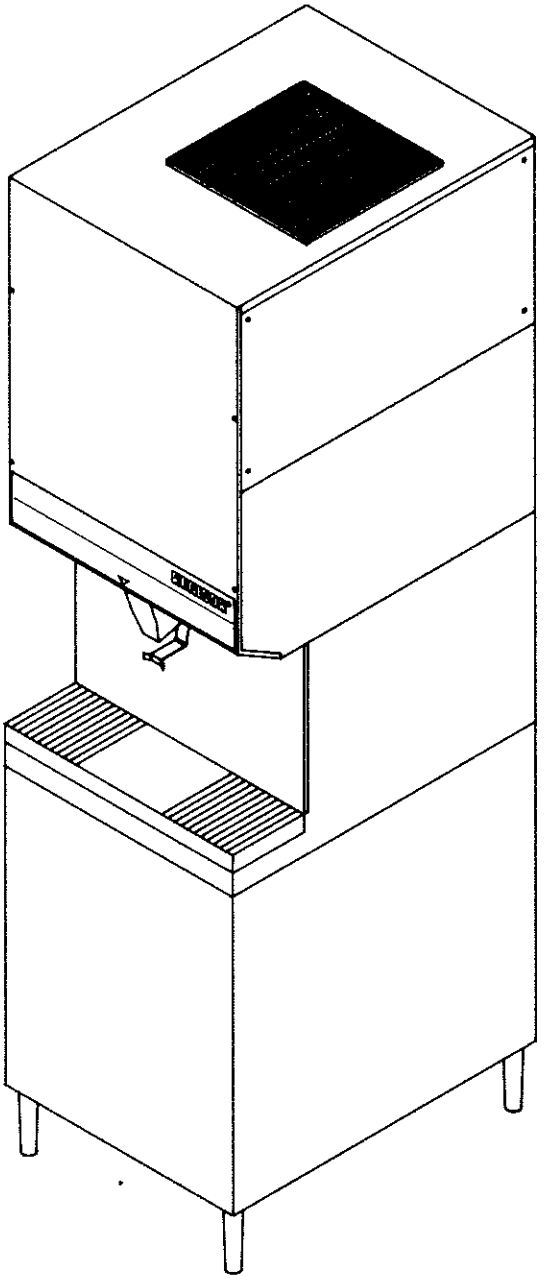
REMCOR®

# SPIRAL ICEMAKER-DISPENSER
# S.I.D.
# OWNER'S MANUAL

MODEL:
SID652A/80S W/1990 STAND



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REMARKS:

CERTIFICATION: "It is hereby certified that DGSC technical manual for icemaker dispenser, 220V, 1PH, 50HZ, 7A, to be provided under contract number DLA400-86-C-3140 has been approved by the approval data shown above."

Dwight Hagberg — Production Planner
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# IDENTIFYING TECHNICAL PUBLICATION SHEET

1. IDENTIFICATION DATA: Defense General Supply Center
   Technical Manual Icemaker, Dispenser
   Model SID652A/80S w/1990 Stand
   220V, 1PH, 50HZ, 7A

2. PURPOSE: This technical publication is issued for the purpose of identifying an authorized commercial manual for Army use and for providing supplemental technical information thereto.

   A. MANUFACTURER: Remcor Products Company, 9145 King Street, Franklin Park, Illinois, 60131
   B. PURCHASE ORDER OR CONTRACT NO: DLA400-86-C-3140
   C. EQUIPMENT: Icemaker-Dispenser, SID652A/80S w/1990 stand, 03019 Serial Nos. 1412-1426
   D. FEDERAL STOCK NUMBER: 4110-01-237-5588
   E. TITLE: Technical Manual: Commercial Equipment

3. ADDITIONAL COPIES: Additional copies are available from DGSC.

4. FILE LOCATION: The above described commercial manual is filed in _____ _____.

*REFER TO ATTACHED APPROVAL AND PROCUREMENT RECORD PAGE (DLA)

# DESCRIPTION

The Remcor S.I.D. (Spiral Icemaker-Dispenser) is a unique, self-contained, countertop style unit which automatically makes hard, clear cube-quality ice and stores it in a sealed hopper for sanitary dispensing. The ice is made by a new, patented process on a spiral-shaped, stainless steel evaporator and produces true cube quality ice on the outside of the tubes. There are no augers, no compressing of flaked-ice, no bearings and no high gear motor loads in the ice making process. The unit has been designed to be simple, yet effective, to provide many years of trouble-free operation.

# SPECIFICATIONS

| | |
|---|---|
| COMPRESSOR: | HP: 3/4 |
| REFRIGERANT: | R-502/2 1/4 lbs. |
| VOLTAGE: | 220/1/50 |
| AMPS: | 7 |
| CIRCUIT AMPACITY: | 10 |
| FUSE SIZE: | 15 A Time-Delay |
| ICE STORAGE CAPACITY: | 80 lbs. |
| ICE MAKING CAPACITY: | 525 lbs/24 hours |
| SHIPPING WEIGHT: | 350 lbs. |

# CONTENTS

# LIST OF ILLUSTRATIONS

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# UNPACKING

1. With the unit upright, carefully remove the shipping crate. Inspect for shipping damage and report any such damage to the shipper immediately.

2. Unlock and open hinged service door on upper left side panel.

3. Remove shipping tape from ice drop cover, storage hopper cover, and agitator in storage hopper.

# IMPORTANT

## INSTALLATION NOTICE

An Everpure Model 9320-42, Systems IV Model B1000, or equal, icemaker quality water treatment unit MUST BE INSTALLED in the water supply line to the icemaker. Failure to do so may result in poor quality ice, low production output, and may cause premature failure of the icemaker evaporator and void the extended evaporator warranty.

This icemaker is provided with a stainless steel evaporator, designed to last the life of the product. But some of the chemicals in treated and untreated water, specifically chlorine and sulfur (sulfide), have the ability to attack stainless steel and cause premature failure. An initial investment in proper water treatment will pay for itself in increased production, quality and long life of the product.

# INSTALLATION

1. LOCATION

Locate the icemaker-dispenser indoors in a well ventilated area. Avoid exposure to direct sunlight and/or heat caused by radiation. Ambient room temperature must be in the range of 60 to 90°F. Do not install unit in an enclosed area where heat build-up could be a problem. For proper airflow for the refrigeration system, allow 6". clearance at the back of the unit and 12" above the top panel.

Consult Fig. 1 for utility connection locations.

2. PLUMBING

Connect the icemaker to a cold, potable water source, suitable for drinking. Do not install unit on a water softener line. It is recommended that a hand shut-off valve and a strainer be used on the incoming supply line. A 1/4 OD compression tube fitting is provided at the back of the unit for the water supply hook-up (see Fig 1). For proper operation the incoming water supply pressure must be in the range of 30-90 PSIG. Install a pressure regulating valve if above this range!

IMPORTANT

To insure proper icemaker operation and also to reduce the frequency of water-related service problems, a water filter should be installed. Remcor recommends the use of one of the following basic systems:

1. Everpure Inc.
   660 N. Blackhawk Drive
   Westmont, Illinois 60559
   312/654-4000

   InsurIce Twin System #9320-42

2. Systems IV
   16632 Burke Lane
   Huntington Beach, California 92647
   714/842-4221

   Basic Water Systems #B1000

For specific recommendations on these filter systems for your water conditions, consult with a distributor in your area or contact the filter manufacturer.

Connect 3/4" IPS (or equal) drain lines to the 3/4" threaded drain connections at the lower rear of the unit. Connect the plastic drain tube, supplied with the unit, to the drain fitting located on the bottom of the sink (see Fig 1). It is recommended that the drain tube be installed in the counter access hole (see Fig 2) prior to locating unit on the counter. These lines must pitch downward to an open drain, and must contain no traps, or improper drainage will result.

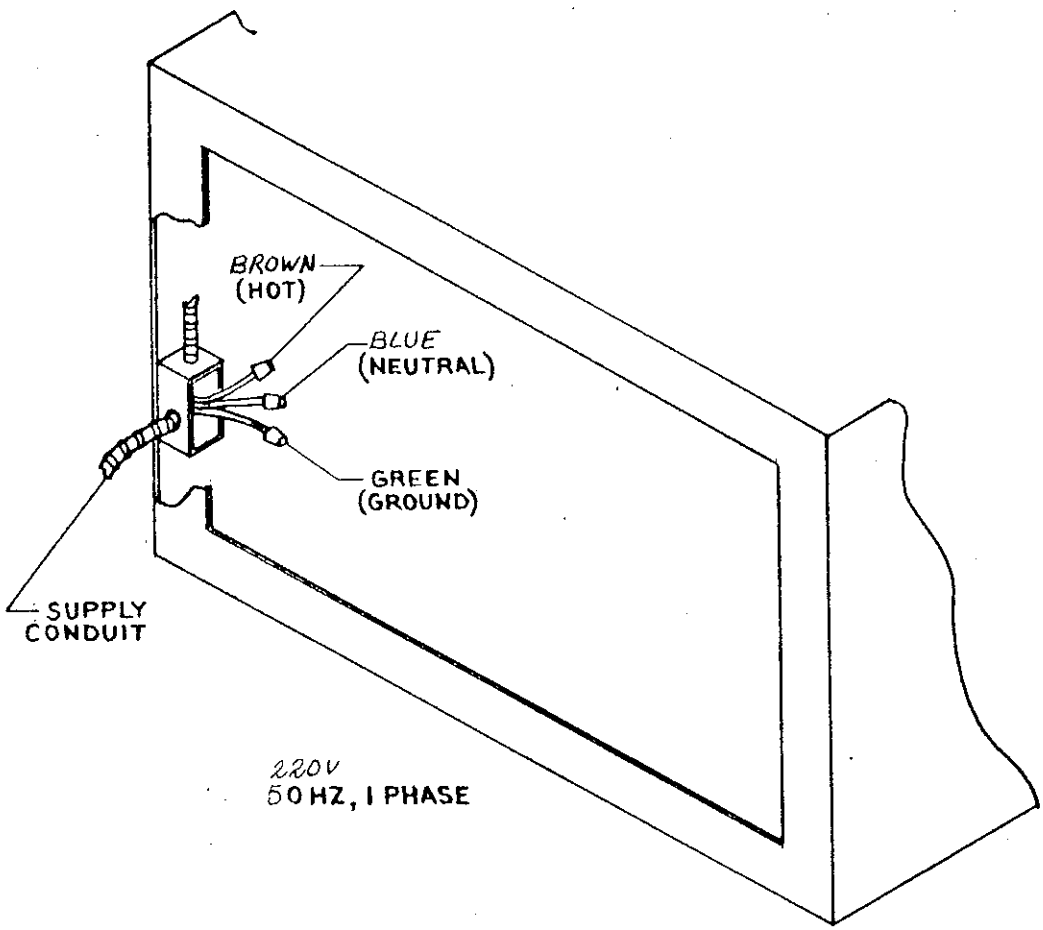
NOTE: In areas where consistantly warm water temperatures are encountered, the use of a Remcor precooler in the water line is recommended to maximize the ice production of this unit. Contact Remcor for more information on this product.

3. ELECTRICAL

A 4 X 2 junction box is located at the rear of the unit for the supply hook-up. Connect the icemaker to its own individual circuit per the national electric code and local code (see specification section for ampacity and fuse size).

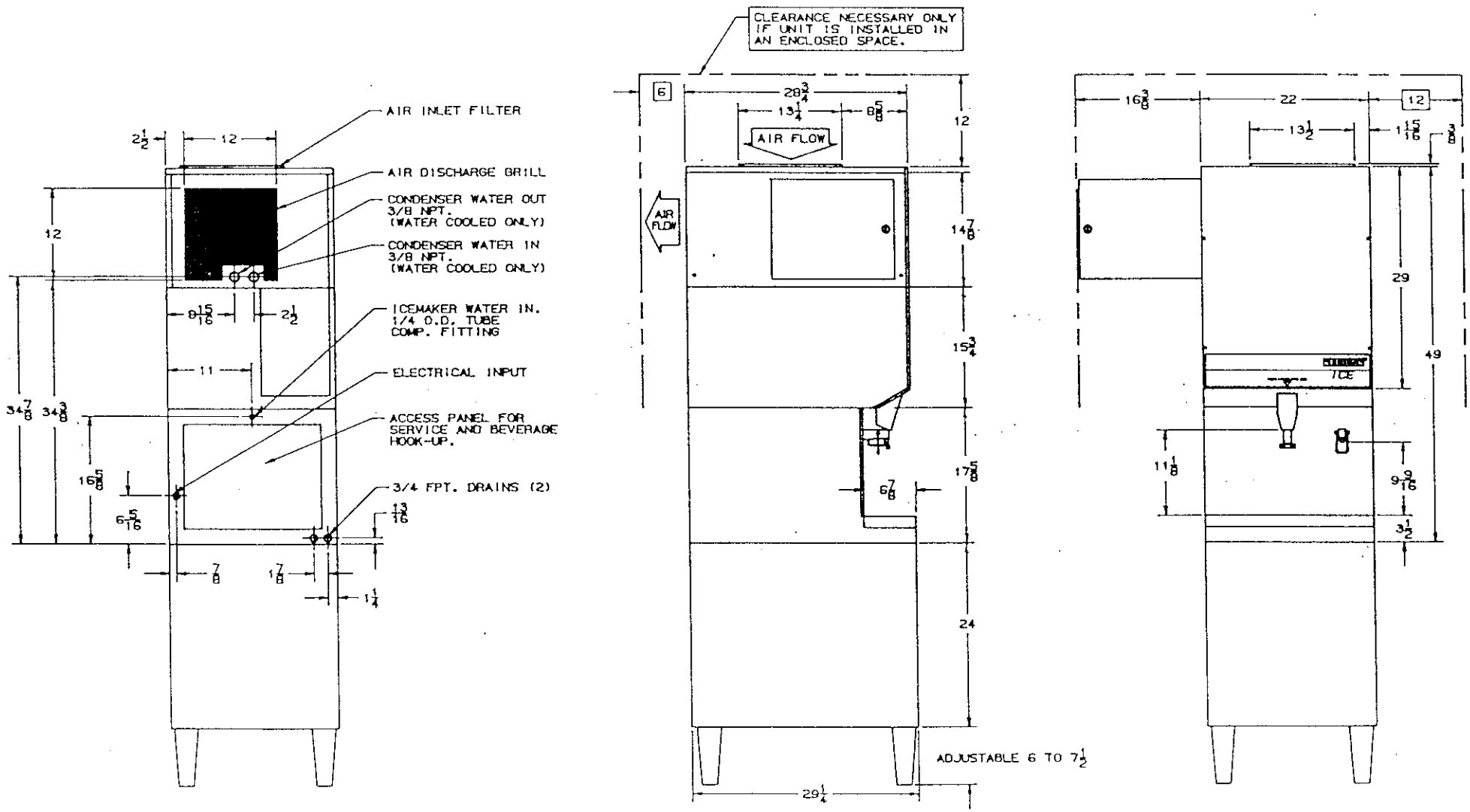
IMPORTANT: The wire size must be adequate for the ampacity rating and the supply voltage must be within a range of ± 10% for proper icemaker operation.

