MODEL IMD220V60 ICEMAKER

OWNER'S MANUAL

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IMPORTANT

FOR PROPER ICEMAKER OPERATION, CLEAN THE ICEMAKER WITH ICE MACHINE CLEANER (SEE CLEANING INSTRUCTIONS, STEPS 1-5) ON INTIAL START-UP.

RUN THE UNIT THROUGH SEVERAL ICEMAKING CYCLES AFTER CLEANING TO REMOVE ANY REMAINING TRACES OF THE CLEANING SOLUTION. DISCARD THE ICE.

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MODEL IMD220V60

DESCRIPTION

The model IMD220V60 icemaker is a self-contained, wall-mount style unit which automatically makes hard, clear, cracked-style ice and stores it in a sealed hopper for sanitary dispensing.

SPECIFICATIONS

COMPRESSOR:	1/2 HP, R-12/36 oz.
VOLTAGE:	115 V, 60 HZ, 1 phase
AMPS:	13
FUSE SIZE:	20 A max

INSTALLATION

1. Location

For maximum efficiency and ice output select a location for your Cracked-Ice Ice Maker where it will not be exposed to sunlight, excessive heat or reflected radiation (preferably in a room with a temperature of 70° to 80° F). The Ice Maker normally will not function properly in temperatures below 65° F. The area surrounding the Ice Maker should be well ventilated. Consult Fig. 1 for proper airflow clearance.

Two mounting brackets are supplied for securing the unit to a wall.
IMPORTANT: The machine with a full ice storage hopper weighs 450 lbs. Make sure that the mounting surface is adequately reinforced to support this weight.
The mounting hole dimensions for the brackets are shown in figure 1. Use these dimensions to locate the unit at the desired height on the wall. Secure the brackets to the unit with the six 5/16-18 bolts and lockwashers provided (located at the rear top and bottom panels).

2. Plumbing

Connect the icemaker to a cold, potable water source, suitable for drinking. Do not install unit on a water softner line if at all possible. It is recommended that a hand shut-off valve and strainer be used on the incoming supply line. A 3/8 compression fitting is provided at the back of the unit for the water supply hook-up (see Fig 1).

Connect a 1 1/2" IPS (or equal) drain line to the 1 1/2" threaded drain pan fitting at the lower rear of the unit. The line must pitch downward to an open drain, and must contain no traps, or improper drainage will result.

3. Electrical

A 4 X 5 junction box is located on the lower left side of the unit for the supply hook-up (see Fig 1). Access is obtained by removing the icemaker lower front panel (2 thumbscrews). Connect the icemaker to its own individual circuit per the national electric code and local code (see nameplate for power requirements).

START-UP

Upon completion of the Ice Maker Installation, proceed as follows for start-up.

1. Remove upper front and top cabinet panels.

2. Loosen hold-down bolts on compressor springs.

3. Remove insulated top cover and right side housing panel of the ice maker.

4. Open water valve to Ice Maker and check float valve for admittance of water to sump, then replace insulated cover and side panel.

5. Turn on the electrical power.

6. Check the ice making cycle with insulated covers in place. The initial ice making and harvest cycle will take approximately 15 to 25 minutes. ON THE INITIAL START-UP THE TIMER MAY OPERATE THE ICEMAKER ON THE HARVEST CYCLE FIRST. HOWEVER, AT THE COMPLETION OF THE HARVEST CYCLE, THE ICEMAKER WILL START A NORMAL ICE MAKING CYCLE.

7. DO NOT REMOVE THE INSULATED COVERS UNTIL THE HARVEST CYCLE TIMER STARTS. THIS IS DONE TO MAINTAIN PROPER AMBIENT TEMPERATURE INSIDE CABINET. If it is necessary to make adjustments in ice thickness, possibly due to an altitude problem, stop the ice maker and refer to the service adjustments. When the ice thickness is properly adjusted, the ice will be 1/4-5/16 thick. Ice that is too thick can jam the ice cracker. It is important that the ice thickness thermostat be in proper adjustment.

8. Replace the insulated covers and the cabinet panels. The unit is now ready for normal operation.
   IMPORTANT: THE INSULATED COVERS SHOULD ALWAYS BE IN PLACE WHEN THE ICEMAKER IS BEING USED.

9. Due to meltage loss because of a warm bin, it takes longer to fill the bin the first time than when the ice maker has been operating for several days.

PRINCIPLES OF OPERATION

THE CRACKED-ICE ICE MAKER provides an efficient, sanitary method of forming and dispensing ice. The process rinses away impurities in the water so that the ice produced from it is crystal clear.

The ice making cycle begins with the water circulating pump circulating fresh water through a water distributor header, which distributes the water over the upper surfaces of a pair of inclined freezer plates. The freezer plates are constructed in the form of a "V". As the water flows downward, it freezes on the upper surfaces of the freezer plates. When the proper ice thickness on the freezer plates is reached, as determined by an ice thickness control, the ice making cycle stops and the harvest cycle begins. Hot refrigerant gas warms the freezer plates to disengage the ice sheets from them. The ice sheets are cracked and forced through sizing holes into the storage bin in clear, solid bite size pieces.

