

# Viking Technical Information—Refrigerator

## VCSB482

- Due to a possibility of personal injury or property damage, always contact an authorized technician for servicing or repair of this refrigerator.
- Refer to Service Manual for design, disassembly, ice maker, safety, testing, and troubleshooting information.



### WARNING

To avoid electrical shock which can cause severe personal injury or death, disconnect power to refrigerator using power switch before servicing. Wires removed during disassembly must be replaced on proper terminals to insure correct earthing and polarization. After servicing, reconnect power using power switch.

Model	VCSB482
Capacity	28.57 cu ft
Electrical requirements separate circuit	115 VAC 60 Hz 15A
Refrigerant type amount	R134a 5.25 oz
Width without side extrusions	47"
Depth without handle includes door extrusions	24"
Height range rollers to top of air grille	83 1/4"—84"

#### No Load Performance Controls in Normal Position

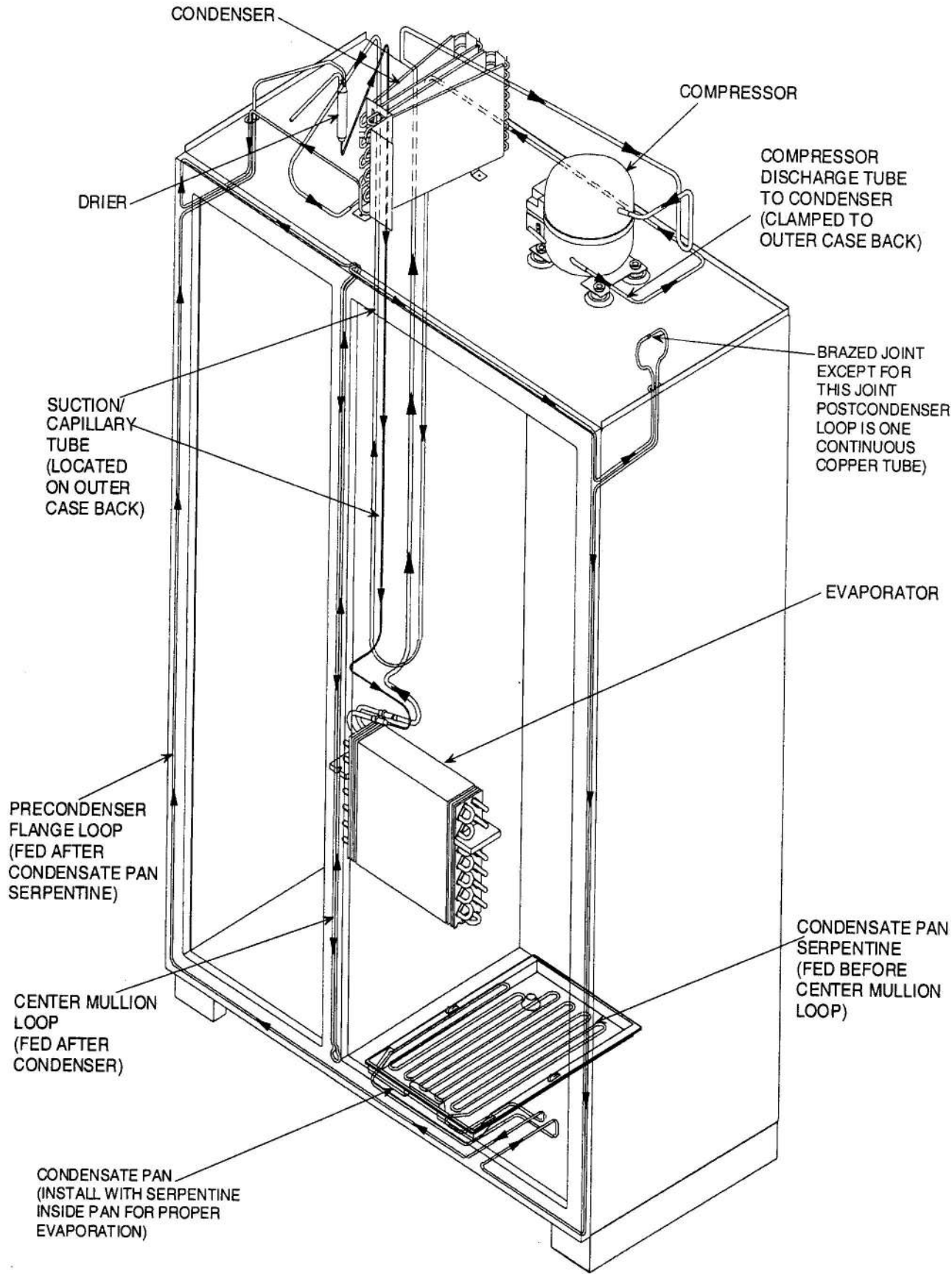
	Kwh/24 hr $\pm 0.4$	Percent Run Time $\pm 10\%$	Cycles/24 hr $\pm 25\%$	Refrigerator Center Compartment Food Average Temperature $\pm 3^\circ\text{F}$	Freezer Compartment Food Average Temperature $\pm 3^\circ\text{F}$
Ambient $^\circ\text{F}$	65° 90° 110°	65° 90° 110°	65° 90° 110°	65° 90° 110°	65° 90° 110°
	1.2 2.3 4.2	28 52 100	30 32 0	39 39 45	3 3 3

#### Temperature Relationship Test Chart

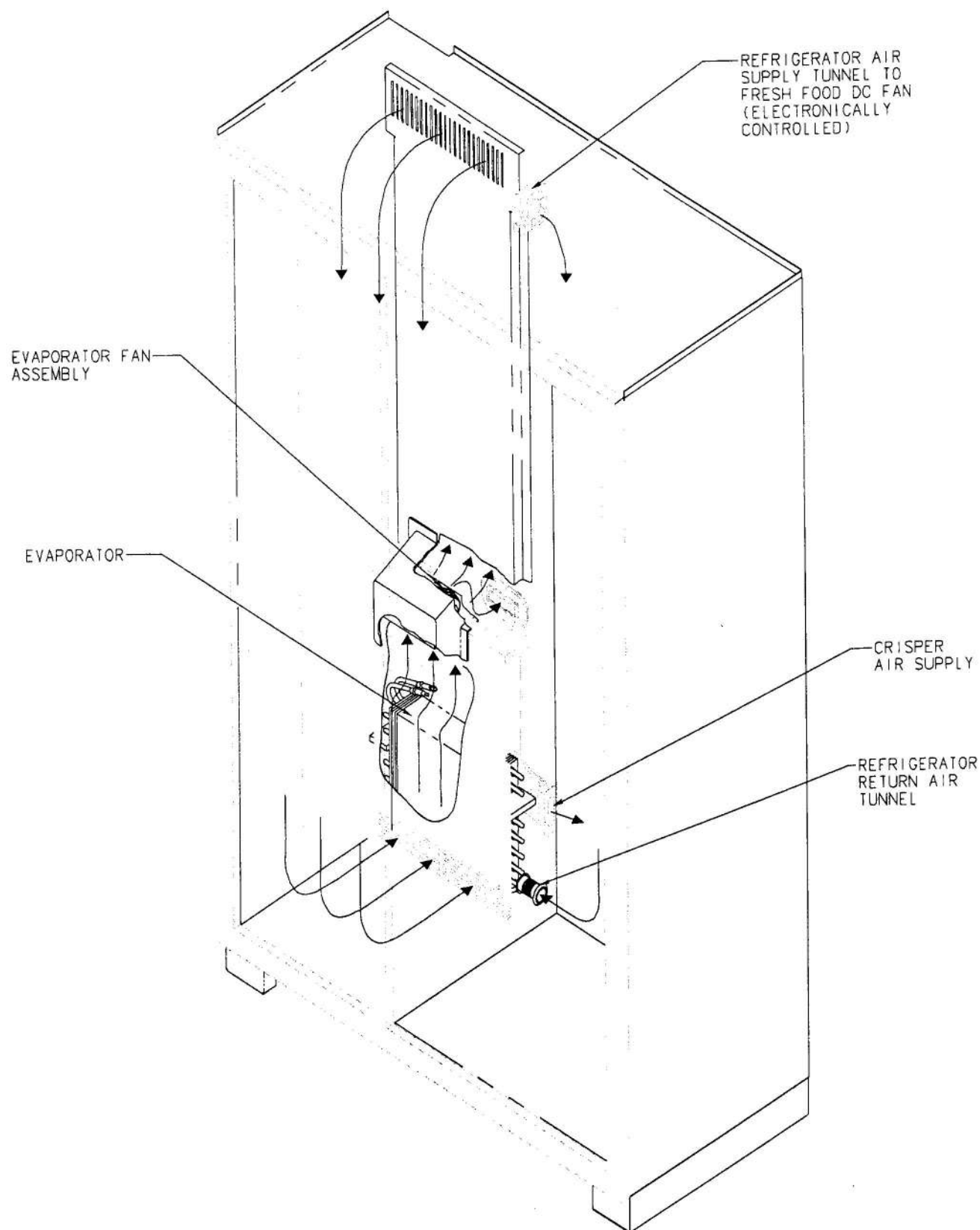
	T-1 Outlet $\pm 3^\circ\text{F}$	T-2 Inlet $\pm 3^\circ\text{F}$	T-3 Suction Line $\pm 7^\circ\text{F}$	Average Total Wattage $\pm 10\%$	Suction Pressure $\pm 2$ PSIG	Head Pressure $\pm 5$ PSIG
Ambient $^\circ\text{F}$	65° 110°	65° 110°	65° 110°	65° 110°	65° 110°	65° 110°
	-14 -14	-14 -14	25 103	157 168	0 0	110 157

