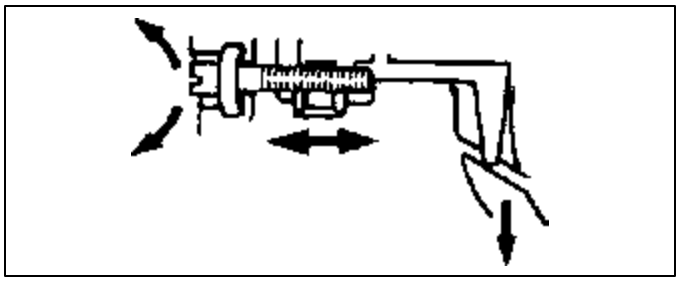
Water Fill Adjustment

Turning the water level adjustment screw moves the contact point in relationship with the contact ring segment upon which it rides. Because the contact ring is tapered, movement of the contact point causes variation in the length of time that the water valve is energized.

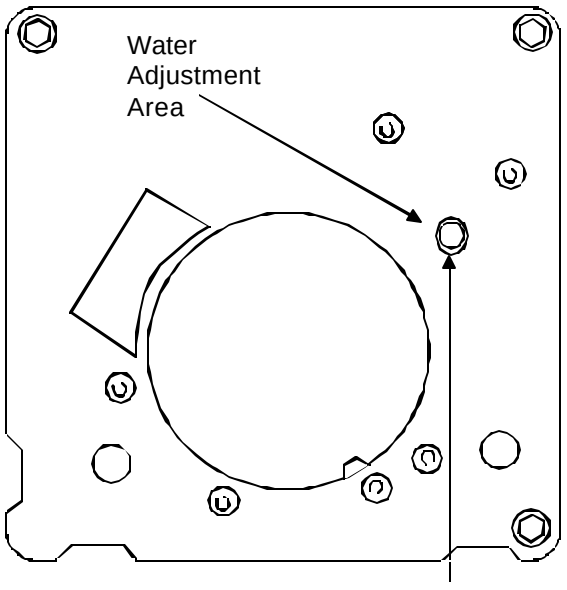


- Turning screw clockwise decreases fill time; turning screw counterclockwise increases fill time.
- One half turn equals 20 cc or 1.2 seconds. A full turn equals 40 cc or 2.4 seconds.

Caution

To avoid risk of damaging the module, one full rotation in either direction is the maximum adjustment recomended.

If water valve adjustment screw falls out, put it back in and turn it until the holes align as shown below.



When small hole is centered in larger hole, water fill time is 7.5 seconds (normal).

Water Problems

Water quality can cause ice makers to fail, flood or produce unacceptable cubes. If mineral content or sand is a problem, the screen in the fill valve can clog and restrict water flow. A particle of sand can prevent the valve from seating properly.

- Symptoms of clogging include small crescents or no ice.
- Symptoms of a dirty valve include, flooding of the ice container when the water valve does not close. Mineral contact can also lime up the mold, causing wicking of water over the mold and poor cube release.

NOTE: Silicone is applied at the upper edges, around fill cup and stripper.

Temperature Problems

Temperatures in freezer section that average more than 0 ± 2°F (18 ± 1°C) slow the formation of ice. Therefore, complaints of inadequate ice production can sometimes be corrected by setting the freezer thermostat to a colder temperature. Thermostat cycling temperature with the one revolution icemaker is 17° ±3°F (-8° ±1°C). Obviously, the ice will be well frozen when those temperatures are achieved. But cycling time slows if freezer temperature is not cold enough to achieve those temperatures easily.

Bimetal Thermostat

See "Test Procedures" to test operation of the bimetal thermostat.

NOTE: Replacement thermostats are no longer available for icemakers. If your thermostat has failed, replace icemaker.

Icemaker

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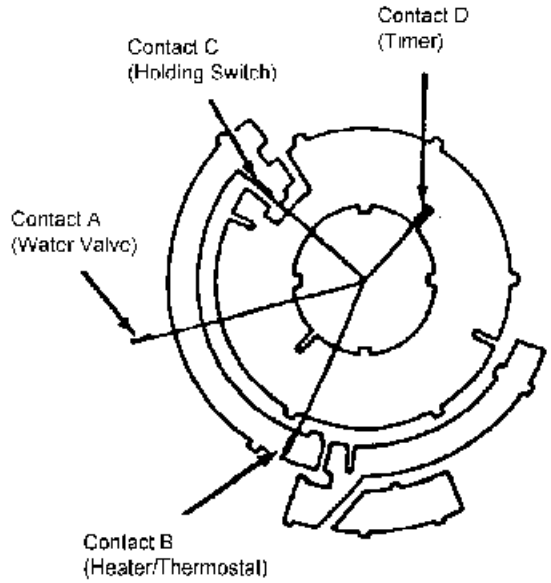
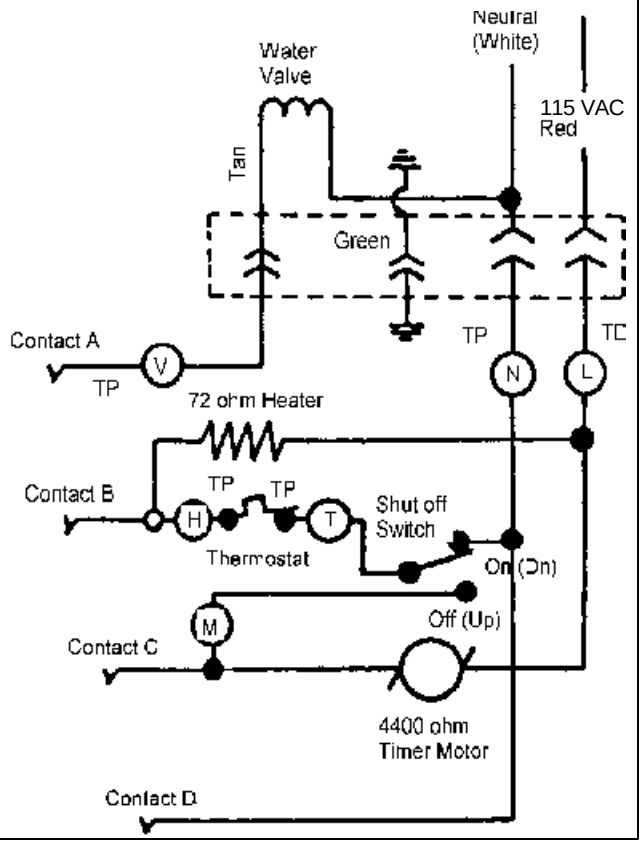
Copper Strips on Backside of Drive Gear