Note that unit requires a 2-wire system plus earth ground for proper operation.




REAR VIEW - BOTTOM SECTION
SERVICE PANEL REMOVED

# FIG. 1
# INSTALLATION DIMENSIONS



# START—UP

1. Open the hinged service door on the upper left side panel. Remove ice drop cover and storage hopper cover.

2. Turn on water to icemaker. Make sure that the proper water level is attained in the float chamber before starting unit.

3. Depress the flush switch for 30 seconds to verify that water dump valve operates and that water drain lines are open and not plugged.

4. Put the (stop/run) switch in the run position. Observe that the ice-maker goes through proper icemaking and harvest cycle. If unit malfunctions, consult trouble shooting section.

   Note: Due to meltage loss because of a warm storage hopper, it will take longer to fill the hopper the first time than when the ice-maker has been operating continuously.

5. Depress the vend switch lever. Check that both the gate solenoid and agitator motor are energized simultaneously to lift the gate slide and rotate the agitator in the storage hopper, respectively. If either component malfunctions, consult the trouble shooting section. Replace the ice drop and hopper covers.

6. The bin thermostat is calibrated at an atmospheric pressure equivalent at 500 feet above sea level. For locations at higher elevations, it may be necessary to readjust these controls. Consult the maintenance/ adjustment procedures section.

# OPERATION

A temperature-sensing control bulb located in the storage hopper starts and stops the icemaking process in response to ice level in the hopper. With this ice-level control "calling" for ice (hopper ice level is low), ice begins to form on the stainless-steel tubing coils in the evaporator section of the icemaker. Ice continues to "grow" on the evaporator coils until it contacts the ice thickness probe (low voltage conductivity sensor). At this point, the conductivity probe triggers the harvest timer motor. The harvest timer contains five cam operated switches which function as detailed in the following table:

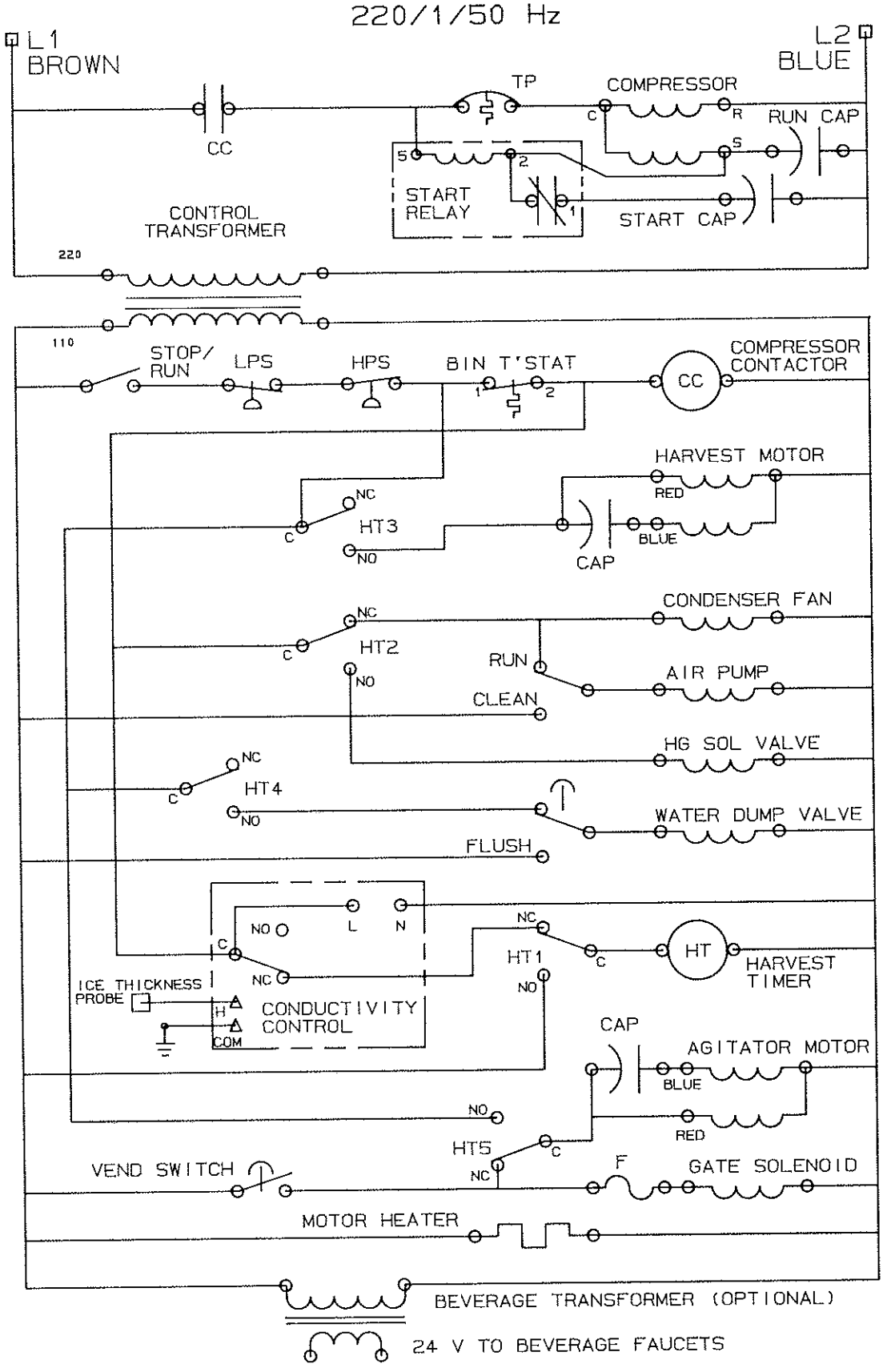
HARVEST CYCLE

| Time (±1 sec) | Cam Switch | Action |
|---|---|---|
| 0-104 sec. | #1 | Timer motor energized |
| 2-11 sec. | #4 | Water dump valve open |
| 2-37 sec. | #2 | Hot gas solenoid valve open<br>Air pump off<br>Condenser fan motor off |
| 37-108 sec. | #2 | Air pump on<br>Condenser fan motor on<br>Hot gas solenoid valve closed |
| 36-66 sec. | #3 | Harvest motor on |
| 44-49 sec.<br>55-66 sec. | #5<br>(double set of cams) | Hopper agitator motor operates |

When ice contacts the ice-level control bulb in the storage hopper, the control will shut down the refrigeration system. If this signal occurs during the harvest cycle, the harvest cycle will be completed before shut-down occurs.

To dispense ice, push the lever located on the lower front panel. Ice will flow from the ice chute until the lever is released.

# FIG. 2


220/1/50 Hz
L1
BROWN
L2
BLUE
CC
TP
COMPRESSOR
RUN CAP
START
RELAY
START CAP
CONTROL
TRANSFORMER
220
110
STOP/
RUN
LPS
HPS
BIN T'STAT
COMPRESSOR
CONTACTOR
HARVEST MOTOR
RED
HT3
BLUE
CAP
CONDENSER FAN
HT2
RUN
AIR PUMP
CLEAN
HG SOL VALVE
HT4
WATER DUMP VALVE
FLUSH
L
N
HT1
HT
HARVEST
TIMER
ICE THICKNESS
PROBE
CONDUCTIVITY
CONTROL
COM
AGITATOR MOTOR
HT5
VEND SWITCH
GATE SOLENOID
MOTOR HEATER
BEVERAGE TRANSFORMER (OPTIONAL)
24 V TO BEVERAGE FAUCETS

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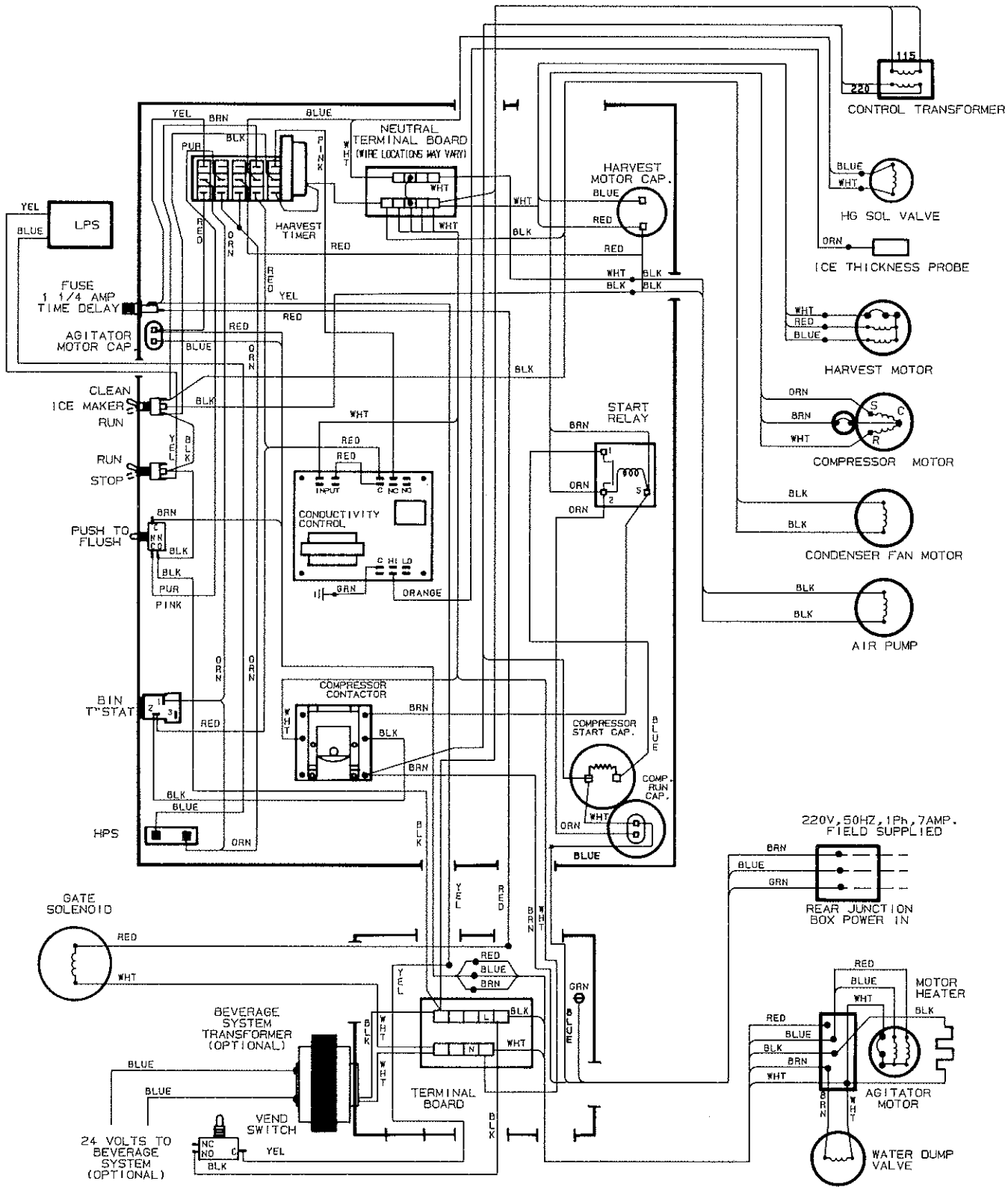
# FIG. 3
# WIRING DIAGRAM



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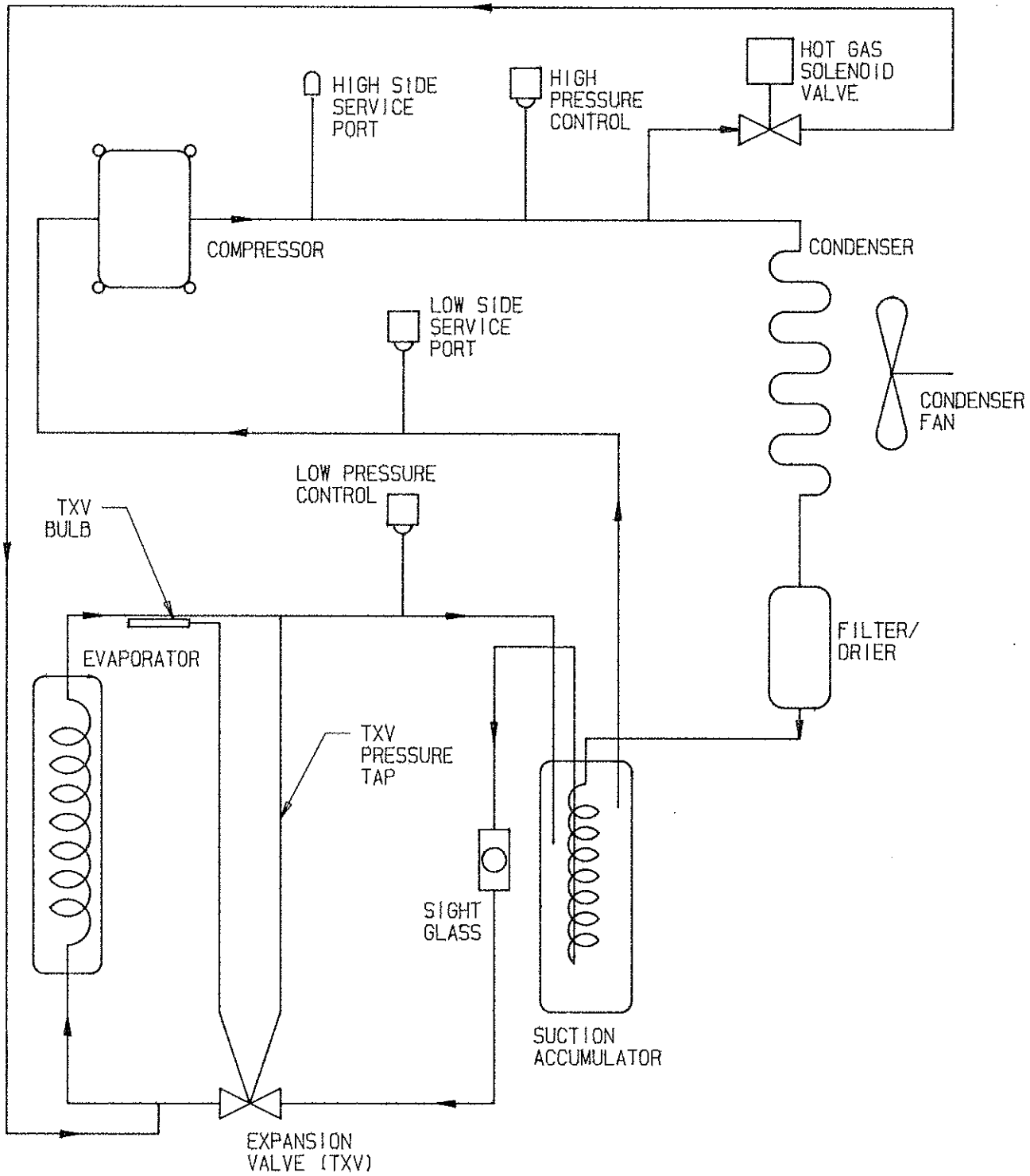
# FIG. 4

# REFRIGERATION SCHEMATIC



# MAINTENANCE

It is recommended that the air inlet filter be cleaned every 3 months or sooner depending on the operating environment for proper refrigeration system performance. On air-cooled units, also check that the condenser is free of dirt/foreign material that could cause air flow blockage. Consult the maintenance/adjustment procedures for cleaning these items.