***Return Technical Sheet to envelope after service***

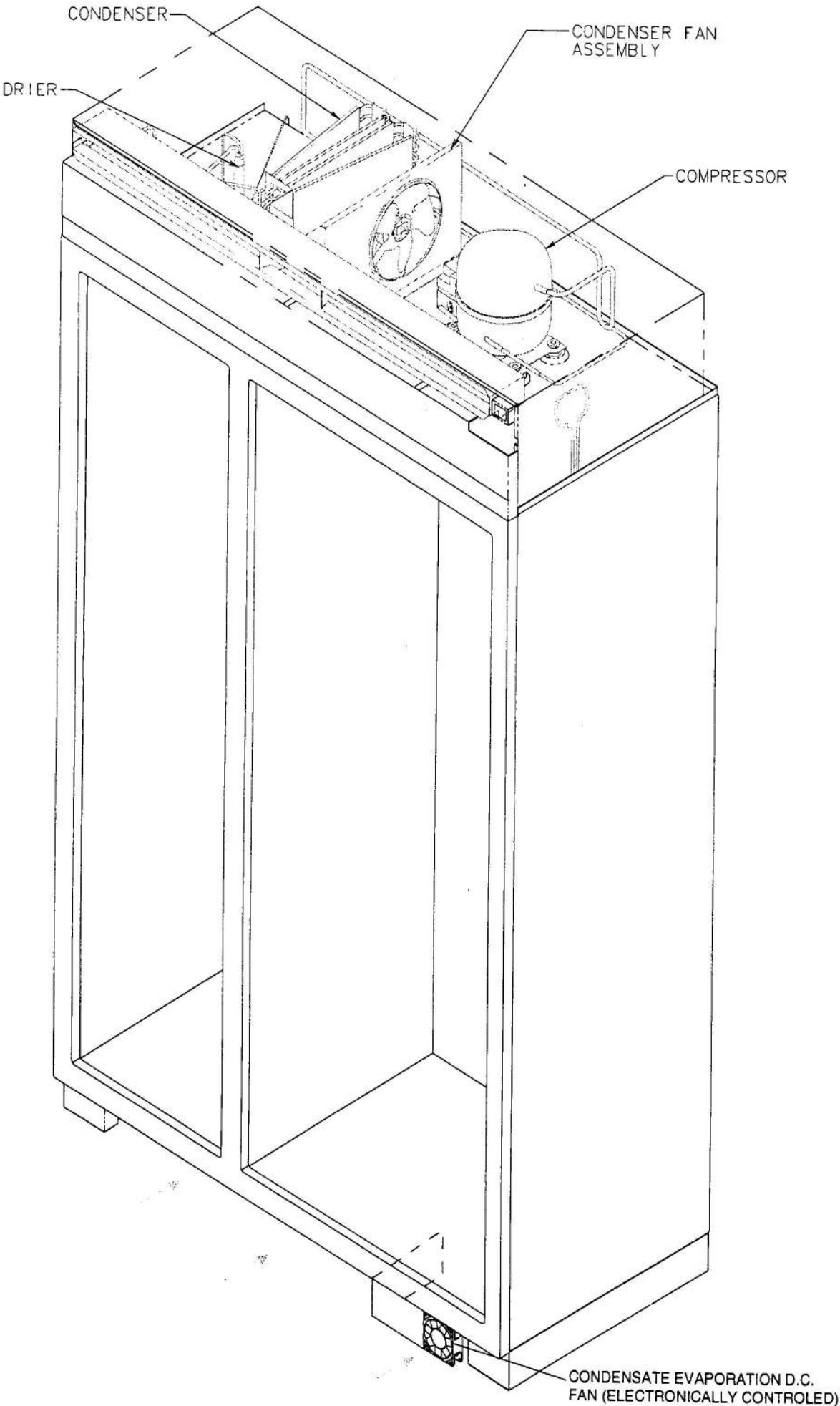
# Refrigerant Flow





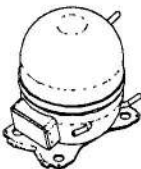

# Cabinet Air Flow



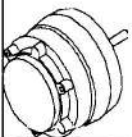
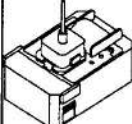
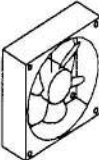
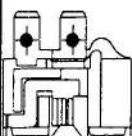
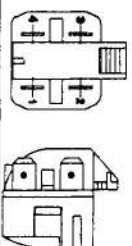
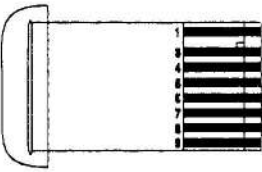
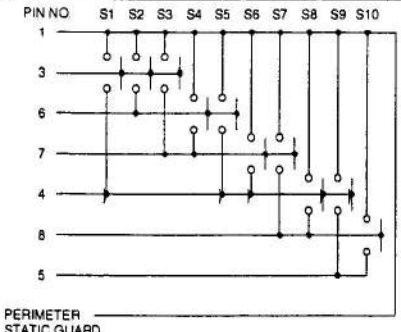


# Machine Compartment Air Flow







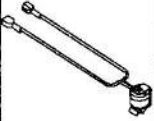
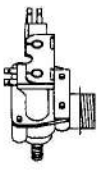
# Component Specifications

Component	Description	Test Procedures	
	Bulb	Volt Watt	115 VAC 40 watts
	Capacitor, compressor run	Volt Capacitance	210/220 VAC 15 Mfd +10% -5%
	Compressor	Type BTUH Volt Watt Current Lock rotor Full load Resistance Run Windings Start Windings	Fan Cooled, R134a refrigerant 1130 BTUH 115 VAC 60 Hz 205 watts 21.3 A 1.8 A 2.60 $\Omega$ 4.35 $\Omega$
	Drier	Drier must be changed every time the system is opened for testing or compressor replacement.  Desiccant (20) 8 x 12 4AXH - 7 M.S. -Grams	
	Heater, evaporator	Volt Wattage Resistance	115 VAC 450 $\pm$ 5% W 30 $\pm$ 5% $\Omega$

