



## Fridge-Freezer Combination Top Mount

KE 470-2-2T

## Service Manual: H7-420-64-01-B

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## 1. Introduction

This refrigeration service manual provides the information necessary to service Top Mount model refrigerators.

**Note:** The KE 470-2-2T covered in this Service Manual uses R134a refrigerant.

Each part of this manual is divided into sections relating to a general group of components and each section is subdivided into various parts describing a particular component or service procedure.

This service manual is a valuable service tool and care should be taken to keep it up to date by prompt and proper filing of subsequent pages as they are issued.

**The following model is covered in this service manual:**

	<b>KE 470-2-2T Top Mount Model</b>
H x W x D	710 x 1,739 x 786 mm incl. handle
Total capacity	464 l
Fridge area	332 l
Freezer area	132 l
Noise level	48 dB
Power consumption	0.19 kWh / 24 h per 100 litres
Energy efficiency class	B
No-Frost-System	Yes
No-Clean-Condenser	Yes
Water inlet with Aquastop	Optional
Freestanding unit on rollers	Yes
Climazone technology	Yes
Icemaker	Optional

## General

The American style Fridge-Freezer Combination "Top Mount" is the centrepiece of any kitchen. The high quality of workmanship and finish, including stainless steel front, side and top panels, guarantee many years of proud ownership.

The appliance is fitted with state of the art technology, such as:

- ◆ No-Frost-System
- ◆ No-Clean-Condenser
- ◆ As the compressor is cooled from the front, both the front and rear panels are flat, to allow flush fitting to a wall.
- ◆ Water inlet with Aquastop
- ◆ Self-closing doors with magnetic catches
- ◆ Freestanding unit on rollers
- ◆ Climazone technology



Freezer area

Refrigerator area

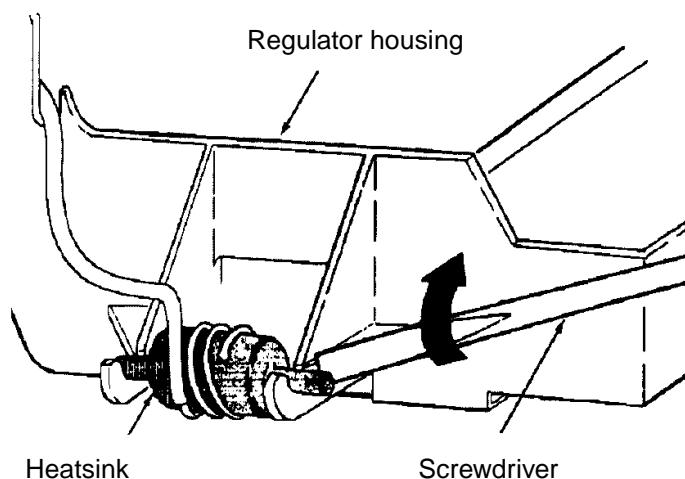
"Keep Fresh" zones  
(for fruit, vegetables and cheese)



## 2. Components

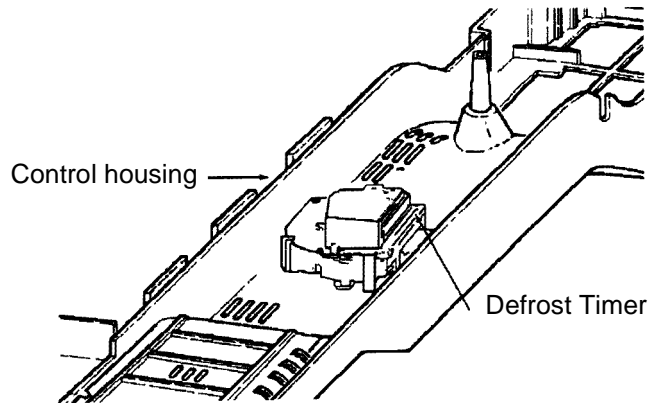
### 2.1 Exchanging the temperature regulator

1. **Disconnect the appliance from the mains.**
2. Open the fresh food door and remove any items on the top shelf.
3. Undo the front screw of the regulator housing.  
Undo the rear screws, whilst holding the front section of the temperature regulator housing. Then pull the housing downwards.
4. Undo the screws on the rear of the regulator housing. Push the regulator housing towards the right and remove from its holder.
5. Disconnect the push-on connectors from the temperature regulator housing.
6. Take the temperature regulator housing out of the fridge-freezer and place it on a level work surface.
7. Take the regulator out of the housing.
8. Pull the cables away from the clips on the temperature regulator housing.
9. Remove the regulator by applying pressure to the locking mechanism with your right thumb. Turn and remove the regulator with your left hand.
10. To remove the heatsink, insert the blade of a screwdriver between the heatsink and the regulator housing. Turn the screwdriver to release.
11. Fit the replacement housing in reverse order.

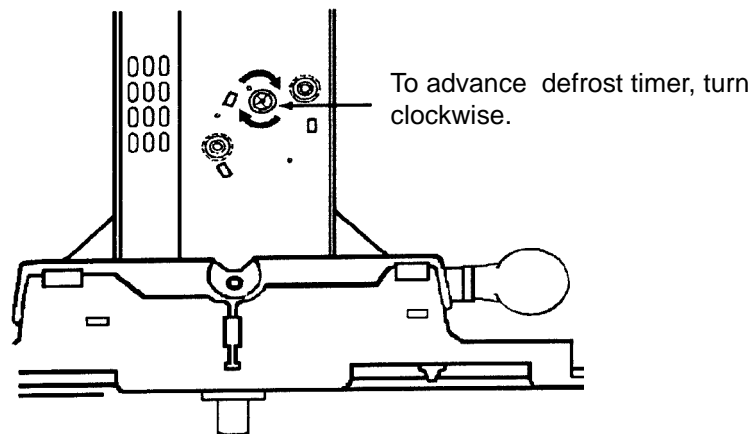


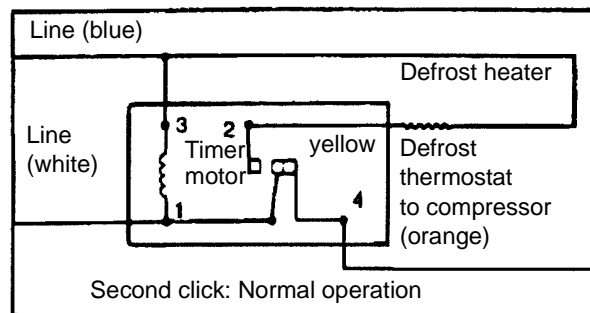
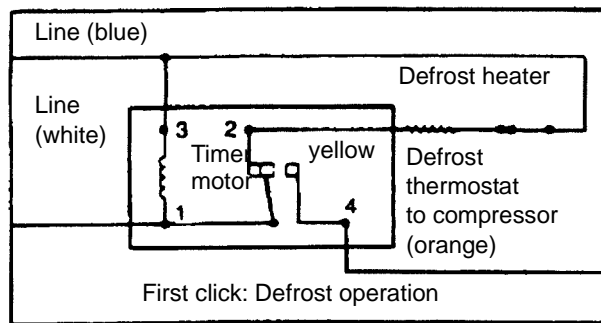
## 2.2 Defrost Timer

The freezer evaporator defrosting system is actuated by an electric timer. The timer is mounted in the control housing located in the fresh food compartment.



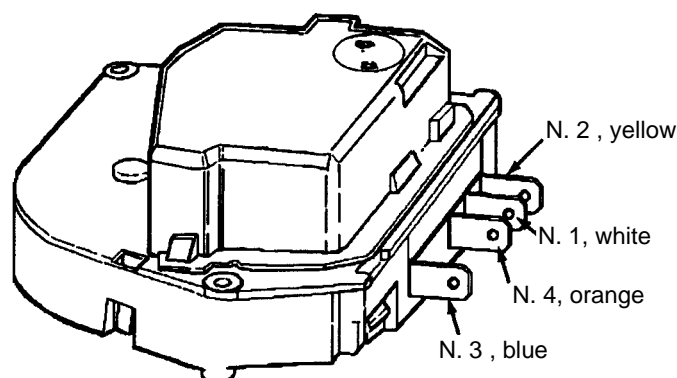
The timer control shaft is designed for screwdriver advancement. When manually setting the timer to initiate defrosting, turn the control shaft clockwise until you establish the approximate location of the defrost cycle. Then turn the shaft slowly, stopping as soon as you hear the first click. The diagram illustrates the timer circuits in sequence.





**1st Click** – The timer turns off the compressor and freezer fan circuit for approximately **21 minutes**, and **it energizes the defrost heater**. Once the temperature of the defrost termination thermostat reaches the cut-out point, the termination thermostat will open the circuit to the radiant heater. However, the compressor circuit remains open for the duration of the defrost interval

**2nd Click** – The timer switches off the defrost circuit and starts the compressor, freezer fan, and the condenser fan motor. The compressor and fan motors are now governed by the temperature control for a period of approximately **8 hours** of the compressor run time, after which a new defrost cycle begins.





### 2.2.1 Checking the Defrost Timer

Disconnect all wires from the timer and attach ohmmeter probes to the terminals specified in the accompanying chart. If no continuity is indicated, the timer is defective.

To Test	Turn Timer Knob to	Check between Terminals
Timer Motor Circuit	Leave as is	1 + 3*
Defrost Circuit	1st Click	1 + 2
Compressor Circuit	2nd Click	1 + 4

### 2.2.2 Timer Replacement

1. **Disconnect the unit from the mains.**
2. Open the fresh food door and remove any items on the top shelf.
3. Remove the front mounting screw in the temperature control housing.
4. Whilst holding the front of the temperature control housing, remove the rear mounting screw. Lower the temperature control housing.
5. Disconnect the temperature control housing electrical quick disconnect.
6. Remove the temperature control housing from the refrigerator and place on a flat work surface.
7. Gently push the timer until it clears the two front locking tabs.
8. Rotate timer up toward back of housing.
9. Lift timer towards the front of the housing to clear the rear locking tab.
10. Disconnect the electrical connector from the timer.
11. Install the replacement timer in reverse order of removal.

## 2.3 No-Frost-System

These models use a radiant heater to remove accumulated frost from the freezer evaporator and drain through during a defrost cycle.

The defrost timer switches on the defrost heater every 8 hours (with reference to the actual run time of the compressor). As soon as the temperature in the proximity of the thermostat reaches a value of approx  $+3.3^{\circ}\text{C}$ , the thermostat interrupts the circuit to the defrost heater. The defrost heater is a spiral wound resistance wire enclosed in a heat resistant glass tube.