Wiring Diagram

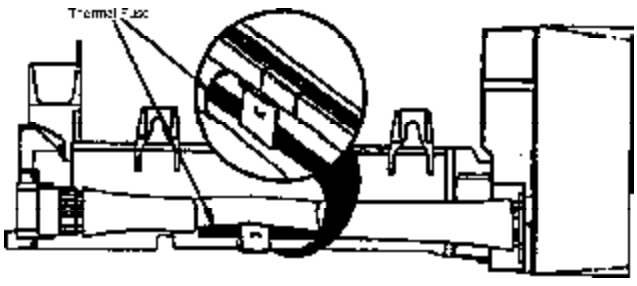


Thermal Fuse

A thermal fuse, incorporated into the icemaker wiring harness, protects the plastic liner from melting if the icemaker overheats. The thermal fuse is spliced into the red wire of the icemaker harness. It is a nonresettable fuse, and it is designed to blow at 170°F (78° C).

Presence of this fuse in the circuit means that a "No Ice" complaint could be caused by excessive heat. Where overheating is the problem, replacement of the wiring harness is a temporary solution.

NOTE: The icemaker should be replaced.



Water Valve

Caution

To avoid risk of property damge; do not overtighten connection to household water supply. Always test for leaks after repair or replacement of water valve.

When the solenoid is energized, amount of water allowed to enter the icemaker mold is determined by two factors:

- Duration of the timing cam that closes the water switch.
- Water pressure present in the tubes.

Proper ice maker fill is 140 ± 10 cc in 7.5 seconds of water fill time at an inlet pressure of 20 to 120 PSI (1.4 to 8.2 bar).

Inside the valve, a flow washer acts as a water pressure regulator. This results in a pressure drop across the valve of 20 to 120 psi (1.4 to 8.2 bar). The valve incorporates an 80-mesh screen water strainer.

Icemaker

WARNING

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Icemaker Troubleshooting Chart

I. No Ice or Low Ice Production	
1. Freezer not cold enough	1. Adjust or repair freezer
2. Broken locking tab on vertical cam	2. Replace ice maker
3. Module shut-off switch and contacts shorted & burned	3. Replace ice maker
4. Motor stalled or stripped	4. Replace ice maker
5. Check ejector position	
A. Park (ejector at 2:30 position)	
1. Contaminated module (Doesn't run when jumped through "T" and "H" probe holes)	1. Replace ice maker
2. Open or missing thermostat	2. Replace ice maker
3. No power to ice maker (harness)	3. Trace power to locate discontinuity
4. Jammed cubes (Notice cube size; hollow?)	4. Clear cube jam; check fill tube & fill cup
5. Little or no water to ice maker (Notice cube size)	
a. Frozen fill tube (leaky water valve)	a. Replace water valve
b. Kinked water tube	b. Un-kink water tube; check for weak spots
c. Clogged water tube to ice maker or refrigerator	c. Clear stoppage
d. Clogged water valve	d. Replace water valve
e. No power to water valve	e. Trace power to locate discontinuity
f. Low water pressure	f. Pressure must be 20 to 120 psi (1.4 to 8.2 bar). Test by jumping "T" to "H" for 7.5 seconds; then remove jumpers; catch water in glass. Should be about 140 cc's.
g. Open heater circuit	g. Replace ice maker
h. Closed thermostat	h. Replace ice maker
i. Damaged heater tulips on module	i. Replace ice maker
j. Heater pins too short; don't contact module	j. Replace ice maker
6. Bail shut-off arm in vacation mode — no ice	6. Lower bail shut-off arm to begin cycle
7. Bail shut-off arm binds when raised or lowered	
a. Water or ice in actuator/housing hole	a. Remove module; dry actuator & housing holes
b. Housing hole small or burred	b. Repair or replace ice maker
c. Actuator O.D. large or burred	c. Replace ice maker
d. Module housing damaged	d. Replace ice maker
e. Bail shut-off arm misformed	e. Replace bail shut-off arm
8. Little or no Alumilastic on thermostat	8. Apply fresh coat of Alumilastic to thermostat
9. Housing-to-mold screws not seated	9. Tighten housing-to-mold screws (20-26 in. lb. or 22.8-29.6 cm/kg)
10. Heater not staked in mold	10. Replace ice maker
11. Wrong heater temperature	11. Replace ice maker
12. Broken shut-off lever (mislocated shut-off switch)	12. Replace ice maker
B. Ejector in 3:00 position	
1. Contamination	1. Replace ice maker
2. Jammed cubes (Notice cube size; hollow?)	2. Clear cube jam
3. Ice maker or refrigerator not level	3. Level as necessary
4. No power to ice maker	4. Trace power to locate discontinuity
5. Excessive water-fill volume	5. Adjust volume screw on module, change water valve or lower water pressure
6. Rack of cubes fell back into mold during ejection	6. Install new fill cup; check fill tube assembly
C. Ejector in 4:00 position	
1. Contamination	1. Replace ice maker
2. Thermostat out of calibration	2. Replace ice maker
3. Open heater circuit (motor should be oscillating)	3. Replace ice maker
4. Little or no Alumilastic on thermostat	4. Apply fresh coat of Alumilastic to thermostat
5. Heater not staked in mold	5. Replace ice maker
6. Broken locking tabs on vertical cam	6. Replace ice maker