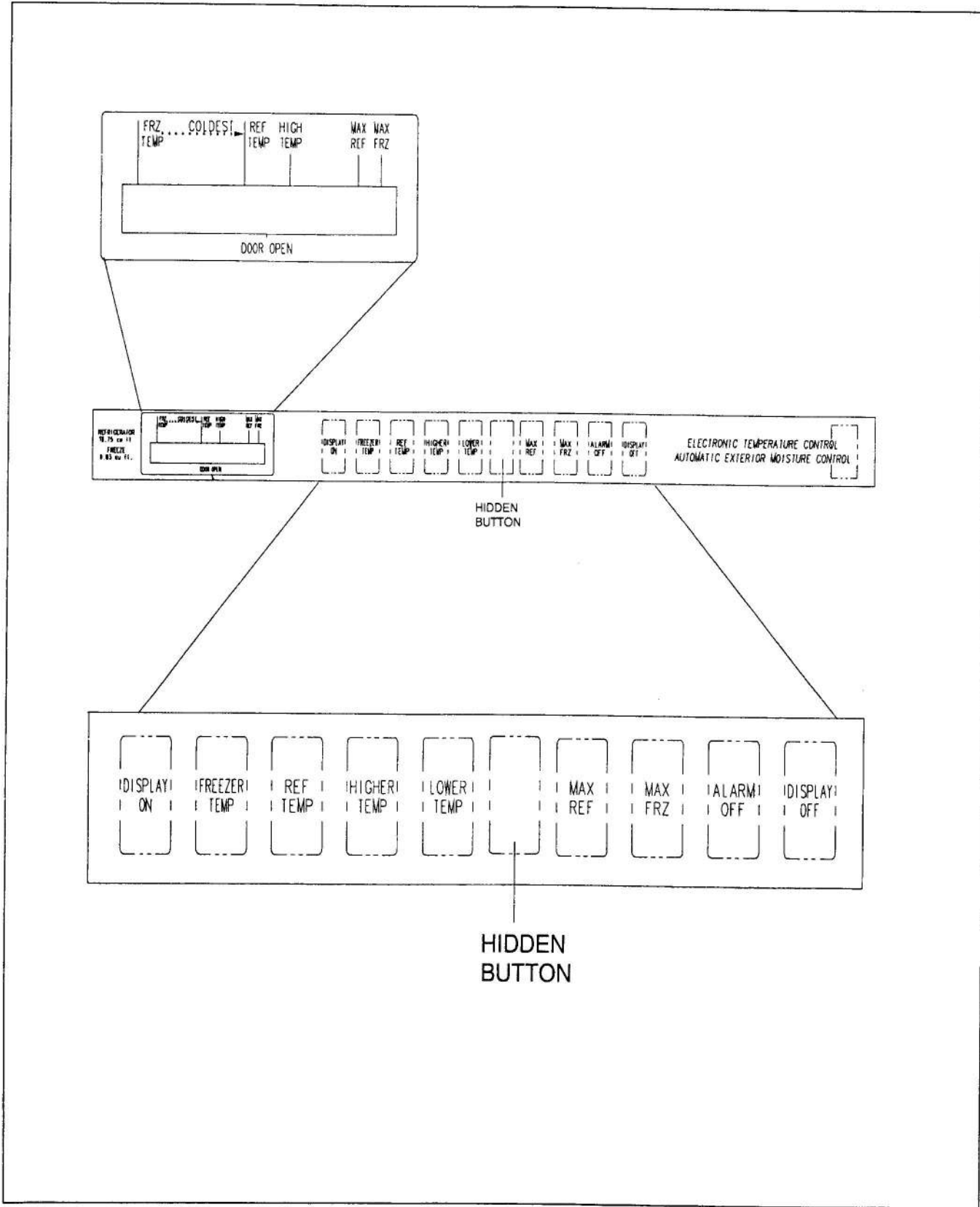
# Component Specifications

	Motor, condenser PSC	Volt Rotation (facing end opposite shaft) RPM Watt Current Resistance	115 VAC, 60 Hz  Clockwise 1300 RPM 6.4 W 0.05 A 480 Ω																																	
	Motor, ECM evaporator fan	Volt Rotation (facing end opposite shaft) RPM Watt	115 VAC, 60 Hz  Clockwise 2600 RPM 3.4 watts																																	
	Motor and blade, 24 VDC fan  One fan located behind toe grille for condensate evaporation. One fan circulates air to refrigerator air supply tunnel.  Under electronic control.	Volt Rotation (facing shaft) RPM Watt	24 VDC Counterclockwise 3300 RPM 1.4 watts																																	
	Overload	Volt Ult. trip amps @ 158°F (70°C) Close temperature Open temperature Short time trip (seconds) Short time trip (amps @ 77°F (25°C)	115 VAC 3.51 A 142°F (61°C) ±9° 257°F (125°C) ±5° 10 seconds 14 A																																	
	Relay	Resistance With power off check: Across terminals 2 & 3 Shorted Open	  3-12 Ω 0 Ω Very high or infinite ohms																																	
<div>Switch, Keyboard Continuity is indicated as 100 Ohms and below.  Each pad must be pressed to perform the following test.</div> <div></div> <table><thead><tr><th>Switch Functions</th><th></th><th>Continuity Test</th></tr></thead><tbody><tr><td>Enable Key</td><td>S1</td><td>1, 3 and 4</td></tr><tr><td>Freezer Temp</td><td>S2</td><td>1, 3 and 6</td></tr><tr><td>Refrigerator Temp</td><td>S3</td><td>1, 3 and 7</td></tr><tr><td>Raise Temp</td><td>S4</td><td>1, 6 and 7</td></tr><tr><td>Lower Temp</td><td>S5</td><td>1, 4 and 6</td></tr><tr><td>Vacation</td><td>S6</td><td>1, 4 and 7</td></tr><tr><td>Max Cool</td><td>S7</td><td>1, 7 and 8</td></tr><tr><td>Fast Freeze</td><td>S8</td><td>1, 4 and 8</td></tr><tr><td>Alarm Off</td><td>S9</td><td>1, 4 and 5</td></tr><tr><td>Display Off</td><td>S10</td><td>1, 5 and 8</td></tr></tbody></table> <div> SWITCH SCHEMATIC</div>				Switch Functions		Continuity Test	Enable Key	S1	1, 3 and 4	Freezer Temp	S2	1, 3 and 6	Refrigerator Temp	S3	1, 3 and 7	Raise Temp	S4	1, 6 and 7	Lower Temp	S5	1, 4 and 6	Vacation	S6	1, 4 and 7	Max Cool	S7	1, 7 and 8	Fast Freeze	S8	1, 4 and 8	Alarm Off	S9	1, 4 and 5	Display Off	S10	1, 5 and 8
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	Switch, auger interlock	Type Volt Current	DPST, NO 250/125 VAC 10/5 A																																	
	Switch, refrigerator fan	Type Volt Current	SPST, NC 125/250 VAC 3 A																																	

# Component Specifications

	Switch, power	Type Volt Current	DPST 125 VAC 15 A
	Switch, freezer light	Type Volt Current	SPST, NC 125/250 VAC 10 A
	Switch, showroom	Type Volt Current	SPDT 125 VAC 6 amps
	Thermistor	Check resistance across terminals Bell Curve resistance (See Page 11)	
	Thermostat	Volt Watt Current Resistance across terminals Above 55° ±6°F Below 20° ±8°F Between 55° ±6°F and 20° ±8°F	120 VAC 1000 watts 10 amps Open Closed Will stay in current state (either open or closed) until either 55° ±6°F and 20° ±8°F is reached.
	Valve, water	Volt Watt Water pressure (inlet) Max Min Fill rate	120 VAC, 60 Hz 20 watts 120 PSI 20 PSI 140 ±10 CC's, at 7.5 seconds

# Display Panel



Display Panel  
Keyboard



# Display Panel Operation

## Keyboard Pad Functions

### Entry Tone

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

### Command Accepted Tone

Three short tones indicate command accepted.

### Display On Pad

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 *Display On* 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 *Higher Temp* or *Lower Temp* pad.

### Ref 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 *Higher Temp* or *Lower Temp* pad.

### Higher Temp 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 *Higher Temp* pad.
2. Press and hold *Higher Temp* pad to raise temperature setting at a faster rate.

### Lower Temp 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 *Lower Temp* pad.
2. Press and hold *Lower Temp* pad to lower temperature setting at a faster rate.

### Max Frz Pad

Activates Maximum freezer mode setting freezer temperature to coldest setting for 24 hours or until *Max Frz* pad is pressed again.

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

### Max Ref Pad

Activates Maximum refrigerator mode setting refrigerator to coldest setting for 24 hours or until *Max Ref* pad is pressed again.

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

### Alarm Off Pad

Turns off alarm signals. See Alarms section 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.

### Hidden Button

Activates *Program Mode*. See Program Mode section for description of functions available.

1. Open refrigerator door.
2. Press Display On pad.
3. Press hidden button pad.
4. Within 6 seconds press the following pads in this sequence: *Max Ref*, *Max Frz*, *Max Ref*, *Max Frz*.
5. Tone will sound 3 times and control will be in program mode A.

### Display Off Pad

1. Deactivates control panel.
2. Deactivates temperature indication area of control panel.

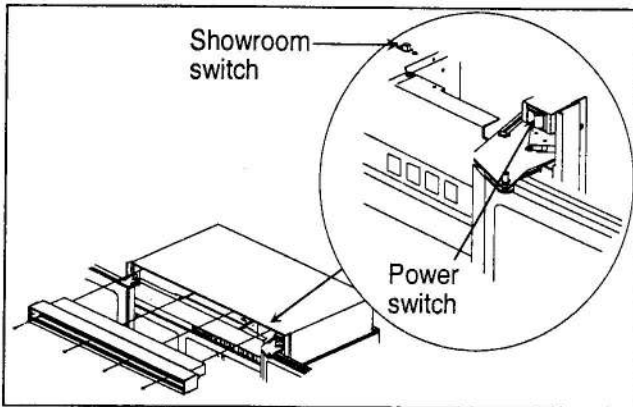
# Electronic Functional Description

## Power Disconnect Switch

Use power disconnect switch to disconnect power without unplugging refrigerator. Power disconnect switch is located behind air grille on top right side. Refrigerator is shipped with power disconnect switch in the *on* position.

## Showroom Switch

Showroom switch allows electronic controls and interior lights to function independently of refrigeration system. Showroom switch is located behind air grille to right of control panel. Refrigerator is shipped with showroom switch in *unit run* position.



## Thermistor Alarm

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. Refer to 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.

## 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 will flash until *Alarm Off* or *Display On* is pressed.

**Note:** All settings return to default factory settings.

### Door Open Alarm

Alarm tone sounds and indicator lights blink if either refrigerator or freezer 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 *Display On* pad and then press and hold *Alarm Off* pad for 3 seconds.
3. Door alarm delay can be adjusted in Program Mode B.

### High Temperature Alarm

Alarm sounds and indicator light shows if freezer or refrigerator temperature has gone above critical level and remained warm for 2 hours. Alarm tone stops if temperature falls again.

1. Critical temperature for freezer is +15°F; for refrigerator critical temperature is +60°F.
2. Press *Alarm Off* pad to turn off alarm.

# Electronic Functional Description

## Temperature Control Operation

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

### 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)	187470	48 (9)	62970
16 (-9)	161040	50 (10)	59670
19 (-7)	138690	55 (13)	52290
25 (-4)	119760	61 (16)	45900
30 (-1)	103680	64 (18)	40410
32 (0)	97920	70 (21)	36540
34 (1)	92550	77 (25)	30000

As temperature decreases, resistance increases.

As temperature increases, resistance decreases.

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 cycle.

- Freezer temperature setting and thermistor value will 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).
- Refrigerator temperature setting and thermistor value will determine if fresh food fan switch is open or closed.
- 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 set freezer and refrigerator settings

Frozen Food		Fresh Food		Level
Cut-Out °F (C) ±1.5°	Cut-In °F (C) ±1.5°	Cut-Out °F (C) ±1.5°	Cut-In °F (C) ±1.5°	
-10 (-23)	2 (-17)	29 (-2)	34 (1.1)	9
-8 (-22)	4 (-16)	31 (-0.6)	36 (2.2)	8
-6 (-21)	6 (-14)	33 (-0.6)	38 (3.3)	7
-5 (-21)	7 (-14)	34 (1)	39 (3.8)	6
-4 (20)	8 (-13)	35 (2)	40 (4.4)	5
-3 (-19)	9 (-13)	36 (2)	41 (5)	4
-2 (-19)	10 (-12)	37 (3)	42 (5.5)	3
0 (-18)	12 (-11)	39 (4)	44 (6.6)	2
2(-17)	14 (-10)	41 (5)	46 (7.7)	1
-10 (-23)	2 (-17)	—	—	Max Ref
—	—	29 (-2)	44 (6.6)	Max Frz

# Electronic Functional Description

## Adaptive Defrost Operation

Defrost occurs after predetermined length of compressor run hours. 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 55°F (13°C) and closes at 20°F (-7°C).
- Compressor run time between defrost (CRTD) will be one of 3 values under normal operation: CRTD 1 (8 hours) or CRTD 2 (12 hours) or CRTD 3 (16 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 (DI - 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 4 hours.

