TABLE OF CONTENTS

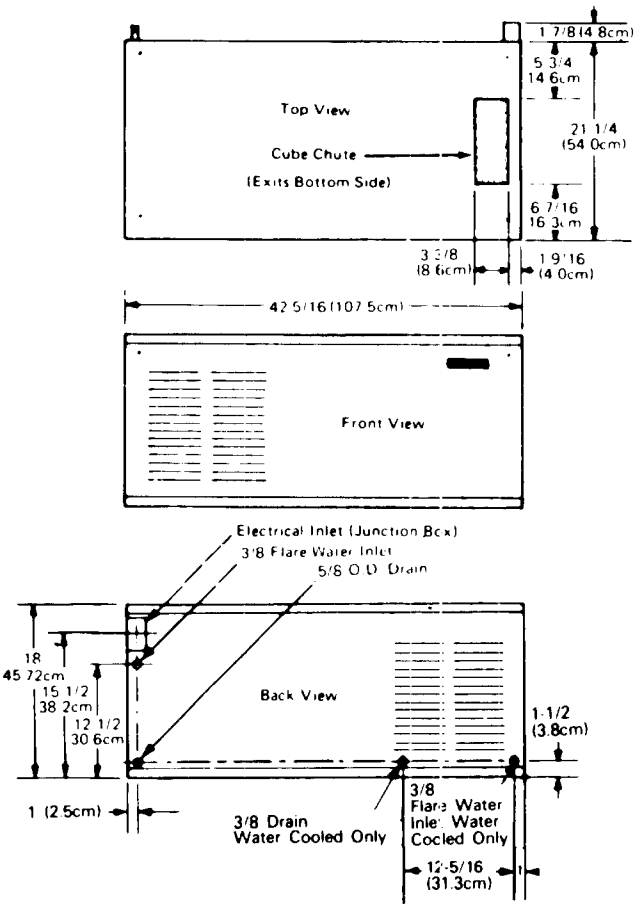
TABLE OF CONTENTS (Cont'd)

LIST OF ILLUSTRATIONS

This icemaker has been engineered to our own rigid safety and performance standards. The National Sanitation Foundation (NSF) seal, signifies that it is listed with the NSF and that it complies with the materials and construction standards of the NSF. In addition, the Underwriters Laboratories, Inc., (UL) Listing Mark signifies that its construction and design have been inspected and tested by them. NSF and UL inspectors also periodically examine production icemakers at the factory, to assure continued compliance.

To retain the safety and performance built into this icemaker, it is important that installation and maintenance be conducted in the manner outlined in this manual.

SPECIFICATIONS
HC400R



MODEL HC400R with REMOTE CONDENSER

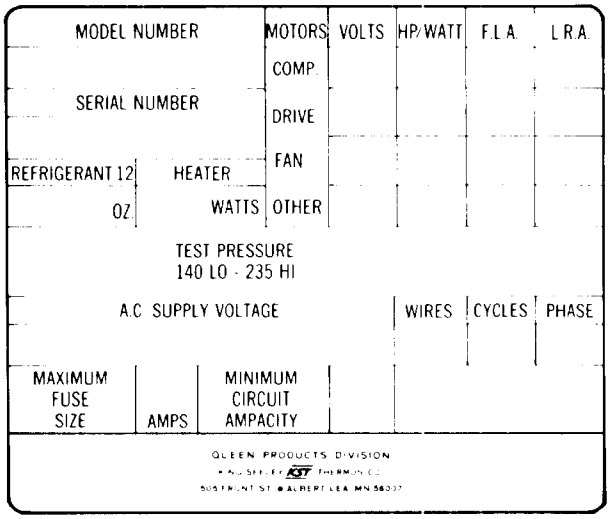
HC400 MRE-1A	115/60/1
HC400 MRE-31A	115/208-230/60/1

Est. Ship Wt.: 210 lbs.

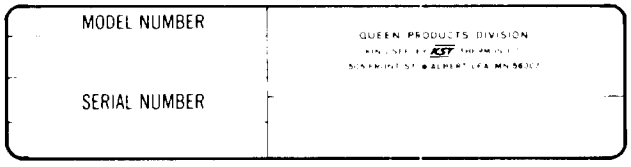
EASY ACCESS SERVICE PANELS

OPTIONALS

SPKMC1 Stainless Steel Panels
Refer to paragraph I-I for listing of ice storage Bins, Extensions and Bin Top.



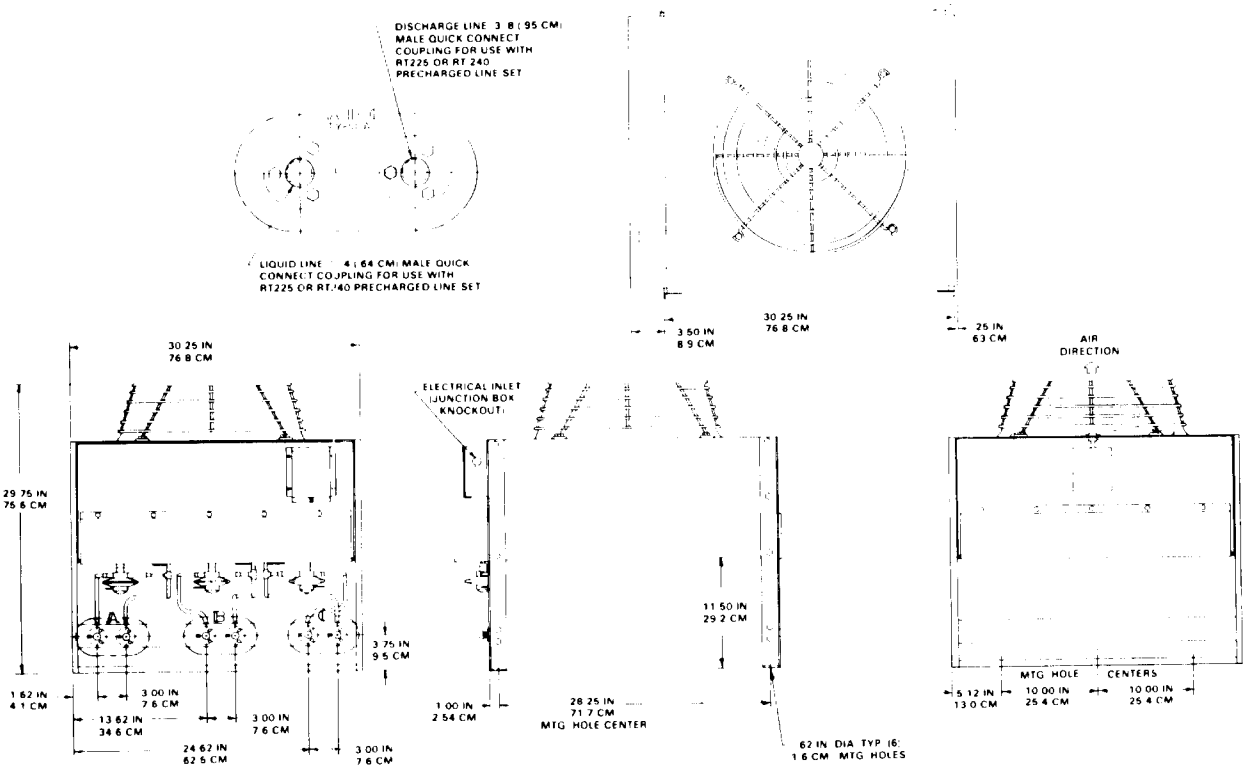
SEE NAMEPLATE, shown at left, for electrical and refrigeration specifications. NAMEPLATE located near top right corner of rear service panel.



Remove Front Panel to locate the Model Serial Number plate, shown at left, on the Chassis base, just to the right of the Control Box.

SPECIFICATIONS (Con't)

MODEL RC 151-32A, RC 202-32A and RC 303-32A



FRONT VIEW SIDE VIEW REAR VIEW

MODEL	ELECTRICAL	EST. SHIP. WT.
RC 151-32A	208/230/60/1	140 lbs.
RC 202-32A	208/230/60/1	145 lbs.
RC 303-32A	208/230/60/1	150 lbs.

SEE DATA PLATE for MODEL NUMBER, SERIAL NUMBER, ELECTRICAL and REFRIGERATION Specifications. Locate DATA PLATE on the upper front panel at the center of the shroud.

SCOTSMAN
AIR COOLED CONDENSER
QUEENS PRODUCTS DIV.
KING SEELEY THERMOS CO.
ALBERT LEA, MINNESOTA 56007

MODEL NUMBER	RCXXX-32A
SERIAL NUMBER	XXXXXX-XX
VOLTS	XXX-XXX
CYCLE	XX
PHASE	X
NUMBER OF MOTORS	X
MOTOR HORSEPOWER	XX
NUMBER REFRIGERANT CIRCUITS	X
R-12 CIRCUIT	XX oz
TOTAL AMPS	XX amps
MINIMUM CIRCUIT AMPACITY	XX amps
MAXIMUM FUSE SIZE	XX amps
WORKING PRESSURE	XXX psig

SUITABLE FOR OUTDOOR USE

PRE-CHARGED REFRIGERANT LINE KITS

KIT NUMBER	SIZE	EST. SHIP. WT.
RT-225	25-Foot	7 lbs.
RT-240	40-Foot	10 lbs.

We reserve the right to make product improvements at anytime. Specifications subject to change without notice.

SECTION I

GENERAL INFORMATION & INSTALLATION

I. INTRODUCTION

This manual provides specifications and the step-by-step procedures for the installation, startup and operation, and the maintenance and cleaning for the SCOTSMAN Model HC400R Modular Cuber, with Remote Condenser.

The Model HC400R Modular Cubers are quality designed, engineered and constructed, and thoroughly tested icemaking systems, providing the utmost in flexibility to fit the needs of a particular user. Separate sections detail more specifically: General Information & Installation; Start Up Operation; Principles of Operation; Adjustment and Removal and Replacement Procedures; Maintenance and Cleaning Instructions; Service Diagnosis; Wiring Diagrams; and, the Illustrated Assemblies and Parts Lists.

DESCRIPTION

An attractive horizontal cabinet of leathergrain embossed steel with high gloss, charcoal brown baked enamel finish. Also, an optional stainless steel panel kit is available. These removable panels allow easy access to electrical and mechanical components for cleaning and maintenance.

SEALED REFRIGERATION SYSTEM

To provide quiet efficient operation of Icemaker, the Compressor motor is internally spring-mounted. The Compressor motor is covered by a five year parts warranty.

REMOTE CONDENSER AND PRE-CHARGED REFRIGERANT LINES

The Model HC400R Modular Cuber can be installed with any one of three Remote Condensers and with either of two lengths of precharged refrigerant lines and sealed couplings.

Available are the single-pass Condenser, two-pass Condenser, and the three-pass Condenser. The single-pass Condenser can accommodate a single HC400R Cuber and one set of two precharged refrigerant lines. The two-pass Condenser can accommodate two separate HC400R Cubers at two different locations; or, a double-stacked installation of two HC400R Cubers and two sets of the two pre-charged refrigerant lines. The three-pass Condenser can accommodate three separate HC400R Cubers at three different locations; or, a triple-stacked installation; or, a combination of one double-stacked and one single installation, plus three sets of the two pre-charged refrigerant lines.

In any of the above installations or combination installations, the sets of two pre-charged refrigerant lines to be used, are the 25-foot line kits or the 40-foot line kits. These pre-charged refrigerant line kits are a one-time, initial charge type of hardware; that is, once the sealed couplings are connected, the internal seal is severed and the lines cannot be disconnected without losing the refrigerant charge. However, they ARE REUSABLE in the refrigerant system, when they are removed and reconnected, and the complete refrigeration system is re-charged with refrigerant.