An ohmmeter check will determine if all phases of the defrost cycle are functioning properly. The defrost thermostat contacts open at approximately  $+3.3^{\circ}\text{C}$ , and closes at approximately  $-9.4^{\circ}\text{C}$ .

The defrost thermostat has a 240 K ohm resistor connected internally across the two terminals. This resistor enables the defrost heater to be checked when the evaporator is  $-9.4^{\circ}\text{C}$ , or higher.

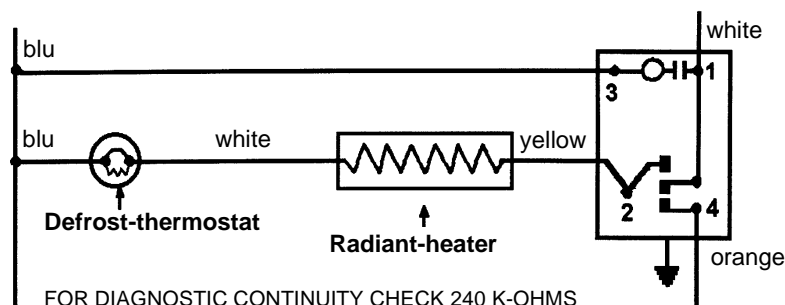
An ohmmeter can be used to test the defrost heater and thermostat without disassembling the freezer compartment even if the evaporator temperature is  $-9.4^{\circ}\text{C}$  or higher. To check, proceed as follows:

1. **Disconnect the unit from the mains.**
2. Open the fresh food door and remove any items on the top shelf. Remove the front mounting screw in the temperature control housing. Whilst holding the front of housing, remove the rear mounting screw. Lower the control housing.
3. Disconnect the timer wire harness connector from the defrost timer.
4. Set the ohmmeter to 1 kOhm and connect the probes to the No. 2 and No. 3 terminals of the disconnect plug.
5. The meter should read between 100 to 200 ohms. The resistance is not critical. The heater is working if there is continuity between terminals No. 2 and No. 3. If there are no resistance readings (open circuit) the defrost heater and thermostat must be checked separately.

**NOTE:** When using the meter, avoid touching the probes as this could result in a false reading and misdiagnosis.

To test defrost heater and thermostat when the evaporator temp. is  $-9.4^{\circ}\text{C}$  (or below) proceed as follows:

1. Switch on the watt meter.
2. Manually advance the defrost timer to the defrost cycle. See the defrost timer section for information on manually advancing the timer.
3. The wattmeter should read between  $1.8\text{A} \pm 10\%$  depending on the model (total wattage of the timer motor and defrost heater). If the reading is 0 and 20mA is displayed, the defrost heater or thermostat is defective. To further isolate the defective part, proceed to step 4.
4. Disconnect the unit from the watt meter.



5. Follow step 2 and 3 of "Testing the Heater and Thermostat" when the evaporator temperature is  $-9.4^{\circ}\text{C}$ , or higher.
6. If the meter reads approximately 240K ohms, the defrost thermostat is defective.

To use an ohmmeter, set the meter to 1k ohm. If the reading is approximately 100 to 200 ohms, the defrost heater and thermostat are operative.

## 2.4 Defrost Heater Replacement

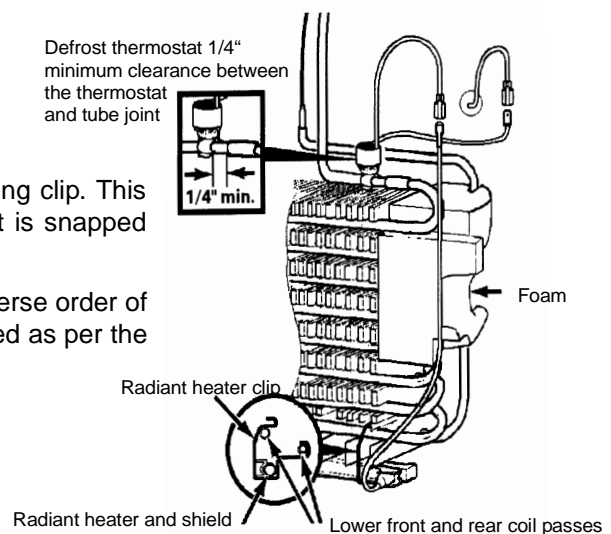
1. **Disconnect the unit from the mains.**
2. Remove the icemaker, if fitted.
3. Remove the evaporator cover by loosening the top 4 screws on each corner of the cover and removing the bottom screws on each corner.
4. Tilt the top of the evaporator cover forward and disconnect the wire harness connector.
5. Remove the evaporator cover and fan motor assembly. It is very important that this part be reinstalled in the same manner as it was originally.
6. Disconnect the defrost heater wire leads. Using long nose pliers, remove the defrost heater retainer clips. (One on the right side of the heater and one on the left side).
7. Remove the heater and the shield.  
Note the placement and orientation of the shield. It goes between the heater and the evaporator cover.
8. Install the replacement heater in the reverse order of removal.

**NOTE:** When installing the replacement heater, do not touch the glass. Salt from fingertips could cause damage.

## 2.5 Replacing The Defrost Thermostat

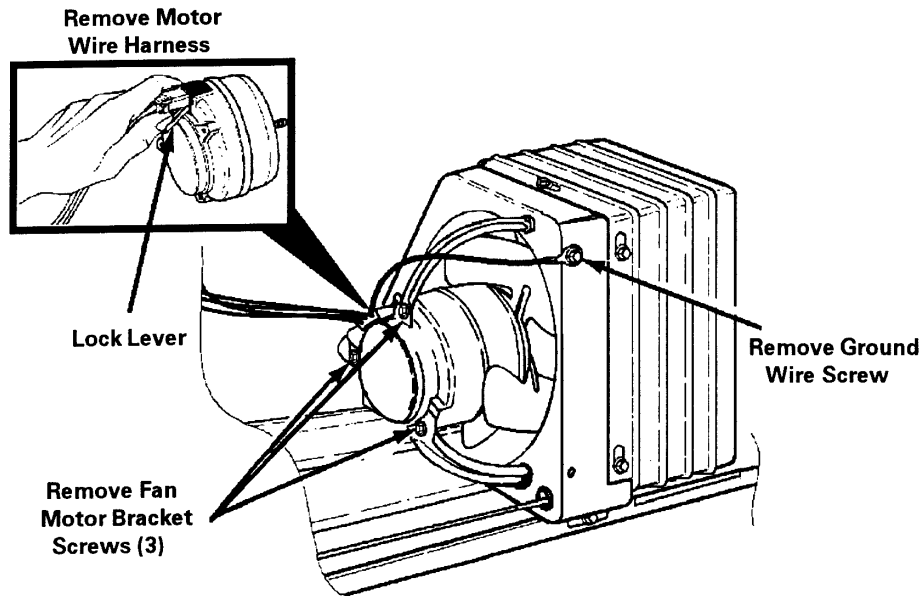
The defrost termination thermostat is located on the top right side of the evaporator.

1. Follow the first five steps in replacing the heater.
2. Disconnect the leads from the thermostat.
3. Remove the defrost thermostat and mounting clip. This is done by releasing the mounting clip that is snapped around the evaporator tubing.
4. Install the new defrost thermostat in the reverse order of removal. Make sure the thermostat is located as per the drawing.



## 2.6 Condenser Fan Motor

The condenser fan motor is connected in parallel with the compressor. If the compressor runs but the motor doesn't, the motor is either defective or disconnected. If neither operates, check the cold control, defrost timer, and the cabinet wiring.



### 2.6.1 To Check The Condenser Motor Direct

1. Disconnect the unit from the power source.
2. Remove the insulated cover from the rear of the cabinet.
3. Disconnect the condenser fan motor lead connector on the motor terminals.

To remove the lead connector from the condenser fan motor, grasp the connector with your thumb inserted between the connector and the locking lever as shown. Pull the connector away from the motor.

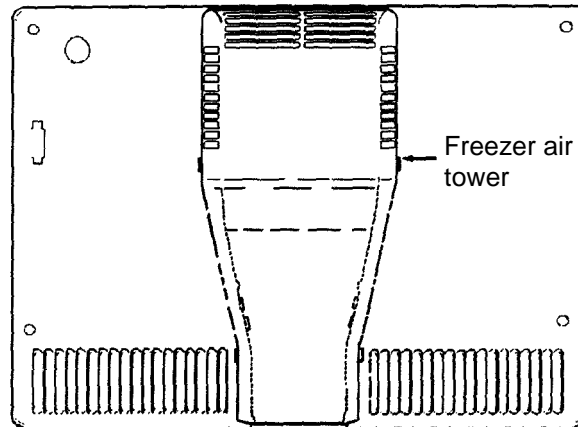
4. Attach a 230V test cable to the condenser motor and connect to the mains. If the motor fails to operate, it is defective and must be replaced.

### 2.6.2 Condenser Fan Motor Replacement

1. Disconnect the unit from the power source and remove the insulated cover from the rear of cabinet.
2. Disconnect the condenser fan motor lead connector on the motor terminals.
3. Remove the screws that mount the fan motor to the brackets.
4. Transfer the fan blade to the replacement motor, making sure it is installed in the same manner as the original.
5. Install the fan motor leads and earth wire.
6. Install those parts previously removed. Test run the unit.

## 2.7 Freezer Fan Motor

The freezer fan circulates the cooled air throughout the fresh food and freezer compartment. The fan blade is made of polyethylene and is pushed onto the shaft. It is important when replacing the fan blade that the hub of the fan blade faces outward towards the back of the freezer air tower. If the fan fails or operates erratically, the reduced air circulation will result in poor cooling characteristics.