- Hidden Button Mode CRTD equals 96 hours. Hidden Button Mode CRTD is interrupted with door openings. Defrost interval will revert back to interval before Hidden Button Mode. Three things must occur to reach Hidden Button Mode CRTD:
  - 1) Defrost interval must be CRTD 3 (16 hours).
  - 2) Both refrigerator and freezer doors must have remained closed since last defrost cycle.
  - 3) Defrost thermostat must have opened in less than 21 minutes during last defrost cycle.
- Six minute dwell time occurs after defrost terminator opens before compressor and condenser fan motor will operate. Ten minute dwell time occurs after defrost terminator opens before evaporator fan motor will operate. Dwell time can be bypassed by disconnecting power to the unit for 30 seconds.
- Conventional defrost can be selected in Program Mode B.

# 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. Open refrigerator door.
2. Press *Display On* pad.
3. Press Hidden Button pad.
4. Press the following sequence of pads within 6 seconds: *Max Ref*, *Max Frz*, *Max Ref*, *Max Frz*.
5. When access is granted, tone will sound three time and control will be in Program Mode A. Unmarked indicator light will illuminate.
6. Toggle to Program Mode B by pressing *Display On* pad. Unmarked indicator light is off.

## EEPROM Update in Control Memory

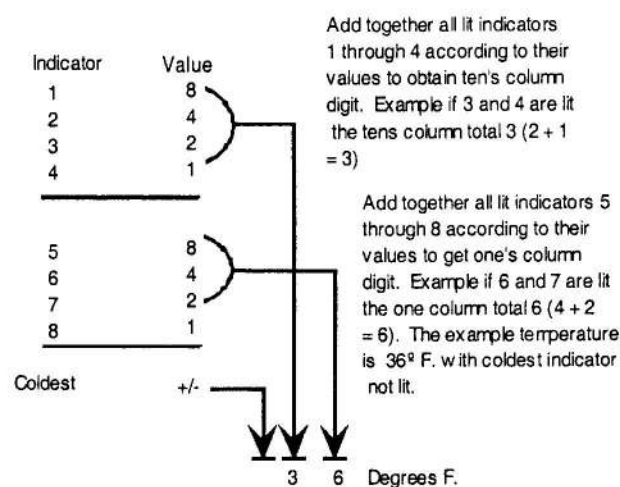
EEPROM is permanent programmable memory of the control panel.

- Entry tone, door audio alarm and status are stored in EEPROM after control panel is deactivated.
- Information stored in EEPROM memory is not affected by power loss.

## Mode A Functions

### Reading Temperature Display

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



### 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 *Ref Temp* pad.
2. Refrigerator thermistor temperature displays.

## 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. DO NOT LEAVE KEYBOARD IN ENABLED MODE 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 *Higher Temp* pad to decrease delay by 1 minute.
3. Press *Lower Temp* pad to increase delay by 1 minute.

### Max Ref Run Time Duration

1. Press *Max Ref* pad. Max Ref light will glow. One temperature indicator should glow indicating present Max Ref run time duration in 2 hour increments (indicator 1 means 2 hours, 2 means 4 hours, etc.) Default delay is 10 hours.
2. Press *Higher Temp* pad to decrease Max Ref duration by 2 hours.
3. Press *Lower Temp* pad to increase Max Ref duration by 2 hours.

### Max Frz Run Time Duration

1. Press *Max Frz* pad. Max Frz light will glow. One temperature indicator should glow indicating present Max Frz run time duration in 4 hour increments (indicator 1 means 4 hours, 2 means 8 hours, etc.) Default delay is 24 hours.
2. Press *Higher Temp* pad to decrease Max Frz duration by 4 hours.
3. Press *Lower Temp* pad to increase Max Frz duration by 4 hours.

# Program Mode

## Temperature Offset Calibration

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

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 *Ref Temp* pad. Refrigerator indicator and one indicator will glow. Press *Higher Temp* pad to move offset to the next warmer setting. Press *Lower Temp* pad to move offset to the next colder setting. Factory default refrigerator offset is -4.
- **Setting Freezer Temperature Offset**  
Press *Freezer Temp* pad. Freezer temperature indicator and one indicator will glow. Press *Higher Temp* pad to move offset to the next warmer setting. Press *Lower Temp* pad to move offset to the next colder setting. Factory default freezer offset is 0.

## Defrost Mode Selection

Toggle *Hidden Button* pad to select adaptive or conventional defrost mode. *Hidden Button* indicator glows when adaptive defrost has been selected. If *Hidden Button* indicator is off, conventional defrost is selected. Conventional defrost uses 8 hour CRTD value.

## Forced Defrost

Defrost can be forced to start by pressing and holding the *Alarm Off* pad for 3 seconds. Program changes will be saved permanently in EEPROM and program mode will exit to Run Mode.

## Forced Pulldown (Compressor Start)

Compressor start can be forced by pressing and holding *Max Frz* pad for 3 seconds. Program changes will be saved permanently in EEPROM. Compressor, evaporator fan, and condenser fan will come on.

## Exiting Program Mode

Press *Display On* 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, Program Mode will be automatically exited. However, no changes will be saved if Program Mode exits automatically.



# Electronic Testing

## Electronic Testing Mode

### Forced Defrost Start

1. Press *Display On* pad to activate control panel.
2. Simultaneously press and hold *Max Ref* and *Display Off* pads for 3 seconds.

### Forced Compressor Start

1. Press *Display On* pad to activate control panel.
2. Simultaneously press and hold *Max Frz* 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. Refer to 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.

### Evaporator Fan Suppression

The evaporator fan will turn off every time either refrigerator or freezer door is open.

To test if this function is operating:

1. Perform forced pull down procedure as noted above –evaporator fan should be on.
2. Open the refrigerator or freezer door—the fan should turn off.
3. Push the light switch off—the evaporator fan should start.

If fan does not toggle off and on when refrigerator light switch is turned off and on and it has been determined evaporator fan motor is operational, perform following tests to determine failure:



## DANGER

To avoid electrical shock, personal injury or death, disconnect power to unit and discharge capacitor before handling.

1. Check for line voltage on terminal E7 on high voltage board. With refrigerator door open (refrigerator light ON) reading should be 115 VAC. With refrigerator door closed (refrigerator light OFF) reading should be approximately 0 VAC.  
If voltage does not change with light switch and light switch is turning light off and on, red/white wire is broken between switch and high voltage board.
2. Check for voltage on terminal E7 on high voltage board. Output voltage should toggle with toggling of light switch. If output voltage does not toggle, high voltage board needs replacing.



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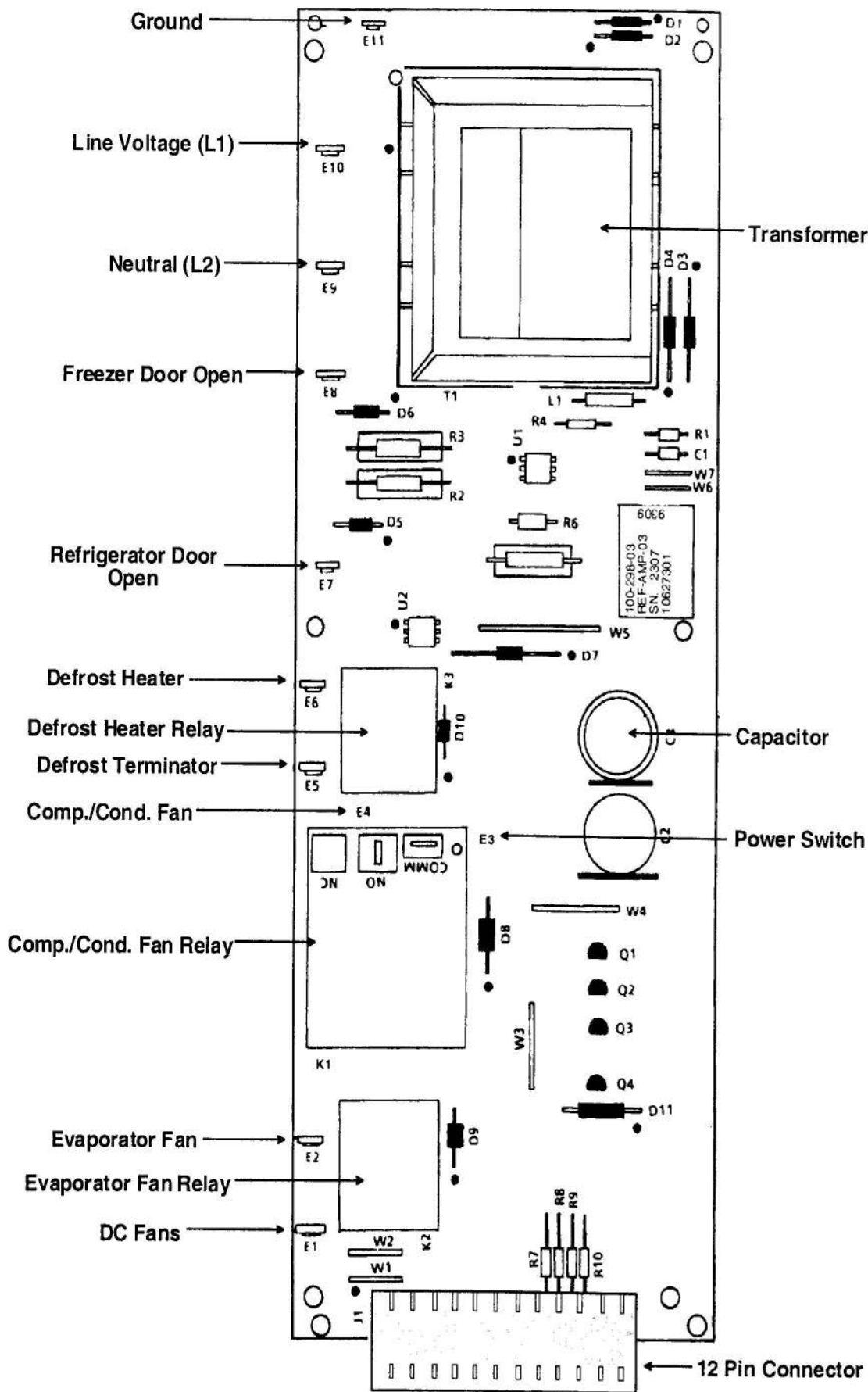
1. Check for line voltage on terminal E8 on high voltage board. With freezer door open, reading should be 115 VAC. With door closed, reading should be approximately 0 VAC. If voltage does not change with light switch and light switch is turning light off and on, violet/white wire is broken between switch and high voltage board.
2. Check for voltage on pin 7 on pin connector of high voltage board. Output voltage should toggle with toggling of light switch. If it does not toggle, high voltage board needs replacing.
3. If voltage on pin 7 on pin connector on high voltage board changes with opening and closing of door, orange wire in low voltage harness is broken (check for continuity between pin 7 on high voltage pin connector and pin 10 on low voltage board) or low voltage board needs replacing.