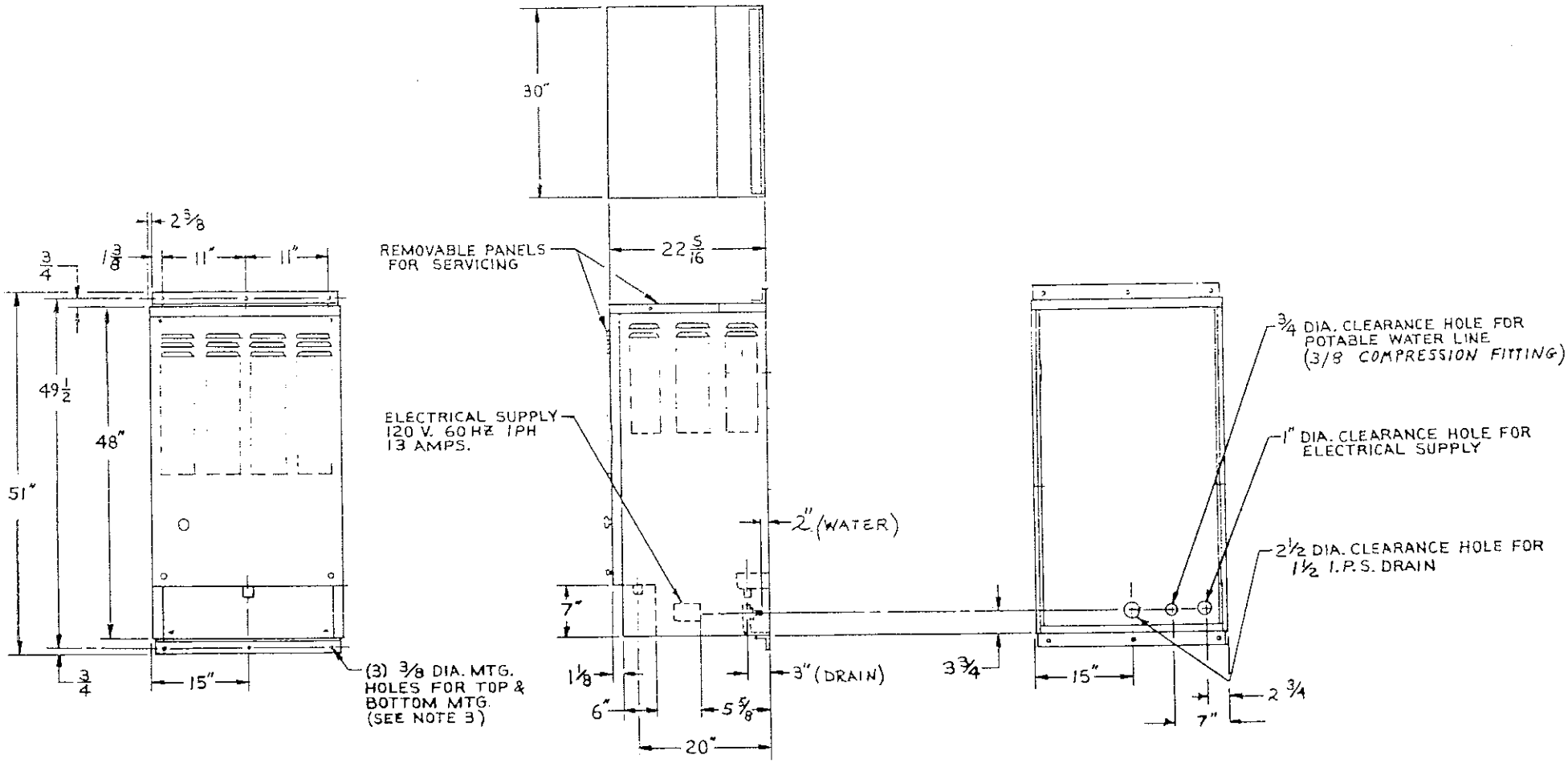
During the ice making cycle fresh water is admitted through the water float valve to the water reservoir to replace the water which has been made into ice.

During the harvest cycle the water drain valve opens and allows the water to drain from the water reservoir to a building drain. Fresh water then enters the water reservoir to begin a new ice making cycle.

Ice continues to accumulate in the ice storage bin until the bin is full, at which time the ice touches the bulb of the bin thermostat. This stops the Ice Maker until the ice level in the bin has been lowered, at which time the Ice Maker resumes operation. The bin thermostat may stop or start the Ice Maker at any point in the harvest cycle. However, if the bin thermostat opens during an ice making cycle, an override circuit forces completion of the cycle before the unit shuts off. When the bin thermostat again calls for ice, operation will commence with a harvest cycle, which clears the machine of any previously formed ice, thereby preventing damage.

Depressing the dispense button on the lower front panel activates a microswitch behind the panel, which energizes the agitator motor and gate solenoid. This causes the agitator to rotate and the gate slide to lift, allowing ice to push out the gate opening. Ice flow will continue until the lever is released.

FIG. 1



NOTES:

1.) WALL MUST BE ADEQUATLY REINFORCED TO SUPPORT UNIT WHICH WEIGHS APPROXIMATELY 450 LBS.

2) ALLOW 2 1/2" AIR FLOW CLEARANCE AT LEFT AND RIGHT SIDE LOUVERS.

3) TWO 11GA. SS ANGLES FURNISHED LOOSE FOR MOUNTING UNIT TO WALL. LOCATION DIMENSIONS ARE FOR BOTH BOTTOM & TOP OF UNIT.