Icemaker

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I. No Ice or Low Ice Production (cont)	
5. Check ejector position (cont)	1. Adjust or repair freezer
D. Ejector at 6:00 position	
1. Contamination (motor doesn't oscillate)	1. Replace ice maker
2. Hollow cubes	2. Refer to Section III, "Hollow Cubes"
3. Insufficient water to ice maker (small cubes)	3. Refer to Section III, "Hollow Cubes"
E. Ejector at 7:30 position	
1. Contamination (motor doesn't oscillate)	1. Replace ice maker
2. Bail arm stuck in ice or obstructed	2. Remove obstruction or replace ice maker
3. Pac-Man cubes (cubes not formed properly)	3. Un-jam unit; check fill-cup and fill-tube assembly
F. Ejector at 9:00 position	
1. Contamination	1. Replace ice maker
2. Cube frozen fo fill cup or mold	2. Un-jam unit; install new fill cup or new ice maker
II. Overproduction of Ice	
1. Bail shut-off arm not in actuator	1. Replace bail shut-off arm in actuator; watch for loose fit
2. Misformed bail shut-off arm	2. Replace bail shut-off arm
3. Shut-off lever broken or bypassing vertical cam	3. Replace ice maker
4. Broken module actuator	4. Replace ice maker
III. Hollow Ice Cubes	
1. Water fill volume too low	1. Adjust screw on module; clear water path or change water valve
2. Improper freezer air flow	2. Redirect air flow away from ice-maker thermostat
3. Thermostat out of calibration	3. Apply fresh Alumilastic; replace ice maker
IV. Flooding; Ice Slabs in Bucket or Freezer	
1. Thermostat out of calibration	1. Apply fresh Alumilastic; replace ice maker
2. Jammed cube stalls unit in water-fill cycle	2. Remove cube; find cause of jamming
3. Leaky water valve	3. Replace water valve
4. Fill volume of water excessive	4. Adjust screw on module; change water valve
5. Motor stalled in fill cycle (ejectors in 12:00 position)	5. Replace ice maker
6. Contaminated module	6. Replace ice maker
7. Refrigerator or ice maker not level	7. Level as necessary
8. Excessive water pressure	8. Lower pressure to 20-120 psi (1.4-8.2 bar)
9. Module shut-off switch and contacts shorted & burned	9. Replace ice maker
10. Broken locking tab on vertical cam (stalled in fill cycle)	10. Replace ice maker
11. Fill tube not properly located in fill cup	11. Reposition fill tube
12. Fill cup water opening flashed over or plugged	12. Install new fill cup
13. Cubes fall over back of ice maker, melting into freezer	13. Install new fill cup

Ice and Water Systems

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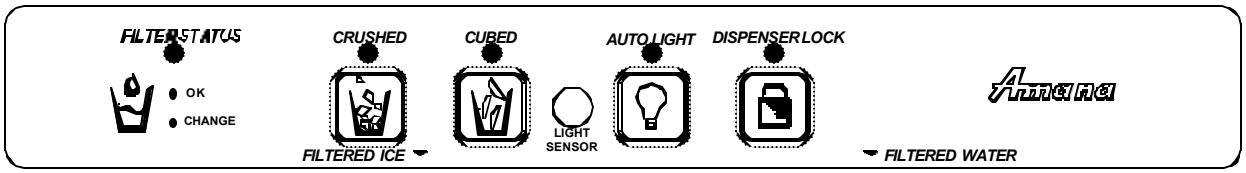
Ice 'n' Water™ Electronic Dispenser



Ice Dispenser Operation

Select CRUSHED or CUBED mode by pushing the button on the dispenser panel. A green indicator light above the button indicates the current selection. Selection mode cannot be changed while ice dispenser is in operation.

Dispenser Light

Light activates at full power when dispensing ice or water. A sensor activates light at half-power when light level around refrigerator is low. Activate or deactivate sensor by pushing AUTO LIGHT button located on control façade. Green light above AUTO LIGHT button indicates sensor is active.

Dispenser Lock

Prevents operation of water and ice dispensers. To activate or deactivate lock, press and hold DISPENSER LOCK button for 3 seconds. Green light above button indicates dispenser lock.

Automatic Lock Out

Shuts down both ice and water mechanisms of dispenser when either mechanism has run continuously for 5 minutes. To return power to dispenser, press and hold DISPENSER LOCK for 3 seconds. Auger motor shuts off automatically after 3 minutes of continuous operation. After about 3 minutes in shut-off state, auger motor resets automatically.

Filter Status Light

This feature reminds users to replace water filter after 6 months have passed or after 250 gallons of water are filtered, whichever happens first.

NOTE: Filter status light turns red after 6 months have passed or after 250 gallons of water are dispensed, even if bypass is installed and unit is used without filter cartridge.

Green light indicates filter in good condition. Red light indicates filter replacement needed.

The filter monitor works by keeping track of time:

- Six months is approximately 16 million seconds.
- The refrigerator's water system requires about 2 million seconds to pass 250 gallons of water.
- Each second that water is dispensed counts as 0.66 ounces of water.
- Each second that cubed ice is dispensed counts as 0.66 ounces of water.
- Each second that crushed ice is dispensed counts as 0.4 ounces of water.
- Every 30 minutes counts as an additional 1.33 ounces of water. This attempts to account for bulk ice usage at the rate of 0.5 gallons of water per day.

Filter Status Light Reset

Once filter light turns red, it remains red until reset. To reset filter indicator, press both DISPENSER LOCK and AUTO LIGHT buttons simultaneously and hold for 4 seconds. Green light flashes 3 times when indicator resets.