# Electronic Functional Description



## WARNING

To avoid electrical shock which can cause severe personal injury or death, disconnect power to refrigerator using power switch before servicing. Wires removed during disassembly must be replaced on proper terminals to insure correct earthing and polarization. After servicing, reconnect power using power switch.





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## Refrigeration and Defrost Component Checks Made at High Voltage Board

Low voltage board input	W1 to D11	approximately	-25 VDC
High voltage board input	E10 to E9 (Neutral) or ground	approximately	120 VAC
Compressor/condenser fan motor	"ON" = E4 to E9 (Neutral) ground "OFF" = E4 to E9 (Neutral) or ground	approximately	120 VAC
Compressor/condenser fan motor relay	"CLOSED" = R7 to ground "OPEN" = R7 to ground	approximately approximately	-11 VDC -25 VDC
Evaporator fan motor relay	"CLOSED" = R8 to ground "OPEN" = R8 to ground	approximately	-11 VDC -25 VDC
Evaporator fan motor	"ON" = E2 to E9 (Neutral) or ground "OFF" = E2 to E9 (Neutral) or ground	approximately	120 VAC 0 VAC
Defrost heater	"ON" = E6 to E9 (Neutral) or ground "OFF" = E6 to E9 (Neutral) or ground	approximately	120 VAC 0 VAC
Defrost heater relay	"CLOSED" = R9 to ground "OPEN" = R9 to ground	approximately approximately	-11 VDC -25 VDC
Defrost terminator	"CLOSED" = E5 to E9 (Neutral) or ground "OPEN" = E5 to E9 (Neutral) or ground	approximately	120 VAC 0 VAC
DC fan output voltage from high voltage board to fresh food fan or condensate evaporation fan	"ON" = E1 to ground "OFF" = E1 to ground	approximately	-25 VDC 0 VDC
DC fan input voltage	"ON" = R10 to ground	approximately	-11 VDC
Signal to high voltage board from low voltage board for fresh food fan and for condensate evaporation fan	"OFF" = R10 to ground	approximately	-25 VDC

Filament voltage at pins 11 and 12 = less than 5 VAC

**Note:** D.C. voltages are read from side of resistor which is closest to 12 pin connector.

# Wiring Schematic



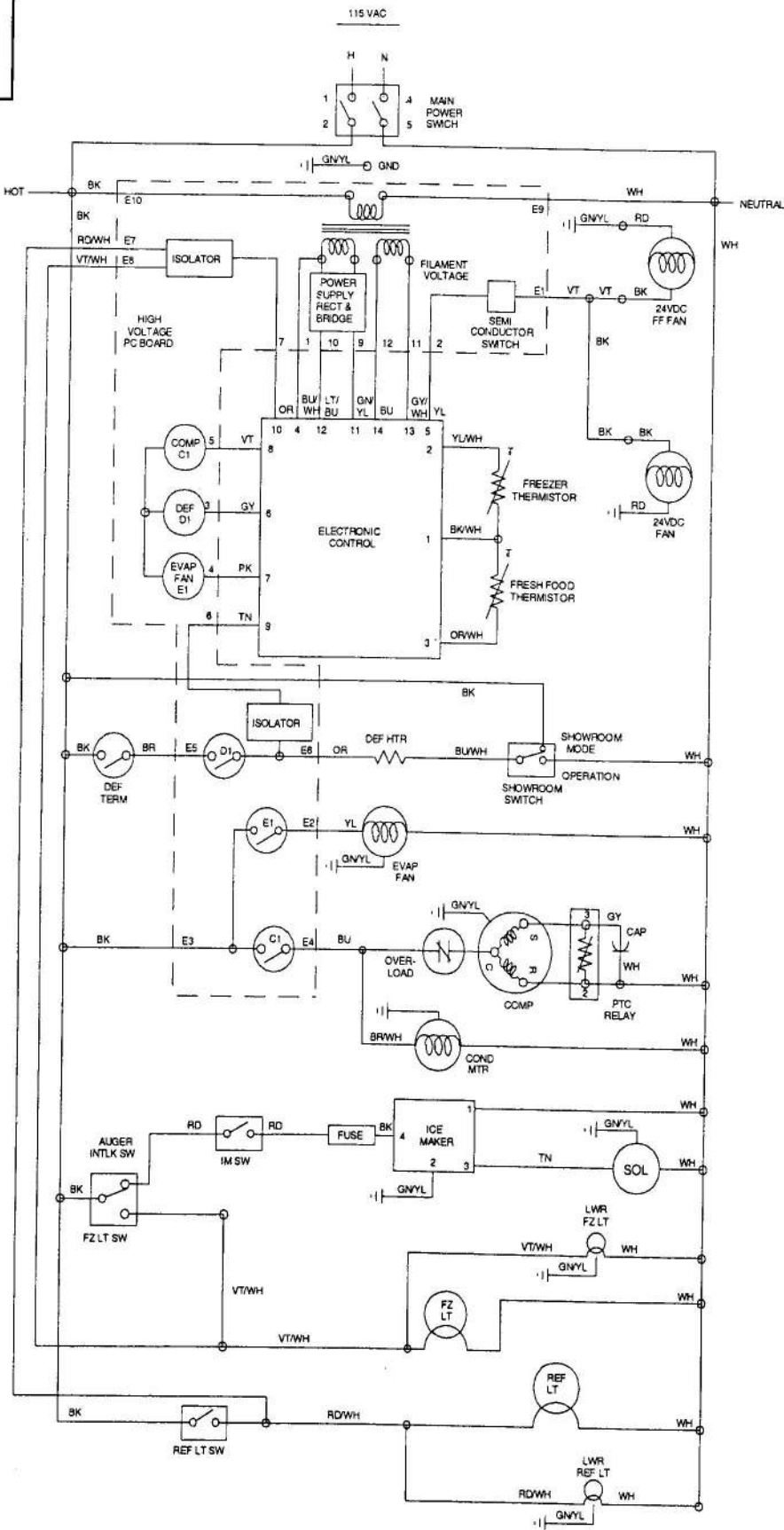
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## DANGER