INSTALLATION DIMENSIONS

FIG. 2

WIRING DIAGRAM

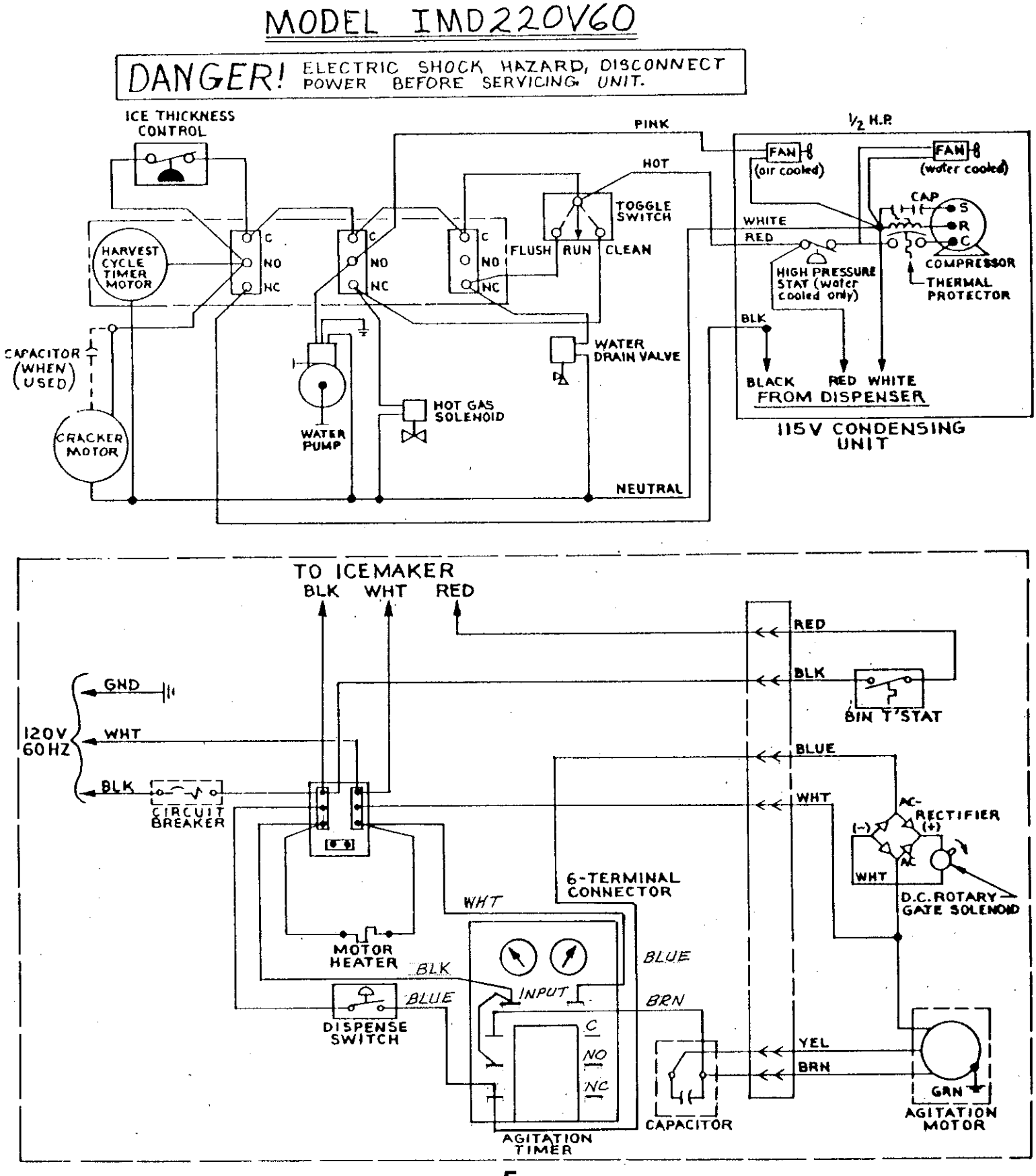
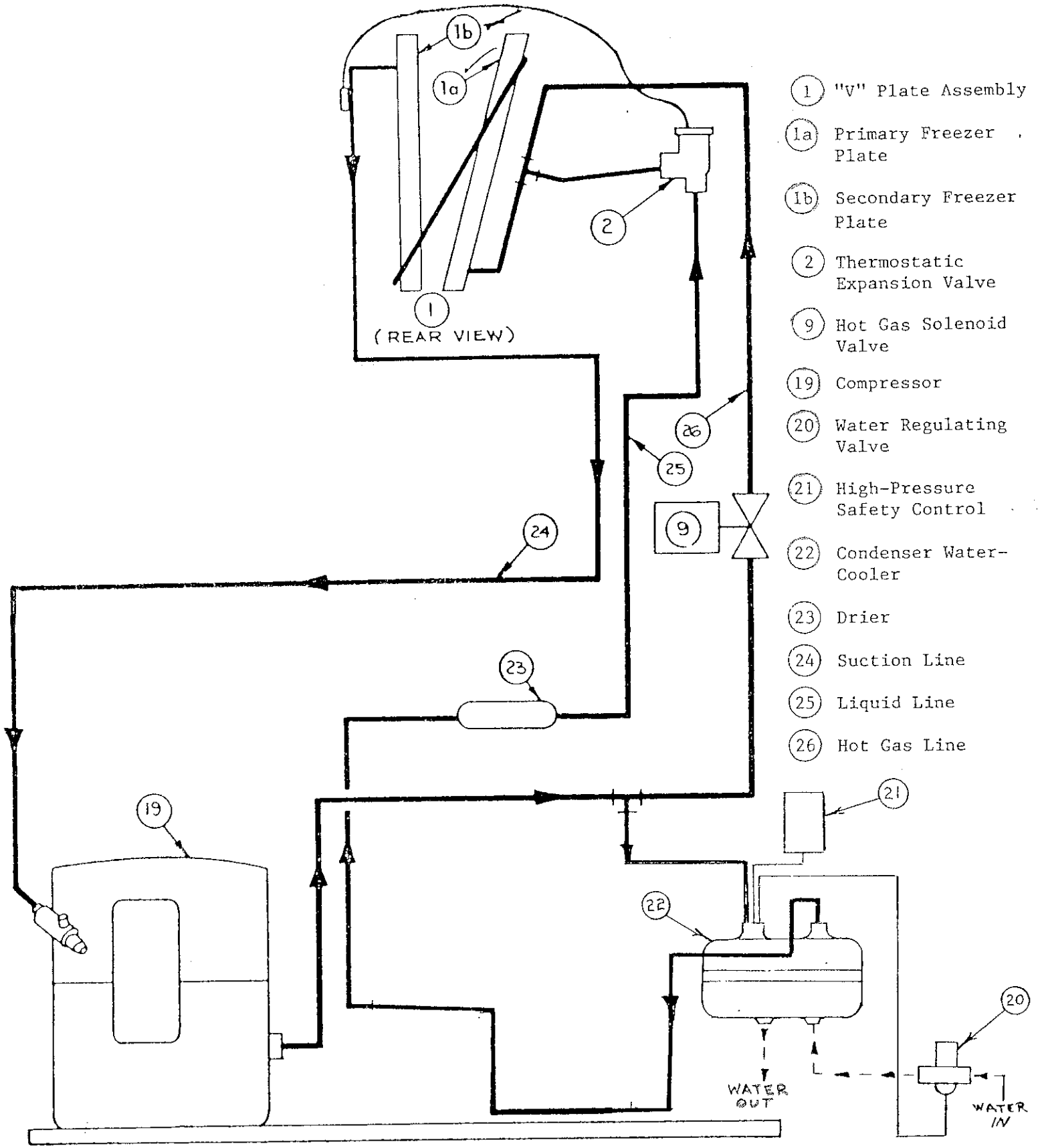


FIG. 3

REFRIGERANT CIRCUIT



CLEANING INSTRUCTIONS

The icemaker should be cleaned at a minimum of three months intervals (more frequently in hard water areas) in the following manner:

1. Remove the lower and upper front panels. Stop the icemaker at the completion of the harvest cycle and remove the icemaker housing and cover.

2. Add two teaspoons of Virginia Ice Machine Cleaner (available from most refrigeration wholesalers) to the water reservoir sump.

   Note: Virginia Ice Machine Cleaner is a mild acid. Normal care should be taken - Keep out of eyes and cuts.