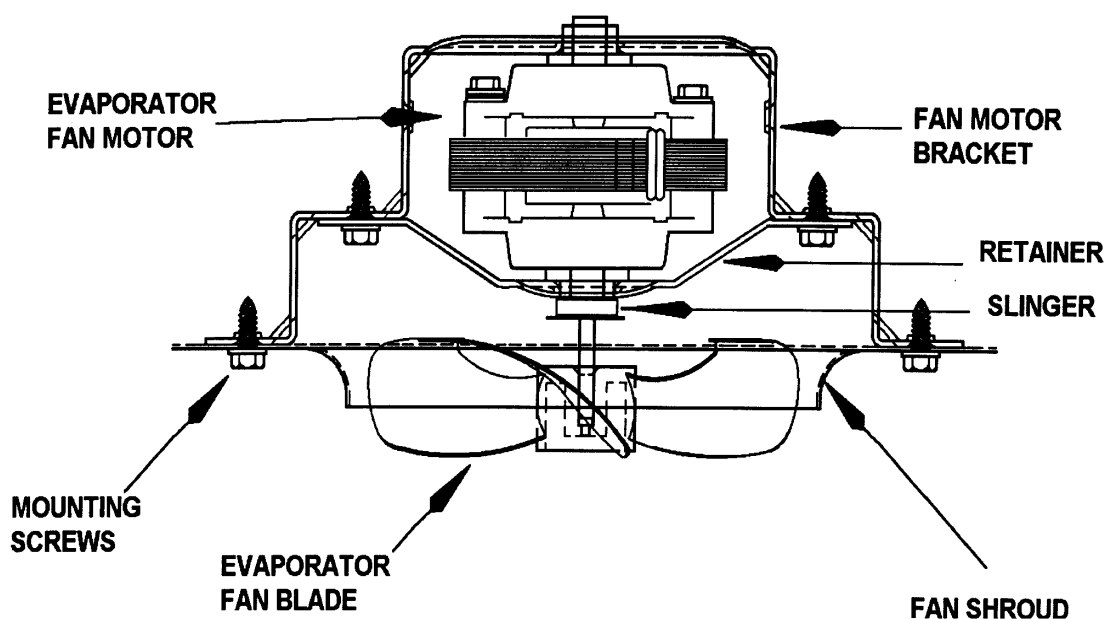
### 2.7.1 Freezer Fan Motor Diagnosis

1. **Disconnect the unit from the power source.**
2. Remove the icemaker, if fitted.
3. Remove the freezer shelving.
4. Remove the evaporator cover mounting screws.
5. Tilt the top of the evaporator cover forward and disconnect the wire harness connector.
6. Remove the evaporator cover and fan motor assembly and place it on a work surface.
7. Disconnect the evaporator fan motor leads. The wire leads are self-locking and it is important to squeeze the clip before pulling the leads off the terminals. Connect the motor terminals to a power cable and connect the cable to the mains.
8. If the motor fails to operate, it is defective and must be replaced.

### 2.7.2 Freezer Fan Motor Replacement

1. Follow steps 1 to 5 "Checking the Freezer Fan Motor".
2. Remove the freezer air tower from the cover by pressing the mounting tabs inward. Remove the screws that secure the motor bracket assembly to the evaporator cover.
3. Remove the fan blade by pulling it off the shaft.
4. Remove the screws that secure the rear bracket to the front bracket. Remove the motor from the rear mounting bracket.
5. Install the new motor in the rear mounting bracket. Mount the rear bracket to the front mounting bracket.
6. Install the fan blade on the replacement in the same position as on the original motor shaft.
7. Install the motor and bracket assembly onto the evaporator cover.
8. Connect the wire leads and the earth wire to the motor.
9. Reassemble those parts previously removed and test the unit.

The fan blade is provided with a stop on the face of the hub. When the blade is positioned so the stop rests against the end of the shaft, it is properly installed.



### 3. Cabinet and Related Components

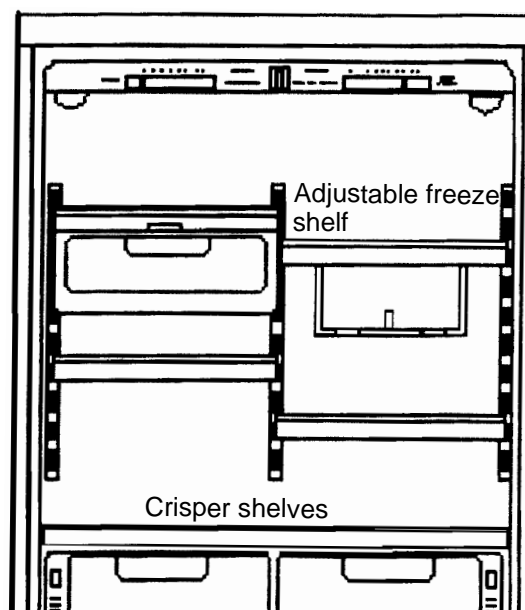
#### 3.1 Food Liner

All food liners are made of a high impact polystyrene material which has a glossy surface. All models are produced with foamed-in-place insulation.

#### 3.2 Freezer Shelves

The freezer area is equipped with a full width adjustable freezer shelf. This shelf can be removed by lifting the left end up about 1.5 cm and pulling the right end bars out of the sockets in the side wall. Reverse the removal procedure to replace the shelf, making sure the left end bars are pressed completely into the supports.

#### 3.3 Refrigerator Shelves



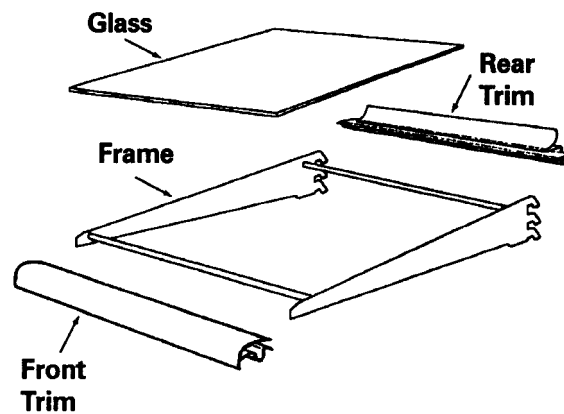
### 3.3.1 Adjustable Cantilever Shelves

Glass or wire cantilever shelves may be available with your refrigerator. To remove a shelf, tilt front up and lift the rear up a fraction of an inch and pull straight out. To lock the shelf into another position, tilt the shelf with the front up. Insert hooks into desired shelf openings and let the shelf settle into place. Make sure that the shelf is securely locked into position before loading it with food.

### 3.3.2 Cantilever Shelf Trim

The cantilever shelf trims are easily removed by placing the shelf on a flat work surface. Raise the front of the shelf, grasp the right underside of the front trim, and pull towards you. Next, remove the glass from the rear trim and remove trim.

Install the new rear trim on the glass. Place the shelf in a vertical position (shelf front up). Install the glass and rear trim by applying a downward force on the rear metal shelf cross brace until it snaps securely into place. Next, install the front trim on the glass and the front metal shelf cross brace.



### 3.3.3 Crisper Shelves

1. Remove cantilever shelves if needed to allow removal of crisper.
2. Remove crisper drawers by pulling out to the stop. Lift and pull again.
3. Carefully remove glass. The glass just lays on the shelf.
4. Lift crisper shelf and pull forward. Tilt to one side to remove from the refrigerator.
5. Reverse procedure to reinstall.



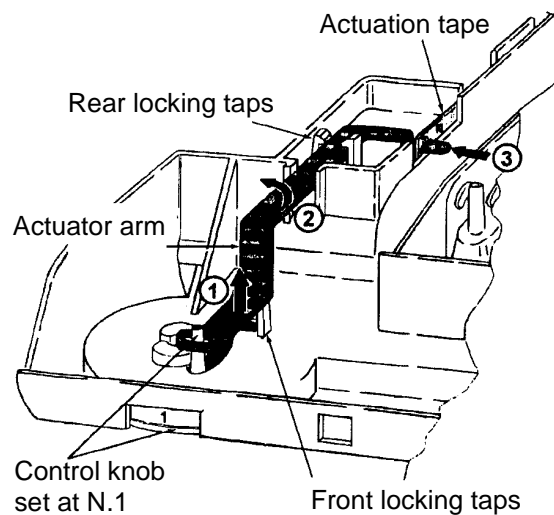
### 3.4 Freezer Cold Control

The freezer control is located in the temperature control housing of the fresh food compartment. The control knob is connected to a damper by an actuator arm and actuation tape. By turning the freezer control knob toward a higher number you can reduce the flow of chilled air into the fresh food compartment; thus lowering the temperature of the freezer compartment.

By turning towards a lower number, you increase the flow of chilled air into the fresh food compartment and decrease the flow of the freezer compartment.

#### Replacing The Manual Freezer Damper Control

1. **Disconnect the unit from the mains.**
2. Open the fresh food door, then remove any food products on the top shelf.
3. Remove the front mounting screw in the temperature control housing.
4. While holding the front of the temperature control housing, remove the rear mounting screw, and lower control housing.
5. Disconnect the temperature control housing electrical quick disconnect.
6. Remove the temperature control housing from the refrigerator and place on a flat work surface.
7. Lift the damper control up just enough so that you can turn the damper arm to separate from the actuation tape.
8. Replace the damper control.
9. Assemble the parts by following the reverse order of removal.



**Replacing The Freezer Control Actuator Arm And Tape:****Do Steps 1-6, “Replacing the Manual Damper Control“**

1. Lift up the actuator arm to disengage it from the control knob and front locking tabs.
2. Rotate actuator arm counterclockwise and lift it out to clear the rear locking tabs.
3. Remove the actuator arm from the actuation tape.
4. Install the replacement parts in the reverse order.

### 3.5 Mounting Hardware

**Nylon Snap Nuts**

Snap nuts are in places where a screw must mount in the liner.

To remove a snap nut, pry it loose with a small screwdriver or putty knife.

Install a snap nut by pressing the nut into the opening until it snaps into place.

### 3.6 Defrost Water Drain System

Defrost water collects in the evaporator drip tray and drains into a trough in the fresh food control housing. Next, the water passes through a restricted opening and into a 90° elbow which joins to the drain tube. (The restricted opening prevents foreign objects from blocking the drain system.) The drain tube is located in the insulation cavity and drains the water into a pan located under the cabinet.

**NOTE:** A trap is incorporated with the drain tube to prevent warm air from entering into the refrigerator.

## 3.7 Cabinet Doors and Associated Parts

### 3.7.1 Paint Touch-Up

Painted areas of the cabinet doors that become scratched or marked can be touched up with enamel. The original paint finish is a high solids polyester type.



**Never use lacquer anywhere on the cabinet where it could come into contact with the door seal.**

**Lacquer will damage the vinyl material in the seal.**

### 3.7.2 Inner Door Liner Replacement

The polystyrene inner door liner and the door seal are mounted to the outer panel by screws placed around the door flange. The inner door liner can be replaced without removing the door from the cabinet. If it is necessary to remove the door liner, proceed as follows:

1. Turn the control to the "OFF" position.
2. Open the freezer door and remove the screws from around the door flange.
3. Remove the door liner and transfer the seal to the replacement liner. Make sure the lip of the seal will sandwich between the inner and outer door panel.
4. Position the replacement door liner and loosely install all the screws around the door flange.
5. Open and close the door several times to check the seal for proper alignment.
6. Carefully open the door by pulling on the middle of the door panel.