STORAGE BIN & EXTENSIONS

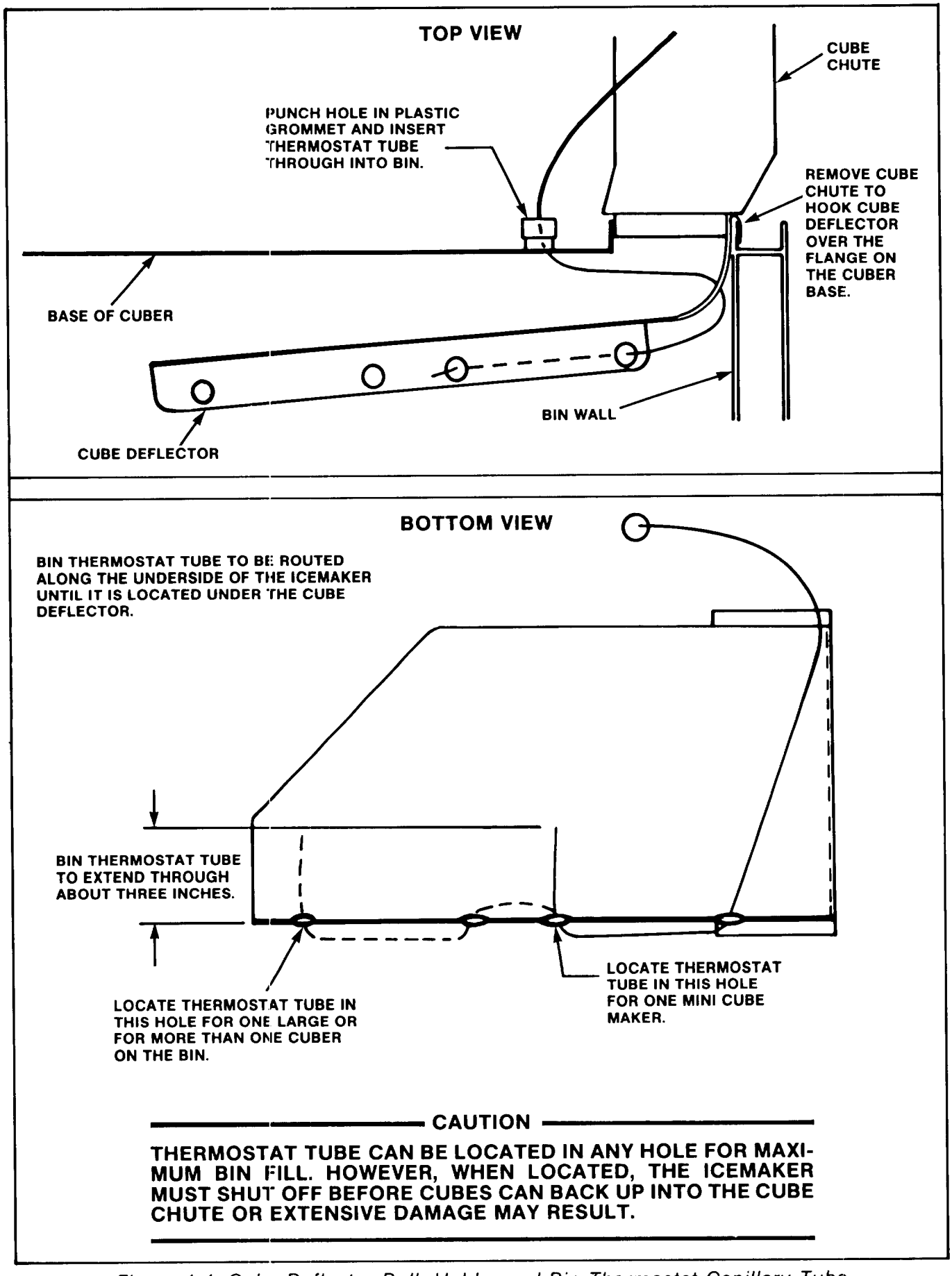
Since the Model HC400R, like other modular cubers in the SCOTSMAN line, does not have an attached ice storage bin, it is necessary to use an auxiliary bin. Modular systems combinations include: B40 Ice Storage Bin with 350 pounds (lbs.) capacity; B60 with 550 lbs.; B80 with 590 lbs.; B90 with 590 lbs.; and, bin extensions: BX15 with 75 lbs.; BX25 with 150 lbs.; and the KBT2 Bin Top used with BX83 with 260 lbs.; BX85 with 560 lbs., and BX87 with 560 lbs. Two HC400R Modular Cubers can be stacked to double ice production volume.

II. UNPACKING AND INSPECTION

1. Call your authorized SCOTSMAN Distributor or Dealer, for proper installation. He's listed under ICE MAKING EQUIPMENT and MACHINERY in the yellow pages of the telephone book.

2. Visually inspect the exterior of the shipping container and skid and any severe damage noted, should be reported to the delivering carrier; and a concealed damage claim filed subject to internal inspection, with the carrier representative present.

3. Remove screws and shipping tape, and all panels, including the top, from the cabinet, and inspect for any concealed damage. Notify carrier of any concealed damage claims, as stated in step 2 above.



CAUTION

THERMOSTAT TUBE CAN BE LOCATED IN ANY HOLE FOR MAXIMUM BIN FILL. HOWEVER, WHEN LOCATED, THE ICEMAKER MUST SHUT OFF BEFORE CUBES CAN BACK UP INTO THE CUBE CHUTE OR EXTENSIVE DAMAGE MAY RESULT.

Figure 1-1. Cube Deflector Bulb Holder and Bin Thermostat Capillary Tube.

4. Remove all internal support packing, tape and wires, if any, in machinery compartment.
5. Check that refrigerant lines do not rub or touch lines or other surfaces, and that fan blades, if any, move freely.
6. Check that Compressors are snug on all mounting pads.
7. Remove optional Water Strainers from shipping bag, for installation in water supply line.
8. Untape and remove for installation, one plastic Base Drain and one electrical Conduit Box taped to the top channel support above the Freezing Chambers, and install Conduit Box in locatio shown on Specification Page III, per instructions on label inside the Box.
9. Uncoil Bin Thermostat Tube and install Cube Deflector in Bin, see Figure 1-1.
10. Use clean damp cloth or disposable paper wiper to wipe clean the exterior surfaces of the cabinet.
11. SEE NAMEPLATE on the top rear, center service panel, and check that the location source voltage corresponds with the voltage specified on the nameplate.

CAUTION

Improper voltage supplied to the Icemaker will void your parts replacement program.

12. Remove the Manufacturer's Registration Card from the front of the User's Manual and fill in all spaces including: Model Number and Serial Number taken from the Model-Serial Nameplate located on the left side, front part of the Chassis base, with Left Front Panel removed. Forward the completed, self addressed, registration card to the SCOTSMAN factory.

III. LOCATION AND LEVELING -ICEMAKER

WARNING

This Icemaker is NOT designed for outdoor installations, or where air temperatures are below 50-degrees F., or above 100-degrees F., and water temperature is below 40-degrees F., or above 100-degrees F. Extended periods of operation at temperatures exceeding these limitations will constitute misuse, under the terms of the SCOTSMAN Manufacturer's limited warranty coverage. This WARNING does NOT include the Remote Condenser.

1. Position the Modular Cuber and Bin, with or without Bin Extensions, in the selected permanent location.

NOTE

Prior consideration for location site shall include:

1. *Minimum room temperature 50-degrees F. and maximum room temperature 100-degres F.*
2. *Water inlet temperatures: Minimum 40-degrees F. and maximum 100-degrees F.*
3. *Well ventilated location for air-cooled model, advising user to frequently clean Condenser.*
4. *SERVICE ACCESS: Adequate space for all service connections, through the rear of the cabinet. A six inch minimum clearance at rear, left and front panels.*
5. *Location determined length of pre-charged refrigerant lines, 25-foot or 40-foot, and the restriction of a maximum of 12-foot vertical rise in the connecting tubing of the installation.*

2. Level the modular cabinet in both the left-to-right and front-to-rear directions. The optional leveling legs on the Bins can be adjusted.

IV. REMOTE CONDENSER AND PRE-CHARGED LINES - INSTALLATION

A. Location Considerations:

1. Limited to a 40-foot length or a 25-foot length of pre-charged refrigerant line from the rear of the icemaker Chassis to the Remote Condenser.
2. Maximum vertical rise of 12 feet between the icemaker and the Remote Condenser coupling connection levels.
3. Available separate electrical power source to the Remote Condenser, for the Fan Motor.
4. Best available location, protected from the extremes of dirt, dust, rain, sun and winds.
5. Must meet local building code installation requirements.

B. Unpacking and Inspection:

1. Visually inspect the exterior of the shipping container and any severe damage noted, should be reported to delivering carrier; and a concealed damage claim filed subject to internal inspection, with carrier representative present.
2. Uncrate the Remote Condenser and the Pre-Charged Refrigerant Line Kits and inspect for any concealed damage. Notify carrier of any concealed damage claims, as stated in Step 1, above.

3. Check that the pre-charged refrigerant lines are intact, not kinked, and that there is no seal puncture or loss of refrigerant.

C. Remote Condenser - Roof Attachment:

1. Install and attach the Remote Condenser to the roof of the building, using the methods and practices of building standards that conforms to and meets the local building code requirements, in your area.
2. Install an electrical power line to the Fan Motor of the Remote Condenser. This electrical power line shall be separate from the icemaker electrical power line and have a separate junction box and switch. Install properly grounded conduit, wherever the electrical power line to the Fan Motor is exposed to outside weather.
3. Remove Junction Box Cover, from the Remote Condenser, and set Ambient Sensing Thermostat at 50-degrees F.

D. Pre-Charged Refrigerant Lines:

1. Each set of pre-charged refrigerant lines in the 25-foot length, or 40-foot length kits, consists of a ¼-inch diameter, self-sealing LIQUID line and a ⅜-inch diameter, self-sealing DISCHARGE line. One coupling on each line is fitted with a charging port, which provides the service man with access for service gauges at the REMOTE CONDENSER location, when necessary

NOTE

The openings in the building ceiling or wall, listed in the next step, are minimum sizes recommended, through which the pre-charged refrigerant lines may pass; and, are to be considered only if they conform to and meet the local building code requirements, in your area.

2. Minimum recommended sizes for openings required in a ceiling or wall, for the pre-charged refrigerant lines to pass, are as follows:
   a. Single-pass Condenser: 1-¾-inch diameter.
   b. Two-pass Condenser: 2-inch diameter.
   c. Three-pass Condenser: 2-¼-inch diameter.
3. When possible, route the maximum length of the pre-charged refrigerant lines INSIDE the building, with the MINIMUM length on the roof, to prevent vandalism and to minimize the CONDENSER EFFECT that exposed lines can produce in cold weather. INSULATE refrigerant lines that will be exposed to outside temperatures that will be below freezing, for extended periods of time.

CAUTION

1. The couplings on the sets of pre-charged refrigerant lines, the refrigerant fittings on the Remote Condenser, and the rear of the icemaker Chassis are SELF-SEALING and should be tightened 1/4-turn more than snug tight.

ALWAYS USE TWO WRENCHES WHEN TIGHTENING THESE FITTINGS, ONE AS BACKUP WRENCH TO PREVENT TWISTING OF TUBING AND POSSIBLE KINKING OR LINE RUPTURE.

2. BE SURE to connect the ends of the pre-charged refrigerant lines, that have the charging port fittings, TO THE REMOTE CONDENSER FITTINGS. This gives the serviceman access for service gauges at the REMOTE CONDENSER location, when necessary.

4. Connect the ¼-inch diameter refrigerant line coupling, with the CHARGING PORT fitting, to the Remote Condenser refrigerant fitting labeled: LIQUID LINE. Use two proper size wrenches, on the coupling body hex and on the union nut, and tighten until the coupling bodies BOTTOM, or a definite RESISTANCE is felt; THEN, TIGHTEN AN ADDITIONAL 1/4-TURN. See Figure 1-2.
5. Connect the ⅜-inch diameter refrigerant line coupling, with the CHARGING PORT fitting, to the Remote Condenser refrigerant fitting labeled: DISCHARGE LINE. Tighten as detailed in step 4.
6. Connect the ¼-inch diameter refrigerant line coupling, to the refrigerant fitting on the upper right rear of the icemaker Chassis labeled: LIQUID LINE. Tighten as detailed in step 4.
7. Connect the ⅜-inch diameter refrigerant line coupling, to the refrigerant fitting on the upper, right rear of the icemaker Chassis labeled: DISCHARGE LINE. Tighten as detailed in step 4.

E. Excess Length of Pre-Charged Refrigerant Lines:

At installations where the icemaker Chassis-to-Remote Condenser refrigerant line path is substantially LESS than the 25-foot length or 40-foot length of pre-charged refrigerant line kit to be installed, route and dress the excess refrigerant line as follows:

1. Follow straight line routing, when possible.

2. Retain excess pre-charged refrigerant line INSIDE the building.
3. SPIRAL the excess footage of the pre-charged refrigerant line(s), in the best selected INSIDE location, and in a manner that PREVENTS refrigerant TRAPPING. See Figure 1-3 for recommended methods of spiralling the excess refrigerant lines.

CAUTION

DO NOT kink or crimp the refrigerant lines. DO NOT bend the excess refrigerant lines in a vertical LOOP(s), which allow trapping of refrigerant in LOW sections, during OFF time. Bend and shape the excess refrigerant lines in VERTICAL spirals, not HORIZONTAL spirals. See Figure 1-3.

V. ELECTRICAL CONNECTIONS

SEE NAMEPLATE for current requirements to determine wire size to be used for electrical hookup. The Cuber requires a solid earth ground wire. See Wiring Diagram.

Be certain the Cuber is connected to its own electrical circuit and individually fused. The maximum allowable voltage variation should not exceed ten percent of the nameplate rating, even under starting conditions. Low voltages can cause erratic operation and may be responsible for serious damage to the motor windings.

All external wiring should conform to the national, state and local electrical code requirements. Usually electrical permit and services of a licensed electrician will be required. Install separate power line, junction box and grounded conduit for areas the power line is exposed to outside weather, for the Remote Condenser Fan.

WARNING

BE SURE the icemaker is properly grounded and connected to the proper voltage at the location power source, to begin the 12-hour PRE-START heating of the Compressor Crankcase. This precautionary step heats the oil in the Compressor Crankcase, separates refrigerant from oil, which prevents probable damage to the Compressor, at START-UP.