Cleaning of the icemaker is recommended on a regular basis not only for sanitary reasons but also to maintain the performance of the unit. Build-up of lime and scale can hinder icemaking production rates and interfere with proper dispensing of the ice. See the cleaning section for the recommended procedure.

Periodically, check the vending area sink for proper water drainage. Remove any foreign material from the sink to prevent drain blockage.

Check water filter system at regular intervals for build-up of deposits on the filter elements. Consult system manual for servicing procedure.

# CLEANING INSTRUCTIONS

IMPORTANT: The icemaker should be cleaned at a minimum of 3 month intervals or more frequently depending on local water conditions. The storage hopper interior should be cleaned at least once a month.

WARNING: Do not use metal scrapers, sharp objects or abrasives on the surface of the storage hopper, as damage may result. Do not use solvents or other cleaning agents as they may attack the plastic surface. Use only the recommended chemicals and solutions for both the icemaker and hopper.

ICEMAKER SECTION

1. Open the hinged service door on the upper left side panel.

2. Put the (stop/run) switch in the "stop" position at the end of the harvest cycle. An alternate method would be to stop the unit during the icemaking cycle and allow ice in the evaporator to melt by waiting for at least 1 hour before beginning the cleaning procedure. The flush switch can be depressed to bring in warmer water to help the melting process.

   WARNING: Electrical power is on to unit during icemaker-section cleaning. To avoid possible injury, do not reach into hopper or into icemaker nozzle. Do not contact exposed electrical wiring and components.

3. Close the water supply valve to the icemaker.

4. Remove the ice drop cover from evaporator and the storage hopper cover.

5. Seal the evaporator outlet with the plastic plug provided with the unit and replace the ice drop cover.

6. Move the water float valve reservoir to the "clean" position by lifting slightly and pulling forward to raise the reservoir to the upper mounting screws.

7. Remove the float valve cover and add 4 oz. of Virginia Ice Machine Cleaner to the reservoir.

   CAUTION: Virginia Ice Machine Cleaner is a mild acid. Normal care should be taken - Keep out of eyes and cuts. Read warnings on package before using. Do not operate unit in the cleaning mode without the ice drop cover in place. There may be some overflow of cleaning solution through the evaporator vent tube during the cleaning cycle.

8. Open the water supply valve and fill evaporator with water (level is up in float reservoir).

9. Put the (clean/run) switch in the "clean" position. Allow unit to run in the cleaning mode for at least 30 minutes.

10. Put the (clean/run) switch in the "run" position.

11. Close the water supply valve.

12. Depress the flush switch pushbutton and drain evaporator for about 1 1/2 minutes. Release pushbutton. Open the water supply valve. Allow evaporator to refill with water. Repeat steps 11 and 12 three times to thoroughly remove cleaning solution from evaporator.

13. Close water supply valve. Depress the flush switch pushbutton for about 1 1/2 minutes to drain the evaporator.

14. Lower float valve reservor to "run" position. Remove the evaporator plug.

15. Open the water supply valve and fill the evaporator with water.

16. Put the (stop/run) switch in the "run" position and allow unit to run through at least 3 complete icemaking and harvest cycles, and until ice is free of "sweet" taste.

| | |
|---|---|
| WARNING: | If unit fails to harvest ice, put the (stop/run) switch in the "stop" position. Close the water supply valve. Depress the flush switch pushbutton for 1 1/2 minutes to drain the evaporator. Flush the evaporator with hot water to thoroughly melt all the ice in the evaporator. Repeat step 12 to remove all traces of the cleaning solution from the evaporator. |

17. Dispense all ice out of storage hopper and discard.

DISPENSER SECTION

18. Turn off main electrical power supply to machine.

19. Remove agitator assembly from storage hopper and wash and rinse it thoroughly.

20. Wash down all inside surfaces of the ice storage area including the top cover and ice drop cover with a mild detergent solution, and rinse thoroughly to remove all traces of detergent.

21. Replace agitator.

22. With brush provided, clean the inside of the ice chute with a mild detergent solution and rinse thoroughly to remove all traces of detergent.

23. Sanitize the inside of the hopper, agitator, the ice chute, and the hopper and ice drop covers with a solution of 1 oz. of household bleach in 1 gallon of water.

24. Replace the hopper cover and ice drop cover. Turn on the electrical power supply. The icemaker is ready for normal operation.

# TROUBLE SHOOTING PROCEDURE

The following pages contain information to aid an experienced serviceman in diagnosing possible problems which may occur. The trouble shooting guide is divided into the following 8 main areas:

A. Sections I - VII, icemaking problems

B. Section VIII, ice dispensing problems

In using this guide, refer to both the Service Procedure portion of the manual and the appropriate assembly illustration/parts list when the specific remedy involves either checking and/or replacing a component. Note that the service procedures assume a working knowledge of refrigeration systems and electro-mechanical devices.

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| I. Unit totally inoperative. | 1. No electrical power at rear junction box. | 1A. Check for loose connection or broken wire in supply wiring to unit. |
| | | 1B. Check for loose connection or broken wire inside unit. |
| | 2. Supply fuse blown or circuit breaker tripped. | 2A. Wrong device size. Replace with correct size (15A time-delay). |
| | | 2B. Short or grounded circuit. Check internal wiring/components for shorts. Repair and/or replace defective components. |
| | 3. Line voltage too high. (Greater than 10% of nameplate voltage.) | 3. Install bucking transformer to reduce line voltage. |
| | 4. Line voltage too low. (Less than 10% of nameplate voltage) | 4A. Check for loose or corroded connection in supply wiring. |
| | | 4B. Check supply wiring for undersized wire. Replace if necessary. |
| | | 4C. Check that unit is on its own circuit. Remove all other equipment from icemaker circuit. |
| | | 4D. Install boosting transformer to raise line voltage. |
| II. Icemaker is not operating. | 1. Hopper is full of ice. | 1. Normal operation. Unit is shut-off on bin thermostat. |
| | 2. Run/stop switch is in "stop" position. | 2. Put switch in "run" position. |
| | 3. Hopper is not filled but bin thermostat is open. | 3. Check thermostat adjustment. Replace bin thermostat if required. |

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| | 4. High pressure switch is open. (hopper is not full) | 4A. Check for restricted air flow at top or rear of unit. |
| | | 4B. Check for hot air recirculating to top inlet. Eliminate by baffling. |
| | | 4C. Check for dirty inlet air filter. |
| | | 4D. Check for dirty air cooled condenser. |
| | | 4E. Check condenser fan motor. |
| | 5. Low pressure switch is open and there is a proper water level in the evaporator. (hopper is not full) | 5A. Check for refrigerant under-charge. |
| | | 5B. Check TXV valve. |
| | 6. Low pressure switch is open and there is no water/low water level in the evaporator. (hopper is not full) | 6A. Check that water supply is open. |
| | | 6B. Check water supply filter. |
| | | 6C. Check for plugged water fill valve. |
| | | 6D. Check adjustment of timer cam #4. (water dump) |
| | | 6E. Check timer switch #4. |
| | | 6F. Check if water dump valve is stuck open. |
| III. Icemaker is operating but not producing ice. | 1. Compressor is not running. | 1. Check that line voltage is with ± 10% of nameplate voltage. Check voltage problems in I3 and I4. |
| | 2. Compressor overload is open. | 2. Check that compressor body is cold. Replace compressor overload. |
| | 3. Compressor contactor is not "pulled in." | 3A. Check that 110V is present at contactor coil. Replace contactor. |
| | | 3B. If 110V is not measured at coil, check for loose or broken wiring connection in control circuit. |

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| | 4. Compressor contactor "pulled-in" but compressor is not running. | 4A. Check for loose or broken wiring connection in compressor power circuit. |
| | | 4B. Check contactor. |
| | | 4C. Check starting relay. |
| | | 4D. Check capacitor(s). |
| | | 4E. Check compressor motor. |
| IV. Icemaker (compressor) is operating but not producing ice. There is no ice on the evaporator. | 1. Evaporator is not cold (hot gas solenoid valve not energized). | 1A. Check for refrigerant under-charge. |
| | | 1B. Check hot gas solenoid valve for leaking seat. |
| | 2. Evaporator is not cold. (hot gas solenoid valve is energized) | 2A. If harvest timer is in the "home" position:<br>1. Check adjustment of timer cam #2. (hot gas)<br>2. Check timer switch #2. |
| | | 2B. If harvest timer is not in the "home" position:<br>1. Check adjustment of timer cam #1. (timer home)<br>2. Check timer switch #1.<br>3. Check timer motor. |
| | 3. Evaporator is cold. (harvest timer is running) | 3A. If conductivity control is energized, check timer switch #1. |
| | | 3B. If conductivity control is not energized:<br>1. Check for open probe wiring.<br>2. Check conductivity control. |
| | 4. Evaporator is cold. (harvest timer is <u>not</u> running) | 4A. If water level in evaporator is normal, check refrigeration system. |
| | | 4B. If water level is low, check water problems in II6. |

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| V. Icemaker (compressor) is operating but not producing ice. There is ice on the evaporator. | 1. Frozen evaporator. | 1. Shut-off icemaker and thaw evaporator. Start icemaker and perform the following trouble shooting procedure:<br>A. Check that ambient is not lower than 60°F.<br>B. Check that voltage is within ± 10% of nameplate rating.<br>C. Check that harvest timer goes through the following proper operation by disconnecting probe wire from conductivity control:<br>1. Timer motor starts. If <u>not</u>, check timer motor and conductivity control.<br>2. Hot gas solenoid valve opens and closes in proper sequence (see harvest cycle chart in "operation" section). If <u>not</u>,<br>a. Check adjustment of timer cam #2 (hot gas).<br>b. Check timer switch #2.<br>c. Check hot gas solenoid valve.<br>3. Water dump valve opens and closes in proper sequence. If <u>not</u>,<br>a. Check adjustment of timer cam #4 (water dump).<br>b. Check timer switch #4.<br>c. Check dump solenoid.<br>4. Harvest motor starts and stops in proper sequence. If <u>not</u>,<br>a. Check adjustment of timer cam #3. (harvest motor)<br>b. Check timer switch #3.<br>c. Check harvest motor capacitor. |

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| | | d. Check harvest motor.<br>D. Replace probe wire on conductivity control during harvest cycle.<br>1. If timer does not return to the "home" position:<br>a. Check adjustment of timer cam #1. (timer home)<br>b. Check timer switch #1.<br>2. If timer returns to the "home" position, wait one full freezing (about 6-10 min) cycle. Observe that the harvest cycle is initiated and that the ice is harvested normally, If not, repeat the check of the harvest cycle sequence of events. |
| VI. Icemaker (compressor) is operating but ice production is low. | 1. Low water level in evaporator. | 1. Check water problems in II6. |
| | 2. High supply water temperature. | 2. Normal effect. Install Remcor pre-cooler to increase capacity. |
| | 3. High ambient temperature | 3. Normal effect. Check airflow problems in II4. Arrange for lower ambient air temperature if possible. |
| | 4. Ice thickness is too thin. | 4A. Check problems in IV.<br>4B. Check refrigeration system. |
| VII. Icemaker (compressor) is operating but ice quality is poor. (soft and/or cloudy ice) | 1. Air pump not operat- operating properly. | 1. Replace air pump. |
| | 2. Water dump valve time too short. | 2. Check adjustment of harvest timer cam #4. |
| | 3. Water dump valve not operating properly. | 3. Replace dump valve. |
| | 4. Clogged water filter. | 4A. Replace filter element.<br>4B. Install additional water treatment devices for specific "problem" water. |

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| VIII. Unit does not dispense ice. Icemaker is functioning properly. | 1. Gate slide not opening. | 1A. If voltage at gate solenoid is in the range of 103-126 V:<br>1. Check for burned out solenoid.<br>2. Check for stuck or binding gate mechanism. |
| | | 1B. If gate solenoid voltage is not 103-126 V:<br>1. Check for blown solenoid fuse in electric box. If fuse is blown, check for stuck gate mechanism, burned out solenoid, or low voltage.<br>2. Check vend switch.<br>3. Check for loose or broken wire connection in solenoid circuit.<br>4. Check voltage problems in I. |
| | 2. Agitator in ice storage hopper not rotating. | 2A. Check motor capacitor.<br>2B. Check timer switch #5.<br>2C. Check agitator motor. |
| | 3. Ice level in storage hopper too high. | 3A. Check bin thermostat adjustment.<br>3B. Replace bin thermostat. |
| | 4. Ice is "slushy." | 4A. Check hopper drains.<br>4B. Check level of unit.<br>4C. Check for water overflow from evaporator. See II6.<br>4D. Check adjustment of timer cam #5. (agitation time)<br>4E. Check timer switch #5. |

# SERVICE PROCEDURE

## HIGH PRESSURE CONTROL

The high pressure control is factory set at 400 PSIG. To check the setting, install a refrigeration discharge pressure gauge on the service port located adjacent to the electrical control box. Open the hinged service door on the upper left side cabinet panel or remove the upper front panel to access this service port. Disconnect electrical power to the unit and the condenser fan motor leads in the control box. Run the icemaker to determine the control cut-out point. Adjust if necessary. The adjustment screw is located to the left of the reset lever. This control is manual reset type; the reset lever is located on the lower left side of the control box. Push in to reset. If the icemaker will not run after the control has been reset, replace the control.

## BIN THERMOSTAT

1. The bin thermostat is located in the electrical control box on the lower left side.

2. To adjust the thermostat, open the hinged service panel on the upper left side cabinet panel. The adjustment screw is located below the flush switch on the control box. The factory settings is 35°F cut-out/ 41°F cut-in. Check that the adjustment screw is turned clockwise to the stop position (CCW adjustment will raise the cut-out/cut-in temperatures).

> WARNING: Electrical power is on for the service procedure in item 3. Avoid contact with uninsulated parts in the control box.