**NOTE:** Do not pull the door by the handle or the panel will shift out of alignment.

7. Tighten all corner screws.
8. Open and close the door several times. Recheck the door seal for proper alignment. If alignment is correct, tighten the remaining screws.  
Tighten the screws until they are just snug, then turn clockwise another one-half turn.

**NOTE:** Do not attempt to twist the door panel after all screws have been tightened.

9. Transfer the shelves and the trim to the replacement liner.

### 3.7.3 Outer Door Panel Replacement

#### Upper door

**NOTE:** Remove all food from the freezer door.

1. Turn the control to the "OFF" position.
2. Remove door handle and trim.
3. Use a soft lead pencil to trace around the upper hinge. (This will aid in replacing the hinge).
4. Remove the upper hinge and place it on top of the unit with newspaper or cloth underneath to prevent scratching. Do not misplace the spacers. Place the door on a padded work surface.
5. Transfer the handle, trim, plug button, bushings, gaskets and liner to replacement panel.
6. Install the top hinge using the tracing to align the hinge.

**Lower Door**

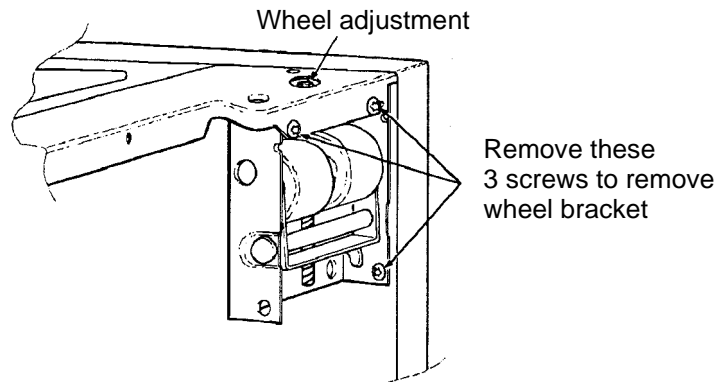
**NOTE:** Remove all food from the fresh food door.

1. Remove upper door.
2. Remove the interior centre hinge screw and carefully open the door pulling it over far enough so the centre hinge clears the outside shoulder screw. Lift the door up and off the lower hinge pin.
3. Place the door on a padded work surface.
4. Transfer the handle, trim, plug button, bushings, door seal, (metal retaining strips if used) and liner to the replacement panel. Do not tighten the liner mounting screws.
5. Position door onto bottom hinge and mount the door on the centre hinge. Close the door.
6. Install the upper door and hinge.
7. Open and close the doors and tighten the liner mounting screws.

### 3.8 Cabinet Wheels

The cabinet has non-adjustable rear wheels.

The rear wheels are securely fastened in place by an axle held in place by a retaining tab in the rear compressor mounting rail.



### 3.9 Front Wheel Assembly

The front wheel assembly is securely fastened by two screws to the faceplate and the leg of the cabinet.

Models covered in this manual have adjustable front wheels. However, there are some that do not have adjustments. To lock the cabinet in place, lower the front levelling legs.

### 3.10 Cabinet Levelling

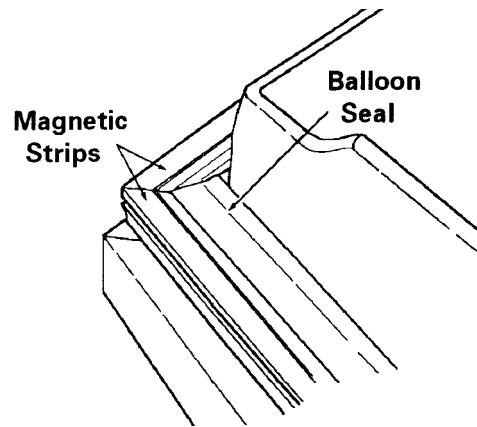
To enhance its appearance and maintain efficient performance, the refrigerator should be level.

The front wheels were adjusted at the factory so the doors were properly aligned and the cabinet level.

However, jarring in transit, or standing the refrigerator on uneven floors may cause the doors to shift out of alignment. If front alignment is necessary, adjust the wheel with a socket spanner. Clockwise raises the cabinet, counter-clockwise lowers the cabinet. If front wheels are not adjustable, use levelling legs to level.

### 3.11 Door Seal

The drawing shows a view of the magnetic door seal used on all models mentioned in this manual. The magnetic strips are attracted to the metal cabinet front, providing an excellent seal around the entire door. A visual inspection of the door seal while opening and closing will reveal any areas of poor seal. You will notice a slight expansion and compression of the seal bellows as the door is opened and closed.



Door Seal and Magnetic Strips

### 3.12 Toe-in & Toe-out Adjustments

To seal evenly around the entire door, the seal must make contact at the top and bottom at the same time. For this reason, the door, when ajar, should not *toe-in or toe-out*. To correct a *toe-in or toe-out* condition, first check that the hinge-side of the door is parallel with the cabinet then proceed as follows:

1. Check the cabinet levellers and adjustable wheels. Raising the handle side may correct a toe-out; lowering may correct toe-in. Tighten a few screws on the handle side to hold the door in this position.
2. Loosen all inner panel mounting screws along the top, bottom and handle side of the door. **Do not loosen the screws along the hinge side.**
3. Hold the corner that toes-in stationary, and push in on the toe-out corner until the door is lined parallel with the cabinet.
4. Open and close the door several times to ensure a proper fit. *If necessary, repeat steps 2 and 3.*
5. Tighten all loosened screws until they are snug.

### 3.13 Hinge Adjustments

Hinge adjustments are necessary when:

1. The seal is not sealed sufficiently along the hinge side of the door.
2. The seal is compressed more than 1.6 mm on the hinge side (causing a poor seal elsewhere around the door.)
3. The distance between the door and cabinet is greater at the top than it is at the bottom, or vice versa.
4. The handle side of the door does not line up with the cabinet side (viewed from the front), or when the door panel top is not parallel with the cabinet top.
5. If one or more of these conditions exist, adjust one or both hinges to correct the trouble. Raising the hinge side may correct a door sag.

### 3.14 Door Alignment

The cabinet door on each model covered in this manual is in correct alignment when:

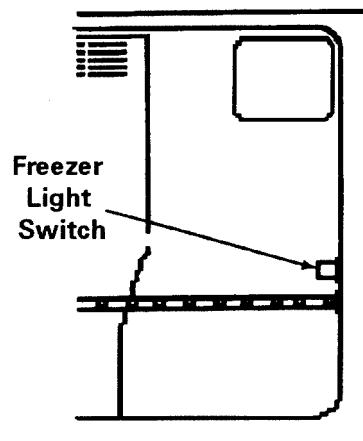
1. The hinge side of the door is an equal distance from the cabinet flange at the top and bottom.
2. The gasket seals smoothly and is compressed no more than 1.6 mm along the hinge side with the door closed.
3. The handle side of the door lines up with the side of the cabinet (viewed from the front). The door panel is parallel with the cabinet top.

In many cases, levelling the refrigerator will eliminate the need for cabinet door adjustments. Ensure that the refrigerator is plumb by checking all edges as well as both sides of the cabinet with a carpenter's level.

### 3.15 Door Switch

**Disconnect the unit from the mains.**

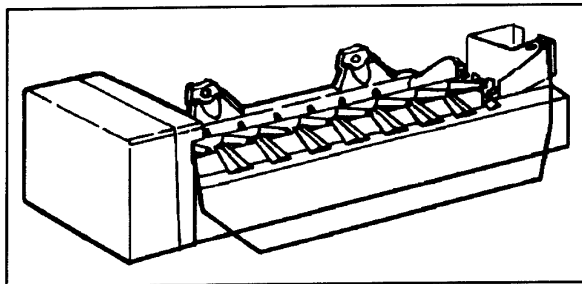
The door switches can be easily removed by using a flat blade screwdriver or putty knife. Pry from the liner and disconnect wires.



## 4. Servicing of Automatic Icemakers (optional)

### 4.1 Servicing

The design of this icemaker allows all of the components to be tested without removing the ice maker or moving the refrigerator away from the wall to access the water valve.

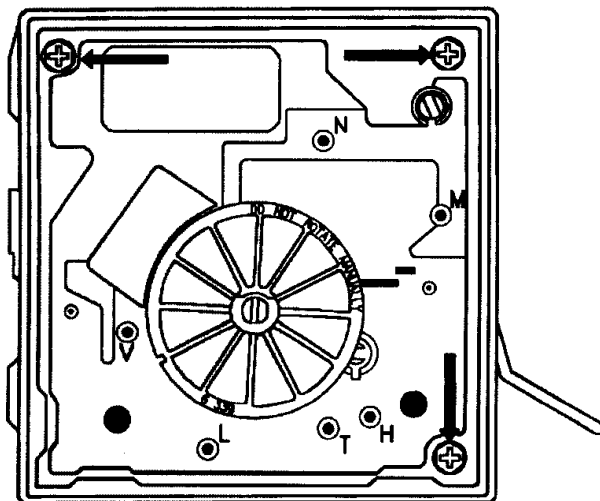


Remove the cover and you will see the test points identified on this module.

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

**NOTE:** Read this section completely before doing any testing or adjusting. Refer to the tech sheet for complete testing information.

The test holes are identified as "N", "M", and "V", etc.





## 4.2 Test Procedures

### Icemaker plugged into power/ shut-off arm down/ freezer cold:

- ♦ Test points L & N will verify 230 volts to ice maker module.  
(Make sure your test probes go 12.5 mm into the test points).
- ♦ Test points T & H will verify if the bimetal thermostat is open or closed.  
Short T & H with an insulated piece of wire (1.5 mm<sup>2</sup>) to run the motor. If the motor doesn't run, replace the module assembly. If the motor runs, replace the bimetal thermostat.
- ♦ If you leave the jumper in for half of a revolution, you can feel the heater in the mould heat up, if it is good.  
Remove the jumper and the water valve will be energised in the last half of the revolution.  
(Make sure the freezer temperature is cold enough to close the bimetal).