VI. WATER SUPPLY AND DRAIN CONNECTIONS

The recommended water supply line is a ⅜-inch O.D. copper tubing. Connect to cold water supply line with standard plumbing fittings, with a shutoff valve installed in an accessible place between the water supply and the Cuber.

A wire mesh strainer is available and must be installed with the cleanout plug down. Locate the strainer next to the male flare water inlet fitting, at the rear of the Chassis, with the arrow on the strainer positioned in the direction of the water flow. The strainer protects against large particles of rust, scale, etc., which may be loosened in the water supply line at the time of installation.

In some cases a plumbing permit and services of a licensed plumber will be required.

WARNING

DO NOT operate this Modular Cuber when the water supply is shut OFF, or is BELOW the recommended 20 PSIG water pressure. Press the Master ON-OFF toggle switch on the Control Box to OFF immediately.

B. DRAIN CONNECTIONS. All drains are gravity type and must have a minimum of ¼-inch fall per foot on horizontal runs. The drains to be installed to conform with the local plumbing code. Install a vertical open vent on drain line to ensure good venting. The drain receptacle should be an open, trapped or vented construction. See Figure 1-4.

Recommended bin drain is ⅝-inch O.D. copper tubing and should be vented and run separately.

VII. INSTALLATION - OPTIONAL

Install optionals ordered with the HC400R:

1. SPKMC1 - Stainless Steel Cabinet Panels.
2. B40 Bin - 350 lbs. storage capacity.
3. B60 - 550 lbs. storage capacity.
4. B80 Bin - 590 lbs. storage capacity.
5. B90 Bin - 590 lbs. storage capacity.
6. BX15 Bin Extention - 75 lbs.
7. BX25 Bin Extension - 150 lbs.
8. BX83 Bin Extension - 260 lbs.
9. BX85 Bin Extension - 560 lbs.
10. BX87 - Bin Extension - 560 lbs.
11. KBT2 Bin Top.

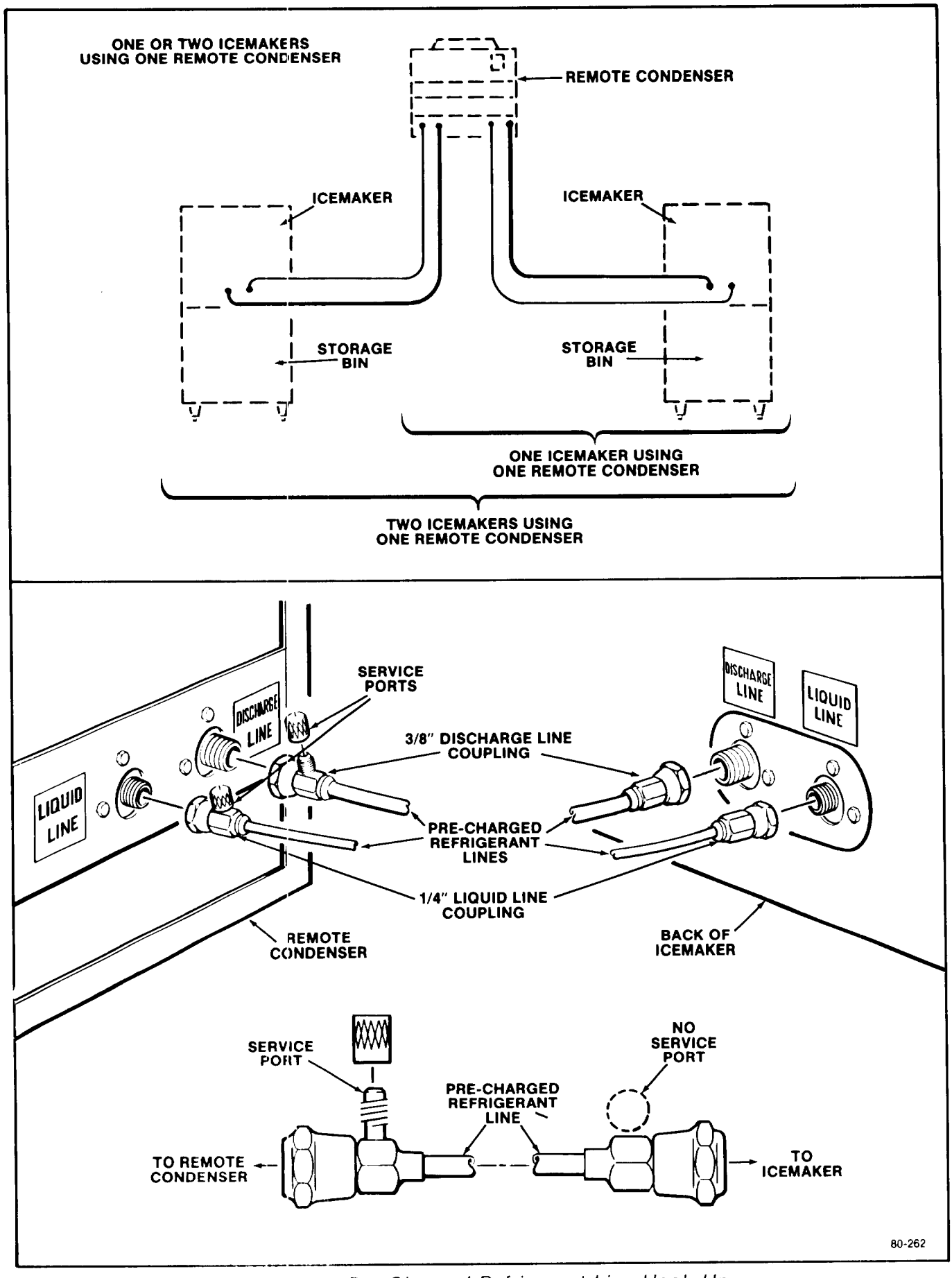


Figure 1-2. Pre-Charged Refrigerant Line Hook-Up

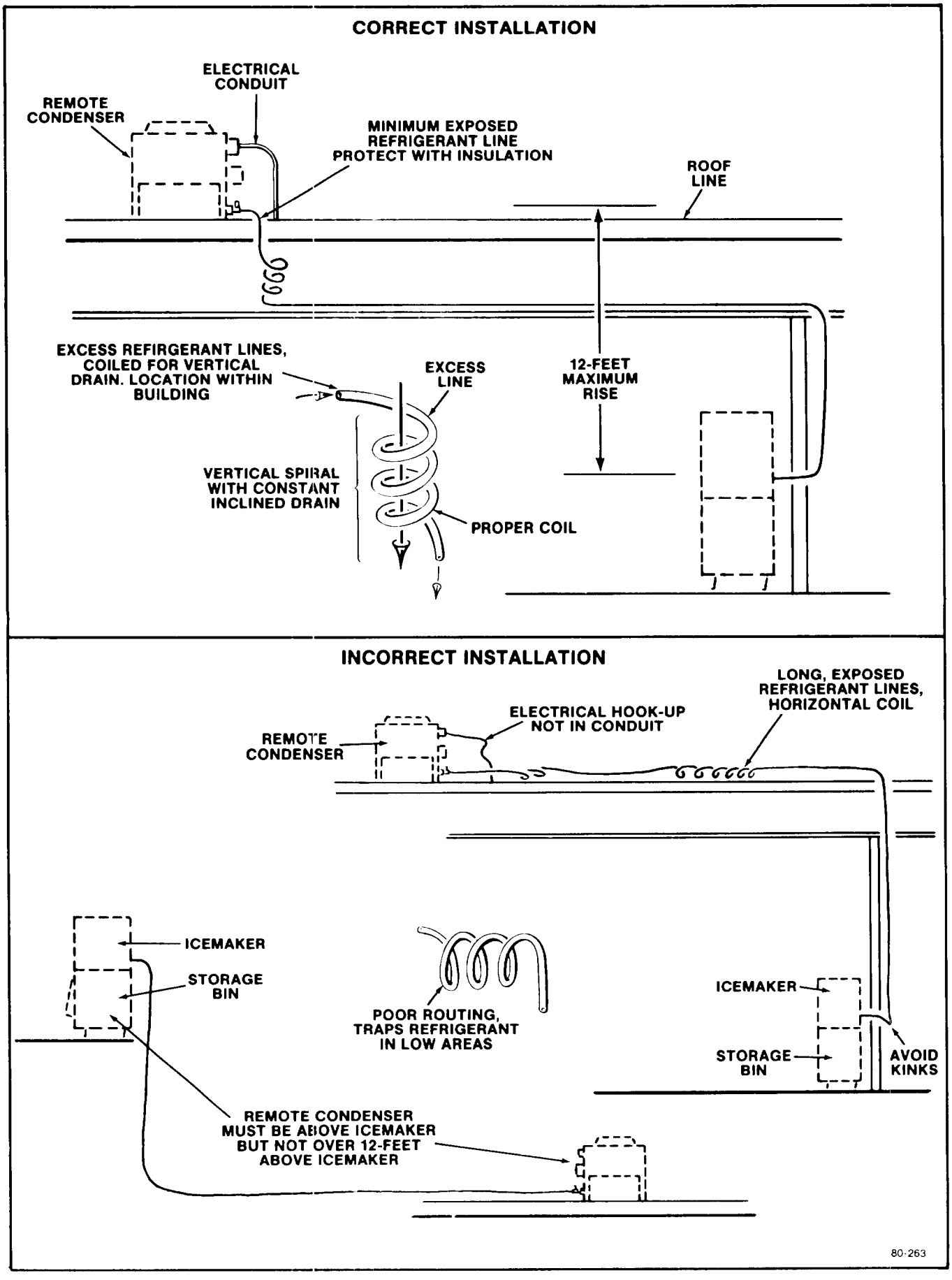
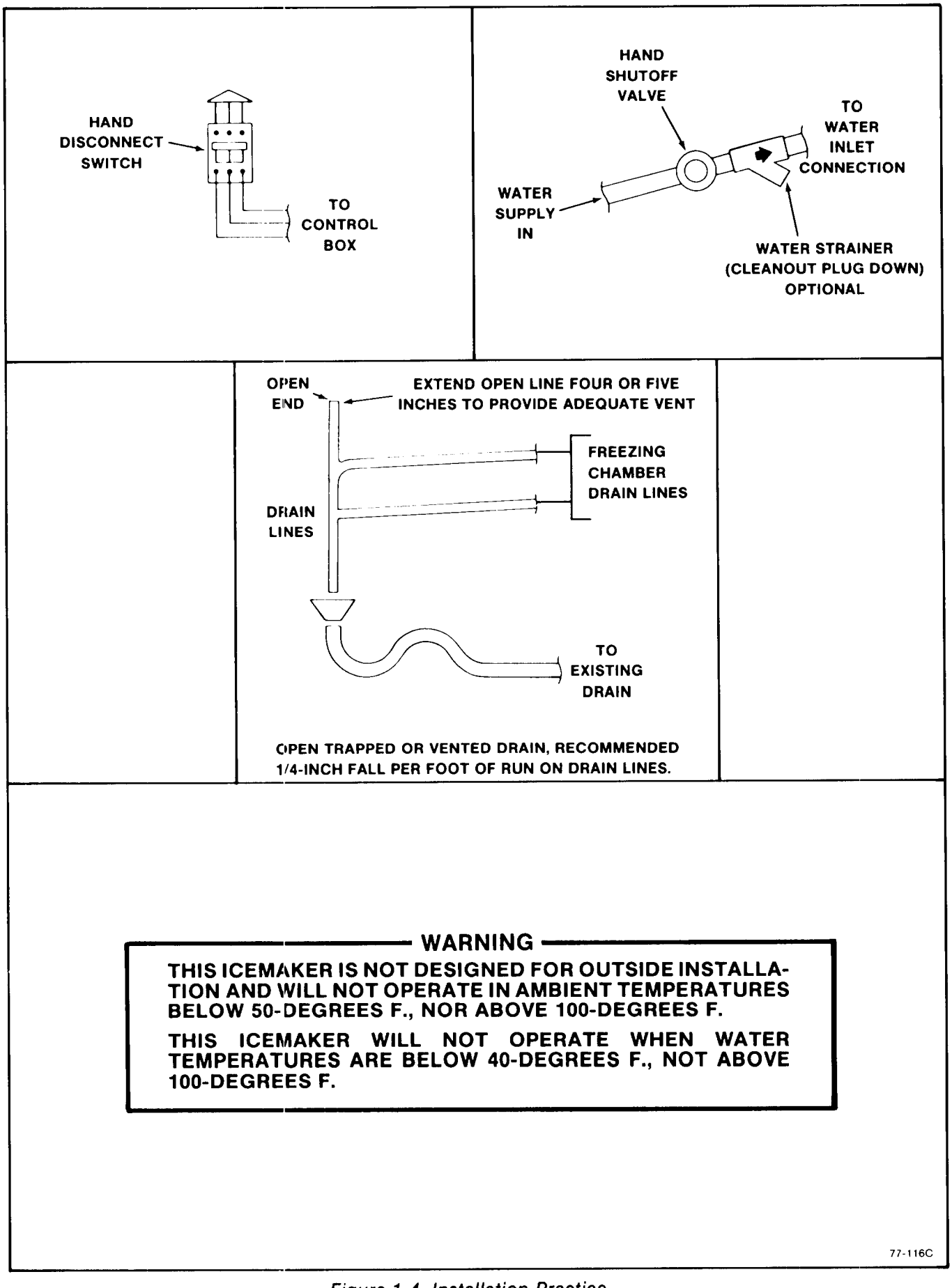


Figure 1-3. Pre-Charged Refrigerant Line Routing



WARNING

THIS ICEMAKER IS NOT DESIGNED FOR OUTSIDE INSTALLATION AND WILL NOT OPERATE IN AMBIENT TEMPERATURES BELOW 50-DEGREES F., NOR ABOVE 100-DEGREES F.