High Voltage

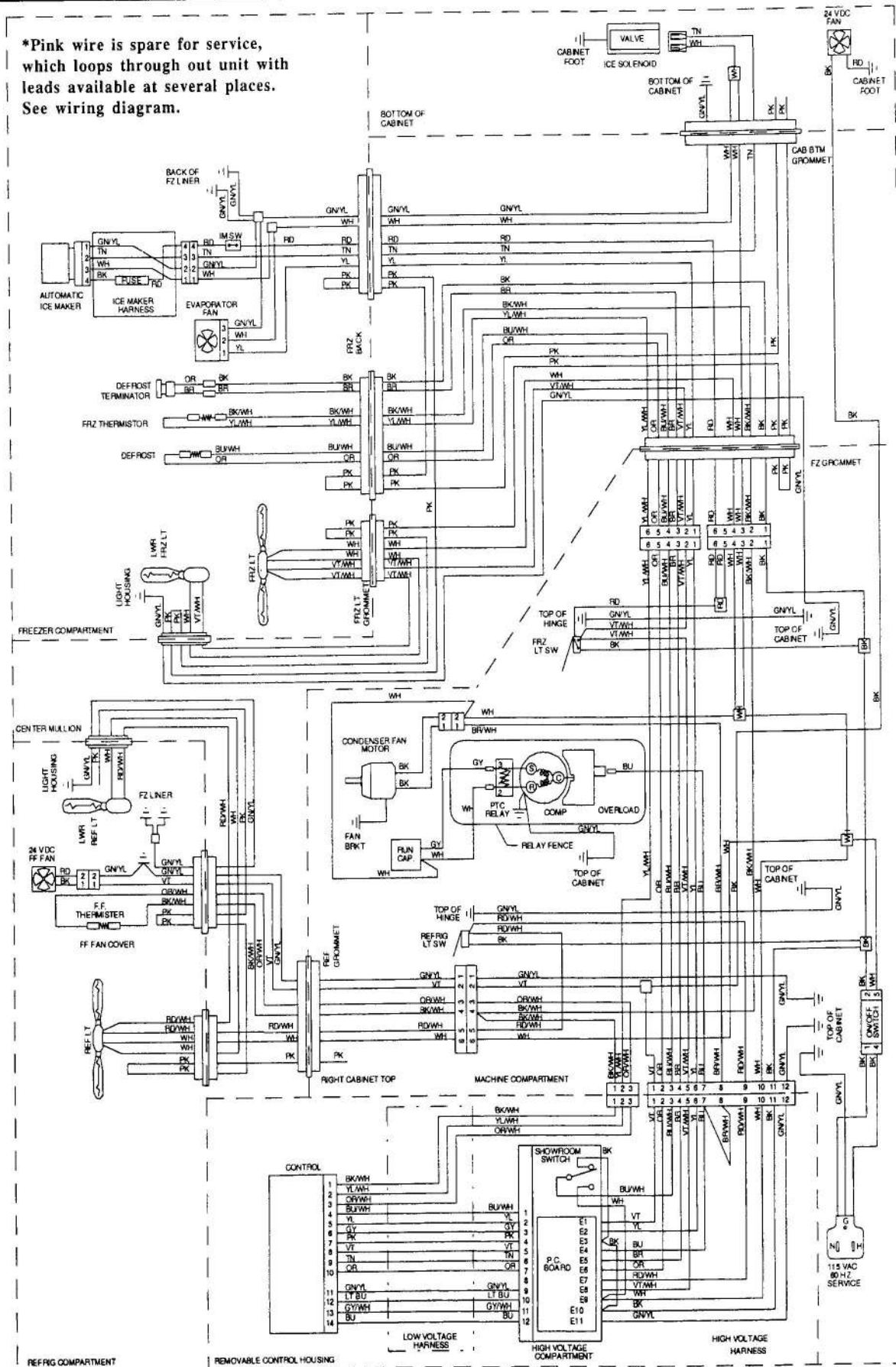


## Wiring Diagram

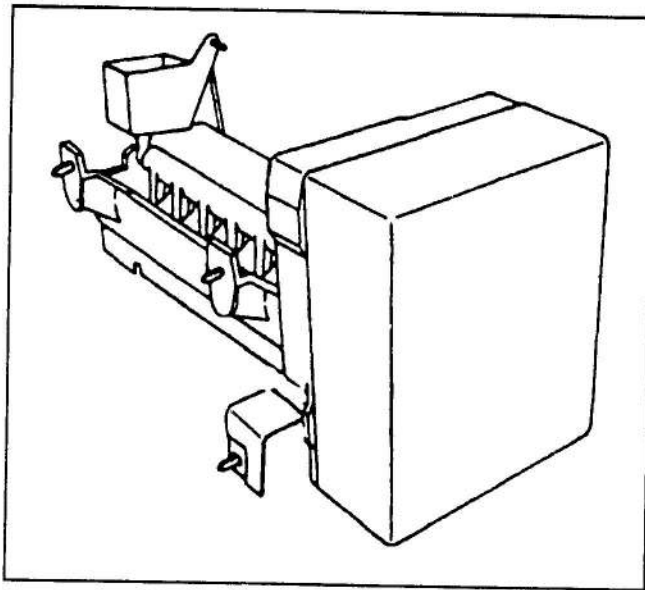


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# Ice Maker



## Operation

Thermostat closes when temperature reaches  $17^{\circ} \pm 3^{\circ}\text{F}$  ( $-8.3^{\circ} \pm 1.5^{\circ}\text{C}$ ). Current flows through thermostat to motor. See "Ice Maker Wiring Diagram". Motor is linked with drive gear. From module, there are copper contacts that ride on copper strips on backside of drive gear. As the drive gear rotates, contacts will make or break a circuit (tract) to the copper strips to operate ice maker.

All components can be tested without removing ice maker or moving refrigerator away from installation. Remove cover.

Test points are identified on module:

N = Neutral side of line

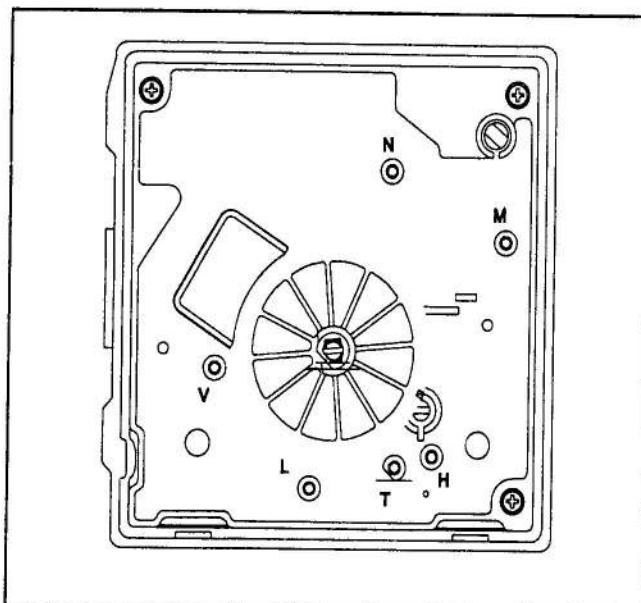
M = Motor connection

H = Heater Connection

T = Thermostat connection

L = L1 side of line

V = Water valve connection



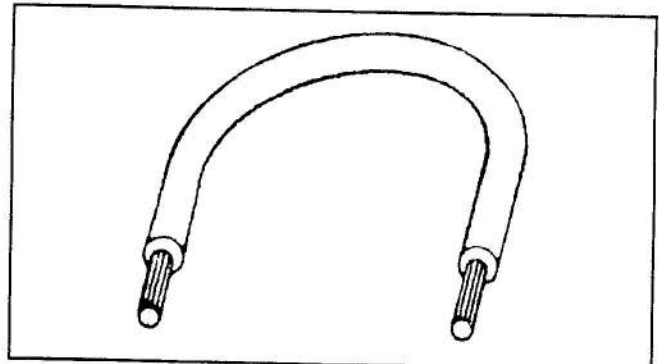
## Specifications

Mold heater: 185 watts, 264 ohms  
 Thermostat: Close  $17^{\circ} \pm 3^{\circ}\text{F}$  ( $-8^{\circ} \pm 1^{\circ}\text{C}$ )  
 (bimetal) Opens  $32^{\circ} \pm 3^{\circ}\text{F}$  ( $0^{\circ} \pm 1^{\circ}\text{C}$ )  
 Water fill: 140 cc, 7.5 sec.  
 Motor cycle: Stamped in circuit.  
 Plug in connectors.  
 One revolution of blades takes  
 3 minutes plug stall time on ice  
 (eject and water fill).

## Testing Procedures

Verify ice maker has power, shut-off arm is down, and freezer is cold enough to close bimetal thermostat.

- Test point L and N will verify 120 volts to ice maker module.
  - Test points T and H will verify bimetal thermostat is open or closed.
  - Verify test probes go into test points 1/2 inch (1.25 cm).
1. Short T and H with a shunt (insulated 14 gauge wire with ends stripped back 5/8 inch (1.6 cm) to run motor. If motor runs, replace bimetal thermostat. If motor does not run, replace module.



2. Leave jumper in for half of revolution. Touch heater mold. If heater mold feels warm, heater is working properly.
3. Remove jumper. Water valve will be energized in last half of revolution if mold heater has not failed.



## Caution

To avoid ice maker damage do not short any contacts together other than those specified.

# Ice Maker


Module Ohmmeter Checks No Power to Ice Maker and Ejector Blades in End of Cycle Position			
Test Points	Component	Module Position	Ohms
L - H	Mold and heater	Attached to support	264
L - M	Motor	Separated from heater	16,100

Module Voltage Checks with Meter or Test Light Power to Ice Maker			
Test Points	Component	Line Voltage	0 Volts
L - N	Module	Power on	Power off
T - H	Bimetal	Open	Closed
L - H	Heater	On	Off
L - M	Motor	On	Off
N - V	Water valve	On	Off

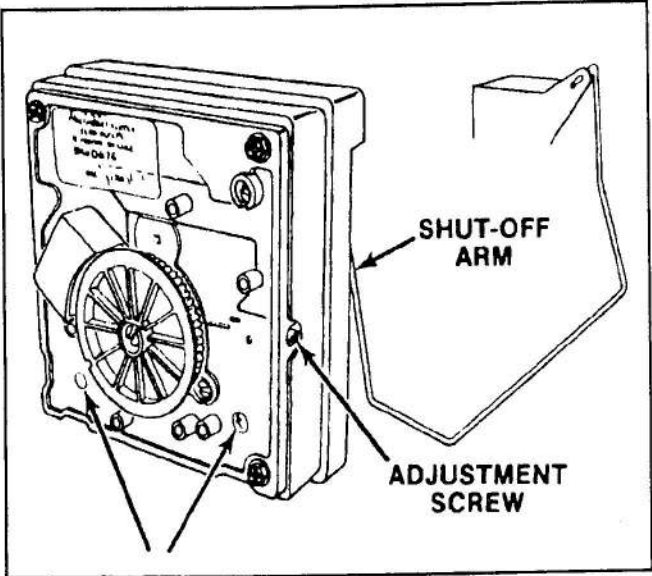
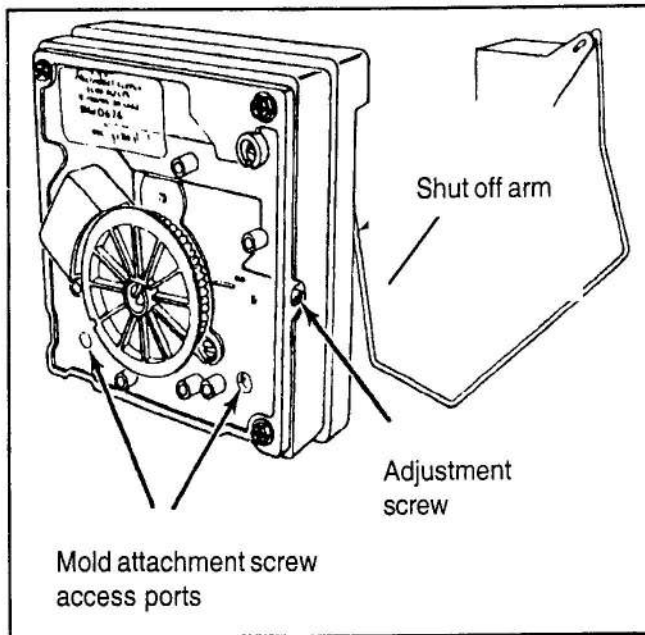
## Disassembly Procedures

### Cover

1. Pull water adjustment knob forward.
2. Snap off cover.

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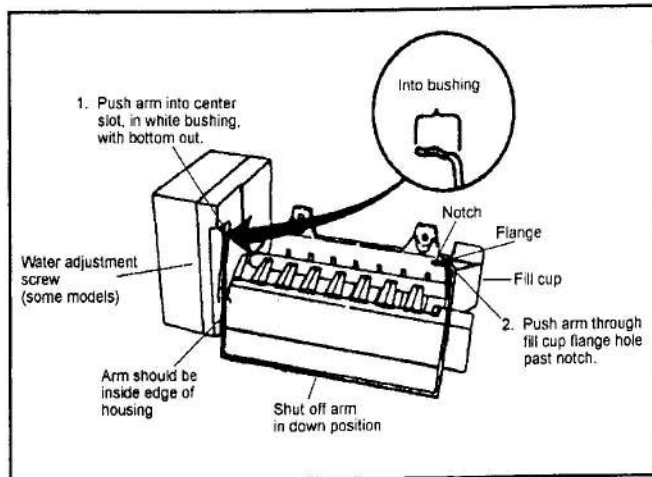
### Module, Motor, and Support Assembly

1. Loosen both screws in module access ports.
2. Disconnect shut-off arm.
3. Pull mold from support assembly.

Remove module only by removing 3 screws and pulling module out of housing.