Ice and Water Systems

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Ice 'n' Water™ Troubleshooting Charts

Symptom	Possible Cause	Test Procedure	Repair
No LED's lit.	Switch failure in freezer door.	With refrigerator powered, open freezer door. Press freezer door switch in. If freezer light does not turn off, switch is defective.	Replace switch and retest.
	Incorrect harness wiring.	Verify wire colors on 10-pin connector.	Correct wiring and retest.
	Harness: Open heater, open white wire between splice and heater, or open brown wire.	Disconnect power. Remove 10-pin connector and measure resistance between white and brown wires. Reading should be 1.4kΩ ± 105Ω.	Repair connector or wire if possible. If not, connect redundant heater. See wiring diagram. Replace door if both heaters have failed.
	Open black wire.	Disconnect power. Unplug 10-pin connector from PCB and attach ohmmeter probe to harness Pin 10 (black wire). Remove top hinge cover. Disconnect 4-pin plug. Attach second meter probe to harness Pin 2 (black wire). Meter should read less than 1Ω.	Repair black wire if possible. If not, cut black wire at top hinge plug and at 10-pin connector. Splice violet wire (spare) in door harness between black wire at top hinge plug and black wire at 10-pin connector.
	Open white wire between top hinge and cavity.	Disconnect power. Unplug 10-pin connector from PCB and attach ohmmeter probe to harness Pin 1 (white wire). Remove top hinge cover. Disconnect 4-pin plug. Attach second meter probe to harness Pin 1 (white wire). Meter should read less than 1Ω.	Repair white wire if possible. If not, use violet wire (spare) to connect redundant heater. See wiring diagram. Replace door if both heaters have failed.
	PCB: Power supply.	If no LED's turn on and wiring checks OK, PCB is defective.	Replace PCB.
No water, Auger motor operates.	Failed water actuator switch.	Remove both leads from switch and measure resistance across switch terminals. Press finger against actuator to close switch. Resistance should read less than 1Ω in this position and greater than 1 MΩ when actuator switch is open.	Replace switch.
	Harness: Open red wire between ice switch and water switch.	Inspect switch area. Test red wire for continuity.	Repair wire and retest.
	Harness: Gray wire not attached to the water switch.	Inspect switch area.	Reattach gray wire and test for continuity of gray wire.
	Incorrect harness wiring.	Verify gray (Pin 5) and red (Pin 4) wires are correctly positioned in the 10-pin connector.	Correct wiring and retest.
	Harness: Open gray wire between water switch and solenoid.	Test gray wire for continuity to door hinge. Test light blue wire from door hinge to blue or violet wire at solenoid.	Repair or replace this wire.
	Harness: Open water valve.	Measure resistance across water valve. Refer to component specifications in this document for tolerances.	Replace water valve.
Water dispenses but no cavity light when water is actuated.	Harness: Open gray wire between ice switch and 10-pin connector.	Test gray wire for continuity from water switch to 10-pin connector.	Repair wire or connector.

Ice and Water Systems

⚠ WARNING

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Symptom	Possible Cause	Test Procedure	Repair
No auger motor. Cavity light comes on when water is actuated but not when ice is actuated.	Incorrect harness wiring.	Verify correct wiring of 10-pin connector.	Correct wiring and retest.
	Harness: Open black/red wire between connector and auger switch.	Test black/red wire for continuity.	Repair wire or replace door.
LED's operate but no ice or water. Cavity light does not come on when ice or water is actuated. Night light works properly.	Operational error: Lock mode may be enabled.	Press and hold *DISPENSER LOCK* button for 4 seconds.	Customer education.
	Harness: Open red wire in harness (Pin 4 on 10-pin connector) between connector and auger switch.	Disconnect power. Unplug 10-pin connector from PCB and attach ohmmeter probe to harness Pin 4 (red wire). Remove red wire from auger switch. Attach second ohmmeter probe to red wire. Look for less than 1Ω resistance.	Repair wire or terminal.
	PCB: Lock relay stuck open.	Disconnect power. Remove 10-pin connector from PCB. On PCB, measure resistance between Pin 10 and Pin 4. Meter should read less than 2Ω.	Replace PCB.
LED's operate. Cavity light comes on when ice or water actuated, but no auger motor.	Auger motor: Open winding or connection.	Perform standard auger motor test.	Replace auger motor.
No night light. Cavity light works properly.	PCB defective.	Verify LED above *AUTO LIGHT* button is lit. Completely cover sensor lens with coin. If night-light turns on, then product is operating within spec. Otherwise, PCB needs replaced.	Replace PCB.
No light at all. Everything else works properly.	Bulb burnt out.	Measure resistance across bulb filament. If higher than 1kΩ, replace bulb.	Replace bulb.
	Harness: Open white wire between cavity light and splice in door. Wire not connected at light socket.	Inspect wire for proper connection at 10-pin connector and cavity-light socket. Ohmmeter should show short between white wire at cavity light and neutral on the power cord.	Repair or replace white wire or connection, or splice in violet wire (spare) if white wire is not accessible.
	Harness: Open white wire between 10-pin connector and cavity light.	Test white wire for continuity.	Repair or replace white wire or terminal.
	Harness: Yellow wire open or not connected between 10-pin connector and light socket.	Test yellow wire for continuity.	Repair or replace yellow wire or attach wire to light socket.
	Incorrect harness wiring.	Check color-coding of wires against wiring diagram.	Correct wiring and retest.
	PCB failure.	If LED's turn on, PCB is defective.	Replace PCB.
Ice all the time.	Switch failure: Shorted auger switch.	Remove both leads from switch. Measure resistance across switch terminals. Resistance is greater than 1MΩ in open position and less than 1Ω when switch is closed.	Replace auger switch.
	PCB failure.	If LED's turn on, PCB is defective.	Replace PCB.

Ice and Water Systems

⚠ WARNING

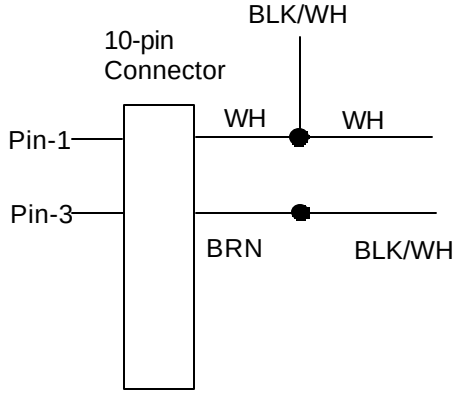
To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Symptom	Possible Cause	Test Procedure	Repair
Water all the time.	Shorted water solenoid switch.	Remove leads from switch and measure resistance across switch terminals. Resistance is greater than 1MΩ in open position and less than 1Ω when actuator is pressed closed.	Replace water solenoid switch.
	PCB failure.	If no LED's turn on PCB is defective.	Replace PCB.
	Water valve stuck open.	Remove power to the refrigerator. If water still flows through the valve, valve is bad or there is low water pressure.	Replace the water valve or correct household water pressure.
Night-light on all the time. Cavity light works properly, comes on when ice or water actuated.	Operational error: Lens is dirty or covered with contamination.	Make sure nothing covers or masks photosensitive lens.	Clean lens area of control.
	PCB: Defective photo-sensor circuit.	If night-light is on all the time and procedure above has been preformed, PCB is defective.	Replace PCB.
Cavity light all the time. Ice and water work OK.	Incorrect harness wiring.	Verify wire colors on 10-pin connector against the wiring diagram.	Correct wiring and retest.
Filter LED never changes to red.	Operational error: User mistakenly resets filter counter.	Demonstrate reset operation to customer.	Customer education.