THIS ICEMAKER WILL NOT OPERATE WHEN WATER TEMPERATURES ARE BELOW 40-DEGREES F., NOT ABOVE 100-DEGREES F.

77-116C

Figure 1-4. Installation Practice

VIII. FINAL CHECK LIST

1. Is the Cabinet/Bin level?
2. Is the Cuber in a room where ambient temperatures are a minimum of 50-degrees F. all year around?
3. Is there at least six inches clearance behind the Cabinet, for all connections?
4. All shipping tape removed from doors, panels, styrofoam blocks, etc.?
5. Have all electrical and piping connections been made?
6. Has the electrical power supply wiring been properly connected, and the voltage tested and checked against the nameplate rating? Has proper Chassis-to-earth ground been installed?
7. Is the water supply shutoff valve installed and opened; and, has the inlet water supply pressure been checked to ensure a minimum of 20 PSIG?
8. Have the Compressor hold down bolts been checked, to be sure the Compressor is snug on the mounting pads?
9. Check all refrigerant lines and conduit lines to guard against vibration and possible failure.
10. Check that the Bin Thermostat Control bulb and Bracket have been properly installed.
11. Has the Cuber and Bin been wiped clean with clean damp cloths?
12. Has the Remote Condenser and associated set of pre-charged refrigerant lines been properly installed and connections made and checked?
13. Check to be sure the Ambient Sensing Thermostat, on the Remote Condenser, is set at 50-degrees F.
14. Has a separate electrical power line been routed to the Condenser Fan Motor and Chassis-to-earth ground installed and checked?
15. Has the electrical power to the icemaker been connected to start the 12-hour period of PRE-START crankcase heating?
16. Has the owner been given the User Manual and instructed on how to operate the icemaker and the importance of periodic maintenance?
17. Has the owner been given the name and telephone number of the Authorized SCOTSMAN Distributor or Service Agency serving him?
18. Has the Manufacturer's Registration Card been properly filled out? Check for correct Model and Serial numbers from nameplate then mail the completed card to the SCOTSMAN factory.

SECTION II

OPERATING INSTRUCTIONS

I. START UP

WARNING

Check to BE SURE the 12-hour pre-heating of the Compressor Crankcase has been completed. Be sure the icemaker is properly grounded and connected to proper voltage at the location power source.

1. Move the junction box switch for the Remote Condenser Fan Motor to the ON position.
2. Remove screws, the Top Panel and the Front Panel.
3. Check that the Master ON-OFF and Compressor ON-OFF toggle switches are OFF, on the front of the Control Box.
4. Rotate the shaft of the Timer & Switch Assembly protruding through the hole in the front cover of the Control Box, CLOCKWISE, to start the Timer for filling the reservoir sump, in the Freezing Chamber, with water.

NOTE

Slowly rotate the shaft CLOCKWISE, until the actuator arm on the microswitch drops off of the outer cam into the cam slot. An audible click can be heard, but in a noisy area, look at the cam and switch to observe the event. See A, Figure 2-1.

5. *Move the Master ON-OFF toggle switch to the ON position.*

NOTE

Observe that the Water Inlet Solenoid valve OPENS and inlet water flows from the valve through tubing and can be seen flowing to the Defrost Water Tube, at the top rear of Freezing Chamber, where the water then flows around the inverted ice cube cups and drains into the Freezing Chamber sump. Excess water is overflowed through the standpipe and drain tube. This cycle will take about three minutes, when the Timer will CLOSE the Water Inlet Solenoid Valve.

6. Repeat step 4.
7. After completion of the second Harvest Cycle, move the Compressor ON-OFF toggle switch to the ON position.

NOTE

1. *During START UP, advancing two Harvest Cycles, allows a check that: the Water Inlet Solenoid Valve operates properly; inlet water can be observed flowing; the sump is filled with water in preparation for the Freezing Cycle; and, checks the function of the overflow and drain.*
2. *The Water Pump operates during the defrost Harvest Cycle, Factory testing proved faster defrost and increased ice capacity with continuous operation of the Water Pump.*

8. Temporarily remove Cube Chute for these operational checks.
9. Check that the plastic Curtain hangs evenly and vertically, to prevent loss of water during the Freezing Cycle.

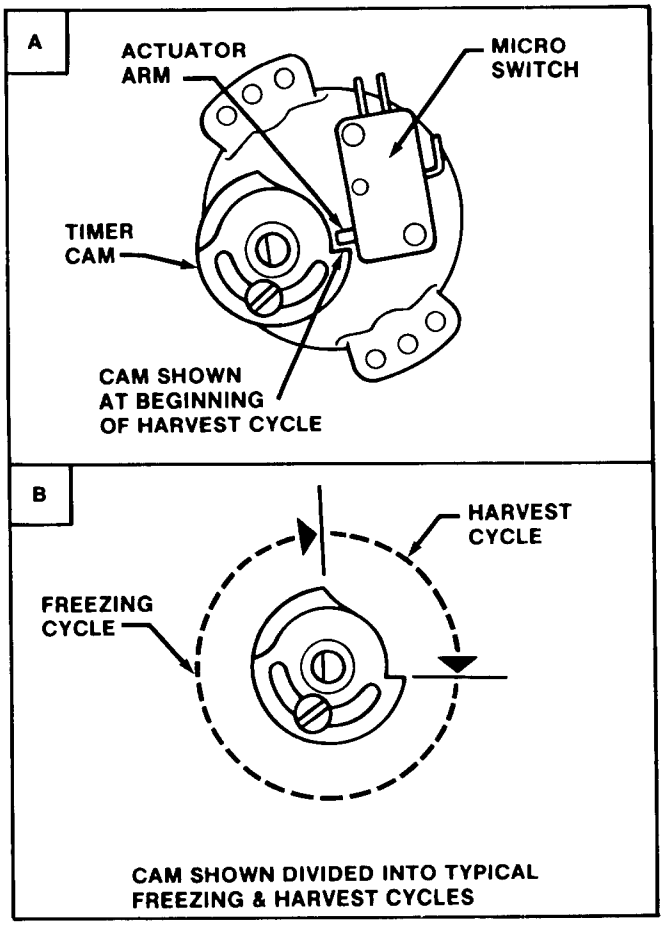


Figure 2-1. Timer Cam Positions

NOTE

The Timer dial does not rotate at the end of the Harvest Cycle, it is started later by the Cube Size Control, in the Control Box.

10. Check operation of Freezing Cycle:
    a. Compressor is operating.
    b. Agitator Motor is operating, as seen by Fan rotating on top of Freezing Chamber. Chamber.
    c. Water Pump is operating, as seen at Tygon Tubes on Pump and looking at water being sprayed into inverted ice cube cups, from rotating Spray Bar, seen inside Freezing Chamber.
    d. Icemaking process begins: feeling inside ice cube cups reveals cold temperatures and very shortly ice begins to form.

NOTE

Freezing time will range between 17 to 25 minutes in a 70-degree F. ambient temperature. Longer time, for temperatures above 70-degrees F. and shorter time required when temperatures are below 70-degrees F. Average complete cycle range is about 20 to 30 minutes.

WARNING

DO NOT operate this Icemaker when the water supply is shut OFF, or is BELOW the recommended 20 PSI water pressure. Move the Master ON-OFF toggle switch to OFF, immediately.

11. Replace the plastic Cube Chute, before Harvest Cycle begins.
12. Observe first ice cube harvest:
    a. Check size of ice cubes: when too small after a second harvest, refer to procedure IV-II, for adjustment to Cube Size Control to increase size of ice cube.

NOTE

Normal cube size is with a one-quarter inch depression in the crown.

    b. Check texture of ice cubes: when partially cloudy throughout, suggests icemaker operating short of water, near end of freezing cycle, or possibly an extreme problem water condition, where in filtering or purifying equipment is recommended. Contact SCOTSMAN - Queen Products Division, Service Department, Albert Lea, Minnesota, for further details.
13. With the icemaker in the Harvest Cycle, hold ice against the Bin Thermostat Control bulb to test shutoff, which should cause the icemaker to shut OFF at the end of the Harvest Cycle.

NOTE

Within minutes after the ice is removed from the sensing bulb, the bulb will warm up and cause the icemaker to restart. This control is factory set and should not be reset until testing is performed. Normal setting is about 35-degrees F. CUT-OUT and 39-degrees F. CUT-IN.

14. Install refrigerant service gauges on the high side and low side Schrader valve fittings and check the Compressor head pressure and back pressure.

NOTE

Air-Cooled Models: Head pressure after 20 minutes of Freezing Cycle, at 70-degree F. ambient temperature, will be about 135 PSIG. The back pressure tends to equalize during hot gas defrost and gradually pulls down to about four PSIG, just before Harvest Cycle. Higher ambient temperatures and dirty Condenser will cause higher pressure.

15. Replace Control Box Cover and all service panels.
16. Remove refrigerant service gauges.
17. Thoroughly explain to the owner/user the significant specifications of the Icemaker, the start up and operation, going through the procedures in the operating instructions. Answer all questions about the Icemaker, by the owner; and, inform the owner of the name and telephone number of the authorized SCOTSMAN Distributor, or Service Agency serving him.

SECTION III
PRINCIPLES OF OPERATION - How It Works

I. FREEZING CYCLE

Water from the sump in the reservoir of the Freezing Chamber is pumped to a rotating Spray Bar Assembly, which is powered by the Agitator Motor drivemotor on top of the Freezing Chamber. Each Spray Bar Assembly has ten jets through which water is uniformly sprayed into the inverted ice cube cup molds of the Freezing Chamber Evaporator. See Figure 3-1. At the beginning of the Freeze Cycle, the electrical circuit is completed to the Compressor, Water Pump, and the coil of the Finish Relay. The Water Pump operates continuously during the Freeze Cycle, through contacts of the Finish Relay.

Refrigerant is compressed in the Compressor and discharged into the Condenser as a high pressure, high temperature gas. The refrigerant is cooled and condensed by air and condenses to a high pressure, high temperature liquid. This liquid refrigerant, then passes through a Receiver, which stores excess refrigerant not required at high condensing temperatures: then, on to the Thermostatic Expansion Valve where the temperature and pressure of the liquid refrigerant are lowered. The low pressure, low temperature liquid refrigerant, next enters the Evaporator. The refrigerant is warmed by water being sprayed against the Evaporator and begins to boil off, to become a gas. The refrigerant next travels through the Accumulator, where any remaining liquid refrigerant then returns to the Compressor as a low pressure, low temperature gas, and the cycle starts again.

During the Freezing Cycle, both the Water Inlet Solenoid Valve and the Hot Gas Solenoid Valve are CLOSED.

When the ice cubes are about three-quarters formed, the Cube Size Control bulb located on the Evaporator inlet lines will sense the temperature at which it is preset to CLOSE.

This will complete the electrical circuit to the Timer. The Timer then controls the remainder of the cycle.