**NOTE:** Do not short any contacts other than those specified. Damage to the ice maker can result.

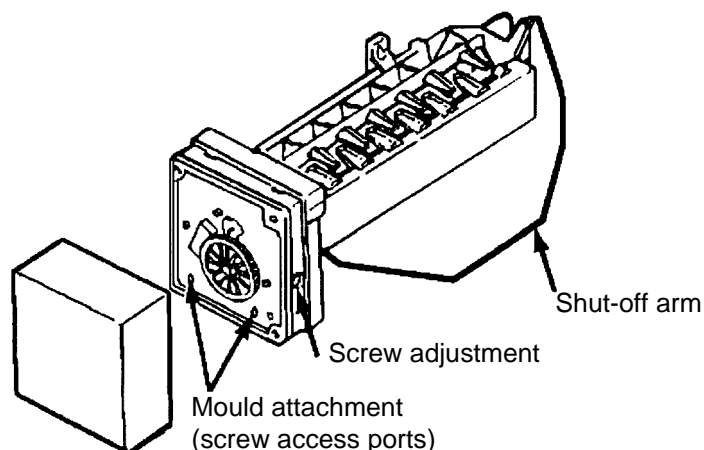
### Icemaker unplugged:

- ♦ Test points L & H will check the resistance of the heater (72 ohms).  
Replace the mould and the heater assembly if not near this value ( $\pm 10$  ohms).  
(Ejector blades should be at the end of the cycle position.)

## 4.3 Service Procedures

**Cover:** Pull water adjustment knob first and snap off cover. Index knob and reinstall in same position for same water fill. (Some units may not have index knobs.)

### Remove cover



**Module, Motor and Support Assembly:**

1. Insert Phillips screwdriver in access ports of module.
2. Loosen both screws.
3. Disconnect shut-off arm.
4. Pull mould from support assembly.
5. To remove module only, remove 3 Phillips screws and pull module out of housing.

**Shut-Off Arm:**

Pull out from white bushing. Reinsert to full depth. See page 31 for detailed position.

**Mould & Heater:**

Remove module and support assembly. Install on new mould and heater assembly.

**Bimetal:**

Remove module and support assembly. Pull out retaining ring clips with bimetal.

**Fill Cup:**

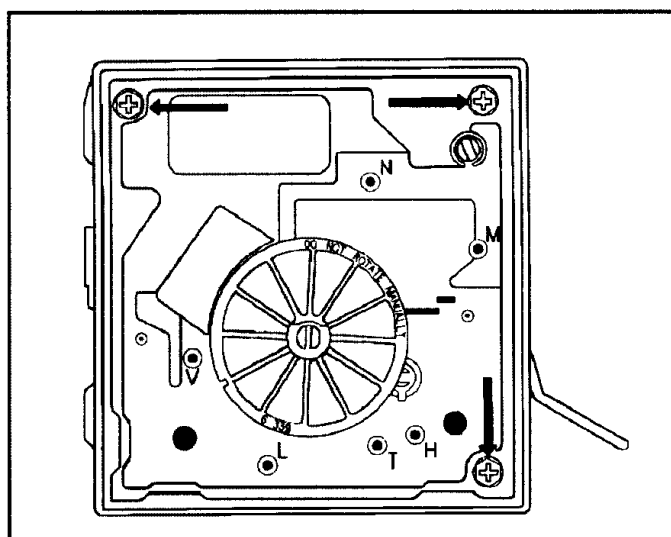
Remove module and support assembly. Remove ejector blades and shut-off arm. Pull fill cup up from mould.

**Ejector Blades or Stripper:**

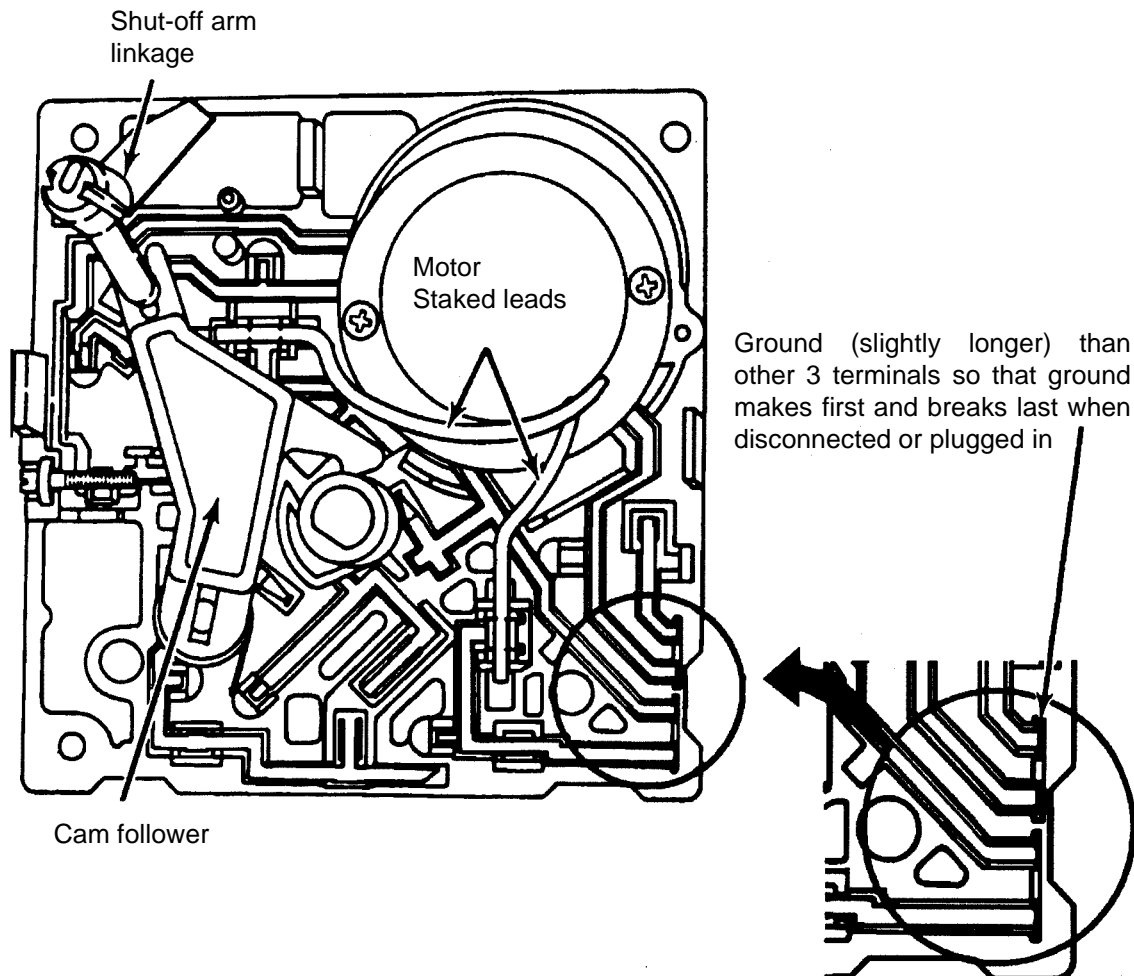
Remove module and support assembly. When reinstalling ejector blades, realign "D" coupling with module cam.

## 4.4 Accessing the Control Box

To remove motor and contact assembly from control box, take out three screws (see arrows) and pull free **after disconnecting the shut-off arm**.



## 4.5 Module Components



### Warning

**Never rotate the blade or the drive gear! It will ruin the main assembly.**

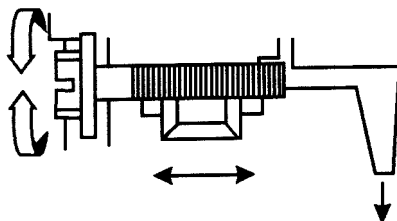
There are several switches which will jam if manually turned counterclockwise. Also, the gears will be destroyed if turned clockwise. If you need to advance the icemaker into the cycle, use a jumper to bridge "H" to "T". Unless the motor is defective, it will run. (The shut-off arm must be in the "ON" position.)

**NOTE:** There are several slotted shafts on the motor assembly board. Do not under any circumstances insert a screwdriver and attempt to turn these shafts. These slots are to permit assembly only.

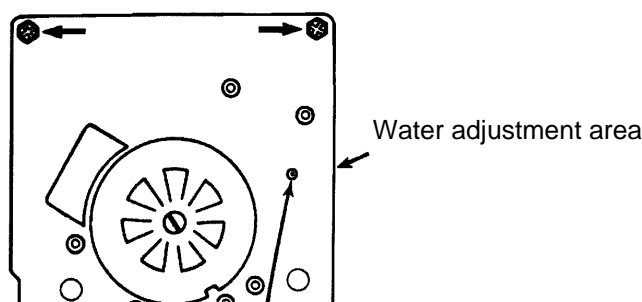
**NOTE:** There are not repairable or replaceable components in the module. Unless replacing the module, there should be no need to remove it when diagnosing or repairing the icemaker.

## 4.6 Water Fill Adjustments

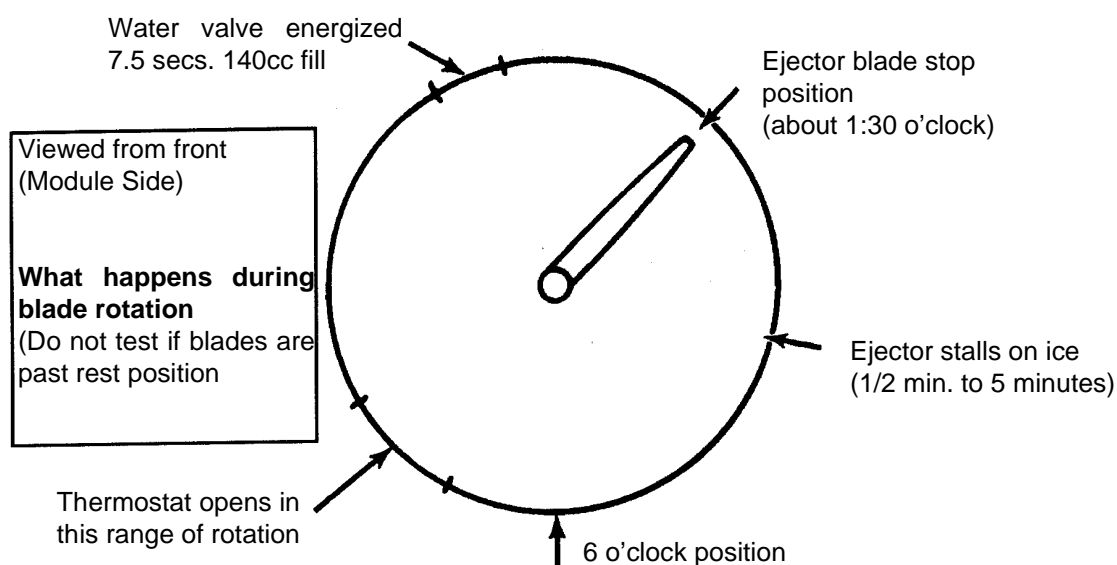
Turning the water level adjustment screw will move the contact in its relationship with the contact ring segment. This causes the contact to vary the time that the water valve is energised since the contact ring is tapered at the end of the fill time.