3. There is a three-position clean switch, located near harvest timer, marked "clean-run-flush." With switch set in clean position and Ice Machine cleaner in sump, turn on icemaker and run unit for 15 minutes.

4. Set clean switch to flush position. Allow Ice Machine to run and flush until acid solution is completely removed from machine.

5. Turn off the icemaker. Close water supply valve to the icemaker. Siphon or drain the water from the water reservoir. Then turn switch to run position.

6. Remove splash shield from water float valve (2 thumbscrews). Remove pump from evaporator mounting bracket (2 screws). Remove spring clamps (2) from water reservoir pan drain fitting with pliers and lift pan out. Using the brush provided, thoroughly clean the splash shield, water pump, water float valve, water reservoir pan, and the entire area under the evaporator with a mild detergent solution. Rinse with clear water to remove all traces of detergent. Sanitize with a solution of 1 oz. of household bleach (sodium hypochlorite) in 1 gallon of water.

7. Replace the pan and hook-up the drain fitting to the solenoid drain valve. Secure the splash shield and pump in position. Turn on the water supply and check operation. Replace the icemaker cover and housing. The icemaker is ready for normal use.

THE HOPPER INTERIOR SHOULD BE CLEANED AT LEAST ONCE A MONTH

WARNING: DISCONNECT POWER BEFORE CLEANING

Do not use metal scrapers, sharp objects or abrasives on the inside surface of the hopper as damage may result. Do not use solvents or other cleaning agents, as they may attack the plastic surface.

1. Remove the ice chute (2 thumbscrews) and mounting panel (4 thumbscrews).

2. After disconnecting the hopper electrical connector plug at the electrical box, the hopper can be removed by lowering the front height-adjustment thumbscrews (located on the left and right slide rails) and sliding the hopper forward.

3. Remove the agitator assembly and wash and rinse it thoroughly.

4. Wash the inside of the hopper and the top cover with a mild detergent solution, and rinse thoroughly to remove all traces of detergent.

5. Remove the gate slide from the ice spout as follows:

   a. Disconnect the gate slide return spring from slide.

   b. Manually lift gate slide to full open.

   c. Push back on slide pin to disengage from slot on solenoid lift arm.

   d. Remove slide from ice spout by lifting up.

   Clean the gate slide as described in Step 4.

6. Replace the agitator and gate slide.

7. Sanitize the inside of the hopper, top cover, agitator and the gate slide with a solution of 1 oz. of household bleach in 1 gallon of water.

8. Wash and rinse the stainless steel ice chute. Sanitize as described in Step 7.

9. Replace the top cover, and reinstall hopper. Assemble ice chute and mounting panel. Unit is ready for operation.

TROUBLESHOOTING GUIDE

Problem	Possible Causes	See Service Adjustments
No ice build up on freezer plates	Level of water in water reservoir too low	B
	Water Circulating pump failure	C
	Hot gas solenoid valve stuck open	H
	Water float valve stuck or plugged	A
	Water distributor header plugged or water line closed or plugged	B,D,O
	Refrigeration system malfunctioning	N
	Timer out of adjustment	K
	Power failure	U
Ice sheet builds up on but does not disengage entirely from freezer plates	Hot gas solenoid valve not opening or only partially open	H,K
	Hot gas solenoid valve open for too short a time for ambient temperature	H,K
	Freezer plate surface filmed over	G
	Cracker motor not operating	J
	Cracker blades not turning	J
	Ice thickness control inoperative	F
	Ambient temperature below 65°F.	V
Ice sheet very uneven	Freezer plate surface filmed over	G
	Overcharge of refrigerant gas	N
	Undercharge of refrigerant gas	N
	Water supply restricted	A,B,C,D,O
	Water distributor header plugged	D
	Water circulating pump pumping insufficient water	B,C
Incorrect ice sheet thickness	Ice thickness thermostat inoperative or incorrectly set	F
	Overcharge of refrigerant	N
	Undercharge of refrigerant	N
	Refrigeration system not functioning properly	N
	Hot gas solenoid valve stuck open	H
Aerated ice (not clear)	Water supply intermittent or restricted	A,B,C,D
	Water float valve faulty or out of adjustment	A
	Water circulating pump pumping insufficient water	C
	Incoming water contains an excessive amount of minerals or impurities	O

Problem	Possible Causes	See Service Adjustments
Failure to dispense ice	Power failure	U
	Broken agitator motor or defective capacitor	S
	Defective dispensing switch	Q,R,S
	Defective gate solenoid or sticking gate slide	Q
Ice dispensing continuously	Stuck dispensing switch or improperly installed switch	Q,S
Bridging of ice in evaporator section	Stuck bin thermostat	P
	No agitation in hopper	S,T
Back up in chute	Stuck bin thermostat	P
	No agitation in hopper	S,T
Solidification of ice in hopper	No agitation in hopper	S,T
Extremely wet ice in hopper	Plugged drain lines in hopper	Page 2
	Water float valve stuck open	A
	Leak in water reservoir (on ice maker)	B
	Defective water diverting bar (on ice maker)	M

SERVICE ADJUSTMENTS

The Model IMD220V60 CRACKED-ICE MAKER has one V-plate assembly (two inclined freezer plates in the form of a "V"), one water distributor header, one water diverter, one cracker motor, and one set of ice cracker blades.

The ice storage hopper contains these main components: a bin thermostat, the dispensing gate solenoid assembly, a hopper agitator motor and an agitation timer. The timer is located in the electrical box on the left side adjacent to the hopper.

A - WATER FLOAT VALVE

Maintains constant water level in the water reservoir while ice is being made.

If the water float valve is stuck or plugged closed, disassemble and clean, or replace.

B - WATER RESERVOIR

Holds the water being pumped to the Ice Maker freezer plates. Water not frozen on the plates returns to this reservoir.

1. The water level in the water reservoir under the freezer plates should just cover the inlet on the water circulating pump during the ice making cycle. This prevents pumping air. When the water circulating pump is off, during disengagement of the ice sheets from the freezer plates and the ice cracking operation, the water level in the water reservoir rises an inch or so.

2. The water level in the water reservoir should only be adjusted when the water circulating pump is operating. The water level is adjusted by bending the brass water float arm. Bend the arm as close to center as possible. DO NOT BEND AT THE NEETING POINT OF THE WATER FLOAT ARM AND THE WATER FLOAT BALL.