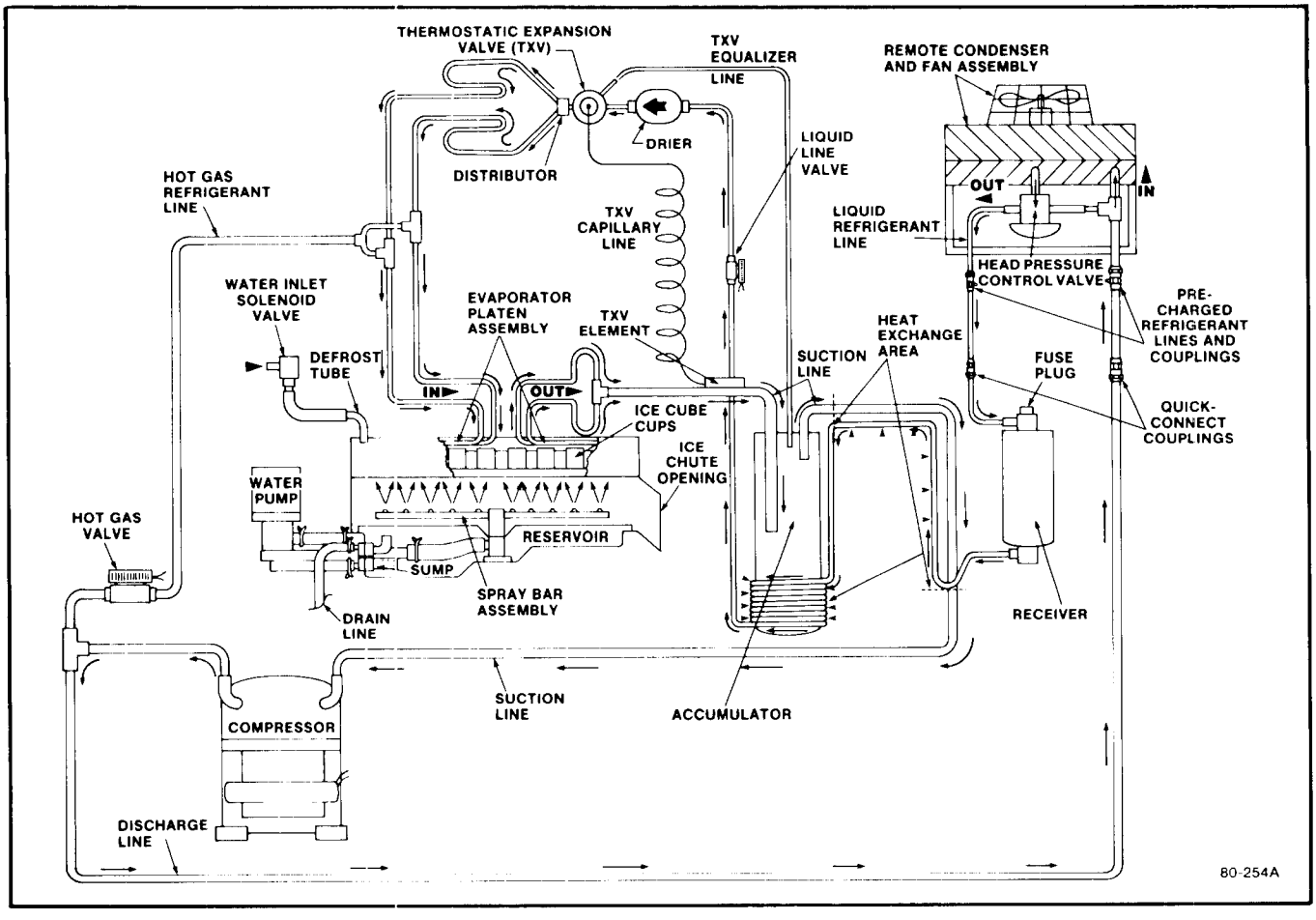


Figure 3-1. Freezing Cycle

The Timer will keep the Icemaker operating in the Freezing Cycle for the next six minutes. This will give the cubes time to fully form. After six minutes, the Timer will switch the Icemaker into the Harvest Cycle, through the contacts of the Timer Assembly microswitch.

II. HARVEST CYCLE

When the Timer switches the Icemaker into the Harvest Cycle, hot gas being discharged from the Compressor is diverted from the Condenser through the Hot Gas Solenoid Valve into the Evaporator. During this cycle, the hot gas circulates from the Compressor to the Evaporator and back again, bypassing the Condenser and Thermostatic Expansion Valve. In the electrical circuit, the Compressor is operating and both the Water Inlet Solenoid Valve and the Hot Gas Solenoid Valve are energized. See Figure 3-2.

Opening the Water Inlet Solenoid Valve, allows a fresh water supply to be discharged into the top of the Evaporator platen assembly. The finished ice cubes are released from the Evaporator, by the warming effect of the hot gas flowing through the Evaporator tubes and the water flow around the ice cube molds. The released ice cubes drop into the inner bottom of the Freezing Chamber and pushed by the rotating Spray Bar Assembly out the slightly slanted ice chute opening, down the plastic Cube Chute and into the ice storage bin. At the end of the Harvest Cycle, the Timer cam will push the actuator arm of the microswitch IN. If the Bin Thermostat is still CLOSED, a whole new cycle will begin. If the Bin Thermostat is OPEN, the icemaker will shut OFF at this time.

III. PUMP DOWN CYCLE CIRCUIT

Three added components, in this series icemaker, control the pump down cycle function: a Contactor, a liquid line Solenoid Valve and a Lo-Pressure Control.

At the end of the Finishing Cycle the liquid line Solenoid Valve will CLOSE. The low side pressure is ABOVE the Lo-Pressure Control setting, which allows the Compressor to continue to PUMP DOWN to 10 PSIG, at which time the Lo-Pressure Control will OPEN, de-energizing the Contactor, which SHUTS OFF the Compressor. As the low side pressure builds back up to 43 PSIG, the Lo-Pressure Control CLOSES, and the cycle starts again.

IV. COMPONENT DESCRIPTIONS

A. BIN THERMOSTAT CONTROL

The Bin Thermostat Control is located in the

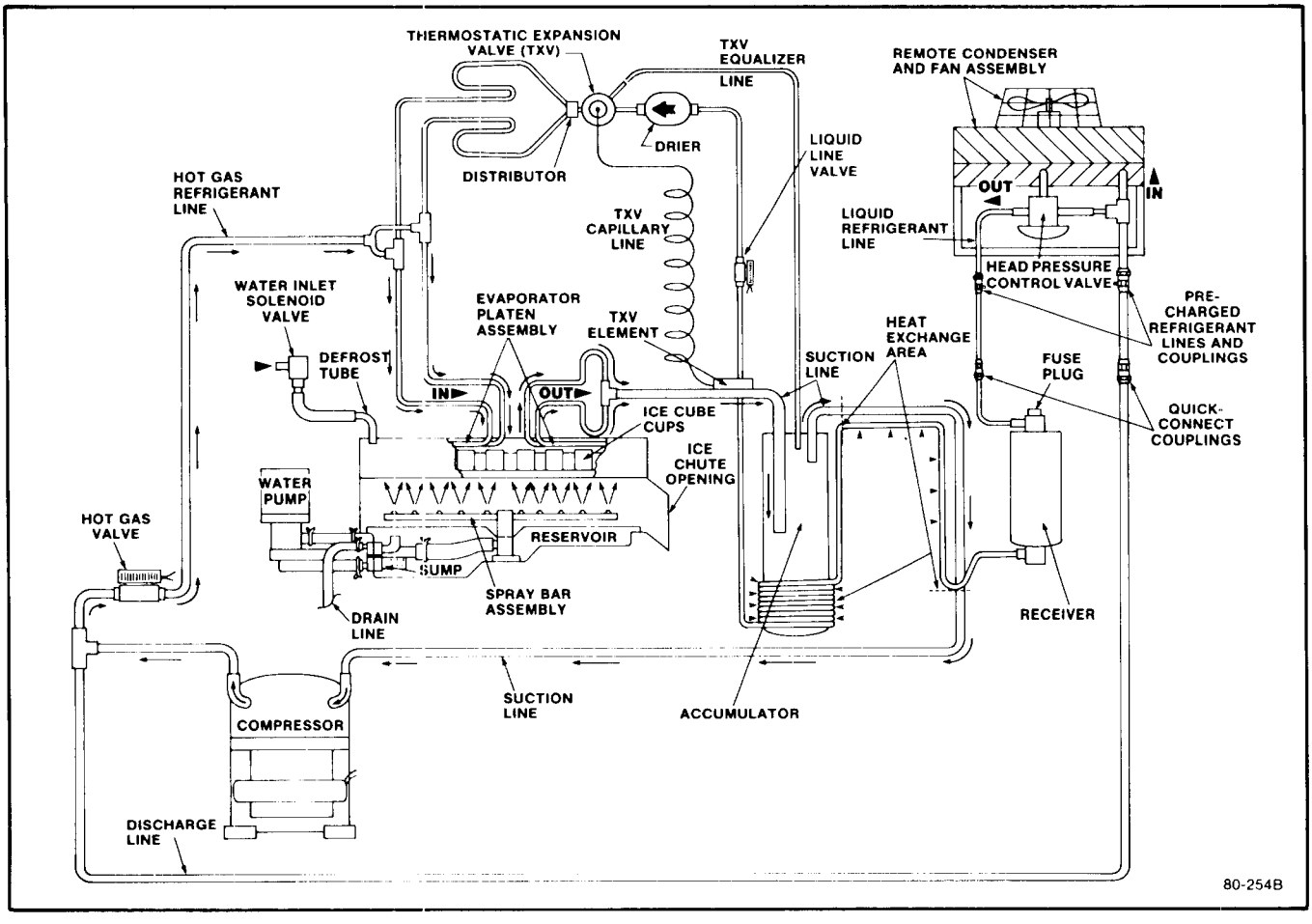


Figure 3-2. Harvest Cycle

right side of the gusset in the front upper corner of the Chassis frame. The sensing capillary tube of the control is routed downward and into the ice storage Bin. The capillary tube is threaded through the grommeted holes of the combination cube deflector and thermostat bulb bracket. The Bin Thermostat Control functions to automatically shut OFF the Icemaker, when the ice storage Bin is filled and ice contacts the capillary tube. It also signals the RESTART of the Icemaker when the capillary tube starts to warm up, after ice has been removed from the Bin.

NOTE

Altitude adjustment should ONLY be performed on Icemakers installed at 2000-foot level locations and ABOVE, and adjust only in increments of one-fourth turn of a screw at a time.

B. COMPRESSOR CRANKCASE HEATER

The Compressor Crankcase Heater is an electrical wire band heater located around the lower outside shell of the Compressor, below the level of the crankcase oil in the Compressor. The heat generated by the Crankcase Heater heats oil in the crankcase, which keeps the oil separated from the refrigerant; and, during the OFF cycle, prevents the refrigerant from migrating back into the Compressor from other areas of the refrigeration system; which can cause severe damage to the Compressor, at STARTUP.

WARNING

BE SURE the Compressor Crankcase Heater is ON, 12-HOURS BEFORE STARTUP, to properly heat crankcase oil, and separate the refrigerant from the oil and PREVENT POSSIBLE DAMAGE to the Compressor, at START-UP.

C. COMPRESSOR START RELAY

The Compressor Start Relay functions to carry the Compressor line current. The relay is wired so any control in the pilot circuit, such as the Bin Thermostat, Low Pressure - and High Pressure Controls, etc., will cause the relay holding coil to be de-energized, when the control contact OPENS, thereby breaking the circuit to the Compressor through the relay points.

D. CUBE SIZE CONTROL

The temperature sensing Cube Size Control affects the length of the Freezing Cycle prior to initiating the Finishing Timer. The Cube Size Control closes its contacts when the Evaporator reaches a preset temperature, starting the Finishing Timer. A variation in either ambient air or incoming water temperature will affect the efficiency of the refrigeration system. This will vary the length of time it takes the Evaporator to reach the temperature at which the Cube Size Control is preset to CLOSE; which, in turn, will affect the overall cycle time.

NOTE

Be sure to refer to procedure IV-II, Adjustment of the Cube Size Control, BEFORE attempting to adjust the control.

E. FINISH RELAY

The multi-function, three pole, double-throw, plug-in relay is installed directly into a receptacle on the printed circuit board in the Control Box. The relay functions, in part, to by-pass the Bin Thermostat Control, to prevent the Icemaker from shutting OFF, when a filled-bin condition occurs, during the Freezing Cycle. The by-pass action serves to ensure full-sized ice cubes with each Harvest cycle; and, to prevent short cycling on the Bin Thermostat Control.

F. FINISHING TIMER - Timer & Switch Assembly

The function of the Finishing Timer begins when activated by the Cube Size Control. The Timer controls a fifteen minute dual function: eleven and one-half minutes are programmed to finish freezing the ice cubes and the final three and one-half minute portion is for the defrost operation and harvest of the ice cubes. All electrical circuitry is connected through the printed circuit board and the Finishing Timer and shunted by the single-pole, double-throw microswitch to either the Freezing Cycle or the Harvest Cycle. The microswitch is actuated by a Cam Assembly directly connected to the Timer Motor. The Timer Cam can be adjusted to vary the defrost timer as required.

G. HOT GAS SOLENOID VALVE

The Hot Gas Solenoid Valve functions only during the Harvest Cycle, to divert the hot discharge gas from the Compressor, by-passing the Condenser and capillary tube, for direct flow to the Evaporator Platen Assembly to release ice cubes from the inverted ice cube molds. The Hot Gas Solenoid Valve is comprised of two parts, the Body & Plunger and the Coil & Frame assemblies. Installed in the discharge line of the Compressor, the energized solenoid coil lifts the valve stem within the valve body to cause the hot discharge gas to be diverted when the Finishing Timer has advanced to the start of the Harvest Cycle.

H. SPRAY BAR ASSEMBLY

The Spray Bar Assemblies are rotated by the Agitator Motor, a small drivemotor mounted on top of the Freezing Chamber; and, designed to channel recirculating water to small jets for uniformly spraying water into the inverted ice cube cups. The Celcon material, used in fabricating the Spray Bar parts, is not subject to chemical attack by either acidic or alkaline materials at low temperatures or at high temperatures. Because of the smooth non-porous surface of the Celcon material Spray Bar, foreign materials have difficulty trying to adhere to these surfaces, thereby, reducing the usual frequency of cleaning procedures.

NOTE

Refer to procedure V-IV, CLEANING - Icemaker; and, for problems requiring removal of parts refer to procedure IV-XI, for details for removing the Spray Bar Assembly.

I. WATER INLET SOLENOID VALVE

The Water Inlet Solenoid Valve functions only during the Harvest Cycle, when it is energized to permit a metered, gallon-per-minute rate of incoming water, to flow through the Defrost tube onto the top of the plastic Platen Assembly, assisting in the harvest of ice cubes. The water drains through holes in the Platen Assembly into the Reservoir in the lower section of the Freezing Chamber; and there, the water is recirculated through the Water Pump for return to the Spray Bars.