3. The thermostat sensing bulb is located in the ice storage hopper on the upper left side wall. Remove the ice drop and hopper covers. With the adjustment screw in the full cold position and no ice contacting the sensing bulb, check that the thermostat is closed (terminals 1 & 2). With ice contacting the T'stat bulb, terminals 1 & 2 should be open. To perform this check, remove the upper front panel and control box cover. Use a voltmeter connected between T'stat #2 and neutral to determine the correct operation.

4. To replace a defective thermostat, disconnect electrical power to the unit. Remove the left side and top panels. Remove the sensing bulb from the storage hopper (2 thumbscrews). Remove the T'stat from the control box (2 screws) by disconnecting the two electrical leads. Install the new control, being careful not to kink the capillary tubing (sensing bulb) when routing it from the control box to the storage hopper.

## CONDENSER

The condenser should only have to be replaced if it has been physically damaged to the point that repair is not practical. Use a fin comb to straighten bent/pushed-in areas. If replacement is necessary, the following equipment is required: vacuum pump, refrigeration manifold with gauges, brazing equipment, and various hand tools. The replacement procedure is:

1. Disconnect electrical power to the unit.
2. Remove the upper front panel and top or right side cabinet panel.
3. Release refrigerant charge from system.
4. Remove screws (2) from hot gas solenoid valve bracket that is secured to the condenser shroud.
5. Unbraze the refrigerant line connections.
6. Remove the screws (4) that secure the condenser to the condensing unit base.
7. Remove the condenser and then remove the shroud.
8. Replace the shroud on the new condenser and repeat the above steps in reverse order to install the new condenser.
9. It is recommended that the filter-drier also be replaced at this point.
10. Evacuate and charge the system to nameplate specifications.
11. Run the icemaker and check that suction/discharge pressures are in the range of 30-60 PSIG/230-330 PSIG respectively. Also check that the sight glass remains "locked" (no bubbles) during this checkout run.

## CLEANING/REPLACING THE INLET AIR FILTER

1. Remove the filter from the top cabinet panel by removing the mounting screw and sliding it forward toward the front of the unit.
2. Wash the filter in a solution of warm water and a mild detergent. Do not use caustic detergents as they may attack the aluminum filter elements.
3. Dry filter thoroughly.
4. For maximum effectiveness, reactivate the filter with an air filter coating (see the parts section under miscellaneous components).

## CLEANING THE CONDENSER

1. Disconnect power to the unit.

2. Remove the upper front and right side panels.

3. Remove all dirt/foreign matter build-up from the condenser fins (fan side). Be carefull not to damage the fins. It is recommended that a power vacuum cleaner with a "crevice" tool attachment be used.

## CONDENSER FAN MOTOR

| WARNING: Electrical power is on to the unit for the following procedure. |
|---|

1. To check for a defective fan motor, remove the upper front panel, top or upper right side cabinet panel, and the electrical control box cover.

2. Put the stop/run switch in the "stop" position. Verify that the fan blade is free to turn.

3. Put the stop/run switch in the "run" position. Refer to the wiring diagram for the following check (a voltmeter is required):

   A. Verify that the high pressure safety control (HPS) is closed and unit is "calling" for ice (no ice on the bin T'stat sensing bulb in hopper).
   B. Check for voltage between neutral and:
      1. HT2-C (common terminal of cam switch #2 of the harvest timer)
      2. HT2-NC
      3. "Run" position of the clean/run switch.
   C. If voltage is shown at the 3 locations in step 3B and motor wiring connections are secure, then the fan motor is defective.

4. To replace the fan motor, disconnect the electrical power to the unit. Disconnect the electrical leads in the control box. Remove the (4) mounting screws securing the fan motor bracket to the condensing unit assembly base. Remove the complete motor/bracket/fan blade assembly from the unit for ease of motor replacement.

## REFRIGERANT UNDER-CHARGE

1. The sight glass and refrigeration system service parts are located on the partition wall adjacent to the electrical control box. Access to this area can be done either through the hinged service door on the left side or by removal of the upper front panel.

2. While the icemaking is running, observe the sight glass for a "locked" condition (no bubbles). If bubbles are present, leak check and charge system until sight glass is locked.

3. Observe that sight glass remains locked after a restart.

EXPANSION VALVE (TXV)

1. To check the TXV, hook-up a refrigeration suction pressure gauge to the appropriate access port (see item 1 of Refrigerant Under-Charge).

2. While the icemaker is running, observe the gauge pressure. The nominal suction pressure range during the icemaking cycle is 30-60 PSIG. The low pressure safety control (LPS) "trips" at 18 PSIG. The TXV is operating properly if the suction pressure drops no lower than 24 PSIG.

3. If the suction pressure is within 6 PSIG of the LPS trip point and there are no bubbles in the sight glass, replace the TXV. If bubbles are observed, recharge the system and then recheck the TXV.

TXV

4. To replace the TXV, the following items are required: vacuum pump, refrigeration manifold with gauges, charging cylinder, and various hand tools (wrenches, screwdrivers, etc). The procedure is as follows:

   A. Disconnect electrical power from the unit.
   B. Release refrigerant charge from system.
   C. Remove insulation from TXV and sensing bulb.
   D. Disconnect TXV from system (3 flare nut connections) and remove bulb from clamps on suction line.
   E. Install replacement valve being careful to completely insulate TXV and bulb/suction line area.
   F. Evacuate and recharge the system to nameplate specifications.

5. Observe that the unit functions normally in both the icemaking and harvest cycles; specifically that suction and discharge pressures are in the range of 30-60 PSIG and 230-330 PSIG and also that the sight glass remains locked.

CONDUCTIVITY CONTROL

This control contains an electronic circuit for sensing the ice thickness on the evaporator coils and initiating the harvest cycle timer at the proper thickness. The ice thickness probe consists of a metal sensor (machine screw) with an attached electrical terminal in a threaded plastic housing. This probe assembly is located on the side of the evaporator housing near the bottom.

The control operates off of 120 Volts that is fed from the control transformer (see the wiring schematic). There is a relay on the control's printed-circuit board; the normally closed (NC) contacts of the relay provided power to the harvest timer motor through cam switch #1 of the timer. The ice thickness probe is supplied low voltage through a transformer on the PC board. During the icemaking portion of the cycle, there is a conductive circuit through the water in the evaporator to ground (evaporator coil).

The function of the control is to monitor the micro-amp current in this circuit. When the amperage reaches a pre-set low value (170 micro-amps), the control opens the circuit to the PC board relay coil and the relay contacts transfer to the NC position energizing the harvest timer. This event occurs as ice "grows" on the evaporator coil and comes in contact with the face of the ice thickness probe. the ice thickness is therefore a direct function of the distance from the evaporator coil to the tip of the probe.

The control can fail in either of two ways:

| SYMPTOM | CAUSE |
|---|---|
| 1. Icemaker is in a continuous harvest cycle. | 1A. Probe circuit is open.<br>1B. Tip of probe is corroded.<br>1C. Ice is stuck between evaporator coil and probe.<br>1D. Defective control/relay.<br>1E. Water is non-conductive; i.e., distilled water or there is a reverse osmosis filter in system. |
| 2. Icemaker fails to harvest. | 2A. Probe circuit is grounded.<br>2B. Probe is not properly located into evaporator housing (not "screwed-in" far enough).<br>2C. No electrical power to conductivity board.<br>2D. Defective control/relay. |

The following procedure is to check for proper operation of the control:

> WARNING: Electrical power is on to the unit. Avoid contact with uninsulated parts in the control box.

1. Remove the upper front panel and control box cover.

2. Using a voltmeter, check for voltage between the NC terminal of the control board relay and ground under the following condition:

   A. With icemaker running, disconnect the probe wire ("high" terminal on the PC board). Voltage should be measured and harvest timer activated.
   B. If no voltage, then check for voltage at the relay "C" terminal. If voltage is present, then relay and/or control is defective.

To replace the conductivity control:

1. Disconnect the electrical power to the unit.

2. Remove the (4) electrical wires at the control terminals.

3. Remove the screws securing the control to the electric box and remove the control.

COMPRESSOR

The compressor can exhibit basically two types of malfunctions. It will run but the refrigeration system produces little or no ice. In this case, check the suction and discharge pressures. A high suction pressure (greater than the normal range of 30-60 PSIG) and low discharge pressure (less than the normal range of 230-330 PSIG) indicates an internal valve problem and loss of compression. The second type of failure is characterized by the fact that the compressor will not run but there is voltage at the terminals. The cause is a defective motor (check for open or grounded windings).

In the case where the compressor is not operating, the electrical system can be checked as follows (a VOM type instrument is required):

1. Remove the upper front panel and the control box cover.

2. Put the stop/run switch in the "run" position.

3. Verify that there is voltage at the compressor contactor coil and also that the contactor has "pulled-in" (voltage between contacts and neutral). If there is no voltage in either case, refer to the appropriate trouble shooting/service procedure section before proceeding.

4. Disconnect electrical power to the unit.

5. Disconnect the following wires so that continuity can be checked on the compressor electrical components: (consult wiring diagram)

   A. Start relay #5 to thermal protector #1 (brown)
   B. Start relay #5 to compressor contactor (brown)
   C. Start relay #2 to run capacitor (orange)
   D. Start relay #2 to compressor #5 (orange)
   E. Start relay #1 to start capacitor (blue)
   F. White wire to compressor #R
   G. White wire to run capacitor

6. Check continuity across the following:

   A. Start relay terminals 5 & 2 - no continuity - replace relay (open relay coil).
   B. Start relay terminals 2 & 1 - no continuity - replace relay (open contacts).
   C. Compressor C & S - no continuity - replace compressor (open start winding).
   D. Compressor C & R - no continuity - replace compressor (open run winding).
   E. Run capacitor terminals.
      (1) VOM on RX1 scale - continuity - replace capacitor (shorted)
      (2) VOM on RX100,000 scale - no continuity - replace capacitor (open)
   F. Start capacitor terminals - procedure same as 6E.
   G. Over load (TP) 1 & 3 - no continuity - replace TP (open).
   H. Compressor C & Shell - continuity - replace compressor (grounded motor).
   I. Check the continuity of the wires removed and reconnect to the proper terminals.

J. If all of the above tests prove satisfactory and compressor still fails to operate properly, change the start relay as the new relay will eliminate any faulty electrical characteristics, such as improper pick-up or drop-out, which cannot be determined by the above tests. If the new relay fails to correct the difficulty, the compressor shall be considered to be inoperative because of internal defects and must be replaced.

To replace the compressor, the following items are needed: vacuum pump, refrigeration manifold with gauges, charging cylinder, brazing equipment, and various hand tools. the procedure is as follows:

1. Disconnect electrical power to the unit and remove wires from the compressor terminals.

2. Release refrigerant charge from system.

3. Unbraze discharge and suction lines.

4. Remove mounting bolts (4) and hardware from old compressor.

5. Install new compressor following the above steps in reverse order.

6. Evacuate and recharge system to nameplate specifications.

7. Run icemaker and perform the following items:

   A. Check that suction/discharge pressures are in the normal operating ranges.
   B. Check for locked sight glass (no bubbles).
   C. Check ice production capacity (see ice thickness adjustment section for procedure).

## HOT GAS SOLENOID VALVE (HGV)

There are three situations to monitor for determining the proper functioning of the HGV. Install suction and discharge pressure gauges on the access ports located on the partition wall adjacent to the electrical control box. Either opening the hinged service door on the left side cabinet panel or removing the upper front panel will be required for this procedure. First, observe the suction/discharge pressures during the icemaking cycle. A high suction pressure (greater than 30-60 PSIG) range and a low discharge pressure (less than 230-330 PSIG) range indicate a leaking valve seat problem and the HGV must be replaced. Secondly, observe the suction pressure during the hot gas portion of the harvest cycle. The minimum suction pressure valve is 70 PSIG; pressures less than this indicate the HGV is not operating properly and must be replaced. The third situation to analyze is the valve coil. During the hot gas portion of the harvest cycle, check for voltage between HT2-N 0 terminal (see harvest timer adjustment procedure and illustration and the wiring diagram) and neutral. If there is voltage but an audible "click" is not heard at the valve, replace the HGV (defective coil - valve not opening). The minimum section pressure would also not be attained in this third case.

To replace the HGV, the following equipment is needed: vacuum pump, refrigeration manifold with gauges, charging cylinder, brazing equipment, and various hand tools. The replacement procedure is:

1. Disconnect electrical power to the unit and the leads to the valve.

2. Release the refrigerant charge from the system.

3. Unbraze the line connections at the valve. Remove the screws (2) that attach the valve to the mounting bracket.

4. Install new valve.

5. Evacuate and recharge system to nameplate specification.

## HARVEST TIMER

Refer to both the wiring schematic and harvest timer illustration in performing the following procedure for determining the proper functioning of the timer (a VOM and timing device are required):

> WARNING: Electrical power is on to the unit for this procedure. Avoid contact with uninsulated parts in the electrical control box.

1. Remove the upper front panel and electrical control box cover.

2. Put the stop/run switch in the "stop" position.

3. Activate the timer motor "manually" by rotating the cam wheels slightly (downward). The timer will then go through one complete cycle and stop at the "home" position.

4. To determine the proper functioning of cam switches #2 through #5, check continuity between switch terminals C and NO during the appropriate "on" time for each switch (see the harvest cycle chart in the Operation section). If no continuity, then switch is defective and replace timer. The cam settings can be checked by timing the "on" (continuity) and "off" (no continuity) periods (see harvest timer adjustment).

5. To check the timer motor, refer to the cycle timer procedure.

## HARVEST TIMER ADJUSTMENT

> WARNING: Disconnect electrical power to unit before servicing timer in electric box.