C - WATER CIRCULATING PUMP

Automatically pumps water to the water distributor header which distributes the water uniformly over the upper surfaces of the freezer plates.

The water circulating pump is secured in place by two screws. Check the pump motor for operation. If the motor is running and no water is being pumped, check to see if the pump impeller is turning. If the motor will not run or the impeller will not turn replace the water circulating pump. CAUTION: DO NOT RUN PUMP AT ANY TIME WITHOUT WATER IN SUMP PAN.

D - WATER DISTRIBUTOR HEADER

Distributes the water pumped from the water reservoir evenly over the freezer plates during the ice making cycle.

If the water distributor header is plugged, it can be taken off for cleaning by slipping off the flexible plastic tubing from the water circulating pump, removing the screws holding the water distributor header to the freezer plate and then removing the plastic end plugs from the water distributor header. The water distributor header may be cleaned with a brush and flushed to remove any accumulated minerals and scale.

F - ICE THICKNESS PRESSURE SWITCH

This switch senses compressor suction pressure, and initiates the harvest cycle when this pressure drops below the switch setting, indicating that the desired ice thickness has been reached. Follow the instructions on the following page if adjustment must be made.

G - FREEZER PLATES

Ice sheets are formed on the freezer plates from water flowing over them. Two sharply inclined plates are set in the form of a "V". This is called a V-plate assembly. The primary freezer plate is the one to which the water scoop tube is fastened with two bolts. The secondary freezer plate is the other inclined plate which completes the "V" and is the shorter of the two plates.

A film sometimes forms on a freezer plate due to the type of water in certain areas. This may retard disengagement of the ice sheet from the plate. If this occurs, resurface the plate VERY LIGHTLY with a 600 grade wet sandpaper.

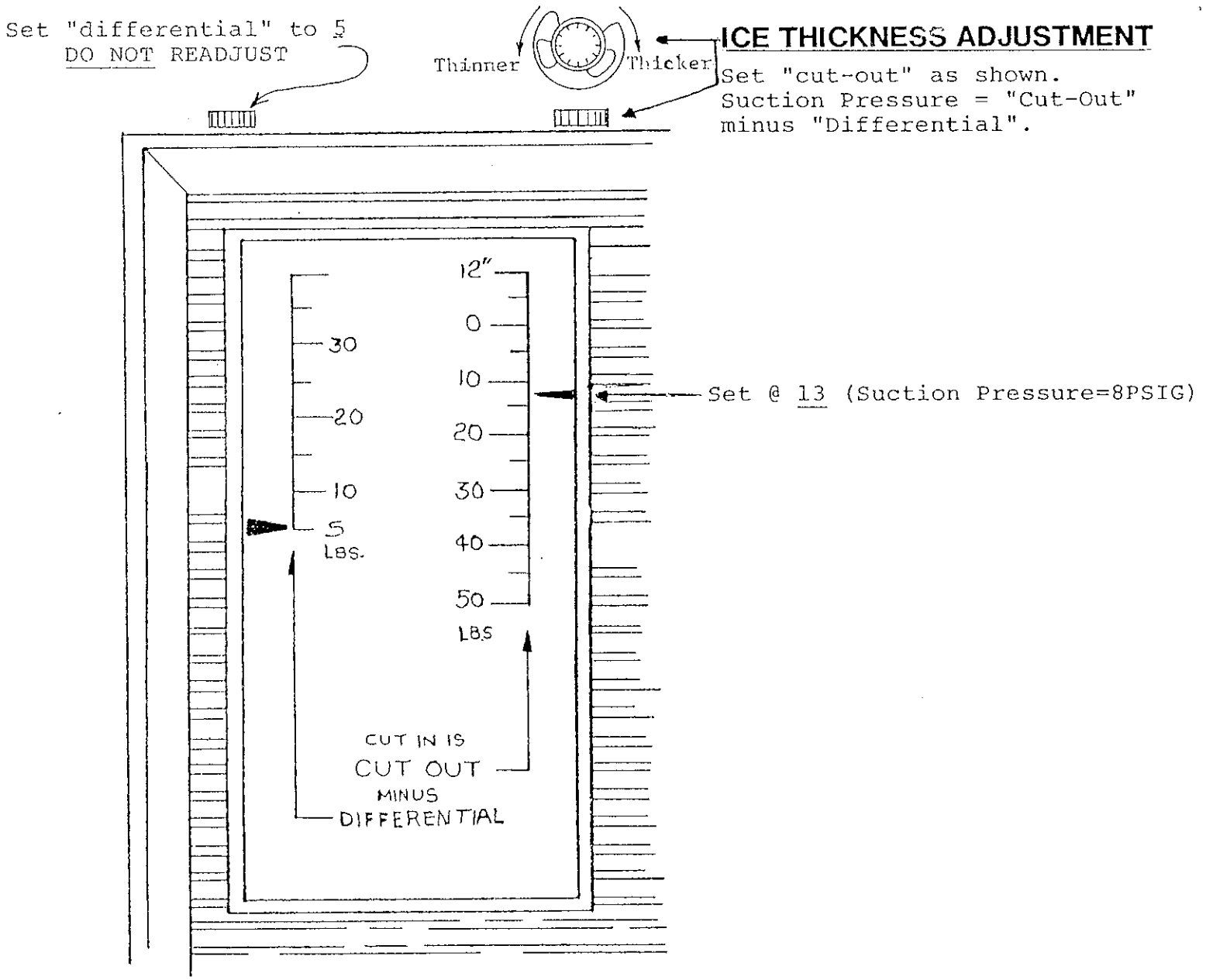
H - HOT GAS SOLENOID VALVE

Diverts hot refrigerant gas from condenser to freezer plates, by-passing condenser and thermostatic expansion valve. During the harvest cycle this hot refrigerant gas warms the freezer plates, disengaging the ice sheets from them. The ice sheets then slide down to the ice cracker mechanism.

1. If the hot gas solenoid valve is inoperative, first check the electric current to the valve; then check continuity and pull of the coil windings. If defective, replace coil only. If plunger will not lift with good coil in place, tap lightly. If valve will not open, replace. REFRIGERATION LINE COMPONENTS SHOULD BE REPLACED ONLY BY A QUALIFIED REFRIGERATION MAN.