Redundant Heater Wiring

Instruction 1: Wire in redundant heater when heater-circuit failure occurs between heater splice and dispenser cavity (See Wiring Diagram). Cut white wire two inches away from 10-pin connector. Splice one of the Blk/Wh leads from wire harness to loose ends of the white wire. Next, cut the brown wire two inches from the 10-pin connector. Splice the other Blk/Wh wire to the two-inch stub of the brown wire at Pin 3 of the 10-pin connector. Tape off the remaining, loose end of the brown wire.

NOTE: Never wire in both heaters at the same time. Doing so will ruin the PCB.



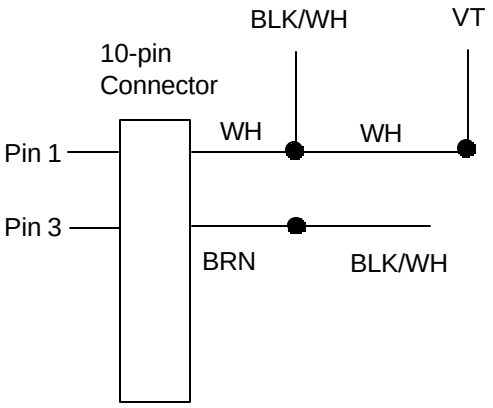
This is how wiring should look at the 10-pin connector after redundant heater is wired into system per Instruction 1.

⚠ WARNING

To avoid risk of electrical shock severe personal injury or death; disconnect power to unit before servicing, unless testing requires power. Discharge capacitor through a 10,000 ohm resistor before handling. Wires removed during disassembly must be placed on the correct terminals to ensure proper grounding and polarization.

Instruction 2: Wire in redundant heater when heater-circuit failure occurs in white wire between top hinge and heater splice (See Wiring Diagram). Cut white wire two inches from 4-pin connector at top hinge. Splice violet wire onto two-inch stub of white wire at 4-pin connector. Tape off remaining, loose end of white wire. In cavity, cut white wire two inches from 10-pin connector. Splice violet wire and one Blk/Wh wire to two-inch stub of white wire at 10-pin connector. Tape off loose end of white wire. Next, cut brown wire two inches from Pin 3 on 10-pin connector. Splice second Blk/Wh wire to two-inch stub of Brown wire at 10-pin connector. Tape off loose end of brown wire.

NOTE: Never wire in both heaters at the same time. Doing so will ruin the PCB.



This is how wiring should look at the 10-pin connector after redundant heater is wired into system per Instruction 2.

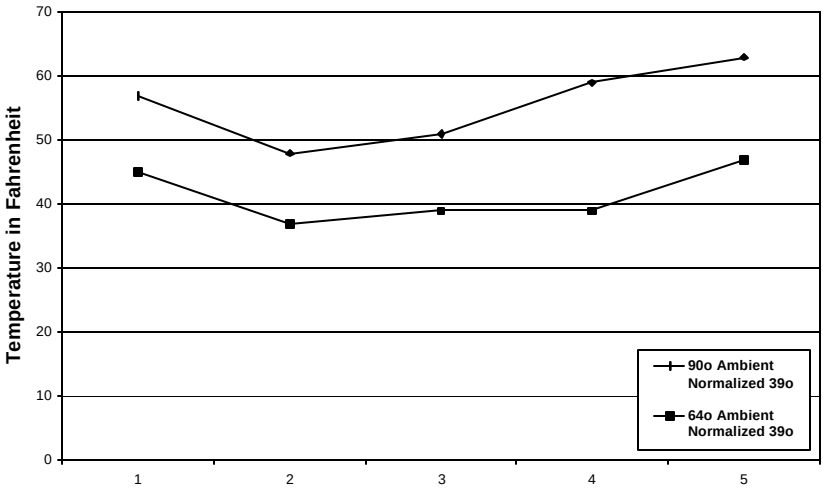
All Ice & Water Systems

	Seconds to dispense 10 oz. water					
Supply pressure	20 psig*	30 psig*	40 psig*	50 psig*	60 psig*	70 psig*
Filter model, bypass installed	18.1	14.3	12.2	10.8	9.8	9.0
Filter model, new filter installed	22.0	17.3	14.2	12.8	11.5	10.4

*Amana specifies a minimum supply pressure of 35 psig 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.