### Shut-Off Arm

1. Pull shut-off arm out from white bushing.
2. Replace by pushing completely in.
3. Follow steps below.



### Module and Heater Assembly

1. Remove module and support assembly.
2. Install module and support assembly on replacement mold and heater assembly.

### Fill Cup

1. Remove module and support assembly.
2. Remove ejector blades and shut-off arm.
3. Pull fill cup from mold.

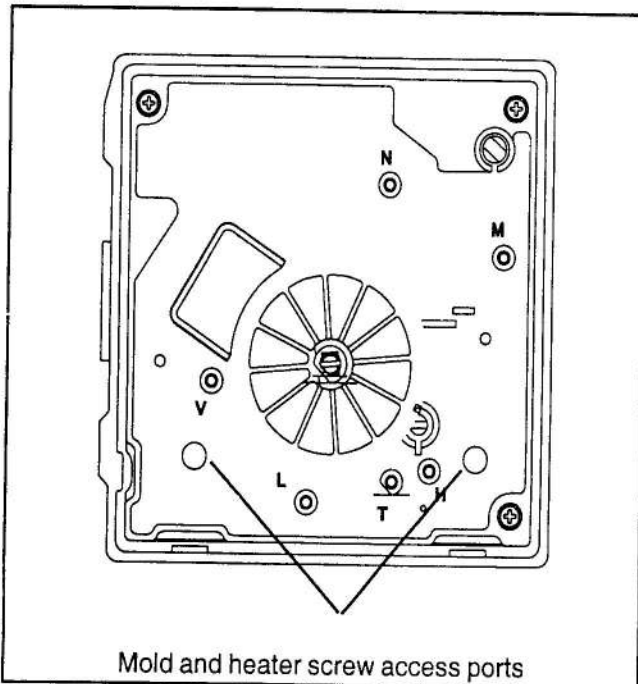
# Ice Maker

## Ejector Blades or Stripper

1. Remove module and support assembly.
2. Install ejector blades, realigning "D" coupling with module cam.

## Accessing Control Box

1. Remove motor and contact assembly from control box by removing 3 screws.
2. Remove shut-off arm.
3. Pull free.



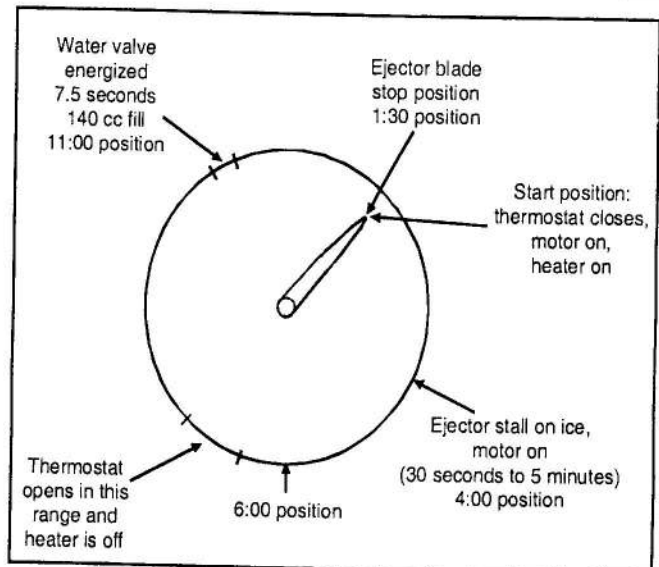
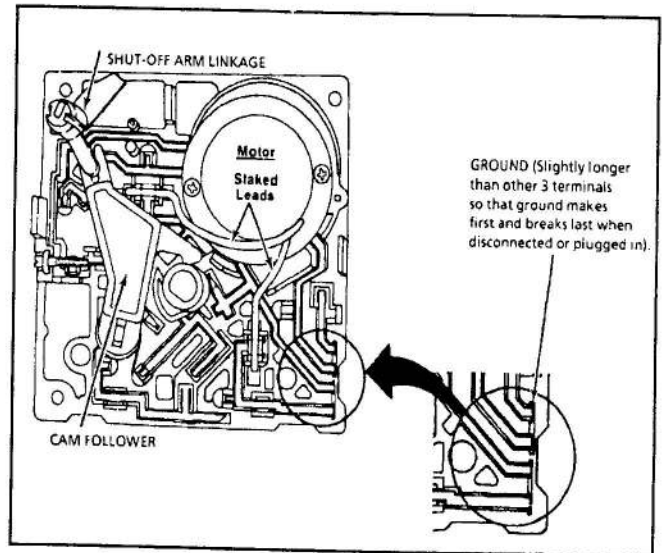
### Caution

To avoid main assembly damage do not rotate blades or drive gear.

Switches will jam if turned counterclockwise and gears will be destroyed if turned clockwise. Advance ice maker into cycle by using a jumper to bridge *H* to *R*. Ice maker will not run if motor is defective. Shut-off arm must be in on position.

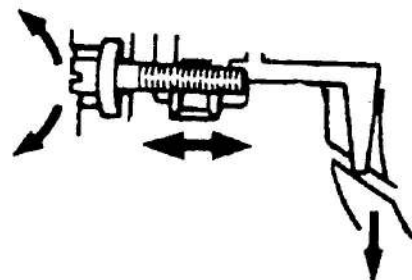
There are several slotted shafts on motor assembly board. Do not insert screwdriver and attempt to turn shafts. Slots permit assembly only.

There are nonrepairable and nonreplaceable components in module. When diagnosing or repairing ice maker, do not remove module unless replacing module.



## Water Fill Adjustment

Turning water level adjustment screw will move contact in relationship with contact ring segment. This causes contact to vary time water valve is energized. Contact ring is tapered at end of fill time.



- Turning screw clockwise decreases fill time.
- Turning screw counterclockwise increases fill time.
- 1/2 turn equals 20 cc or 1.2 seconds.
- Full turn equals 40 cc or 2.4 seconds.



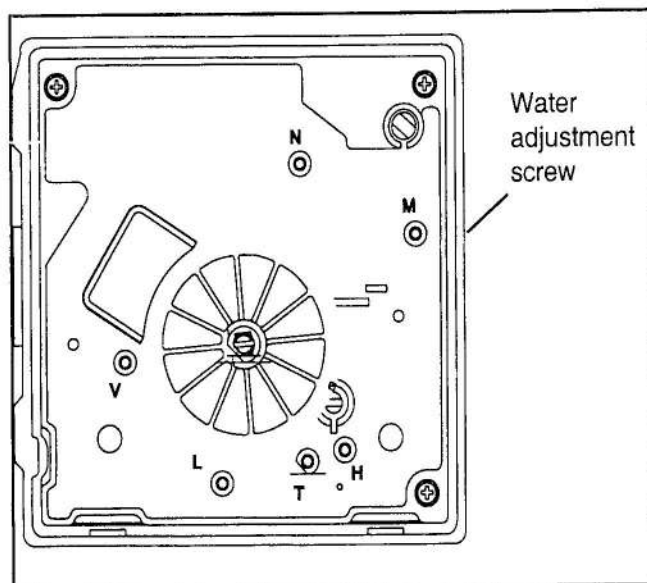
# Ice Maker



## Caution

To avoid module damage do not rotate water adjustment screw more than one full turn in either direction.

If water valve adjustment screw falls out, put screw in hole and align as shown below.



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

## Water Problems

Poor water quality can cause ice maker to fail or produce unacceptable cubes. Mineral content or sand can restrict screen in water fill valve or particle of sand can keep valve from seating properly.

If water valve does not close, the following could occur:

- no ice production
- small or hollow ice cubes
- flooding of ice container

Install water filter to eliminate bad taste, odor, and visible contaminants.

Mineral contact can cause lime build up in mold.

Wicking of water over mold and poor cube release can occur. Silicone is applied at upper edges around fill cup and stripper.