ICE THICKNESS PRESSURE CONTROL ADJUSTMENT INSTRUCTIONS

Note: These instructions supersede all previously issued, and may differ from control adjustment provided previously. In all cases, these latest instructions will provide the same performance.



CORRECT ICE THICKNESS IS 1/4–5/16"

If ice is TOO THICK (suction pressure too low), turn thickness adjustment COUNTERCLOCKWISE.

If ice is TOO THIN (suction pressure too high), turn thickness adjustment CLOCKWISE.

CAUTION: Make adjustments in 1/8 turn increments, and wait TWO (2) cycles before checking.

2. Disengagement of the ice sheets from the freezer plates while the hot gas solenoid valve is open is normally accomplished within 60 to 75 seconds. The cam operating the microswitch is factory set for this period of time and should not be reset unless absolutely necessary.

J - ICE CRACKER AND CRACKER MOTOR

The ice cracker blades begin revolving at the start of the harvest cycle. As the ice sheets disengage from the freezer plates and slide down to the cracker at the base of the freezer plates, the revolving ice cracker blades crack the ice sheets and force the ice through sizing holes into the ice chute.

The Ice Cracker Motor is operated by Cam No. 1 on timer and runs for a 4½ minute period on each harvest cycle. If the motor has been subjected to an unusual load, protective overload may have cut off the electric power. When the motor cools, power will be automatically restored. If the motor still does not operate, check the cracker blade assembly to see that it is firmly affixed to the shaft of the cracker motor and is revolving.

K - TIMER

Sequences the operation of ice harvest components at completion of the ice making cycle.

Time Sequence*	3-Cam Timer
Start	1. Timer motor starts **(CS1) 2. Cracker motor starts (CS1)
10 Sec.	1. Water pump stops (CS2) 2. Hot gas solenoid valve opens (CS2) 3. Water drain valve opens (CS3) 4. Condenser fan motor stops (CS2)
40 Sec.	1. Water drain valve closed (CS3)
70-85 Sec.	1. Hot gas solenoid valve closed (CS2) 2. Water pump starts (CS2) 3. Condenser fan motor starts (CS2)
288 Sec.	1. Timer motor stops (CS1) 2. Cracker motor stops (CS1)

*Timer periods are approximate (tolerance is 1.5%).
**CS1 - Cam Switch No. 1 on timer assembly.

L - WATER DRAIN VALVE

Drains water reservoir automatically during the first minute of ice harvest cycle.

M - WATER DIVERTER

Directs flowing water into water trough during ice making cycle and prevents water from flowing through ice sizing bar and into ice chute.

N - REFRIGERATION SYSTEM

Freon R-12 Refrigeration System. Compressor operates continually except when stopped by bin thermostat.

If the refrigeration system is not functioning properly, check for

1. Plugged or faulty thermostatic expansion.
2. Plugged drier.
3. Inefficient compressor.
4. Water regulator valve malfunction. See below.
5. Inoperative hot gas solenoid valve (partially open, stuck open, or not opening). See H.
6. Stuck open water drain valve.
7. Overcharge or undercharge of Refrigerant Gas. Over charged units will show increased water consumption (see below). Undercharged units will exhibit low or no ice production (unit could continuously cycle on harvest timer) with a corresponding decrease in water consumption (see below).

WATER REGULATOR VALVE

Modulates water flow to condenser to maintain constant head pressure.

Setting	R12	130 PSIG
Nominal water flow		$60^{\circ}F$ H_2O inlet - 12 G.P.H.
		$80^{\circ}F$ H_2O inlet - 24 G.P.H.

O - WATER SUPPLY

Water containing an excessive amount of minerals or impurities can result in cloudy ice or difficulty in disengaging the ice sheets from the freezer plates. The installation of a good water conditioner or filter usually will correct this.

P - BIN THERMOSTAT

Shuts off ice maker when hopper is full. The thermostat is located in the electrical box adjacent to the gate solenoid. The capillary control bulb is routed inside the ice storage hopper along the right side. When the stored ice in the bin reaches a height sufficient to touch the thermostat bulb, the thermostat contacts open and stop the operation of the ice maker. If this occurs during a harvest cycle, operation stops immediately. If it occurs during an icemaking cycle, an override lead connected to Cam Switch No. 1 on the harvest timer will prevent the unit from shutting off until the beginning of the next harvest cycle.

The thermostat can be checked by taking a handful of ice and placing it on the bulb. The machine should shut off in 15 seconds or less. If it doesn't shut off the thermostat is set too cold and should be turned 1/8 turn warmer. Then repeat operation until thermostat is set properly.

Q - DISPENSING GATE SOLENOID ASSEMBLY

The dispensing gate solenoid assembly consists of a dispensing gate slide, and solenoid. The gate slide, when in a "down" position, closes the opening inside of hopper. When in an "up" position, it allows ice to pass through and dispense. The solenoid is the power for raising the gate slide and operates when activated by the dispensing switch located on the front lower panel of the machine.

A failure to dispense ice can be caused by a binding gate slide which can be either bent or have sharp edges on it, an open solenoid coil or a bad rectifier, or a defective dispensing switch.

S - HOPPER AGITATOR MOTOR AND CAPACITOR

The agitator motor is located under the bottom of the hopper, and the capacitor is located in the electrical box, adjacent to the gate solenoid. This motor rotates agitating arms inside the hopper in a counterclockwise rotation looking into hopper. The function of the agitating arms is to move the entire mass of ice. This serves three purposes: 1)to keep the ice from solidifying, 2)to maintain an even level of ice inside hopper, 3)to force ice out of dispensing gate when necessary.

The agitating motor is activated by two methods: 1)when the dispensing switch is depressed, 2)by the agitation timer.

A failure in the agitator motor can also cause a bridging of ice in the evaporator section, a back up of ice in chute, and a solidification of ice in hopper.

T - AGITATION TIMER

The agitation timer is located in the electrical box. Adjacent to the gate solenoid.

The function of this timer is to activate the agitator motor for 2 seconds every 20 minutes, twenty-four hours a day.

A failure of this timer can cause a bridging of ice in evaporator section, a back up of ice in chute, and a solidification of ice in hopper.