J. THERMOSTATIC EXPANSION VALVE

The Thermostatic Expansion Valve regulates the amount of refrigerant admitted into the evaporator during the Freezing Cycle. The operation of the Valve is determined by three fundamental pressures: (1) Capillary bulb pressure acts on one side of the diaphragm, tends to OPEN the Valve; (2) Evaporator pressure acts on the opposite side of the diaphragm, and tends to CLOSE the Valve; and, (3) Spring pressure, within the Valve, which also assists in the CLOSE action, is applied to the pin carrier and is transmitted through push rods to a buffer plate on the Evaporator side of the diaphragm.

When liquid refrigerant in the Evaporator evaporates and becomes superheated, the temperature increases, and the capillary bulb senses increased temperature and changes its refrigerant correspondingly, increasing temperature and pressure. This pressure, acting on the bulb side of the diaphragm, is greater than the opposing Evaporator pressure plus spring pressure, causing the valve pin to be moved away from the valve seat, thus admitting liquid refrigerant into the Evaporator until the pressures equalize and the valve CLOSES.

REFRIGERANT CHARGE

MODEL	Refrig. Chg.
HC400R	72 oz. R-12 (Approx.) (Icemaker ONLY)

NOTE

Always CHECK NAMEPLATE on individual Icemaker for specific refrigerant charge, BEFORE charging the refrigeration system. The above listed refrigerant charges are approximate charges for the HC400R Cubers, however it is important to CHECK NAMEPLATE for each Icemaker, especially when there are different Compressors. See table below, for charging weights of the refrigerant, when charging the complete refrigerant system. SEE usage label on the Rear Panel for each icemaker.

REMOTE CONDENSER	PRE-CHARGED REFRIGERANT LINE KIT	COMPLETE SYSTEM REFRIGERANT CHARGE
RC151	RT225	136 oz.
RC151	RT240	136 oz.
RC202	RT225	112 oz.
RC202	RT240	112 oz.
RC303	RT225	112 oz.
RC303	RT240	112 oz.

SECTION IV
ADJUSTMENT & REMOVAL & REPLACEMENT

The procedures provided in this Section are arranged in alphabetical order, to make specific Adjustment and Removal and Replacement information easy to locate.

Read the instructions thoroughly before performing any Adjustment or Removal and Replacement Procedures.

I. ADJUSTMENT OF THE BIN THERMOSTAT CONTROL

The control for the Bin Thermostat is the Temperature Control, located in the right side of the gusset in the front upper corner of the Chassis frame.

See Figure 4-1 for location and direction of rotation, clockwise (CW) or counterclockwise (CCW), of the adjusting screws on the Temperature Control, the adjustment is to be performed.

WARNING

The adjusting screws on the Temperature Control device have very sensitive response to adjustment. DO NOT attempt to adjust the screw until after thoroughly reading and understanding the following instructions and illustration. Over-adjusting or erratic guessing, can foul the instrument and cause ultimate delay and part replacement, WHICH COULD HAVE BEEN PREVENTED.

II. ADJUSTMENT OF THE CUBE SIZE CONTROL

CAUTION

BEFORE performing actual adjustment to the Cube Size Control, check other possible

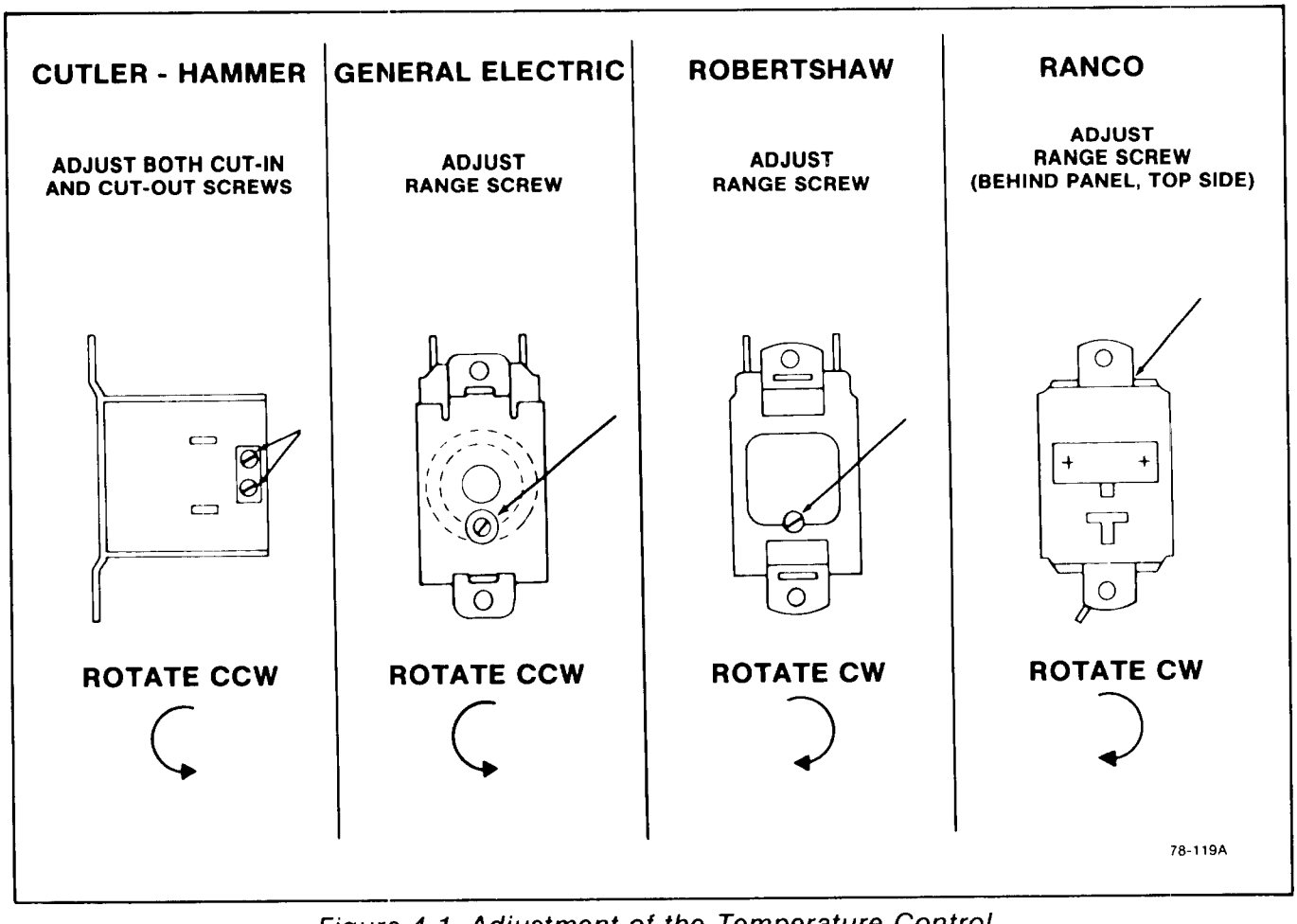


Figure 4-1. Adjustment of the Temperature Control

causes for cube size problems, refer to Section VI, SERVICE DIAGNOSIS for problem review and analysis.

DO NOT perform adjustment when a new Cube Size Control is installed, until the control bulb has been properly installed in the tube well, on the refrigerant tube of the Platen Assembly and the Icemaker has progressed through several complete freezing and harvest cycles, to observe size and quality of ice cubes and whether or not a cube size problem exists.

As a reverse acting temperature control, adjustment on the Cube Size Control is performed to either cause larger sized ice cubes or smaller sized ice cubes to be produced.

A. To Produce LARGER Sized Ice Cubes:

1. Locate the Cube Size Control, in the left side of the gusset in the front upper corner of the Chassis frame.
2. Rotate the adjusting screw one-eighth of a turn CLOCKWISE toward COLDER.
3. Observe size of ice cubes in next two ice cube harvests and repeat step 2 above, in one-eighth turn increments, until desired ice cube size is achieved.

B. To Produce SMALLER Sized Ice Cubes:

1. Locate the Cube Size Control, in the left side of the gusset in the front upper corner of the Chassis frame.
2. Rotate the adjusting screw one-eighth of a turn COUNTERCLOCKWISE toward WARMER.
3. Observe size of ice cubes in next two ice cube harvests and repeat step 2 above, in one-eighth turn increments, until desired ice cube size is achieved.

III. ADJUSTMENT OF THE TIMER & SWITCH ASSEMBLY

The Timer & Switch Assembly is factory set, so that one complete revolution of the cam on the Timer represents fifteen minutes. Eleven and one-half minutes comprise the freezing cycle event during cam rotation, and the final three and one-half minutes program the defrost and harvest cycle. Rotating the shaft of the Timer Cam, CLOCKWISE will allow positioning the actuator arm of the microswitch on the cam at the selected start position for either the freezing cycle or harvest cycle, as required, during the START UP procedures and in the CLEANING instructions. Rotating the shaft COUNTER-CLOCKWISE will unscrew the shaft from the threaded stud on the Timer Cam.

To Adjust the Timer Switch Assembly:

A. HARVEST CYCLE: Slowly rotate the shaft of the Timer & Switch Assembly, located in the hole in the front of the Control Box Cover, CLOCKWISE, until the actuator arm on the microswitch drops off of the outer cam into the cam slot. An audible click can be heard, but in a noisy area, look at the cam and switch to observe the event. See Figure 4-2.

B. FREEZING CYCLE: Slowly rotate the shaft of the Timer & Switch Assembly, located in the hole in the front of the Control Box Cover, CLOCKWISE, until the actuator arm on the microswitch rides up out of the cam slot to the start of the surface of the outer cam.

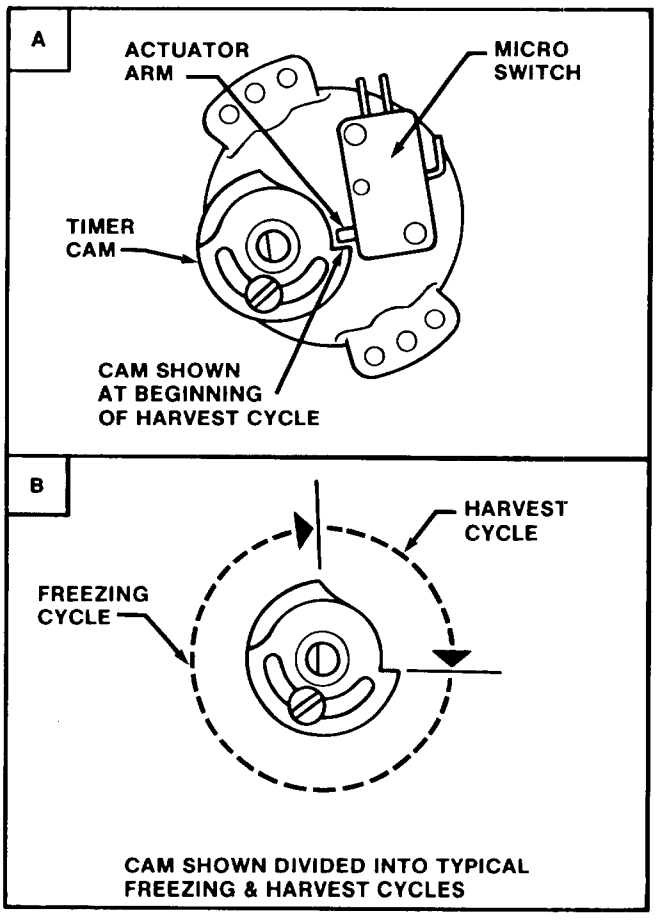


Figure 4-2. Adjustment of the Timer & Switch Assembly.

WARNING

Be sure the electrical power supply and the water supply are OFF BEFORE starting any of the following REMOVAL AND REPLACEMENT procedures as a precaution to prevent possible personal injury or damage to equipment. BEFORE RE-START, be sure Compressor Crankcase Heater is ON for 12-hour period.

IV. REMOVAL AND REPLACEMENT OF THE AGITATOR MOTOR ASSEMBLY

A. To remove the Agitator Motor Assembly:

1. Remove screws and the Top Panel and Front Panel to gain access to the Agitator Motor.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.
3. Remove three U-Type Clips and the plastic Curtain Assembly.
4. Reach through the ice chute opening in the Freezing Chamber and feel for the Spray Bar.
5. Move hand to the center hub and rotate the Spray Bar, so one end is aligned with the ice chute opening.
6. Lift the Spray Bar up, off of the jet bearing hub, then, remove the Spray Bar through the ice chute opening.
7. Disconnect electrical leads and ground wire from terminals on the Agitator Motor.
8. Reach through the ice chute opening, as before, and grasp the top Drive Fork with one hand, and the Agitator Motor Fan, on top of the Freezing Chamber, with the other hand. See Figure 4-3.
9. Hold the Fan blades still and rotate the left-hand thread Drive Fork to the right, COUNTERCLOCKWISE, and unscrew the Drive Fork from the Agitator Motor.
10. Remove four screws and lift the Agitator Motor out the top of the Freezing Chamber.