1. Disconnect power to icemaker.

2. Remove upper front panel and electrical control box cover.

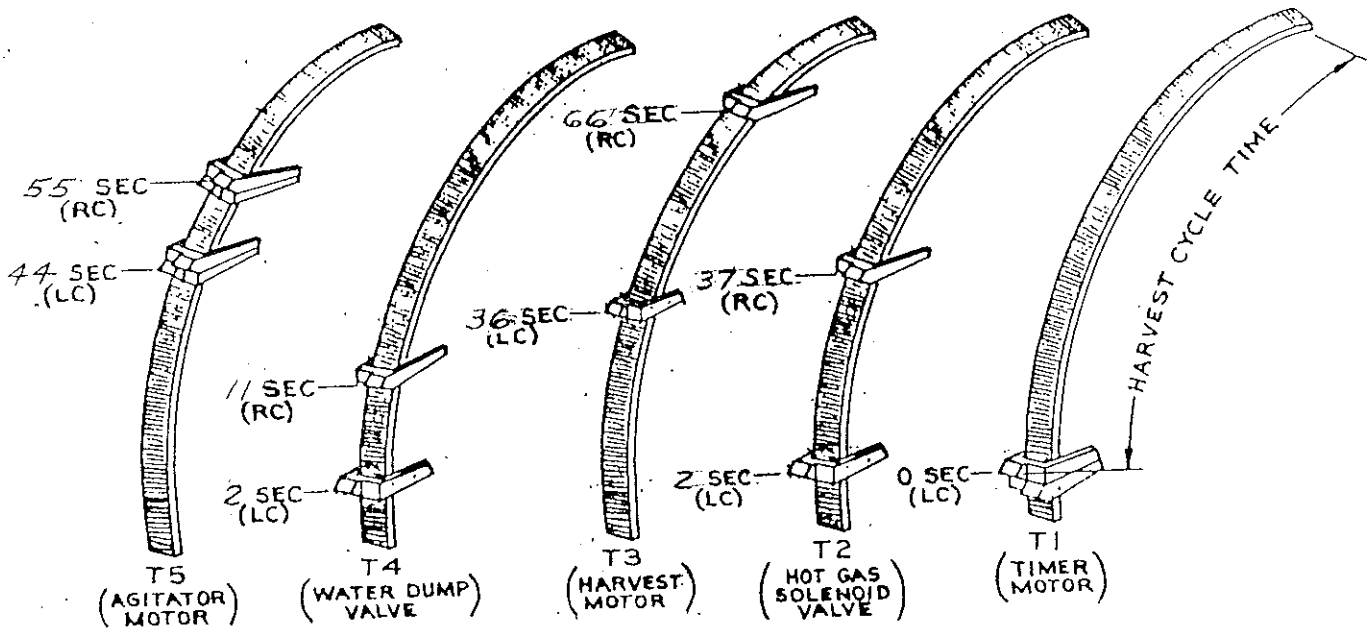
3. Put the (stop/run) switch in the "stop" position.

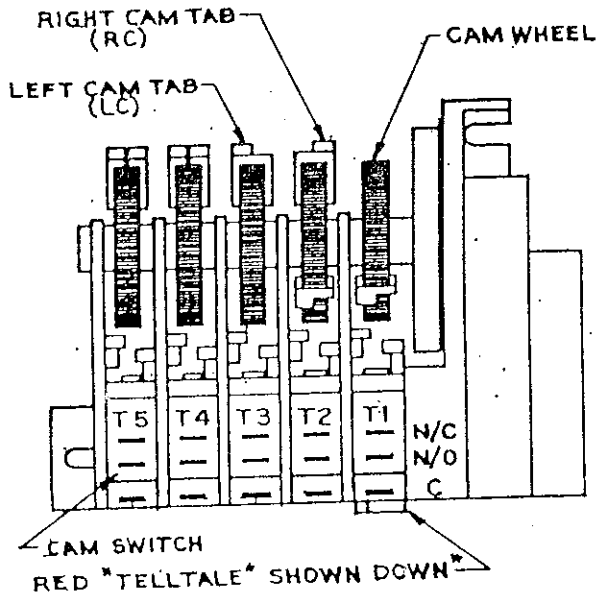
4. Using Fig. 5 as a guide, set the timer cam tabs as follows, starting with cam wheel #1 (all cam tab positions are in relation to #1 left cam tab).

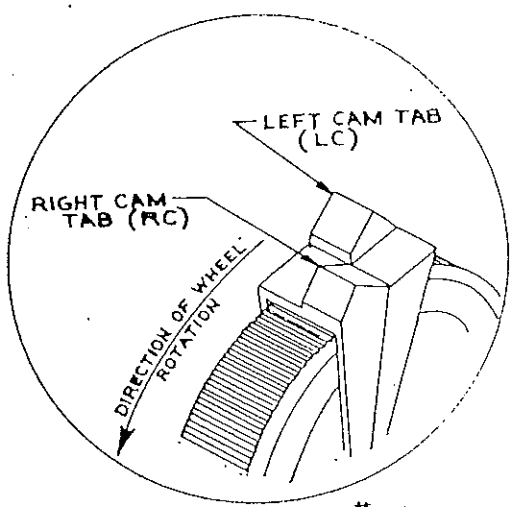
   NOTE: Timer cam wheels can be manually rotated only in the normal direction of rotation-downward as viewed from the front of the unit.

   A. "Manually" adjust the cam tabs by using each "click", as the cam tab is rotated, as equivalent to .9 second.
   B. Set up cam wheel #1 with the left and right cam tabs back-to-back as shown in Fig 7A.
   C. Adjust the cam tabs on wheels 2 through 5 in sequence as shown in the chart. Rotate the cam wheels manually downward to set each wheel.
   D. After the cam tabs are manually set, reconnect power to the icemaker.
   E. Rotate the cam wheels slightly to activate the timer motor (#1 telltale down).
   F. Using a stopwatch, time the cam switch tell tales. Adjust the cam tabs as necessary for the required cycle times.

# FIG. 5
# HARVEST TIMER




DETAIL OF CAM WHEEL # T1
FIG. 7A

## CLEARING EVAPORATOR FREEZE-UP

> WARNING: To prevent possible injury, do not stick fingers or hand into icemaker nozzle or hopper with power applied to unit.

1. Open the hinged service door on the upper left side panel.
2. Put the (stop/run) switch in the "stop" position.
3. Close the water supply valve to the icemaker.
4. Remove the ice drop and hopper cover.
5. Depress the flush switch pushbutton and drain the evaporator.
6. Pour hot water into the evaporator ice exit opening. It will be necessary to use either a funnel or a container with a spout. Fill the evaporator completely.
7. Drain the evaporator. Repeat steps 5 and 6 as required to insure that all the ice in the evaporator is melted.
8. Open the water supply valve and refill evaporator.
9. Replace the ice drop and hopper covers.
10. Consult trouble shootig guide to determine cause of freeze-up before putting unit back in service.

## WATER DUMP VALVE

To check for proper operation, depress the flush switch located on the side of the electrical control box (access the switch through the hinged service door on the upper left side cabinet panel). Observe the water drain line for flow indicating the valve is energized. The evaporator must be full of water for this procedure. If no flow is observed, replace the valve.

The valve is located under the evaporator on the lower left side of the unit. To replace the valve:

1. Disconnect electrical power to the unit.
2. Remove the rear service panel. An alternate method would be to remove the lower front panel.
3. Remove the hoses from the valve inlet and outlet (spring hose clamps) and the (2) screws from the mounting bracket.
4. Disconnect the electrical wires from the solenoid and remove valve.
5. Install new valve, repeating above procedure in reverse order. Make sure that hoses are insulated properly to avoid condensation and drippage problems.

## HARVEST MOTOR

To check the harvest motor for proper operation, it will be necessary to monitor voltage during the harvest cycle. The procedure is as follows:

> WARNING: Electrical power is on to the unit. Avoid contact with uninsulated parts in the electrical control box.

1. Remove the upper front panel and electrical control box cover.

2. Check for voltage between neutral and the following points: (refer to wiring schematic)

   A. HT3-C (common terminal of the harvest timer cam switch #3) - If no voltage, check safety control circuit for open device.
   B. During harvest motor operating portion of harvest cycle, check HT3-NO. If no voltage, defective cam switch (see harvest timer service procedure).
   C. Check voltage at run capacitor. If harvest motor is not running during its portion of the harvest cycle, then either the run capacitor or motor is defective with voltage at the capacitor. Check capacitor (see procedure for compressor). If capacitor passes check, then replace motor.

To replace harvest motor:

1. Disconnect electrical power to unit.

2. Remove top cabinet panel.

3. Disconnect the electrical wires from the control box harness at the motor.

4. Remove screws (4) holding motor mounting bracket to the evaporator top cap and remove the motor from the evaporator.

5. Remove screws (4) securing the mounting bracket to the motor and remove the bracket.

6. Replace the motor, installing the new gaskets that are supplied with the motor.

7. Check out the new motor by turning on the icemaker. Observe that after start-up, the icemaker immediately goes into a harvest cycle. Check that harvest motor starts and stops in the proper sequence in the harvest cycle. Observe also that normal icemaking and harvesting cycles occur.

## AIR PUMP

The air pump is located on the condensing unit base between the electrical control box and the compressor. Its purpose is to recirculate air from the ice storage hopper through the evaporator to agitate the water during the icemaking cycle. This agitation reduces the amount of impurities that are retained in the ice formed on the evaporator coils and hence, increases the clarity of the ice. If the air pump is not operating properly, the ice will turn "cloudy." To check for proper operation of the pump, perform the following procedure:

> WARNING: Electrical power is on to the unit for this procedure. avoid contact with uninsulated parts in the electrical control box.

1. Remove the upper front panel and control box cover.
2. Put the stop/run switch in the "stop" position.
3. Put the clean/run switch in the "clean" position.
4. If the pump is not running, check for voltage between neutral and the common terminal of the clean/run switch. If no voltage, defective switch. If there is voltage, check motor wire connections. If connections are good, then motor is defective.
5. If the pump is running, then it will be necessary to check its performance. This check will require an airflow meter and pressure gauge. Remove discharge tube (line running to evaporator). Check flow (the required range is 10 to 16 liters per minute). Check pressure by "dead-heading" pump (required range is 18-20 PSIG). If either condition is not achieved, pump is defective.

To replace the air pump:

1. Disconnect electrical power to the unit.
2. Remove either the top or right side cabinet panel.
3. Disconnect the electrical wires in the control box.
4. Remove the suction and discharge tubes from the pump fittings.
5. Remove the screws (2) holding the pump to the condensing unit base and remove pump.
6. Repeat the procedure in reverse order to install new pump.

## VEND SWITCH

The ice vend switch is located on the rear side of the lower front panel. It can be checked by using a voltmeter between neutral and the NO switch terminals. If there is no voltage when the switch push button is depressed, then the switch is defective. Disconnect electrical power to the unit and replace the switch as shown in the lower cabinet assembly illustration.

## GATE SOLENOID

The gate solenoid is located in the upper cabinet assembly and operates the gate slide for dispensing ice out of the storage hopper. To protect the solenoid, a fuse is located on the left side of the electrical control box. If the solenoid fails to operate, check the fuse first. Determine next that the gate mechanism operates freely. To check the solenoid:

1. Disconnect electrical power to the unit.

2. Remove the upper front panel.

3. Disconnect the wires to the solenoid.

4. Check continuity across the solenoid terminals and from one terminal to the solenoid frame.

   A. If no continuity is measured across the terminals, then replace the solenoid (open coil).
   B. If continuity is measured from one terminal to the frame, replace the solenoid (coil is shorted to ground).

5. To replace the solenoid assembly, remove the (3) nuts securing the solenoid mounting bracket to the studs on the storage hopper (see upper cabinet assembly illustration).

## AGITATOR MOTOR

The agitator motor operates the agitator in the storage hopper for dispensing ice out through the gate opening. The motor is mounted to the bottom of the storage hopper and secured by brackets to the upper cabinet. To check the agitator motor, perform the following procedure:

> WARNING: Electrical power is <u>on</u> to the unit during this procedure. Avoid contact with uninsulated parts.

1. Remove the upper front panel and control box cover.

2. Put the stop/run switch in the "stop" position.

3. Check voltage between neutral and the following points with the vend switch depressed:

   A. HT5-NC (normally closed terminal of the harvest timer cam switch #5 - see Harvest Timer Illustration)
   B. HT5-C
   C. Agitator motor capacitor.

4. If voltage is not seen at 3A or 3B, then check the harvest timer switch #5. If voltage is measured at 3A and 3B, then either the capacitor or motor is defective.

5. Disconnect electrical power to the unit and check for continuity at the capacitor and motor (remove the appropriate wires to isolate each component from the remainder of the circuit - see the wiring schematic and diagram).

   A. Use a VOM and check continuity across the capacitor terminals.
      1. RX1 scale-continuity-replace capacitor (shorted)
      2. RX100,000 scale-no continuity-replace capacitor (open)
   B. Check continuity across the motor common and the start and run windings. If either reading shows no continuity, replace the motor (open winding).

To replace the agitator motor:

1. Disconnect electrical power to the unit.

2. Remove the lower front panel.

3. Disconnect the motor leads from the control box harness at the junction box.

4. Remove the (4) screws securing the motor to the storage hopper and the (2) screws for the motor clamp (see the upper cabinet illustration).

5. Install the new motor using the new gaskets supplied with the motor.

MANUAL FILLING

In the event that the icemaker is not functioning, the hopper may be manually filled with ice.

1. Open the hinged service door on the upper left side panel.

2. Put the (stop/run) switch in the "stop" position.

> WARNING: Electrical power is on to the agitator motor and gate solenoid. Avoid contact with these components.

3. Remove the ice drop and storage hopper covers.

4. Fill hopper with ice and replace covers and front panel. Unit is now ready for dispensing.

## CAUTION

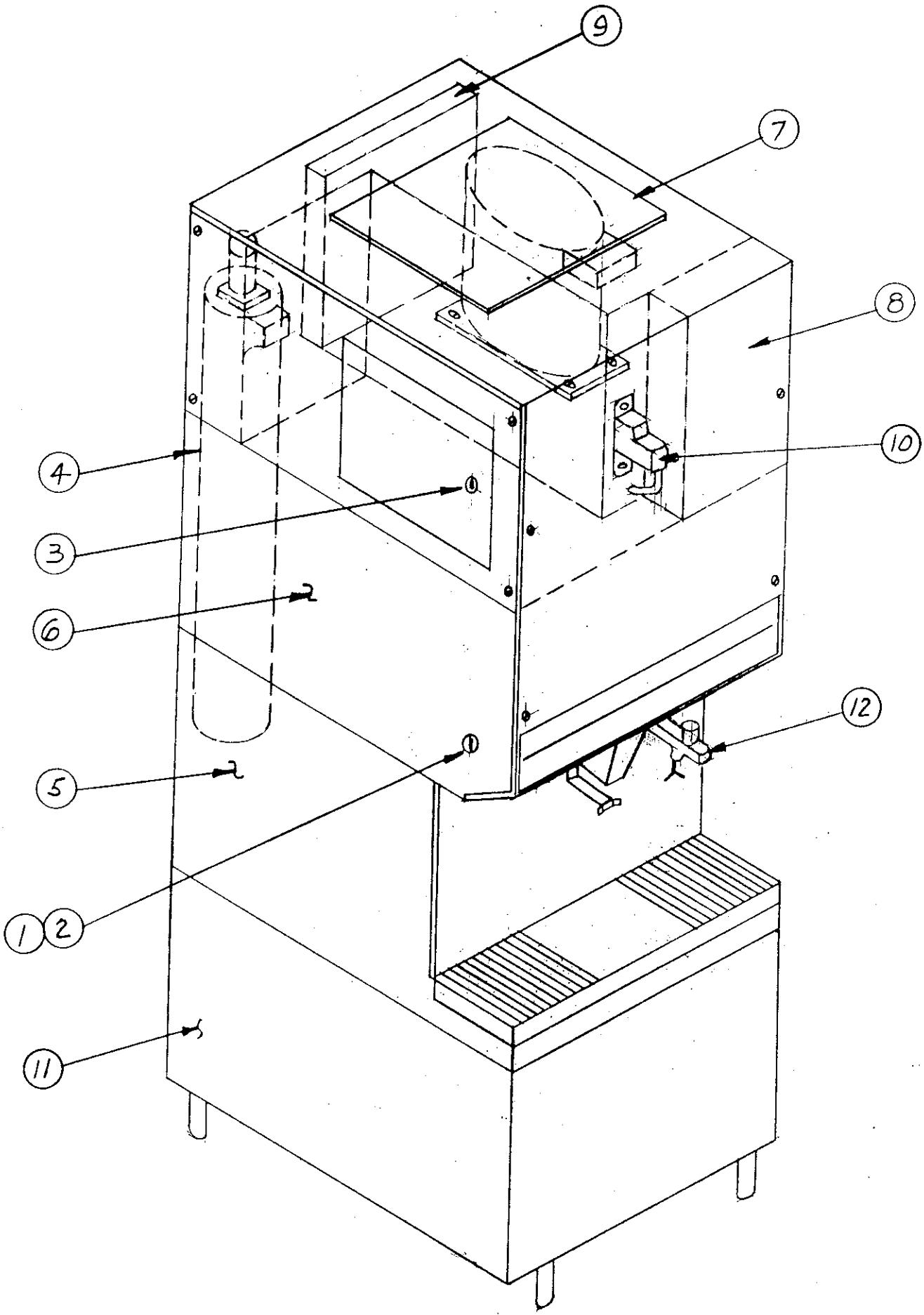
1. Do not use crushed or flaked ice.