U - POWER FAILURE

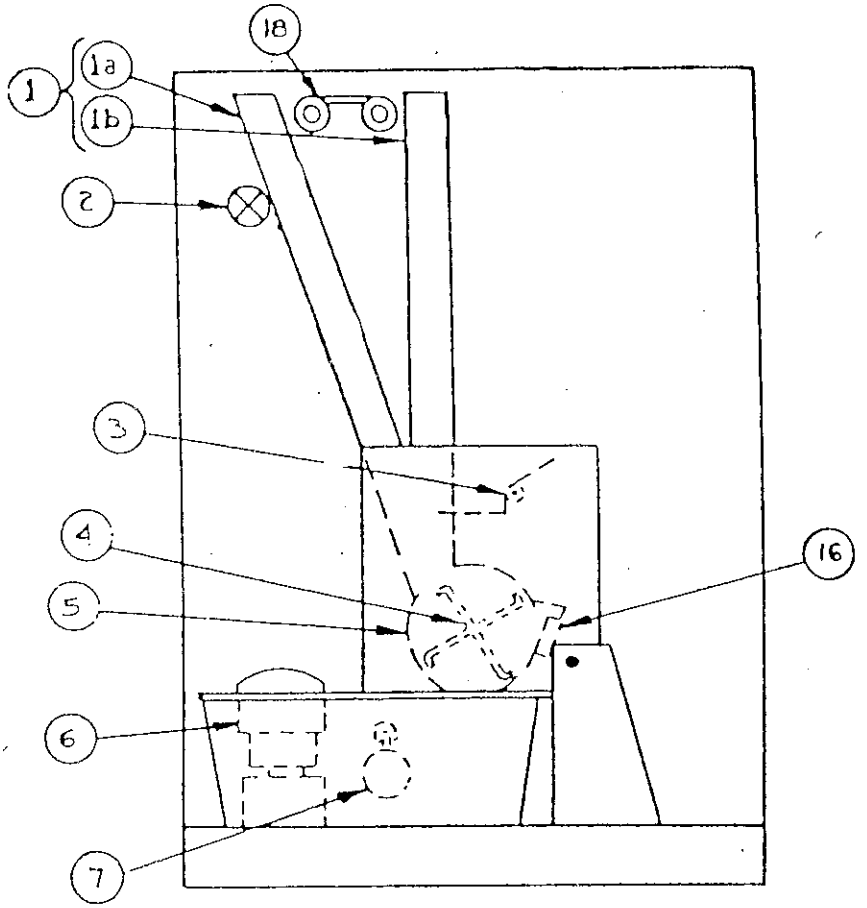
Check for blown fuse or circuit breaker. A power failure can be caused by 1) short circuit in wiring, 2) loose wiring connection, 3) unit improperly wired, check wiring diagram, 4) defective electrical component.

V - ICE MAKER LOCATION

Ambient temperature in the area surrounding the Ice Maker should be above 65°F for proper operation. See Installation Instructions.