## Temperature Problems

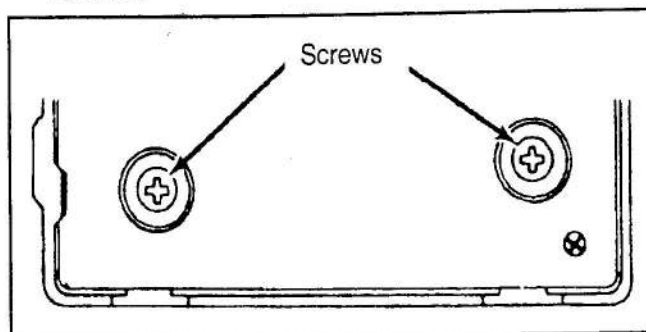
Freezer temperatures above normal  $0^{\circ} \pm 2^{\circ}\text{F}$  ( $-18^{\circ} \pm 1^{\circ}\text{C}$ ) will slow down ice production. Increase ice production by setting freezer to colder setting. Thermostat cycling temperature (1 revolution ice maker) is  $17^{\circ} \pm 3^{\circ}\text{F}$  ( $-8^{\circ} \pm 1^{\circ}\text{C}$ ). Ice will freeze when these temperatures are achieved. Cycling time will be slower if freezer temperature is not cold enough to

achieve mode temperatures easily.

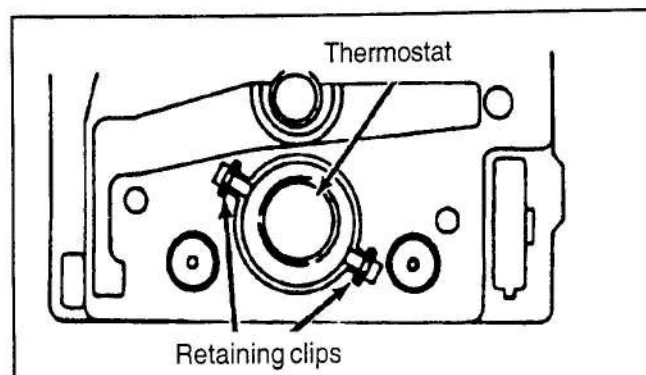
Thermostat, mold heater, and wiring harness are replaceable. Any other failure, including motor, requires replacement of module assembly. Replacement mold assembly comes with new mold heater installed.

## Thermostat

1. Remove control box from mold by removing screws.



2. Pull front of black housing free of mold. Thermostat is on mold side.

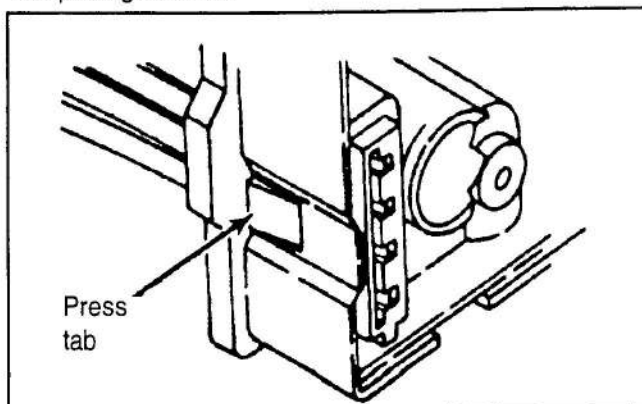


3. Grasp 1 thermostat clip and pull out.
4. Press in new thermostat. Verify pins are properly indexed. Electrical assembly does not need to be removed.

If replacing module, transfer clips to new mold support. Use new thermal bonding material.

## Wiring Harness

Remove wiring harness by pressing retaining tab and pulling forward.



# Ice Maker



## Caution

To avoid property damage, test for water leaks after repair or replacement of water valve. Do not overtighten connection to household water supply.

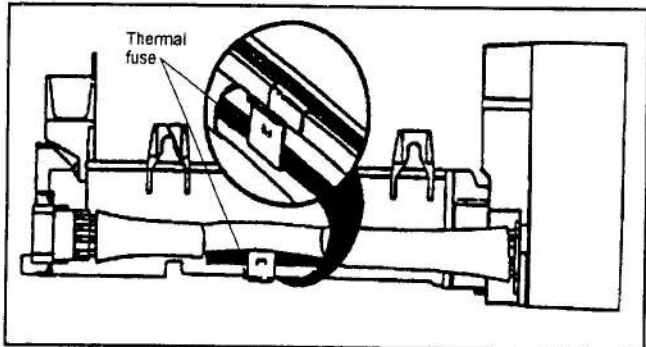
## Water Valve

Water valve has 1 solenoid. Valve has 80 mesh screen water strainer. When an encapsulated solenoid is energized, the amount of water entering ice maker mold is directly proportional to length of time water valve switch is held closed by timing cam.

Inside valve is a flow washer which acts as a water pressure regulator. Proper ice maker fill is 140 cc  $\pm$  10cc at 7.5 seconds of water fill at an inlet pressure ranging from 20 to 120 PSI (1.4 to 8.2 bar).

## Wiring Harness

A nonresettable thermal fuse micro device 170°F (78°C) is spliced into red wire of ice maker wiring harness. Excessive heat can cause no ice production. Replacing wiring harness will only temporarily solve problem. Replace ice maker thermostats.





# Ice Maker Troubleshooting Chart

No or Low Ice Production	
Problem	Action
Warm freezer	Adjust freezer control or repair refrigerator
Broken locking tab on vertical cam	Replace Ice Maker
Shorted and burned module shut-off switch and contacts	Replace Ice Maker
Stalled or stripped motor	Replace Ice Maker
2:30 Ejector Position	
Contaminated module. Motor won't run when "T" and "H" test points are shorted.	Replace Ice Maker
Open or missing thermostat	Replace Ice Maker
No power to ice maker (harness)	Determine discontinuity by tracing power
Jammed cubes	Un-jam cubes
Notice size and density of cubes	Check fill tube and fill-cup assembly
Frozen fill tube	Replace water valve
Kinked water line	Un-kink line and check line for weak sections
Obstructed water line to ice maker or refrigerator	Clear water line
Clogged water valve	Replace water valve
No power to water valve	Determine discontinuity by tracing power
Low water pressure	Short "T" & "H" test points for 10 seconds. Remove jumpers. Catch water in glass. Increase water pressure to 20 – 120 psi (1.4 - 8.2 bar) 140 cc's.
Open heater circuit	Replace Ice Maker
Closed thermostat	Replace Ice Maker
Damaged heater tulips on module	Replace Ice Maker
Short heater pins that do not contact module	Replace Ice Maker
Raised shut-off arm	Lower shut-off arm to begin cycle
Water or ice in actuator/housing hole	Replace Ice Maker
Small or burned housing hole	Replace Ice Maker
Large or burred actuator O.D.	Replace Ice Maker
Damaged module housing	Replace Ice Maker
Deformed shut-off arm	Replace shut-off arm
Little or no alumilastic on thermostat	Apply alumilastic to thermostat
Housing to mold screws not seated	Tighten 2 screws (20-26 in. lb) (22.8-29.6 cm.kg)
Heater not staked in mold	Replace Ice Maker
Incorrect heater temperature	Replace Ice Maker
Broken shut-off lever or mislocated shut-off switch	Replace Ice Maker
3:00 Ejector Position	
Contaminated	Replace Ice Maker
Jammed cubes	Un-jam cubes
Notice size and density of cubes	
Refrigerator or ice maker not level	Level refrigerator or ice maker

# Ice Maker Troubleshooting Chart

3:00 Ejector Position Continued	
Refrigerator or ice maker not level	Level refrigerator or ice maker
No power to ice maker	Determine discontinuity by tracing power
Excessive water-fill volume	Adjust module screw, lower water pressure, or replace water valve.
Cubes falling back into mold during ejection	Replace fill cup Check fill tube assembly
4:00 Ejector Position	
Contaminated	Replace Ice Maker
Thermostat out of calibration	Replace Ice Maker
Open heater circuit	Replace Ice Maker
Motor should oscillate	
Little or no alumilastic on thermostat	Apply alumilastic to thermostat
Heater not stacked in mold	Replace Ice Maker
Broken locking tabs on vertical cam	Replace Ice Maker
6:00 Ejector Position	
Contaminated	Replace Ice Maker
Insufficient water to ice maker, Small or hollow cubes	Refer to "Hollow Ice Cubes"
7:30 Ejector Position	
Contaminated	Replace Ice Maker
Motor will not oscillate	
Shut-off arm stuck in ice or obstructed	Replace Ice Maker
Cubes not formed properly	Un-jam Check fill cup and fill tube assembly
9:00 Ejector Position	
Contaminated	Replace Ice Maker
Cube frozen to fill cup or mold	Un-jam Replace fill cup and Replace Ice Maker

# Ice Maker Troubleshooting Chart

Excessive Ice Production	
Problem	Action
Shut-off arm not in actuator	Replace shut-off arm in actuator
Deformed shut-off arm	Replace shut-off arm
Broken shut-off lever or Lever bypassing vertical cam	Replace Ice Maker
Broken module actuator	Replace Ice Maker

Hollow Ice Cubes	
Problem	Action
Low water fill volume	Adjust module screw, clear water path, or replace water valve
Improper freezer air-flow	Direct air flow away from thermostat
Thermostat out of calibration	Replace Ice Maker

Flooding or Ice in Bucket or Freezer	
Problem	Action
Thermostat out of calibration	Replace Ice Maker
Jammed cube stalled in water-fill cycle	Remove cube Determine reason for stall
Leaky water valve	Replace water valve
Excessive water fill volume	Replace water valve
Motor stalled in water-fill cycle (12:00 ejector position)	Replace Ice Maker
Contaminated module	Replace Ice Maker
Refrigerator or ice maker not level	Level refrigerator or ice maker
Excessive water pressure	Decrease water pressure (20-120 psi) (1.4-8.2 bar)
Shorted and burned module shut-off switch and contacts	Replace Ice Maker
Broken locking tab on vertical cam (Stalled in water fill)	Replace Ice Maker
Fill-tube not properly positioned in fill cup	Reposition fill tube
Fill cup water opening blocked	Replace fill cup
Cubes fall over back of ice maker, Melting in freezer	Replace fill cup

# Ice Maker Wiring Diagram and Parts Layout