2. Use of bagged ice, which has frozen into large chuncks can void warranty. The agitator is not designed to be an ice crusher - use of large chunks of ice which "jam-up" inside the hopper will cause failure of the agitator motor and damage to the hopper. If bagged ice is used it must be carefully and completely broken into small, cube-size pieces before filling into the storage hopper. Do not allow foreign material to enter the ice storage hopper.

# STORAGE

The packaging for this unit is intended only for indoor storage under dry conditions. Do not stack units, as the packaging is not designed for support of additional loading. Follow the carton instructions for storing the unit in an upright position. Storage temperatures up to 150°F are acceptable. Above this limit, some of the plastic materials in the unit may be adversely affected.

# FIG. 6
# UNIT FINAL ASSEMBLY



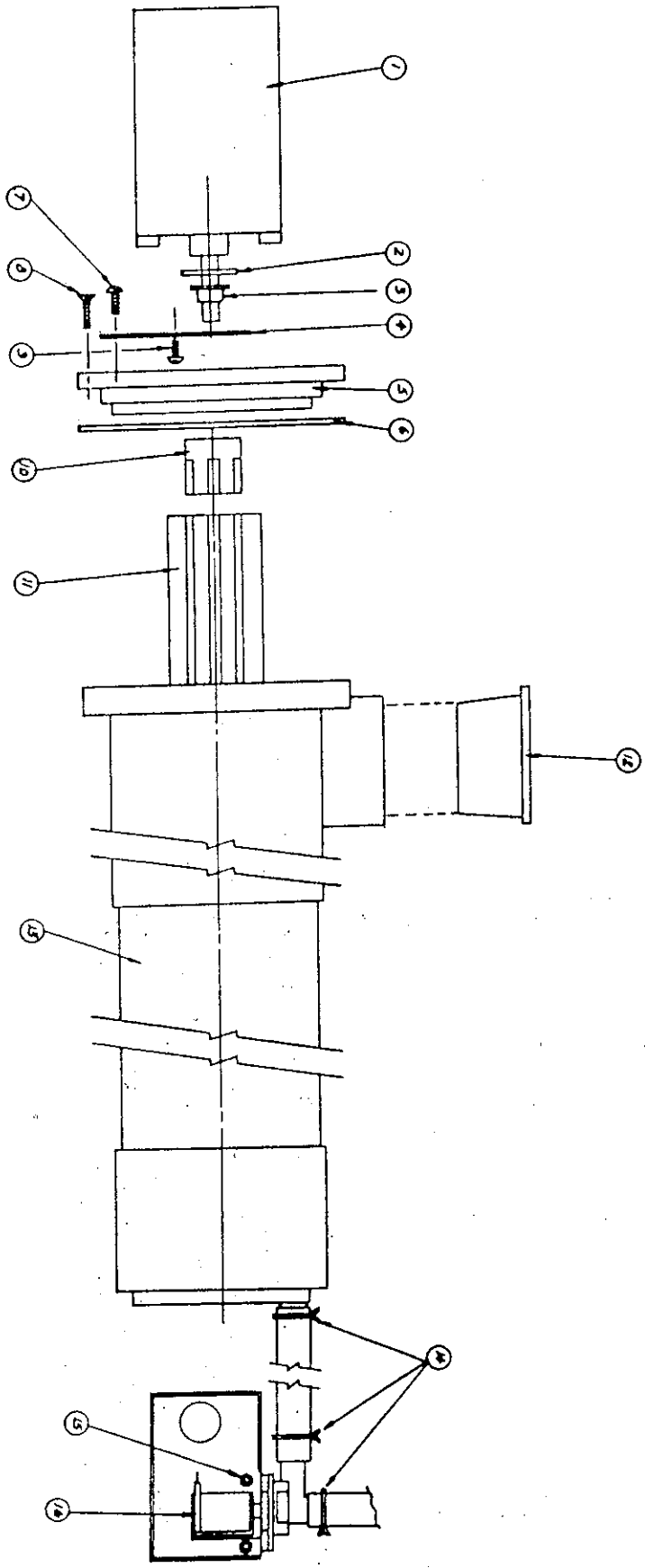
# PARTS LIST

## UNIT FINAL ASSEMBLY

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 1 | Keylock | 31808 | Augat Inc.<br>Alcoswitch Div.<br>1551 Osgood St.<br>North Andover, MA 01845 | M6201 |
| 2 | Contact Block | 31809 | Same as above | F50 |
| 3 | Cabinet Lock | 70476 | Wico Corp.<br>6400 Grosse Point Rd.<br>Niles, IL 60648 | 34-1322 |
| 4* | Evaporator Assy | | | |
| 5* | Lower Cabinet Assy | | | |
| 6* | Upper Cabinet Assy | | | |
| 7 | Air Filter | 70542 | Research Products Corp.<br>1015 E. Washington Ave.<br>Madison, WI 53703 | 97017294 |
| 8* | Electrical Control Box Assy | | | |
| 9* | Condensing Unit Assy | | | |
| 10 | Water Float Valve | 40527 | Robert Manuf. Co.<br>10667 Jersey Blvd.<br>Rancho Cucamonga,<br>CA 91730-0668 | 107-2211 |
| 11 | Floor Stand | 01990 | Remcor | |
| 12 | Water Valve | 40653 | Fisher Manuf. Co.<br>5332 Santa Fe Ave.<br>P.O. Box 58904<br>Los Angeles, CA 90058 | 1013A-1 |

*Refer to individual assembly part listings

# FIG. 7
# EVAPORATOR ASSEMBLY

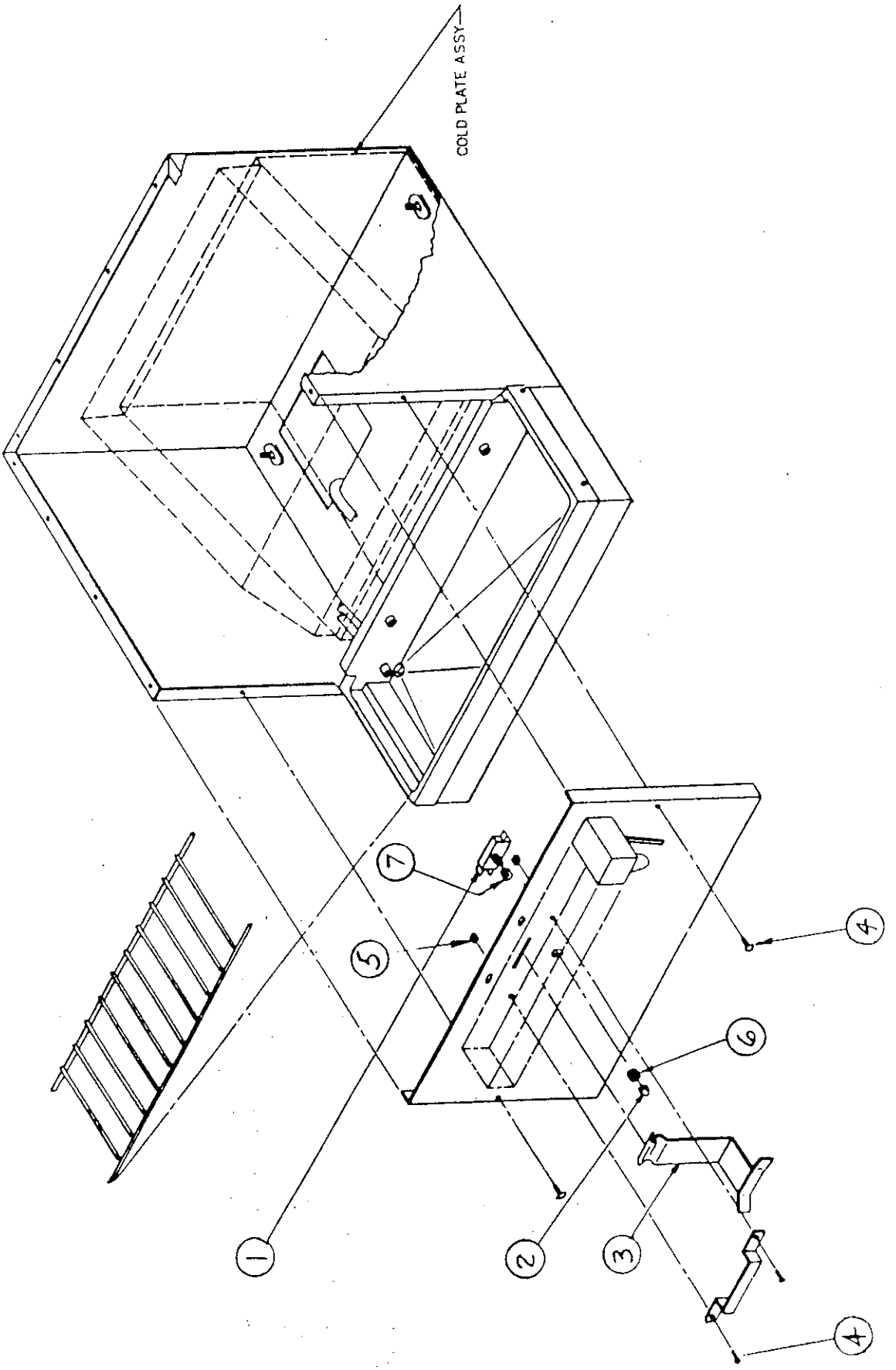


# PARTS LIST

## EVAPORATOR ASSEMBLY

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 1 | Harvest Motor W/ Gaskets | 31560-1 | Remcor | |
| 2 | Gasket - Motor Shaft | 50481 | Remcor | |
| 3 | Seal - Harvest Motor Shaft | 51163 | Remcor | |
| 4 | Brkt - Harvest Motor Mounting | 23334 | Remcor | |
| 5 | Top Cap - Harvest Motor Mounting | 51421 | Remcor | |
| 6 | Gasket - Flange Top Cap | 51422 | Remcor | |
| 7 | Screw, 10-24UNC-2A 3/8in. length phillips truss head, s.s. | Coml. | | |
| 8 | Screw, 10-32UNF-2A 3/4in length phillips flat head, s.s. | Coml. | | |
| 9 | Screw, 10-32UNF-2A 3/8in length, phillips truss head, s.s. | Coml. | | |
| 10 | Drive, Harvest Bar | 10095 | Remcor | |
| 11 | Harvest Bar W/ Gaskets | 51423-1 | Remcor | |
| 12 | Evaporator Cleaning Plug | 51300 | Remcor | |
| 13 | Evaporator Housing W/Coil Subassembly | 51416/ 60698 | Remcor | |
| 14 | Hose Clamp - .750 Clamping range s.s. | Coml. | Corbin Hose Clamp | A-125 |
| 15 | Screw, 8-32-UNC-2A 3/8 in length, phillips truss head, s.s. | Coml. | | |
| 16 | Water Drain Valve | 40652 | Singer Controls Div 9655 W. Soreng Ave Schiller Park, IL 60176 | Model 678 "B" inlet "I" outlet 120V coil |