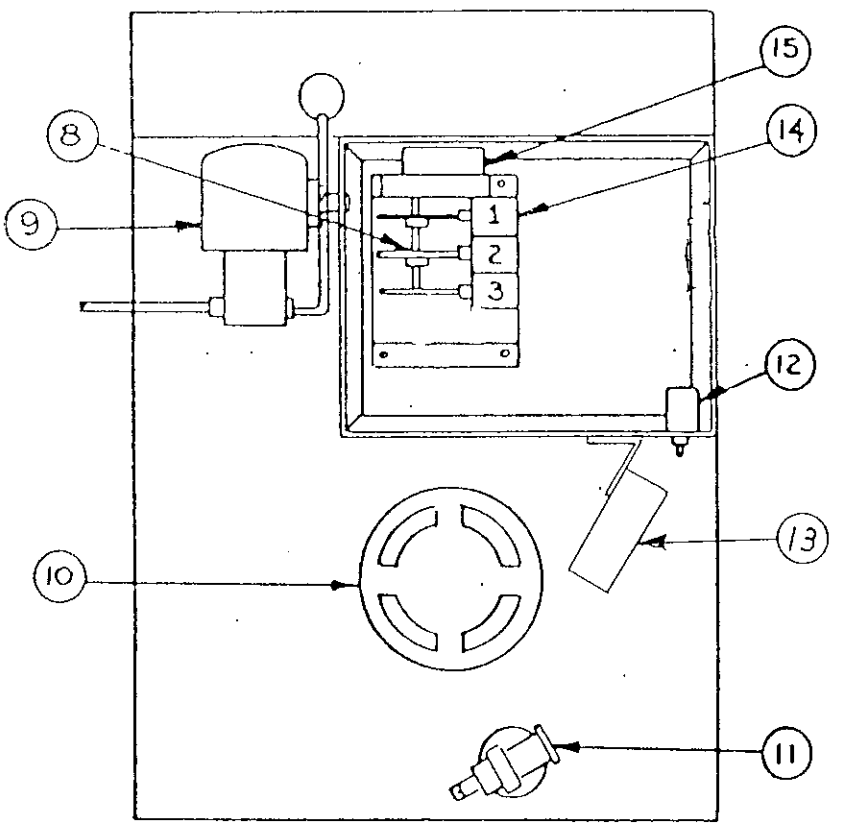
FIG. 4

ICE MAKER COMPONENT PARTS



REAR VIEW

Ice Maker Mechanism



FRONT VIEW

(1) "V" Plate Assembly

(1a) Primary Freezer Plate

(1b) Secondary Freezer Plate

(2) Thermostatic Expansion Valve

(3) Water Diverter

(4) Ice Cracker Blades

(5) Cracker Trough

(6) Water Circulating Pump

(7) Water Float Valve

(8) Timer Cams

(9) Hot Gas Solenoid Valve

(10) Cracker Motor

(11) Water Drain Valve

(12) Clean Switch

(13) Ice Thickness Control

(14) Timer Micro-Switches

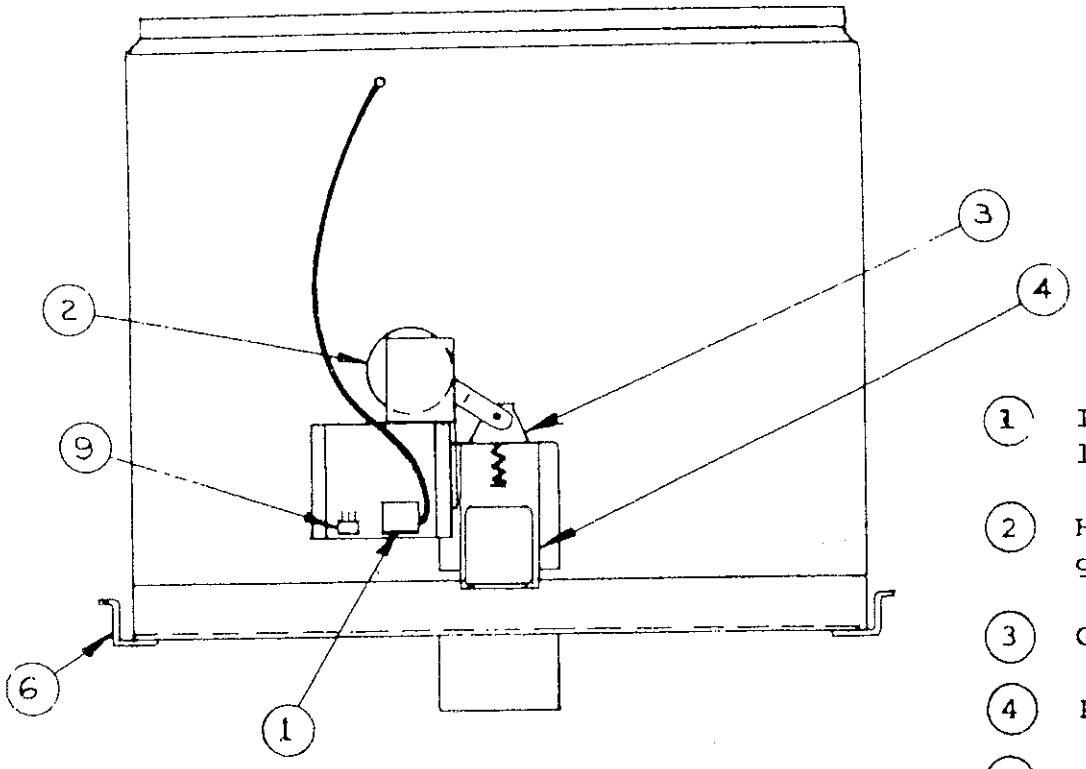
(15) Timer Motor

(16) Ice Sizing Holes

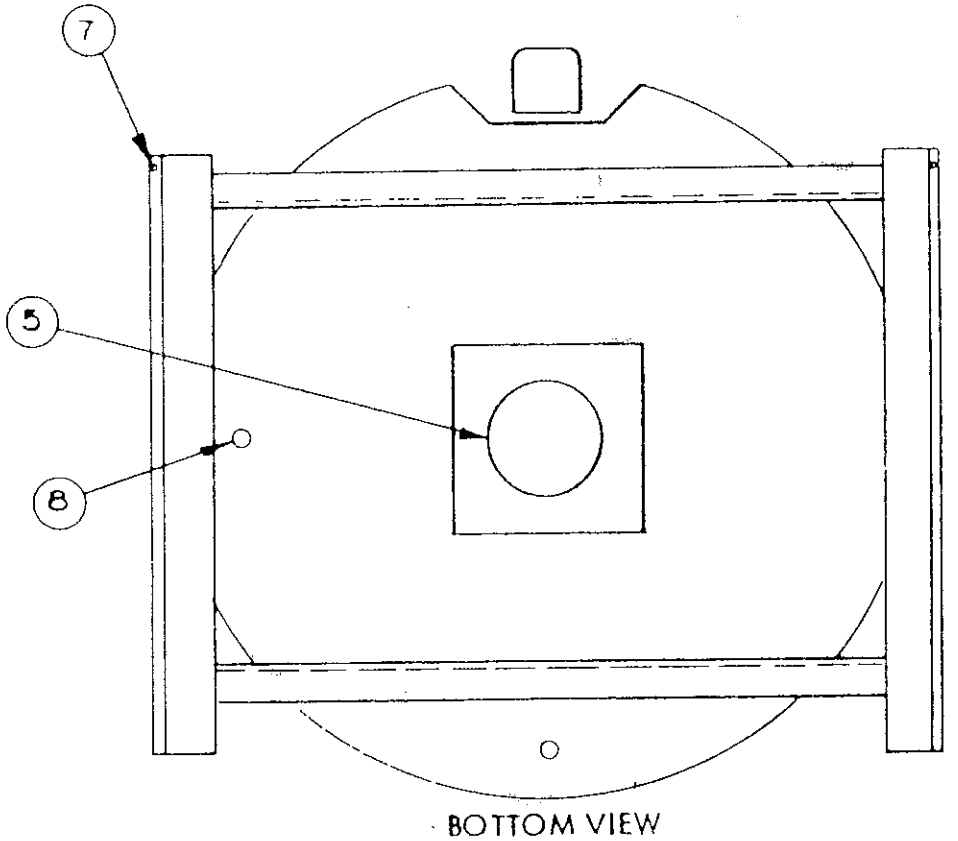
(18) Water Distributor Header

FIG. 5

ICE STORAGE HOPPER
COMPONENT PARTS



FRONT VIEW



BOTTOM VIEW

1. Ice Storage Hopper level thermostat
2. Hopper dispensing gate solenoid
3. Gate Slide
4. Plastic gate spout
5. Agitator Motor
6. Slide rail for removing hopper
7. Hopper slide tie down bolt
8. Hopper drain tube
9. Rectifier

PARTS LIST

DESCRIPTION	PART NO.
Gate Slide	20555
Actuator, Dispense Switch	31570
Agitator	22227
Dispense Switch	30894
Agitator Motor	31112
Motor Shaft Seal	50454
Motor Gasket	50481
Compressor	60473
Plastic Ice Spout	50515
Gate Housing Gasket	50533
"V" Plate Assembly	60591
Thermostatic Expansion Valve	60357
Hot Gas Solenoid Valve	60512
Condenser-Water Cooled	60309
Capacitor-Agitator Motor	30774
Solenoid Assy	31009
Rectifier	30689
Drier	60204
Blower Motor (Water-Cooled Units)	30763
Hi-Pressure Safety Control	60359
Water Regulating Valve	40122
Water Circulating Pump	30484
Water Float Valve	40152
Cracker Motor	31687
Capacitor-Cracker Motor	30765
Water Drain Valve	40101
Clean Switch	30384
Harvest Cycle Timer	31285
Thermostat-Ice Hopper Level	30757
Ice Thickness Control	60437
Agitation Timer	31673
Circuit Breaker	31569