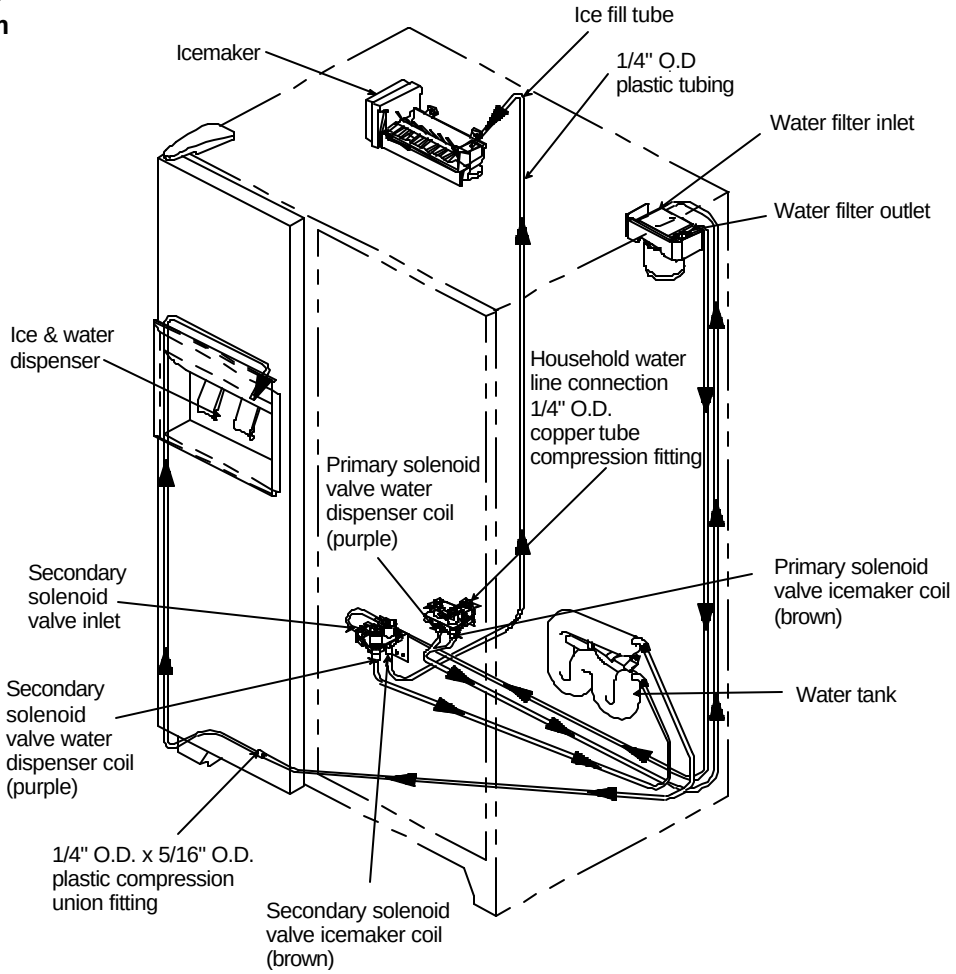
Ice and Water Systems

Water Temperature Chart (Approximate)



Number of 8-ounce Glasses of Water
Water temperature has stabilized for at least 12 hours in water reservoir
Fresh food compartment temperature is 38–40 degrees Fahrenheit

"Filter" model SxS water flow diagram



Appendix C

Installation Instructions

This refrigerator operates most efficiently when it is properly installed. Amana cannot be responsible for loss, injury or damage caused by improper installation or unqualified personnel.

Unpack Unit

1. Cut wire bands at top and bottom of refrigerator carton and remove carton lid.
2. Use a razor knife to slit down side of carton on dotted line, being careful not to gouge the machine.
3. Peel carton off unit and lay carton aside.
4. Tape doors shut to prevent damage caused by unexpected opening.

⚠ CAUTION

To avoid property damage or personal injury, two person lift is required to remove appliance skid.

5. Remove styrofoam pads from top of refrigerator and place them on floor behind unit so that, when refrigerator is tipped over backward, one pad supports unit just above machine compartment and other pad supports unit near its top.

NOTE: Machine compartment cover will not bear the weight of the unit. Styrofoam pad must be located ABOVE machine compartment cover.

6. Gently tip unit backward until it lies on styrofoam pads as described in Step 5.

NOTE: Do not leave refrigerator lying on its back longer than necessary.

7. Pull bottom of carton off appliance skid. Remove all mounting bolts from appliance skid. Remove skid from unit and discard skid.
8. Gently return refrigerator to upright position.

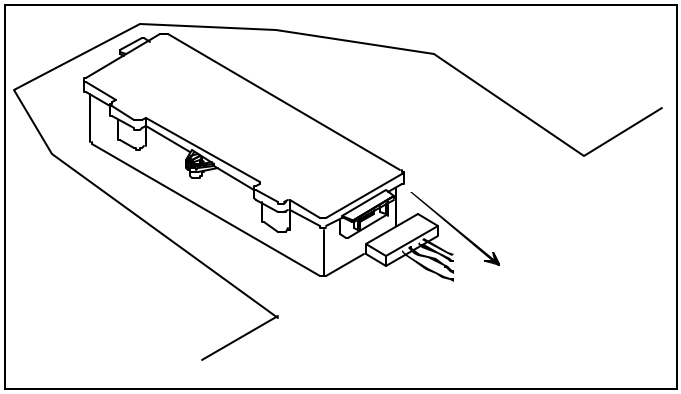
⚠ WARNING

To avoid electrical shock, severe personal injury or death; disconnect power to unit before removing doors.

NOTE: On models covered by this manual, doors are foamed as assemblies at factory. Inner door liners and outer door pans are not replaceable. If either is damaged, door must be replaced.

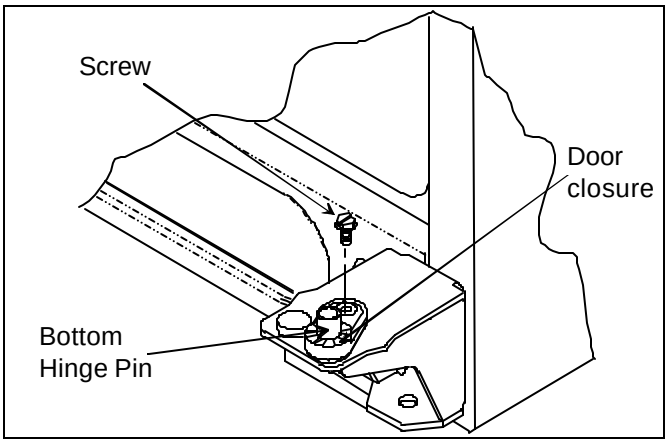
Refrigerator Door (Electronic)

1. Open door and remove storage buckets.
2. Remove toe grille.
   - Grip grille firmly at both ends.
   - Pull straight out, away from unit.
3. Disconnect wiring harness from high-voltage (HV) box behind toe grille.