B. To replace the Agitator Motor Assembly, reverse the removal procedure.

V. REMOVAL AND REPLACEMENT OF THE BIN THERMOSTAT CONTROL

A. To remove the Bin Thermostat Control:

1. Remove screws and the Front Panel to gain access to the Bin Thermostat Control.
2. Trace capillary tube, from the Bin Thermostat Control, down to the Cube Deflector.
3. Carefully remove the capillary tube from the bulb holder holes on the side of the Cube Deflector.
4. Carefully withdraw the capillary tube from the Bin, up through the Chassis Base.
5. Remove electrical leads from the Bin Thermostat Control.
6. Remove screws and the Bin Thermostat Control.

B. To replace the Bin Thermostat Control,

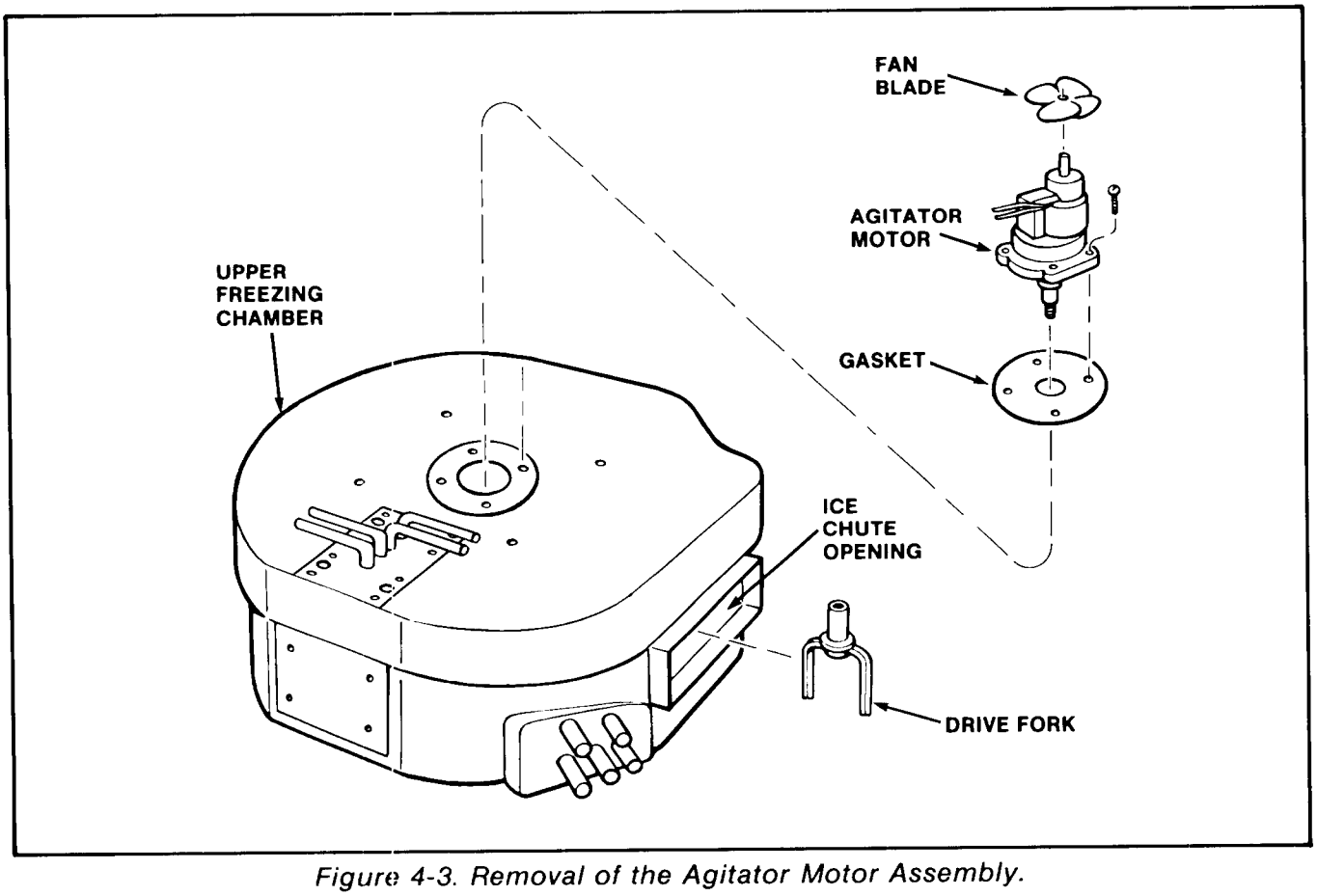


Figure 4-3. Removal of the Agitator Motor Assembly.

reverse the removal procedures.

VI. REMOVAL AND REPLACEMENT OF THE COMPRESSOR ASSEMBLY

CAUTION

Always install a replacement Drier, anytime the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed. BE SURE the Compressor Crankcase Heater is ON, 12-HOURS BEFORE STARTUP.

A. To remove the Compressor Assembly:

1. Remove screws and the Top, Front and Left Side Panels.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Remove the cover from the terminal box on the Compressor; then, remove screws and electrical leads from the Compressor.
4. Disconnect the Compressor Crankcase electrical leads from the Control Box.
5. Unsolder the refrigerant suction line and the discharge line from the Compressor.
6. Remove four bolts and washers which secure the Compressor to the Chassis mounting base.
7. Slide and remove the Compressor from the left side of the Cabinet.
8. Unsolder the process header from the Compressor and retain for installation on the replacement Compressor.

NOTE

Prior to next step, note the exact location of the Compressor Crankcase Heater on the Compressor, so installation will be the same on the replacement Compressor.

9. Loosen and remove the Compressor Crankcase Heater from Compressor. Retain for replacement Compressor.

B. To replace the Compressor Assembly, reverse the removal procedure.

VII. REMOVAL AND REPLACEMENT OF THE CUBE SIZE CONTROL

A. To remove the Cube Size Control:

1. Remove screws and the Front Panel to gain access to the Cube Size Control.
2. Trace capillary Tube, from the Cube Size Control, to the refrigerant suction line on the Evaporator Platen Assembly; then peel back the insulation.
3. Remove clips and the coiled capillary tube bulb out of the Freezer section of the Cabinet.
4. Remove electrical leads from the Cube Size Control.
5. Remove screws and the Cube Size Control.

B. To replace the Cube size Control, reverse the removal procedure.

VIII. REMOVAL AND REPLACEMENT OF THE CURTAIN ASSEMBLY

A. To remove the Curtain Assembly:

1. Remove screws and the Right Side Panel to gain access to the Curtain Assembly to be removed.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.

NOTE

Before removing the Curtain Assembly in the next step, look inside the ice chute opening to note the irregular end of the plastic stiffener of the Curtain Assembly is installed at the left side of the opening.

3. Remove three U-Type Clips and the plastic Curtain Assembly from the top lip of the ice chute opening.

B. To replace the Curtain Assembly, reverse the removal procedure.

NOTE

Be sure to install the replacement Curtain Assembly with the irregular end of the plastic stiffener positioned at the left side of the ice chute opening; and, the edge of the Curtain is dressed evenly with the top lip of the ice chute opening and secured with three U-Type Clips. The thin, clear plastic sheet of the curtain should hang down evenly.

IX. REMOVAL AND REPLACEMENT OF THE DRIER

CAUTION

Always install a replacement Drier, anytime the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed. BE SURE the Compressor Crankcase Heater is ON, 12-HOURS BEFORE STARTUP.

A. To remove the Drier:

1. Remove the screws and the Left Side Panel and the Front Panel.

2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Remove the clamp attaching the Drier to the Chassis base.
4. Unsolder refrigeration lines at both ends of the Drier.

B. To replace the Drier:

CAUTION

1. If the factory seal is broken on the replacement Drier, exposing it to the atmosphere more than a few minutes, the Drier will absorb moisture from the atmosphere and lose substantial ability for moisture removal.

2. Be sure the replacement Drier is installed with the arrow positioned in the direction of the refrigerant flow.

1. Remove the factory seals from the replacement Drier and install the Drier in the refrigerant lines with the arrow positioned in the direction of the refrigerant flow.
2. Solder the Drier into the lines, two places.
3. Secure Drier to Chassis base with the clamp.
4. Purge the system and check for leaks.
5. Thoroughly evacuate the system to remove moisture and non-condensables.
6. Charge the system with refrigerant, by weight. SEE NAMEPLATE.
7. Replace and attach the Left Side Panel and the Front Panel.

X. REMOVAL AND REPLACEMENT OF THE FREEZING CHAMBER

A. To remove the Freezing Chamber:

1. Remove screws and the Top Panel, Front Panel and the Right Side Panel to gain access to the Freezing Chamber.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.
3. Remove three U-Type Clips and the plastic Curtain Assembly.
4. Reach through the ice chute opening in the Freezing Chamber and feel for the Spray Bar.
5. Move hand to the center hub and rotate the Spray Bar, so one end is aligned with the ice chute opening.
6. Lift the Spray Bar up, off of the jet bearing hub, then, remove the Spray Bar through the ice chute opening.
7. Disconnect electrical leads and ground wire from terminals on the Agitator Motor.
8. Reach through the ice chute opening, as before, and grasp the Drive Fork with one hand, and the Agitator Motor Fan on top of the Freezing Chamber, with the other hand.
9. Hold the Fan Blades still and rotate the left-hand thread Drive Fork to the right. COUNTERCLOCKWISE, and unscrew the Drive Fork from the Agitator Motor.
10. Remove four screws and lift out the Agitator Motor.
11. Remove hose clamps and work loose four Tygon Tubes from the Freezing Chamber, three from the Water Pump and one drain tube.
12. Carefully lift the Platen and Cover Assembly, and tie off or use a board to support, and give ample space to allow removal of the Freezing Chamber.
13. Remove screws, lockwashers and bolts and and the Freezer Mount Plates.
14. Carefully work the Freezing Chamber out of the Chassis.

B. To replace the Freezing Chamber, reverse the removal procedure.

XI. REMOVAL AND REPLACEMENT OF THE SPRAY BAR ASSEMBLY

A. To remove the Spray Bar Assembly:

1. Remove screws and the Right Side Panel to gain access to the Spray Bar Assembly.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.
3. Remove three U-Type Clips and the plastic Curtain Assembly.
4. Reach through the ice chute opening in the Freezing Chamber and feel for the Spray Bar.
5. Move hand to the center hub and rotate the Spray Bar, so one end is aligned with the ice chute opening.
6. Lift the Spray Bar up, off of the jet bearing hub, then, remove the Spray Bar through the ice chute opening.

B. To replace the Spray Bar Assembly, reverse the removal procedure.

XII. REMOVAL AND REPLACEMENT OF THE THERMOSTATIC EXPANSION VALVE

CAUTION

Always install a replacement Drier, anytime the

sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed. BE SURE the Compressor Crankcase Heater is ON, 12-HOURS BEFORE STARTUP.

A. To remove the Thermostatic Expansion Valve:

1. Remove screws and the Front Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.

NOTE

Before actual removal of the capillary bulb from the suction line, in the next step, MAKE NOTE or MARK, the exact location position, for precise replacement positioning of bulb.

3. Unwrap insulation, loosen clamp, mark position, and remove the capillary bulb of the Thermostatic Expansion Valve from the suction line of the Evaporator.

CAUTION

Wrap the Thermostatic Expansion Valve with WET CLOTHS, to protect the sensitive parts during soldering and installation. DO NOT direct flame toward the Valve, or the capillary line and bulb. Use extra care to KEEP DIRECT FLAME from these parts.

4. With Thermostatic Expansion Valve protected with WET CLOTHS, unsolder two ¼-inch O.D. lines from the body of the Valve.
5. Unsolder two 3/16-inch O.D. lines from the Evaporator inlet tubing and remove the Valve.

B. To replace the Thermostatic Expansion Valve, reverse the removal procedures and follow special precautions given for steps in installing and soldering Valve tubing.

XIII. REMOVAL AND REPLACEMENT OF THE WATER PUMP ASSEMBLY

A. To remove the Water Pump Assembly:

1. Remove screws and the Right Side Panel and the Front Panel.
2. Remove one screw and one end of the green ground wire from the Water Pump Bracket.
3. Remove two screws and washers attaching the Water Pump Assembly to the Water Pump Bracket.
4. Remove three hose clamps connecting the three Tygon Tubes to the Freezing Chamber; then, lift the Water Pump Assembly off of the Water Pump Bracket and work loose the three attached Tygon Tubes from the Freezing Chamber.

B. To replace the Water Pump Assembly, reverse the removal procedure.

XIV. REMOVAL AND REPLACEMENT OF REMOTE CONDENSER FAN MOTOR ASSEMBLY, THERMOSTAT CONTROL, HEAD PRESSURE CONTROL VALVE

CAUTION

Always install a replacement Drier, anytime the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed. BE SURE the Compressor Crankcase Heater is ON, 12-HOURS BEFORE STARTUP.

WARNING

Be sure the electrical power supply to the Remote Condenser Fan Motor is OFF and the electrical power supply to the icemaker is OFF.

1. Loosen screws securing the wire guard around the Fan Blade on top of the Remote Condenser; then, rotate the wire guard hooks away from the screws and remove the wire guard.