# FIG. 8
# LOWER CABINET ASSEMBLY

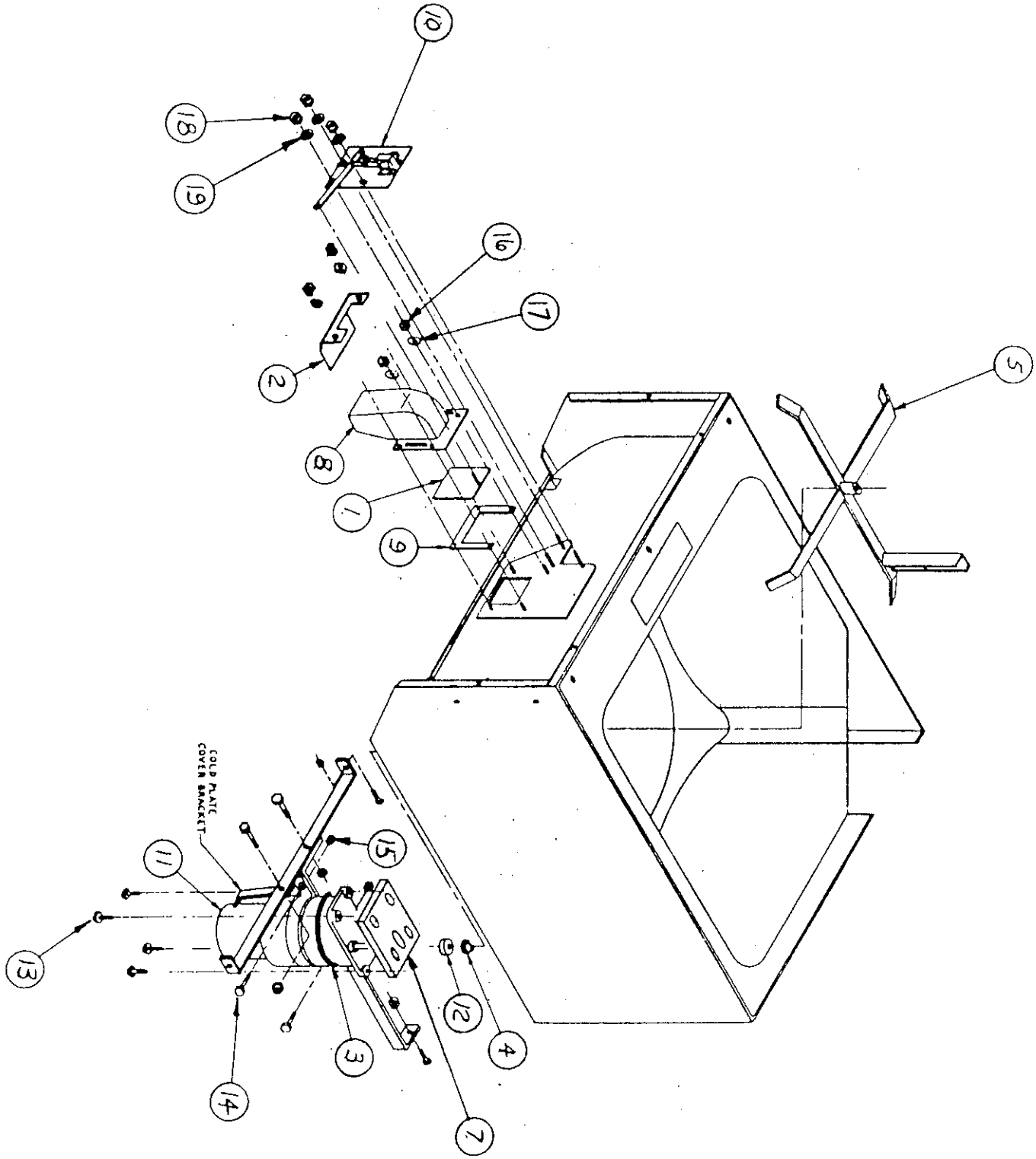


# PARTS LIST

## LOWER CABINET ASSEMBLY

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 1 | Vend Switch | 30895 | Unimax Switch Corp.<br>Ives Rd., P.O. Box 152<br>Wallingford, CT 06492 | AJ |
| 2 | Switch Boot | 31007 | AMP Hex Seal Co<br>44 Honeck St.<br>Englewood, NJ 07631 | N3030-2201 |
| 3 | Depressor Lever | 21515 | Remcor | |
| 4 | Screw, 8-32UNC-2A<br>3/8in length, phillips<br>truss head s.s. | Coml. | | |
| 5 | Nut, 8-320UNC-2B<br>hex, plated steel<br>w/lockwasher | Coml. | | |
| 6 | Switch Insert | 31163 | APM Hex Seal Co<br>44 Honeck St.<br>Englewood, NJ 07631 | 2500-1-5 |
| 7 | Nut, 3/8-32UNEF-2B<br>hex, plated steel<br>5/64in thick | Coml. | | |

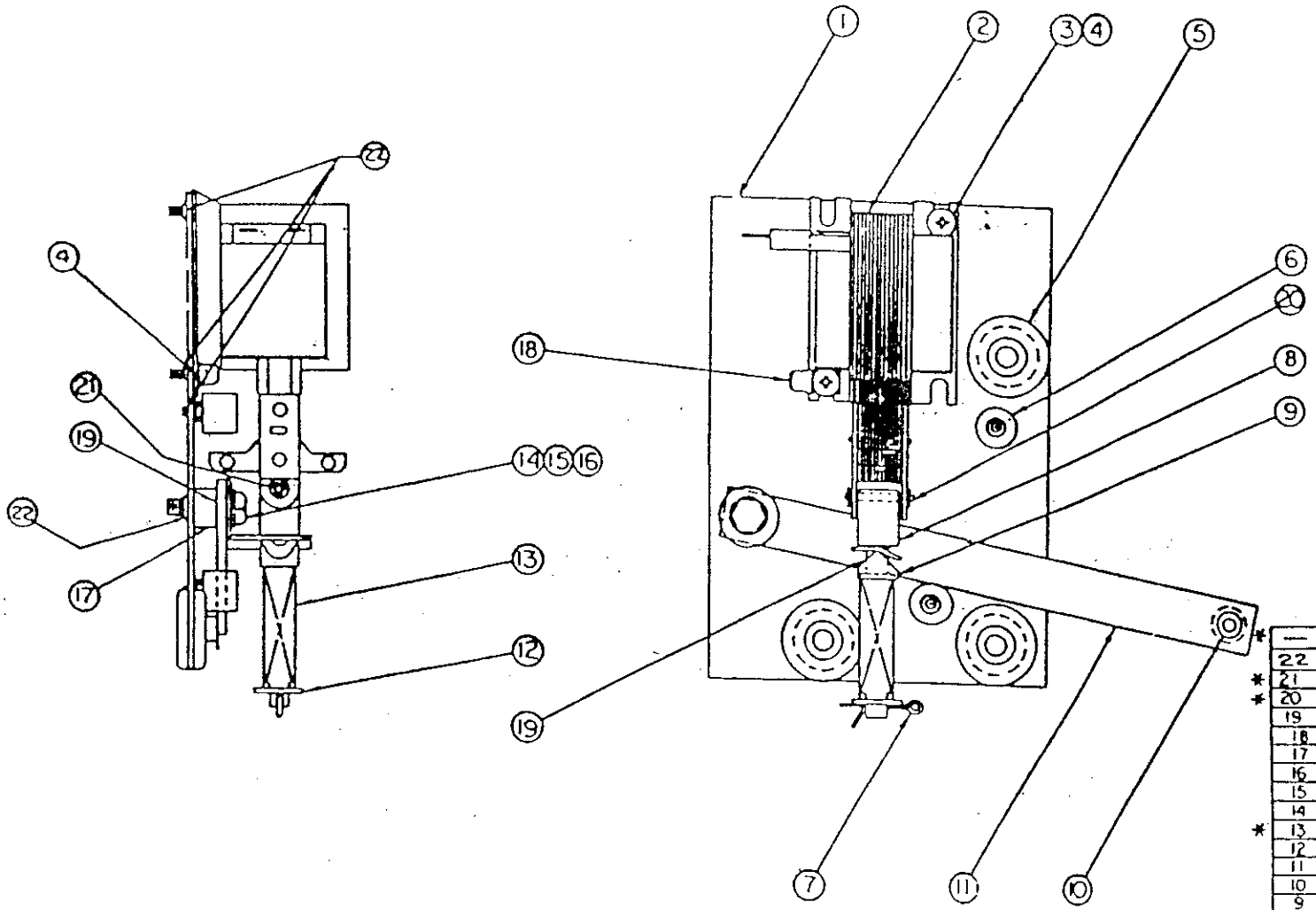
# FIG. 9
# UPPER CABINET ASSEMBLY



# PARTS LIST

## UPPER CABINET ASSEMBLY

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 1 | Gate Slide | 21491 | Remcor | |
| 2 | Foam Shield | 23062 | Remcor | |
| 3 | Heater - Agitator Motor (-BC units only) | 30794 | Remcor | |
| 4 | Agitator Motor Shaft Seal | 50454 | Remcor | |
| 5 | Agitator | 22855<br>21854<br>(-BC units) | Remcor | |
| 7 | Agitator Motor Plate Insulation | 50894 | Remcor | |
| 8 | Ice Chute | 50751 | Remcor | |
| 9 | Gate Gasket | 50770 | Remcor | |
| 10 | Gate Solenoid Assy | 31093 | Remcor | |
| 11 | Agitator Motor W/ Gaskets | 31112-1 | Howard Industries<br>One N. Dixie Highway<br>Milford, IL 60953 | 5-08-0200 |
| 12 | Agitator Motor Gasket | 50806 | Remcor | |
| 13 | Screw, 1/4-20-UNC-2A phillips, round head s.s. | Coml. | | |
| 14 | Screw, 1/4-20-UNC-2A hex head, plated steel | Coml. | | |
| 15 | Nut, 1/4-20-UNC-2B plated steel W/lock-washer | Coml. | | |
| 16 | Nut, 10-32UNF-2B hex s.s. | Coml. | | |
| 17 | Washer, #10 flat s.s. | Coml. | | |
| 18 | Nut, 10-32UNF-2B hex Plated steel | Coml. | | |
| 19 | Washer, 7/32" ID X 7/8" OD X 3/64" thick plated steel | Coml. | | |




* PARTS SUPPLIED WITH REBUILDING KIT.

\# 31551 SOLENOID SUPPLIED WITH ITEMS 20 & 21

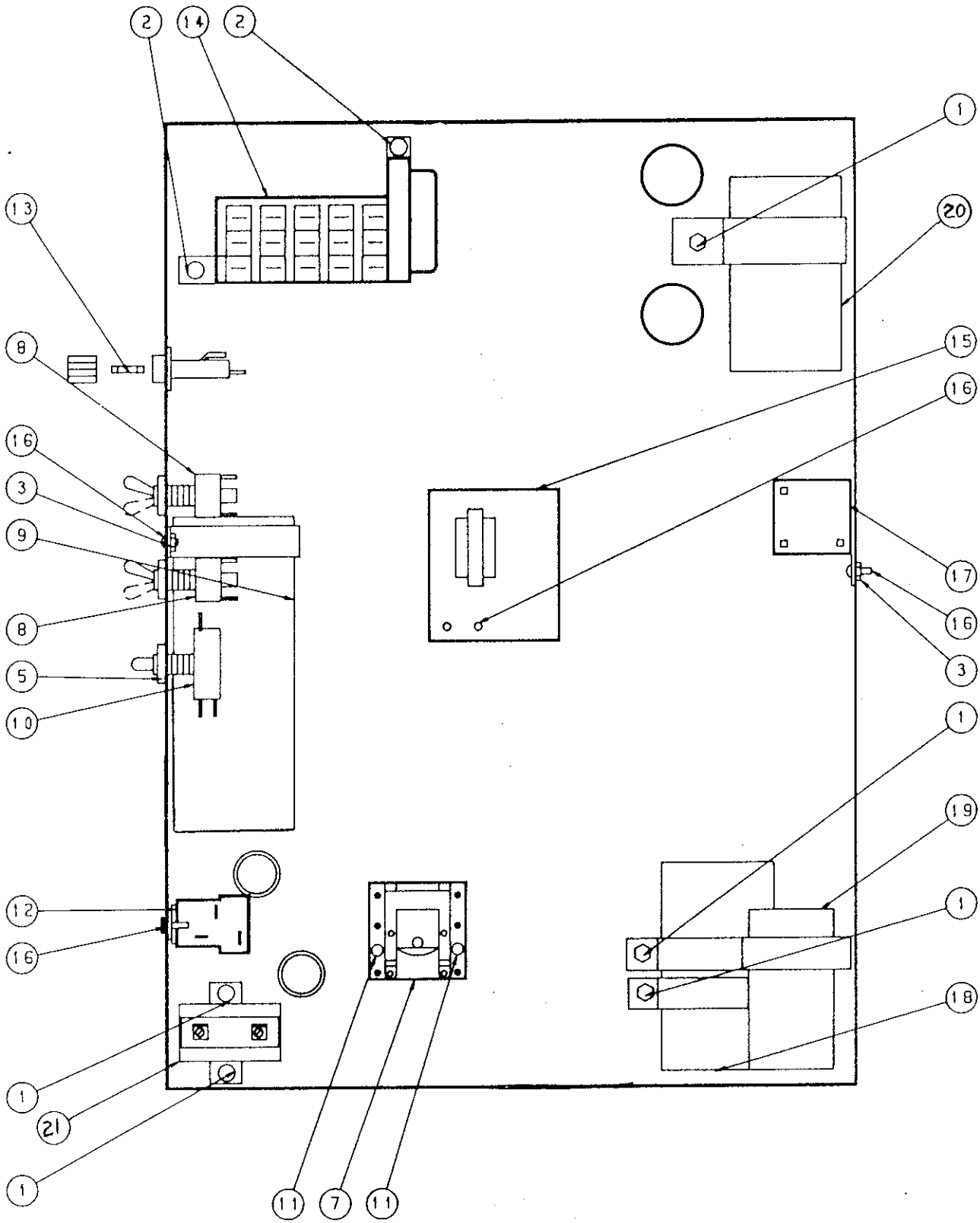
| | ITEM | PT NO. | QTY. | DESCRIPTION |
|---|---|---|---|---|
| * | — | 70436 | | REBUILDING KIT |
| | 22 | 50188 | ~ | LOCTITE |
| * | 21 | 70433 | 2 | RETAINER RING |
| * | 20 | 21592 | 1 | SOLENOID LINKAGE PIN |
| | 19 | 50305 | ~ | LUBRICANT |
| | 18 | 30227 | 1 | ¼ QUICK CONNECT TAB |
| | 17 | 10077 | 1 | PIVOT BEARING |
| | 16 | 70066 | 1 | ¼ FLATWASHER |
| | 15 | 70048 | 1 | ¼ LOCKWASHER |
| | 14 | 70263 | 1 | ¼-20-¾ HEX HD. SCREW |
| * | 13 | 70422 | 1 | SPRING |
| | 12 | 70043 | 1 | FLATWASHER |
| | 11 | 21492 | 1 | GATE LIFT ARM |
| | 10 | 50754 | 1 | GATE ARM BEARING |
| | 9 | 10081 | 1 | GATE LIFT ROD BUSHING |
| * | 8 | 10080 | 1 | GATE LIFT ROD |
| * | 7 | 70423 | 1 | COTTER PIN |
| * | 6 | 50789 | 2 | BUMPER ASSY. |
| | 5 | 50752 | 2 | ISOLATOR |
| | 4 | 70021 | 2 | NO. 8 LOCKWASHER |
| | 3 | 70171 | 2 | 8-32 × ½ PHIL. TR. HD. SCREW |
| # | 2 | 31551 | 1 | SOLENOID |
| | 1 | 21493 | 1 | SOLENOID MTG. PLATE |