High-Voltage Box

4. Remove screw that mounts door closure to bottom hinge.



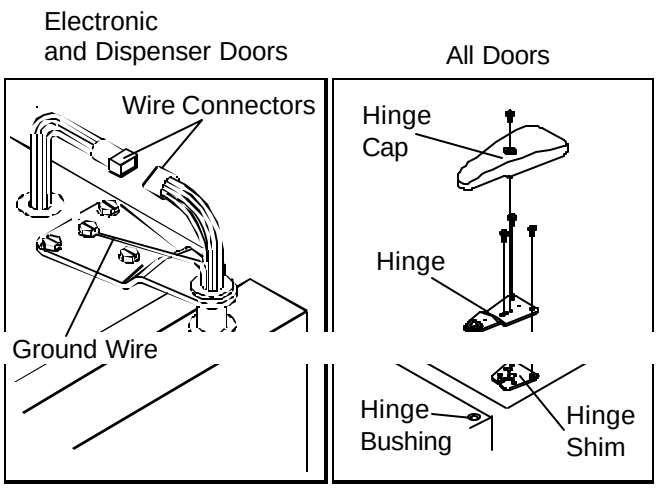
Bottom Hinge Pin & Door Closure
(door removed for clarity)

5. Close door.
6. On decorator units, remove screws that hold trim strip to top of door and remove trim strip.
7. Remove screw that holds cover on top hinge and remove hinge cover.
8. Unplug wiring harness; remove ground screw and ground wire from hinge.

Installation Instructions

⚠ CAUTION

To avoid personal injury or property damage, due to door falling, Secure door to cabinet with strapping tape before top hinge is removed.



Top Hinge Nomenclature,
Side-by-Side Refrigerator & Freezer Doors

9. Remove mounting screws from top hinge. Remove top hinge and hinge bushing and carefully pull them off wiring harness.

NOTE: Hinge shim adheres to top of cabinet and should be left in place. Shim helps to properly locate top hinge when rehanging the door.

10. Open door carefully and lift about 3 inches to bring lower hinge bushing up, off hinge pin.
11. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab) and wiring harness from bottom hinge bracket.
12. If situation requires that unit be as "thin" as possible, remove mounting bolts from bottom hinge bracket and remove bottom hinge bracket.
13. Lay door aside on protective mat.

Refrigerator Door (Nonelectronic)

1. Open door and remove storage buckets.
2. Remove screw that mounts door closure to bottom hinge.
3. Close door.
4. On decorator units, remove screws that hold trim strip to top of door and remove trim strip.
5. Remove screw that holds cover on top hinge and remove hinge cover.

⚠ CAUTION

To avoid personal injury or property damage, due to door falling, Secure door to cabinet with strapping tape before top hinge is removed.

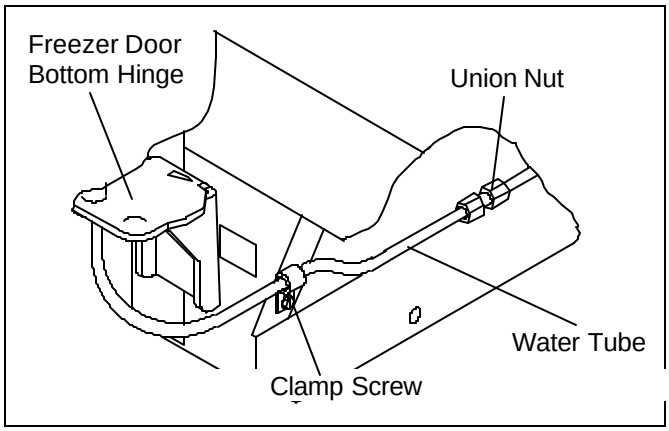
6. Remove three mounting screws from top hinge. Remove top hinge and hinge bushing.

NOTE: Hinge shim adheres to top of cabinet and should be left in place. Shim helps to properly locate top hinge when rehanging the door.

7. Open door carefully and lift about 3 inches to bring lower hinge bushing up, off hinge pin.
8. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab) from bottom hinge bracket.
9. If situation requires that unit be as "thin" as possible, remove mounting bolts from bottom hinge bracket and remove bottom hinge bracket.
10. Lay door aside on protective mat.

Freezer Door (Dispenser)

1. Open door and remove all storage buckets.
2. Remove toe grille.
3. Loosen water-tube clamp screw. Loosen plastic water-tube union nut. Pull water tube away from union nut and through tube clamp.



4. Remove screw that mounts door closure to top surface of bottom hinge.
5. Close door.

Installation Instructions

6. Remove screw holding top hinge cover in place and remove hinge cover.
7. Unplug wiring harness connectors. Remove ground screw and ground wire from top hinge.

⚠ CAUTION

To avoid personal injury or property damage, due to door falling, Secure door to cabinet with strapping tape before top hinge is removed.

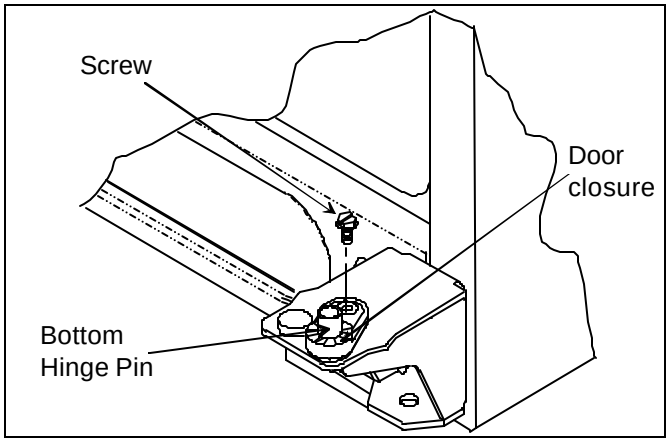
8. Remove top hinge and hinge bushing. Pull hinge and bushing off wiring harness.

NOTE: Hinge shim adheres to top of cabinet and should be left in place. Shim helps to properly locate top hinge when rehanging the door.