- ◆ Turning the knob or screw clockwise decreases fill – counterclockwise increases the fill amount.
- ◆ Only one revolution is possible with the cover on, due to a stop moulded on cover.
- ◆ 360° will affect fill by 40cc – 180° varies the fill by 20cc.
- ◆ Further adjustment could damage module.
- ◆ If water valve adjustment screw falls out, put it back in and align the hole in the hole as shown.



When small hole is centred in larger hole the water fill adjustment is for 7.5 seconds fill time (normal).



## 4.7 Water Problems

Water quality can cause icemakers to fail or produce unacceptable cubes. If mineral content or sand is a problem, the screen in the fill valve can restrict. A particle of sand can keep the valve from seating properly. Results will be small crescents (or no ice) or flooding of the ice container if the water valve does not close.

Mineral content can also lime up the mould causing wicking of water over the mould and poor cube release. Silicone is applied at the upper edges, around the fill cup and stripper.

## 4.8 Temperature Problems

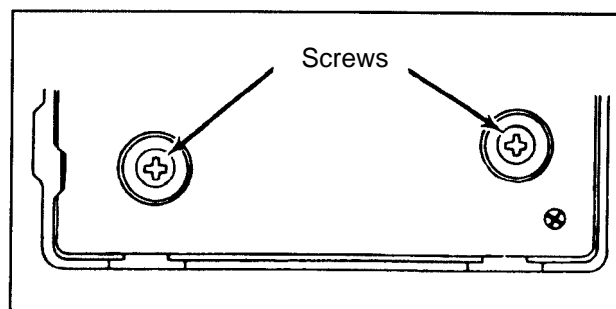
Temperatures in the freezer section which average above the normal  $-17.8^{\circ} \pm 2.8^{\circ}\text{C}$  will slow the production of ice. Complaints of inadequate crescent production may be corrected by setting the freezer to a colder temperature, in this one-revolution ice maker  $-8.3^{\circ} \pm 1.7^{\circ}\text{C}$ . Obviously, the ice will be well frozen when these temperatures are achieved, but cycling time will be slowed if the freezer temperature is not cold enough to achieve these mould temperatures easily.

**Note:** Only the thermostat, mould with heater and wiring harness are replaceable. Any other failure (including the motor) requires replacement of the module assembly. If you are replacing the mould assembly, it comes with a new mould heater installed. External plastic parts are also replaceable.

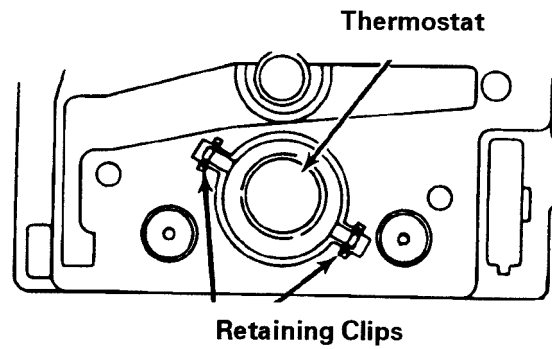
A failed mould heater requires complete replacement of the mould and mould heater assembly.

## 4.9 Thermostat

If the thermostat is diagnosed as defective, it can be removed and replaced easily. Remove the module from the mould by taking out two Phillips screws.



Pull  
(front of module)



Using needle nose pliers, grasp one of the thermostat clips and pull out.

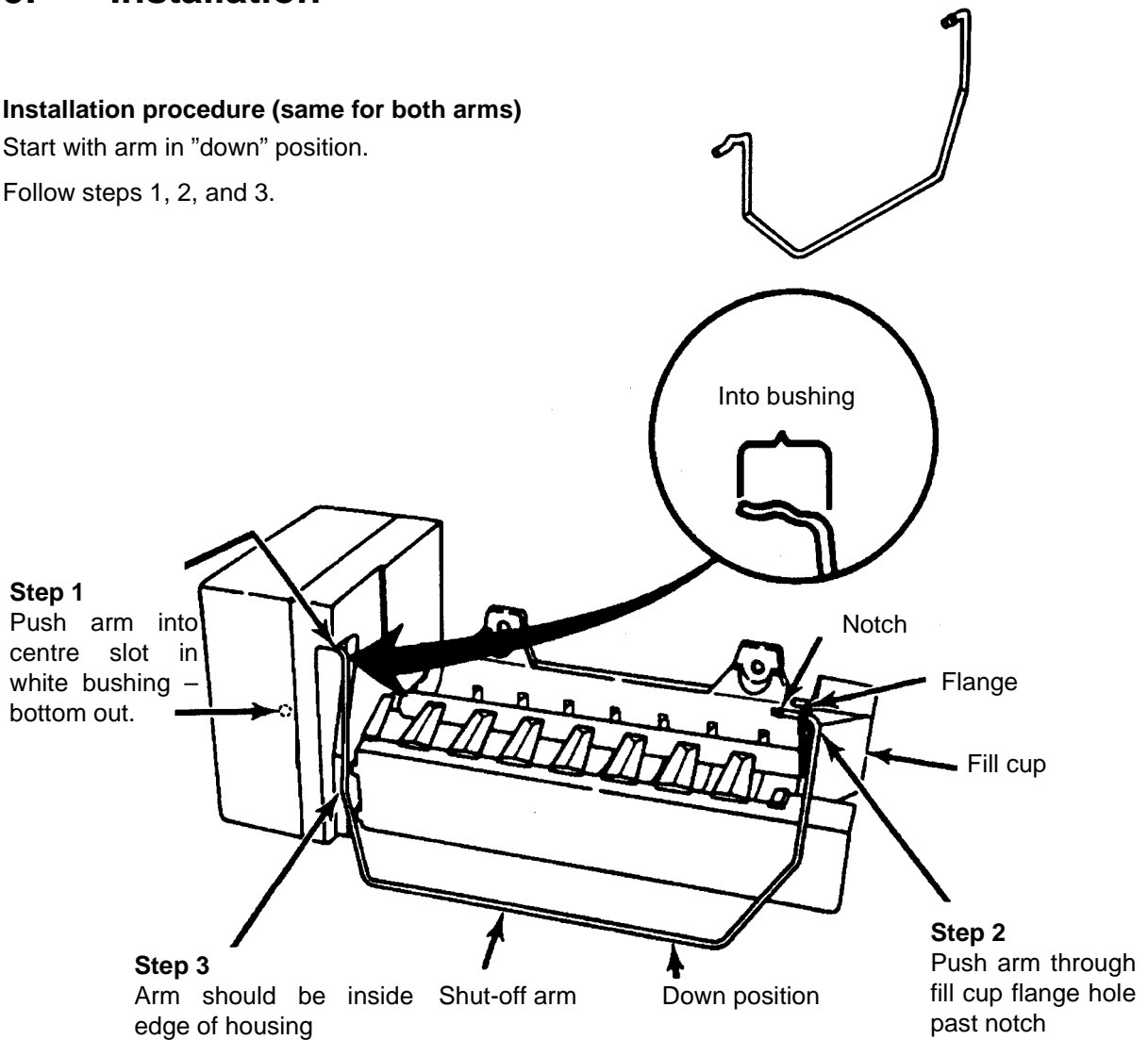
Press in new thermostat, making sure that pins are properly indexed. Using this procedure, it is not necessary to remove the electrical assembly. If you are replacing the module, transfer the clips to the new mould support. (Use new thermal bonding material).

## 5. Installation

### Installation procedure (same for both arms)

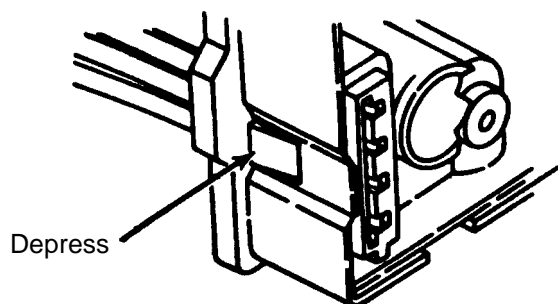
Start with arm in "down" position.

Follow steps 1, 2, and 3.



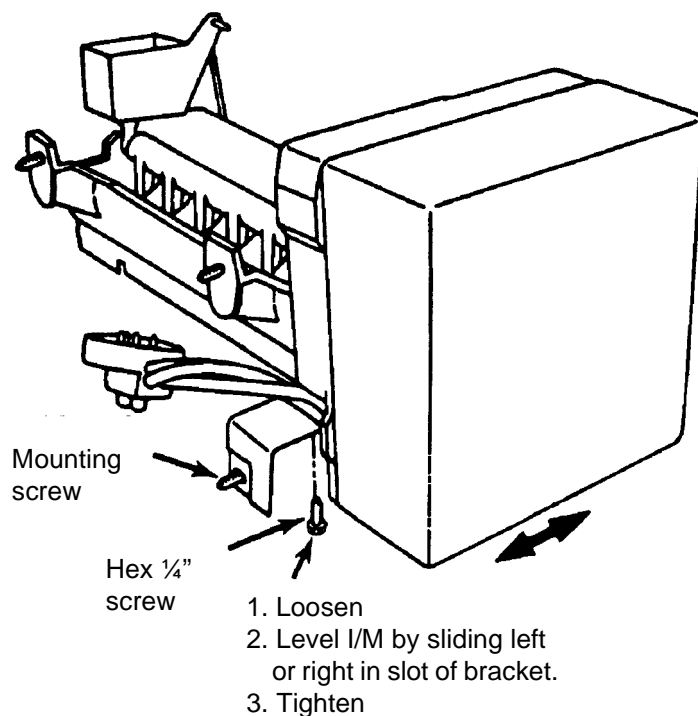
### 5.1 Harness

To remove the wiring harness, depress the retaining tab and pull the plug free.



## 5.2 Levelling Ice maker

This device ensures uniform ice crescents.

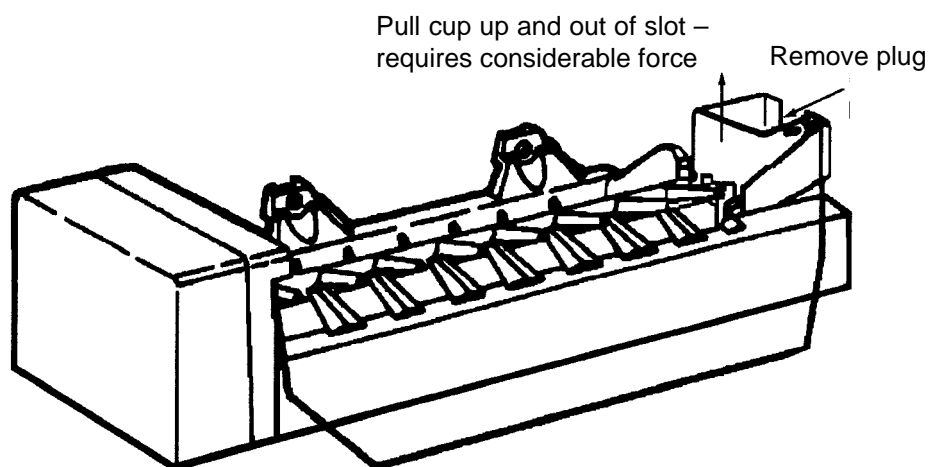


Make sure the refrigerator is level front to back (adjust legs or rollers).