**FIG. 10**

## GATE SOLENOID ASSEMBLY

# FIG. 11

# ELECTRICAL CONTROL BOX ASSEMBLY



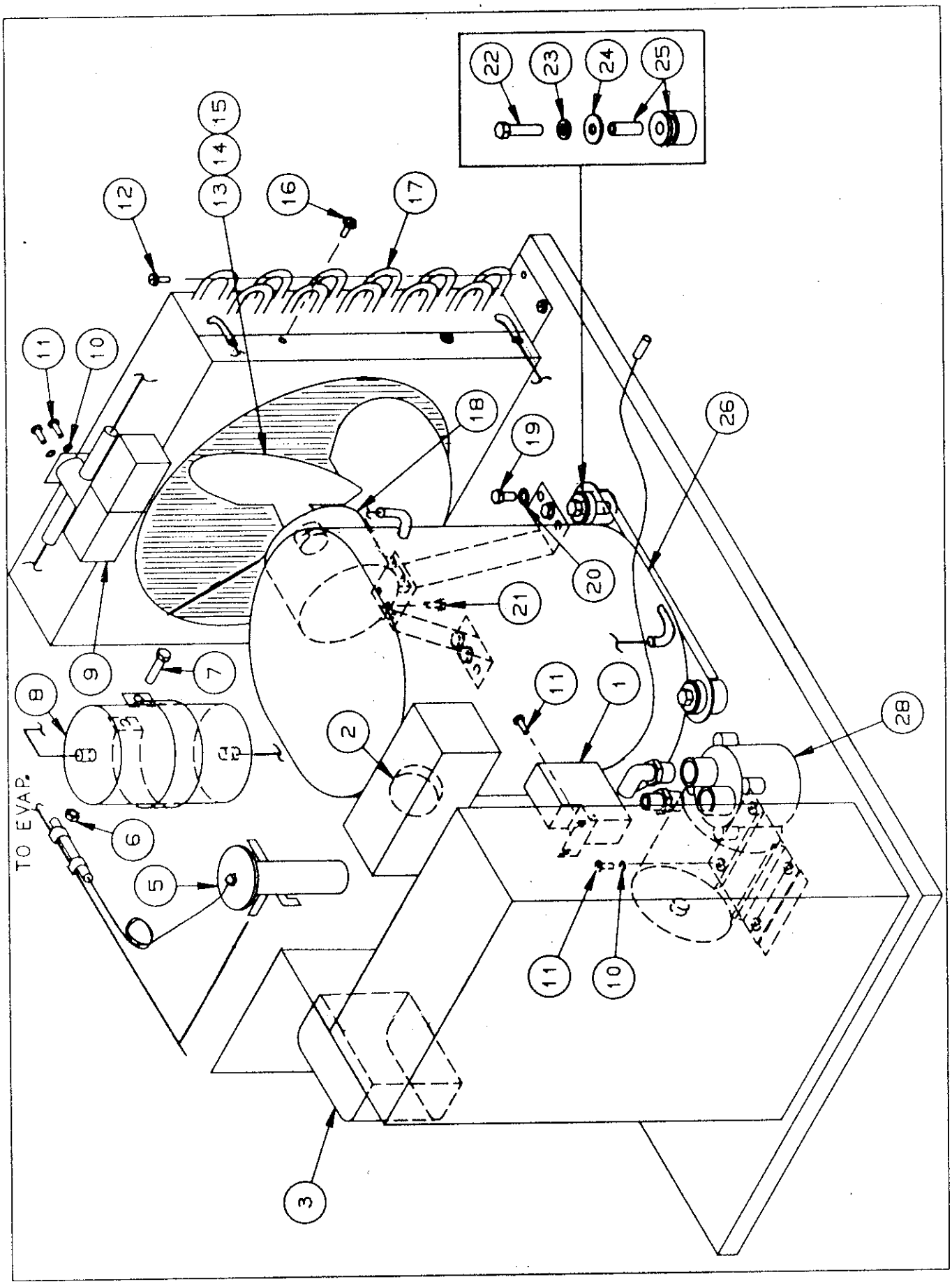
# PARTS LIST

## ELECTRICAL CONTROL BOX ASSEMBLY

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 1 | Screw, #8 type B 1/4" length, hex slotted washer head plated steel | Coml. | | |
| 2 | Screw, #8 type B 1/2" length, hex slotted washer head plated steel | Coml. | | |
| 3 | Nut, 8-32UNC-2B plated steel w/lockwasher | Coml. | | |
| 5 | Nut, 3/8-32UNEF-2B hex plated steel 5/64" thk | Coml. | | |
| 7 | Contactor | 30379 | Potter & Brumfield 200 Richland Creek Dr. Princeton, IN 47671 | PRD7AG0120V |
| 8 | Toggle Switch | 30385 | McGill Manuf. Co. Electrical Division Valparaiso, IN 46383 | 3192-0003 |
| 9 | Capacitor Agitator Motor | 30774 | Ronken Industries Wolfer Industrial Pk. Spring Valley, Illinois 61362 | P71A12855K05 |
| 10 | Flush/Vend Switch | 30895 | Unimax Switch Corp. Ives Rd., P.O. Box 152 Wallingford, CT 06492 | AJ |
| 11 | Screw, #8 type B 5/8" length, slotted round head plated steel | Coml. | | |
| 12 | Bin Thermostat | 31001 | General Electric Co. West Wall Street Morrison, IL 61270 | 3ART24H10 |
| 13 | Fuse, 1 1/2 Amp | 31406 | Littel Fuse 800 E. Northwest Hwy Des Plaines, IL 60016 | 3131.25 |
| 14 | Timer, Harvest | 31839 | Remcor | |
| 15 | Conductivity Control | 31579 | National Controls Corporation 931 N. Dupage Ave. Lombard, IL 60148 | LNC-NS127-120RC |

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 16 | Screw, 8-32UNC-2A 3/8" length, phillips truss head, s.s. | Coml. | | |
| 17 | Compressor Start Relay | 31727 | Copeland Corp. Order Services Dept. 1675 W. Campbell Road Sidney, Ohio 45365 | 040-0001-18 |
| 18 | Capacitor, Comp. Start | 31728 | Same as above | 014-0008-61 |
| 19 | Capacitor, Comp. Run | 31729 | Same as above | 014-0037-013 |
| 20 | Capacitor, Harvest Motor | 31673 | Same as above | 014-0037-009 |
| 21 | High Pressure Control | 60501 | Johnson Controls Inc. 1302 E. Monroe St. Goshen, IN 46526 | P20DB-1 |

# FIG. 12
# CONDENSING UNIT ASSEMBLY



# PARTS LIST

## CONDENSING UNIT ASSEMBLY

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 1 | Control Transformer | 31138 | Stancor Products<br>131 Godfrey St.<br>Logansport, IN 46947 | GSD-300 |
| 2 | Compressor Overload | | Copeland Corporation<br>Order Services Dept.<br>1675 W. Campbell Road<br>Sidney, Ohio 45365 | |
| 3 | Low Pressure Control | 60369 | Johnson Controls, Inc<br>1302 E. Monroe St.<br>Goshen, IN 46526 | P70AB-2 |
| 5 | Expansion Valve | 60635 | Remcor | |
| 6 | Nut, 1/4-20UNCE-2B<br>Plated steel w/lockwasher | Coml. | | |
| 7 | Screw, 1/4-20UNCE-2A<br>1 1/2" length, hex head<br>plated steel | Coml. | | |
| 8 | Filter (drier) | 60623 | Sporlan Valve Co.<br>7525 Sussex Ave.<br>St. Louis, MO 63143 | CG-162-S |
| 9 | Hot Gas Solenoid Valve | 60620 | Same as above | E95230-120V |
| 10 | Lockwasher, #8 internal-<br>tooth s.s. | Coml. | | |
| 11 | Screw, 8-32UNC-2A 1/2"<br>length, phillips truss<br>head, s.s. | Coml. | | |
| 12 | Screw, 8-32UNC-2A 1/2"<br>length hex head, plated<br>steel | Coml. | | |
| 13 | Condenser Fan Blade | 31844 | Electric Motor<br>Specialties, Inc.<br>P.O. Box 180<br>Garrett, IN 46738 | FF100CW34P |
| 14 | Silenzer - fan blade | 70091 | --- | --- |
| 15 | Nut - fan blade | 70090 | --- | --- |
| 16 | Screw, #8 type B, 1/4"<br>length, slotted hex<br>head, plated steel | Coml. | | |

| ITEM | DESCRIPTION | REMCOR PART NO. | MANUFACTURER | MANUF. PART NO. |
|---|---|---|---|---|
| 17 | Condenser Air-Cooled | 60619 | Sundstrand Heat Transfer<br>E. Prairie Ronde St.<br>Dowagiac, MI 49047 | 005452 |
| 18 | Condenser Fan Motor | 31738 | Morrill Motors, Inc<br>3685 Northrop St.<br>Fort Wayne, IN 46805 | ESP-L35EMI |
| 19 | Screw, 1/4-20UNCE-2B<br>1/2" length, hex head<br>plated steel | Coml. | | |
| 20 | Lockwasher, #1/4<br>Internal tooth, plated<br>steel | Coml. | | |
| 21 | Screw, 8-36UNF-2A<br>3/8" length, hex head<br>plated steel w/lockwasher | Coml. | | |
| 22 | Bolt, #5/16-18UNC-2A<br>1 1/2" length, hex head<br>plated steel | Coml. | | |
| 23 | Lockwasher, #3/8 internal<br>tooth plated steel | Coml. | | |
| 24 | Washer, .375"ID X .875"OD<br>X .070"TK, plated steel | Coml. | | |
| 25 | Compressor Mtg Kit | 31607 | Copeland Corporation<br>Order Service Dept.<br>1675 W. Campbell Road<br>Sidney, Ohio 45365 | 527-0039-04 |
| 26 | Compressor | 60675 | Same as above | RSN4-0075-PAZ-204 |
| 28 | Air Pump | 31568 | Barnant Corp<br>28W092 Commercial Ave.<br>Barrington, IL 60010 | 400-1911 |

# WARRANTY

Remcor Products Company conforms with all warranties as cited in Section I10 of the applicable Contract and all clauses within this Section pertaining to Supply Warranties--Food Service--Refrigeration--Air Conditioning Equipment.

# REMCOR® PRODUCTS CO.

## WARRANTY POLICY

### Spiral Icemaker Dispenser

REMCOR Products Company warrants to the original purchaser of each new REMCOR SPIRAL ICEMAKER-DISPENSER, for a period of 21 months from date of installation or 24 months from date of shipment, whichever occurs first, that all parts shall be free from defects in material and workmanship under normal use and service. The S.S. icemaker evaporator is specifically warranted for a period of two (2) years, the compressor for a period of five (5) years, and labor cost to repair factory defective parts or workmanship is covered for a period of thirty (30) days from date of installation. Labor warranty does not cover normal installation or start-up.

Under this warranty, a defective part (or parts) is to be returned to REMCOR Products Company, 9145 King Street, Franklin Park, Illinois 60131 (Phone 312/671-7140) and shall be limited exclusively to repairing or replacing F.O.B. Factory, such part or parts which it concludes upon examination to be defective under the terms of this warranty. Return of any part disassembled will void warranty on any part. The decision of our Service Department regarding the warranty of parts will be final.

The warranties defined herein shall not apply to any damage or defects created or arising from accident, misapplication, abuse, misuse, neglect, alteration, acts of vandalism, flood, fire, acts of God or any other occurences beyond the control of REMCOR. Warranty validity also requires that all instructions have been followed and adhered to as provided in the Owner's Manual included with each unit.

REMCOR's warranty responsibility ceases if shipment is not received by you in good order and in accordance with quantity shown on Invoice or Packing Sheet; if you accept shipment from the Transportation Company in damaged condition without having a proper notation made by the Station Agent you do so at your own risk. If cartons are in apparent good order, but upon opening, contents are found to be damaged; call agent or adjuster to view same and have him mark the freight bill relative to such concealed damage. The procedure must be executed within fifteen days after delivery.

Prior to returning any material, (part or unit), a Return of Material Authorization (RMA) must be obtained. To obtain this authorization provide the reason for return, model number, serial number and part number. Either call or write REMCOR's Parts Service Department and an Authorization number and tag will then be issued - this tag must accompany the material returned. No representative, dealer, distributor or any person is authorized to make any other decisions regarding the warranty or liability in accordance with REMCOR's Warranty. Any material that does not have a pre-issued Return Material Authorization number when received will be refused by REMCOR, and returned to the sender (freight collect).

REMCOR Products Comapny will not honor, or assume any responsibility for any expenses (including labor), incurred in the field for the repair of equipment covered in our Warranty unless authorization has been granted from REMCOR's Service Department prior to work being performed. The request for repair Warranty work will only apply to units shipped from REMCOR within a thirty day time period of request. It will further be at the discretion of REMCOR to decide if said labor will be reimbursed in full, or partial payment. REMCOR Products Company will also control the right to decline payment - all decisions will be based on circumstances prevailing. Charges for a repeat service call on the same unit to rectify the same problem previously corrected shall not be honored. REMCOR Products shall retain the right to select, or recommend another company to complete the necessary repair work.

**CAUTION**

The inherent nature of ice may cause spillage onto counter or floor areas. The Owner or Operator is cautioned to Maintain these areas in a clean, ice-free condition.

MANUAL EVALUATION SHEET

(Bidders should prepare and complete a sheet, similar to the following, and attach it to each copy of a manual submitted for examination.)

| (Check applicable block) | MANUAL CONTAINS | *MANUAL PARTIALLY CONTAINS | MANUAL DOES NOT CONTAIN | NOT APPLICABLE |
|---|---|---|---|---|
| Front Matter | | | | |
| Cover/Title Page/Heading | ✓ | | | |
| Table of Contents | ✓ | | | |
| List of Illustrations | ✓ | | | |
| Introduction/Preface/Forward | ✓ | | | |
| Safety Precautions | ✓ | | | |
| Preparation for Use | ✓ | | | |
| Installation Instructions | ✓ | | | |
| General Theory of Operation | ✓ | | | |
| Operating Instructions | ✓ | | | |
| Maintenance Instructions | ✓ | | | |
| Cleaning | ✓ | | | |
| Lubrication | | | | ✓ |
| Troubleshooting | ✓ | | | |
| Inspection | | | | ✓ |
| Performance Verification | | | | ✓ |
| Disassembly | ✓ | | | |
| Repair | ✓ | | | |
| Replacement | ✓ | | | |
| Reassembly | ✓ | | | |
| Preparation for Reshipment | | | | ✓ |
| Storage | ✓ | | | |
| Parts List | ✓ | | | |
| Illustrations | ✓ | | | |
| Diagrams | ✓ | | | |
| Caution and Warning Notes | ✓ | | | |

* Does not completely satisfy requirements of all subparagraphs of 3.1.2

Ronald J. Nastow 5/15/87
Bidder's signature and date

**Figure 7. Sample Manual Evaluation Sheet**



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MANUAL EVALUATION SHEET

(Bidders should prepare and complete a sheet, similar to the following, and attach it to each copy of a manual submitted for examination.)

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| List of Illustrations | ✓ | | | |
| Introduction/Preface/Forward | ✓ | | | |
| Safety Precautions | ✓ | | | |
| Preparation for Use | ✓ | | | |
| Installation Instructions | ✓ | | | |
| General Theory of Operation | ✓ | | | |
| Operating Instructions | ✓ | | | |
| Maintenance Instructions | ✓ | | | |
| Cleaning | ✓ | | | |
| Lubrication | | | | ✓ |
| Troubleshooting | ✓ | | | |
| Inspection | | | | ✓ |
| Performance Verification | | | | ✓ |
| Disassembly | ✓ | | | |
| Repair | ✓ | | | |
| Replacement | ✓ | | | |
| Reassembly | ✓ | | | |
| Preparation for Reshipment | | | | ✓ |
| Storage | ✓ | | | |
| Parts List | ✓ | | | |
| Illustrations | ✓ | | | |
| Diagrams | ✓ | | | |
| Caution and Warning Notes | ✓ | | | |

* Does not completely satisfy requirements of all subparagraphs of 3.1.2

Ronald J. Masters 5/15/87
Bidder's signature and date

**Figure 7. Sample Manual Evaluation Sheet**



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