9. Lift door about 3 inches to bring lower hinge bushing up, off hinge pin.
10. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab and water tube) from bottom hinge bracket.
11. If situation requires that unit be as “thin” as possible, remove mounting bolts from bottom hinge bracket and remove bottom hinge bracket.
13. Lay door aside on protective mat.

Freezer Door (No Dispenser)

1. Open door and remove all storage buckets.
2. Remove toe grille.
3. Remove screw that mounts door closure to bottom hinge.



4. Close door.
5. Remove screw holding top hinge cover in place and remove hinge cover.

⚠ CAUTION

To avoid personal injury or property damage, due to door falling, Secure door to cabinet with strapping tape before top hinge is removed.

6. Remove three mounting screws from top hinge. Remove top hinge and hinge bushing.

NOTE: Hinge shim adheres to top of cabinet and should be left in place. Shim helps to properly locate top hinge when rehanging the door.

7. Lift door about 3 inches to bring lower hinge bushing up, off hinge pin.
8. Set bottom edge of door on protective pad. Remove hinge pin (with door-closure tab) from bottom hinge bracket.
9. If situation requires that unit be as “thin” as possible, remove mounting bolts from bottom hinge bracket and remove bottom hinge bracket.
10. Lay door aside on protective mat.

Moving Unit

1. Remove doors if necessary.
2. Slide appliance cart under side of unit. Wrap refrigerator carefully with blanket or appliance pad. Thread cart strap around refrigerator and tighten.

⚠ CAUTION

To avoid personal injury or property damage, protect flooring with cardboard or other protective material when moving unit.

3. Move refrigerator in front of final location and rehang doors by reversing removal procedure.

NOTE: Do not tighten top hinge screws or replace toe grille at this time.

If unit has an ice maker, proceed with Water Supply. If unit has no ice maker, skip to Final Steps.

Installation Instructions

Water Supply

⚠ WARNING

To avoid electrical shock, severe personal injury or death; disconnect power to unit before connecting water supply line.

1. Connect water supply.
   a. Get a licensed plumber to connect shut-off valve and water-supply tube to household plumbing in compliance with local codes.

NOTE: Use only seamless, flexible, 1/4" (6 mm) copper tubing. Tubing must be long enough to reach from water supply to refrigerator connection plus an additional 8' (2.4 M) with which to form service loop behind refrigerator.

NOTE: The correct type of shut-off valve requires that a 1/4" (6 mm) hole be drilled in the household water pipe before the valve is attached. Do not use a self-piercing shut-off valve or a valve of any size other than 1/4" (6 mm). Amana is not responsible for property damage caused by improper water connection.

⚠ CAUTION

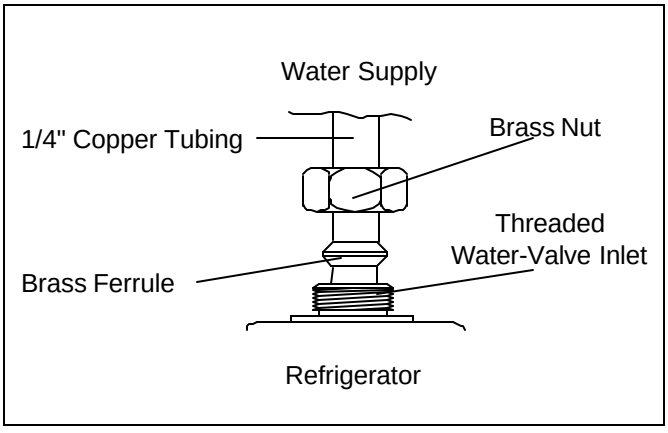
To avoid risk of property damage, supply towels to soak up any spillage of water.

   b. Confirm that water pressure at refrigerator end of water-supply line is between 20 psi and 100 psi (between 1.4 and 7.0 kg/cm^2).

NOTE: Units with filter require pressure between 35 psi and 100 psi (2.5 and 7.0 kg/cm^2).

NOTE: Water valves in your refrigerator will not work properly if system pressure is not within spec.

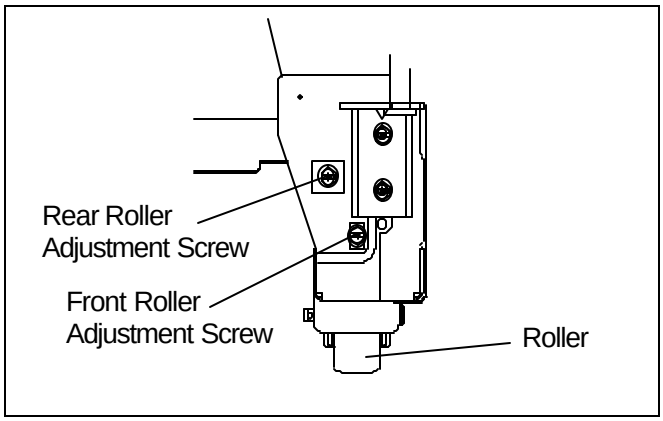
   c. Remove plastic cap from water-valve inlet port on back of refrigerator. Place brass nut and brass ferrule on copper water-supply tube.



   d. Slide water-supply tube into water-valve inlet port. Slide ferrule and nut down to inlet port. Start nut onto threaded inlet port. Turn nut down finger tight and finish with a spanner.
2. Confirm that connection is secure by pulling on copper tubing.
3. Turn on water supply valve at household plumbing and check system for leaks.
4. Use slack in tubing to form service loop behind refrigerator taking care, as you do so, not to kink the tubing.

Final Steps

1. Plug in power cord.
2. Move refrigerator into final location.
3. Level refrigerator and align doors.
   a. At bottom of unit, in front: Turn roller-adjustment screws as necessary to raise or lower corners of cabinet until unit is level and stable.



   b. At top of unit, door corners at center of unit should be about 1/8" (3 mm) higher than door corners at hinges. Doors will sag level when loaded with food.
   c. Lay a dime on door gaskets. Use dime to space refrigerator and freezer doors 11/16" (18 mm) from edge of cabinet.
   d. Tighten all hinge screws.
4. Install toe grille by snapping it into place.