## 5.3 Removing and Replacing Fill Cup

To remove fill cup, you must separate mould and blade from module housing. Remove blade from fill cup.

The appropriate breakout plug needs to be removed from the fill cup for your model. Check old icemaker.





5.4 Other Information

- ◆ Motor connectors can be damaged if leads are removed.
- ◆ The motor is available only as part of the complete module assembly.
- ◆ One revolution of the blade takes three minutes (plus stall time on ice).
- ◆ Bench test lead can be made from cabinet socket.
- ◆ Tan and black wires on socket plug are water valve leads.

5.5 Specifications

Mould Heater	.....	185 watts, 72 ohms
Thermostat (Bimetal)	.....	Close $-8.3^{\circ} \pm 1.7^{\circ}\text{C}$ Open $0^{\circ} \pm 1.7^{\circ}\text{C}$
Water Fill	.....	140cc, 7.5 seconds
Motor	.....	1.5 watts, 8.450 ohms
Module	.....	Stamped Circuit, Plug-in Connectors
Cycle	.....	One revolution (ejects and water fill)

## 6. Troubleshooting



**Warning**  
**DISCONNECT THE UNIT FROM THE POWER MAINS**

Condition	Possible Cause	Correction
Unit does not run No light in refrigerator	No power at mains distribution panel of house	Check and advise customer to call an electrician
	Mains power socket - Defective socket  - Open circuit to mains socket	Advise customer: to have defective socket replaced  Replace fuse. If problem not corrected, advise customer to call electrician
	Defective mains cable plug	Replace
	Open-circuit mains cable or machine compartment wiring harness	Repair or replace if necessary Refer to wiring harness diagrams and check circuit
	Two simultaneous problems - light bulb out and open mains circuit to compressor	Replace light bulb Refer to wiring harness diagrams and check circuit
Unit does not run Light in refrigerator works	Temperature control - Defective or adjusted incorrectly  - mains circuit open to control	See below: Replace or adjust if necessary  Refer to wiring harness diagrams and check circuit
	Defrost timer - Defective (contacts completing compressor circuit are open)  - Mains circuits open to timer (motor winding or contacts)  - May be defrosting	See below: Replace  Refer to wiring diagrams and check circuit  Repair or replace
	Overload protector - Mains circuit open to overload  - Defective overload	See below: Refer to wiring diagrams and check circuit  Repair or replace
	Starting relay - Mains circuit open to coil (overload does not click)  - Defective relay	See below: Refer to wiring diagrams and check circuit  Replace

Condition	Possible Cause	Correction
Unit does not run Light in refrigerator works	Compressor motor - Mains circuit open to compressor  - Defective compressor (overload may or may not click depending upon what is wrong with compressor)  - Low line voltage (overload will click on and off as unit tries to start)	See below: Refer to wiring diagrams and check circuit  Replace  Check voltage. Must be at least 200V with all other load on the line
Unit run excessively or continuously	Complete or possible partial restriction under high ambient (cycles on overload protector after unit stops and tries to restart)	See "Checking Operating Pressure"
	Check to ensure light does not stay on continuously	Check light switch and replace if needed. Check door adjustment
	Dirty or restricted condenser, due to particularly greasy, dusty, or significant pet traffic in the home	Advise customer that it may require cleaning periodically in this environment
	Defective cold control	Repair or replace
	Condenser fan not running	Repair or replace
Unit does not run for period of time after defrost	Defrost timer is defective (does not advance – advance to cool cycle)	Replace
Unit runs continuously but there is no cooling in refrigerator and freezer compartment	Substantial loss of sealed system charge (low wattage readings)	Locate and repair leak before recharging
	Restricted capillary or drier on high side (low wattage readings while running) Will cycle on overload when unit tries to start after defrost cycle, or after having been shut – off and restriction is still present	Replace defective part or parts
	Defective compressor	Repair or replace
Unit runs continuously. The refrigerator and freezer compartment are both too cold (normal wattage reading)	Temperature control is defective (short contacts or not adjusted)	Replace or adjust as required
	Freezer control not adjusted properly	See "Freezer Cold Control" for proper adjustment

Condition	Possible Cause	Correction
Unit runs continuously. The refrigerator compartment not cold enough, but freezer compartment is colder than normal	Air duct from freezer to refrigerator is blocked (normal wattage reading)	Remove what is blocking the air duct. See "Air Flow Diagram"
Unit runs excessively or continuously. The refrigerator and freezer compartments are cooling, but are not cold enough	Freezer fan. - Defective fan motor	See below: Replace
	- AC circuit to fan open (lower wattage readings)	Refer to wiring diagrams and check circuit
	Not defrosting (lower wattage readings than normal and frost buildup or evaporator)	See below:
	- Defective defrost timer, defrost heater or defrost terminal thermostat	Replace defective part or parts
	- AC circuit to defrost system open	Refer to wiring diagrams and check circuit
	Temperature control	See below
	High setting of temperature control may result in these conditions under very severe environmental and usage conditions (high humidity and large number of freezer and refrigerator door openings)	Check and adjust for proper setting
	Sealed system - Overcharge (high wattage readings)	See below Evacuate and recharge with proper amount of refrigerant
	- Undercharged (low wattage readings)	Check and see „Checking Operating Procedure“
	- Partial restriction	Check and see „Checking Operating procedure
	Compressor motor defective Inefficient compressor (low wattage readings)	Replace
	Condenser fan - AC circuit to fan open (high wattage readings)	See below: Refer to wiring diagrams and check circuit
	- Defective fan (high wattage readings)	Replace
	Dirty or restricted condenser due to particularly greasy, dusty or significant pet traffic in the home	Advise customer that it may require cleaning periodically in this environment

Condition	Possible Cause	Correction
Unit runs excessively or continuously. The refrigerator and freezer compartments are cooling, but are not cold enough	Too much warm food placed in refrigerator at one time	Advise customer
	Air (no leak) in sealed system	Replace drier and evacuate system thoroughly, recharge with proper amount of refrigerant
Unit runs excessively. Refrigerator compartment eventually gets cold enough, but freezer compartment is too cold	Partial restriction in air duct from freezer to refrigerator	Check and remove what is causing the restriction. See „Air Flow Diagram“
	Freezer cold control setting too cold	Adjust control for proper adjustment, see "Freezer Cold Control"
	High usage of refrigerator especially in high ambient	Advise customer
Unit run excessively. The refrigerator compartment and freezer compartment both too cold (normal wattage readings)	Setting of temperature control too high for prevailing environmental and usage conditions	Reset control
	Defective temperature control	Replace
	Door seals may be leaking	Adjust door or replace door gasket
Unit runs excessively, but temperature appears to be normal in refrigerator	Problem is one of customer usage and education with severe environmental conditions after confirmation by a temperature recording. Frequent door openings	Advise customer
	Light may stay on constantly in refrigerator	Check light switch and replace if needed. Check door adjustment
	Inefficient compressor	Replace
Short running cycle Refrigerator and freezer compartment are cooling, but are not cold enough	Temperature control	See below
	- Defective control (normal wattage readings)	Replace
	- Improper setting of temperature control for prevailing environmental and usage conditions	Reset control

Condition	Possible Cause	Correction
Short running cycle Refrigerator and freezer compartment are cooling, but are not cold enough	Air circulation	See below
	- Ventilation around condenser, is blocked	Check and advise customer
	- Condenser fan is defective	Replace
	- Dirty or restricted condenser, due to particularly greasy, dusty, or significant pet traffic in the home	Advise customer that it may require cleaning periodically in this environment
	- AC circuit to condenser fan is defective (high wattage readings, unit may be cycling on the overload protector)	Refer to wiring diagrams and check circuit
	Compressor motor defective (high wattage readings. Unit maybe cycling on the overload protector)	Replace
Unit runs and cycles Refrigerator is normal, but freezer is not cold enough (normal wattage readings)	High resistance contacts or too many broken wire stands in compressor motor AC circuit (high wattage readings, unit may be cycling on the overload protector)	Check and replace broken part. Refer to wiring diagrams and check circuit
	Overload protector defective (normal wattage readings)	Replace
	Too much warm food placed in the unit at one time. May be cycling on overload	Advise customer
	Poor freezer door seal	Adjust door or replace if necessary
	Freezer air baffle control setting too warm	Reset control. For proper setting, see „Freezer Cold Control“
	Room temperature too cold	Advise customer
	Excessive freezer door openings	Advise customer
	Too much warm food placed in freezer at one time	Advise customer
	Few refrigerator door openings (low usage in low)	Advise customer
	Check for refrigerant leaks	Repair or replace

Condition	Possible Cause	Correction
Run time normal. Refrigerator compartment is not cold enough, but freezer compartment is normal or possibly colder than normal. Sweating, but refrigerator and freezer are working normally	Air flow problem	Check and remove what is causing the restriction See „Air Flow Diagram“
	Interior sweating	See below:
	- Bad door seals	Replace
	- Excessive door openings during hot, humid weather	Advise customer
	- Storage of excessive uncovered liquids especially if they are inserted into refrigerator while warm	Advise customer
	- Void in insulation	Check and add insulation if possible
	- Overcharged	Evacuate system and recharge with proper amount of refrigerant
	- Bad door seals	Replace
	- Condenser fan not running	Check fan motor and replace part if needed
Excessive dehydration of food	Covering of food	Advise customer
	Sublimation of ice cubes is normal in no frost freezers, but should not be a problem in these units equipped with covered ice storage bins	Advise customer
Excessively noisy, but works normally otherwise	Refrigerator not level or firmly sitting on all four corners	Level the unit, lowering the level legs if necessary to make sure that unit is firmly on the floor
	Structural weakness in floor	Advise customer
	Compressor mounting defective	Check and replace if necessary
	Poor tubing dress	Adjust tubes so they do not touch
	Compressor operation is noisy due to inherent condition	Advise customer
	Unit base mounting loose	Tighten loose part or parts
	Freezer or condenser fan is noisy. May have defective motor	Adjust fan or install foam pad if necessary Replace
	Containers inside refrigerator rattle	Advise customer

## 7. Specification

Power Requirement	220 - 240V 50Hz	Temp. Control <i>Cut / Out</i> ( $\pm 0.9^{\circ}\text{C}$ ) <i>Cut / In</i> ( $\pm 0.9^{\circ}\text{C}$ )	Normal setting -23.3°C -6.11°C
Operating Amps (max.)	2.0A	Capillary Tube	
Compressor	Tecumseh TP1410Y	<i>Length</i> <i>Diameter</i>	244 cm 0.71 mm
Refrigerant Charge R134a	92g	Defrost thermostat <i>Cut / Out</i> ( $\pm 1.7^{\circ}\text{C}$ ) <i>Cut / In</i> ( $\pm 6.1^{\circ}\text{C}$ )	+3.3°C -9.4°C
Compressor	198Cal/hr	Defrost Timer <i>Defrost Cycle</i> <i>Defrost Time</i>	6.7 hrs. $\pm$ 5 mins 17.5 mins. $\pm$ 5 mins.
Cabinet Liner	High Impact Laminated Polystyrene	Defrost Heater <i>Ohms</i> <i>Watts</i>	126 ohms $\pm$ 10% 400W $\pm$ 10%
Door Liners	High Impact Laminated Polystyrene	Defrost Amps. (Max.)	1.8A
Cabinet + Divider Insulation	Foam		
Fountain Heater	With ventilator		

### Performance Test Data

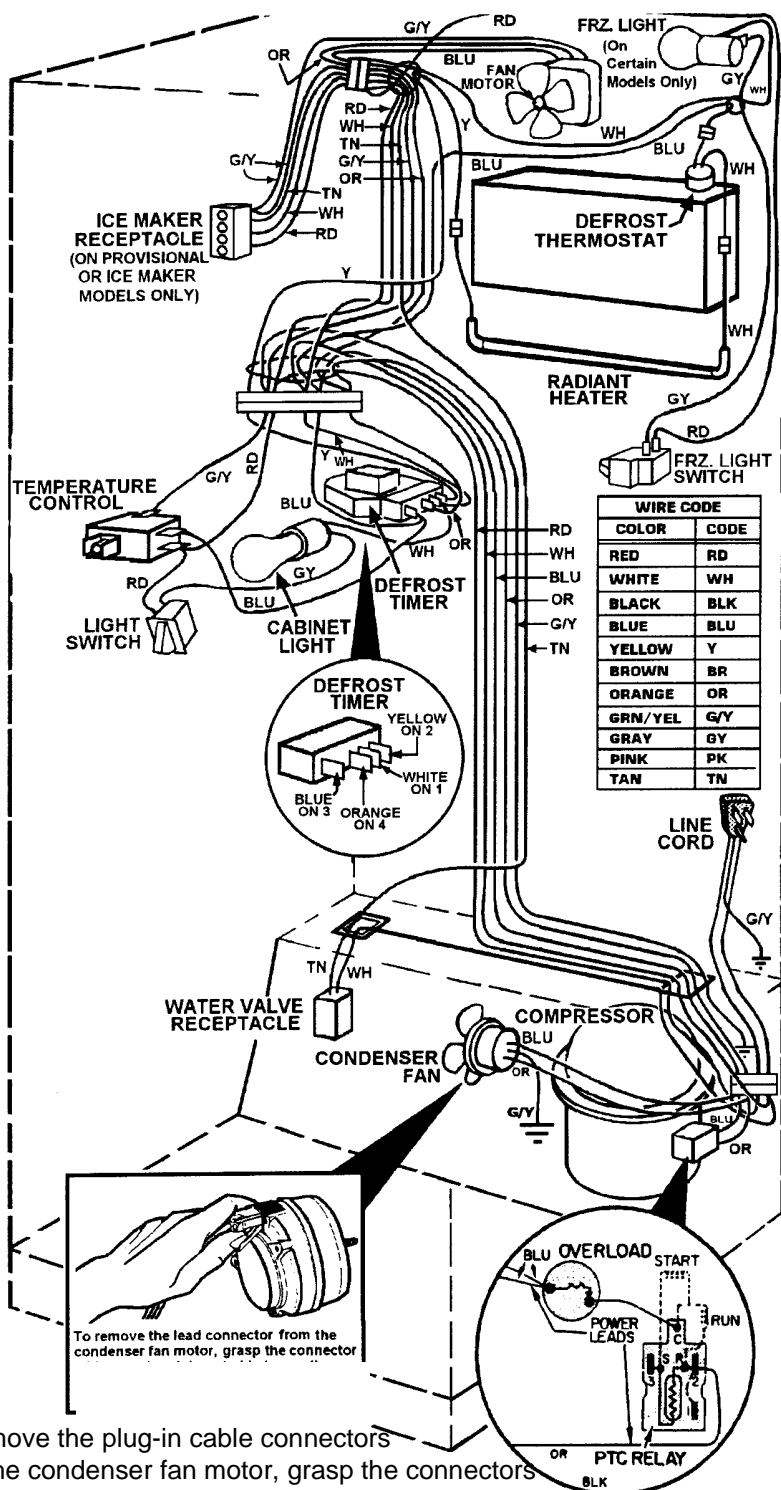
The laboratory test data in this chart was obtained under the following conditions: (1) mains supply of 230V AC, 50 Hz, (2) no door openings, (3) no load, (4) customer control(s) set at mid-point. The pressures and wattages shown were taken: (a) during a normal running cycle, (b) no sooner than 5 minutes after compressor start-up. In the home, measurements will vary depending upon environmental and usage conditions.

	21.1 °C Ambient	32.2 °C Ambient	43.3 °C Ambient
Operating Time in % $\pm 5\%$ Freezer Temp. in °C $\pm 1.7^{\circ}\text{C}$	25% -18°C	45% -20.6°C	100% -26%
KWH / 24 hours	1.9kWh $\pm 0.2$	1.85kWh $\pm 0.2$	3.65kWh $\pm 0.2$
Suction pressure ( $\pm 1\text{bar}$ )	-0.34bar/-31.6°C	-0.24bar/-28.9°C	-0.14bar/-23.3°C
High Side Pressure ( $\pm 1\text{bar}$ )	9.3bar/40.5°C	11bar/46.6°C	-18.3bar/65.6°C
Running Watts during running compressor $\pm 15\%$	160W	170W	200W



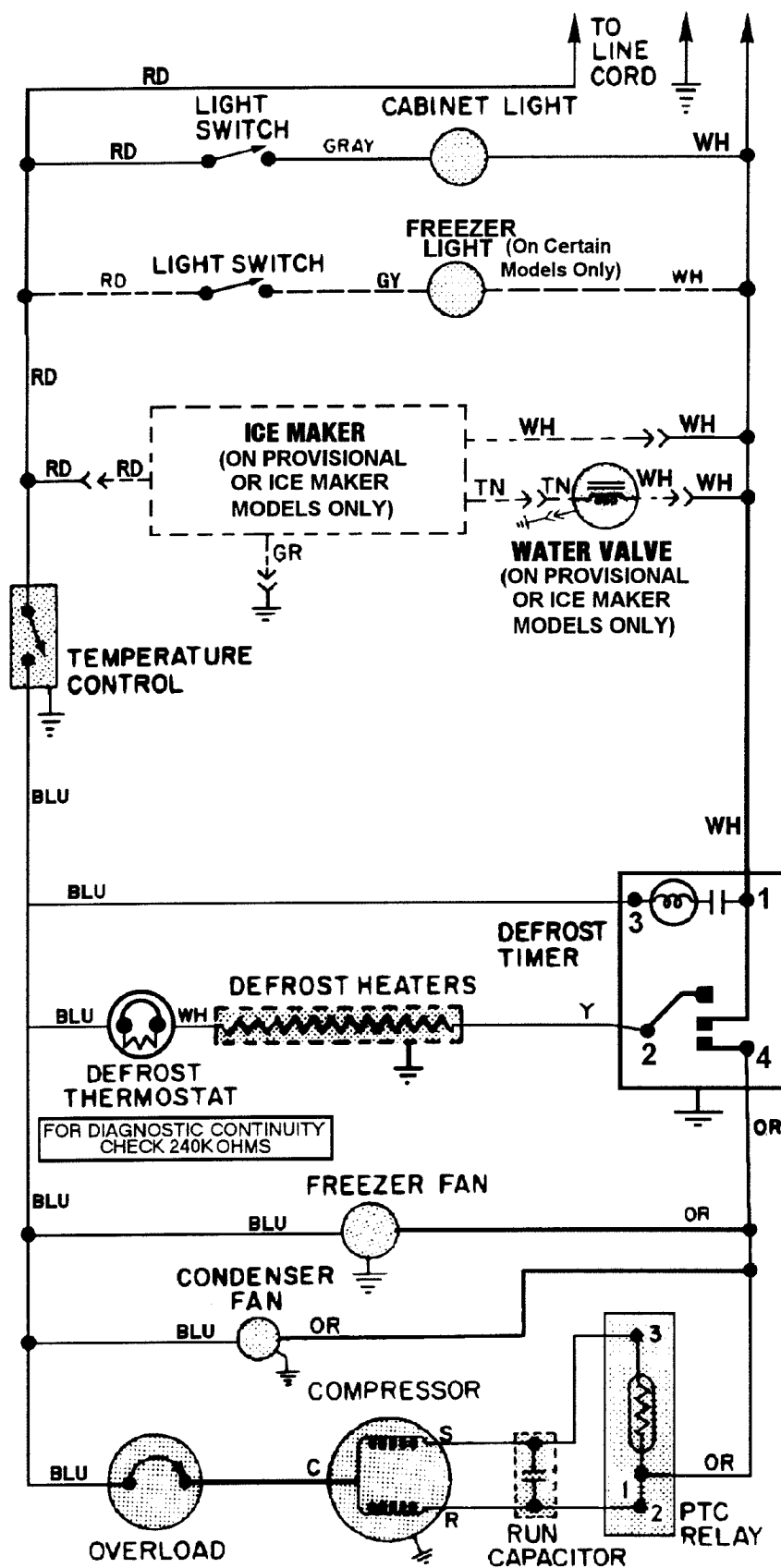
## 8. Wiring Diagrams

### 8.1 Schematic Wiring Diagram



To remove the plug-in cable connectors from the condenser fan motor, grasp the connectors as shown in the illustration, with the thumb between the connector and the locking lever. Then pull off the connectors.

## 8.2 Wiring Diagram



### 8.3 Refrigerant Flow