CAUTION

BEFORE removing the Fan Blade in the next step, observe and mark the exact location of the height of the Fan Blade, on the shaft of the Fan Motor. This is a critical point, to be sure the replacement Fan Blade is installed in the same position, for proper balance and maximum efficiency of air flow. USE CARE in handling Fan Blade to prevent bending blades or otherwise disturbing the sensitive balance.

2. Loosen two setscrews, note and mark location of Fan Blade on shaft of Fan Motor and remove the Fan Blade.
3. Remove Cover to Junction Box and disconnect the electrical wire leads from the Fan Motor in the Junction Box. Pull wire leads out rear of Box.

4. Remove four nuts, lockwashers, flatwashers and mounting bolts and the Fan Motor from the mounting bracket inside the Condenser shroud.

NOTE

BEFORE removing the Thermostat Control, capillary line and bulb, in the next step, observe routing and exact positioning of the bulb for identical positioning during replacement procedures.

5. Remove screw, clamp and the Thermostat Control capillary bulb from the underside of the Remote Condenser. Remove plastic tie from tubing.
6. Carefully work the rubber grommet out of the hole in the Junction Box.
7. Disconnect the electrical wire leads from the Thermostat Control in the Junction Box.
8. Remove screws and the Thermostat Control from the Junction Box, carefully pulling the capillary line and bulb up through the hole in the Junction Box. Remove and retain rubber grommet from capillary line.
9. Bleed off or blow the refrigerant charge in the particular set of pre-charged refrigerant lines connected to the specific Head Pressure Control Valve to be replaced on the Remote Condenser.

CAUTION

Wrap the Head Pressure Control Valve with WET CLOTHS, to protect the sensitive parts during unsoldering; and also during later soldering for installation. DO NOT direct flame toward the Valve body. Use extra care to DIRECT FLAME AWAY from the Valve body.

10. With the Head Pressure Control Valve protected with WET CLOTHS, unsolder tubing connected to the Valve, three places, and remove the Valve.

B. To replace the Head Pressure Control Valve, reverse the removal procedures and follow special precautions given for installing and soldering tubing connections to Valve.

SECTION V
MAINTENANCE & CLEANING INSTRUCTIONS

I. GENERAL

The periods and procedures for maintenance and cleaning are given as guides and are not to be construed as absolute or invariable. Cleaning especially will vary, depending upon local water conditions and the ice volume produced; and, each icemaker must be maintained individually, in accordance with its own particular location requirements.

II. ICEMAKER

THE FOLLOWING MAINTENANCE SHOULD BE SCHEDULED AT LEAST TWO TIMES PER YEAR ON THIS ICEMAKER. CALL YOUR AUTHORIZED SCOTSMAN SERVICE AGENCY.

1. Check and clean water line Strainers.
2. Check that the Icemaker cabinet is level, in side-to-side and front-to-rear directions.
3. Clean the water system Evaporator, Freezing Chamber Reservoir and Spray Bars, using a solution of SCOTSMAN Ice Machine Cleaner. Refer to procedure V-IV CLEANING - Icemaker.

NOTE

Cleaning requirements vary according to local water conditions and individual user operation. Continuous check of the clarity of ice cubes and visual inspection of the Spray Bar parts before and after cleaning will indicate frequency and procedure to be followed in local areas.

4. Check that plastic curtain hangs down evenly within the opening at the front of the Freezing Chamber.
5. Check and tighten all bolts.
6. Check and tighten all electrical connections.
7. Check Hot Gas Solenoid Valve for correct operation and high pressure controls for cut-in and cut-out pressures.
8. Check for refrigerant leaks and tighten line connections.
9. Check for water leaks and tighten drain line connections. Pour water down Bin drain line to be sure that drain line is open and clear.
10. Check size, condition and texture of ice cubes. Perform adjustments as required. Refer to procedure IV-II.
11. Check Bin Thermostat Control bulb to test shutoff. With the Icemaker in the Harvest Cycle, place ice on the bulb, which should cause the Icemaker to shut OFF at the end of the Harvest Cycle.

NOTE

Within minutes after the ice is removed from the sensing bulb, the bulb will warm up and cause the Icemaker to restart. This control is factory set and should not be reset until testing is performed. Normal setting is about 35-degrees F. CUT-OUT and 40-degrees F. CUT-IN.

III. REMOTE CONDENSER

Frequent cleaning and inspection of the Condenser should be performed to maintain maximum efficiency of Icemaker. A dirty Condenser or blocked air flow will greatly decrease icemaking efficiency.

1. With electrical power OFF, on both the icemaker and the Fan Motor of the Remote Condenser, clean the Condenser, using a vacuum cleaner, whisk broom or brush. DO NOT USE A WIRE BRUSH. Instruct customer to clean frequently.
2. Check that Fan Blades move freely, are not touching any surfaces, are not bent or out of balance; and, the wire guard is properly installed and securely attached.
3. Check that the roof area immediately surrounding the Remote Condenser is free and clear of any debris that may collect, such as leaves, paper, trash, etc.

IV. CLEANING - Icemaker

1. Remove screws and Front Panel and Top Panel.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.
3. Move the Master ON-OFF toggle switch and the Compressor ON-OFF toggle switch, on the Control Box, to the OFF positions.
4. Slowly rotate the shaft of the Timer & Switch Assembly, protruding through the hole in the front of the Control Box Cover, until you hear an audible click as the microswitch actuator arm drops into the cam slot, the START position of the Harvest Cycle, then stop. See Figure 5-1.

5. Remove Defrost Water Rube at rear of Freezing Chamber, from the tube hole.

WARNING

SCOTSMAN Ice Machine Cleaner contains Phosphoric and Hydroxyacetic acids. These compounds are corrosive and may cause burns if swallowed. DO NOT induce vomiting. Give large amounts of water or milk. Call physician immediately. In case of external contact, flush with water. KEEP OUT OF THE REACH OF CHILDREN.

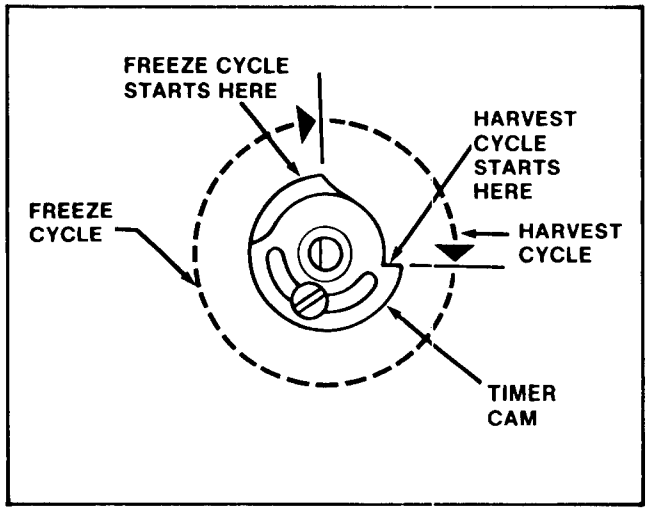


Figure 5-1. START Positions for the Freeze/ Harvest Cycles.

7. Prepare the following cleaning solution: Mix 16-ounces of SCOTSMAN Ice Machine Cleaner with eleven pints of fresh, potable water in a clean container.
8. Pour batch of prepared cleaning solution into the Freezing Chamber, through the Defrost Water Tube hole at the top, center rear of the Freezing Chamber.
9. Immediately replace the Defrost Water Tube; then, move the Master ON-OFF Switch, on the Control Panel, to ON.
10. Allow the icemaking system to operate normally for twenty minutes into the Freezing Cycle.

NOTE

NO ICE CUBES will be made, because the Compressor has been switched OFF.

11. At the end of twenty minutes, rotate the shaft of the Timer & Switch Assembly. CLOCKWISE, to start a second Harvest Cycle. See Figure 5-1.
12. Allow the icemaking system to operate normally through the Harvest Cycle; then, when the Harvest Cycle is completed, rotate the Timer again THROUGH the Freezing Cycle to START another Harvest Cycle. Perform this Harvest Cycle operation three times.

NOTE

During each Harvest Cycle, fresh inlet water is introduced into the water system and acts to rinse all water-related parts and to wash away most mineral concentration through the drain.

13. Wash Curtain Assembly and the Cube Chute in a solution of one ounce of household bleach in one gallon of water.
14. Using a clean, damp cloth or disposable paper wiper, wipe off the Curtain Assembly and the Cube Chute.
15. Move the Compressor ON-OFF toggle switch, on the Control Box, to the ON position.
16. Replace Curtain Assembly and the Cube Chute.
17. Check each ice cube harvest, until the ice cubes are clear and the acid taste is eliminated.

CAUTION

DO NOT USE ice cubes produced from the cleaning solution. Be sure none remains in the Bin.

18. Pour hot water over ice cubes in the Bin, to melt the ice cubes and allow the same cleaning solution to be used to thoroughly wash the inner surfaces of the Bin and the solution to help clean the drain lines as it drains. Rinse inner surfaces of Bin.
19. Replace all panels removed.
20. Clean and sanitize the interior Bin surfaces each week.

SECTION VI
SERVICE DIAGNOSIS

The Service Diagnosis Section is for use in aiding the serviceman in diagnosing a particular problem for pin-pointing the area in which the problem lies, thus an ever available reference for proper corrective action.

The following charts list corrective actions for the causes of known symptoms of certain problems that can occur in the Icemaking-Refrigeration System.

I. ICEMAKING - REFRIGERATION SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Irregular size cubes and some cloudy.	Some jets plugged.	Clean jets.
	Shortage of water.	See Shortage of water CORRECTION.
	Unit not level. Water overflowing vent holes on low side, burning cubes.	Level cabinet, as required.
Cubes too large.	Cube Size Control set too cold.	Rotate Cube Size Control dial toward WARMER.
Cubes too small.	Cube Size Control set too warm.	Rotate Cube Size Control dial toward COLDER.
	Partially restricted capillary tube.	Blow refrigerant charge; replace drier; evacuate system, add refrigerant charge.
	Moisture in system.	Same as above CORRECTION.
	Shortage of water.	See Shortage of water CORRECTION.
	Loss of refrigerant.	Check for refrigerant leaks, correct leaks; recharge system.
Cloudy Cubes.	Shortage of water.	See Shortage of water SYMPTOM.
	Dirty water supply.	Install water filter or softener.
	Accumulated impurities.	Use SCOTSMAN Ice Machine Cleaner.
Shortage of water.	Water spraying out through curtain.	Hang curtain in proper position.
	Water solenoid not opening.	Repair or replace solenoid.
	Water leak in sump area.	Locate leak and repair or correct condition.
	Partial restrictions in water strainer.	Clean or replace strainer.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Decreased ice capacity.	Defective compressor.	Replace compressor.
	Leaky water valve.	Repair or replace valve.
	High head pressure, result of dirty condenser or faulty Fan Motor.	Clean condenser. Repair or replace Fan Motor.
	Non-condensable gas in the system.	Purge the system.
	Poor circulation or extreme hot location.	Relocate the cabinet; or provide ventilation by cutting openings.
	Overcharge of refrigerant.	Slowly purge off to correct charge.
	Hot gas solenoid valve leaking.	Replace valve.
	Defective Thermostat Expansion Valve.	Replace valve.
Poor harvest.	Too short defrost time.	Check and adjust harvest cycle. Check Timer two-minute setting.
	Restriction in water inlet line.	Check strainer and flow check valve. DO NOT remove flow control washers.
	Hot gas solenoid does not open.	Binds or burned out. Replace.
	Plugged air vent holes in upper part of cube cups.	Clean out air vent holes.
Icemaker does not harvest.	Water pressure too low.	Check for 20 PSI flowing water.
Compressor cycles intermittently.	Low voltage.	Check for circuit overload: Check building supply voltage, if low, contact power company.
	Dirty condenser.	Clean condenser with vacuum cleaner or brush. NO WIRE BRUSH.
	Air circulation blocked.	Locate cabinet with adequate air space for proper air flow.
	Defective Fan Motor.	Replace Fan Motor.
	Non-condensable gases in system.	Purge the system.
Icemaker will not operate.	Blown fuse in line.	Replace fuse and check for cause.
	Master switch in OFF position.	Set switch to ON position.
	Faulty Master switch.	Replace switch.
	Timer contacts open.	Replace Timer microswitch.
Hole washed inside ice cube.	Water over the top of cube cups during harvest cycle.	Check and re-level the HC400R cabinet.

SECTION VII
WIRING DIAGRAMS

This Section is provided as an aid in understanding the electrical circuitry of the Modular Cuber:

WARNING

When conducting a continuity check of the Modular Cuber:

1. **Disconnect the main power source.**
2. **DO NOT use an incandescent lamp or jumper wire, conduct all tests with a volt-ohm-meter.**

The Wiring Diagrams in this Section are:

Figure 7-1. Wiring Diagram HC400R-1A 115/60/1

Figure 7-2. Wiring Diagram HC400R-31A 115/208-230/60/1

Figure 7-3. Remote Condenser Wiring Diagram - RC151-32, RC202-32, RC303-32 - 208-230/60/1

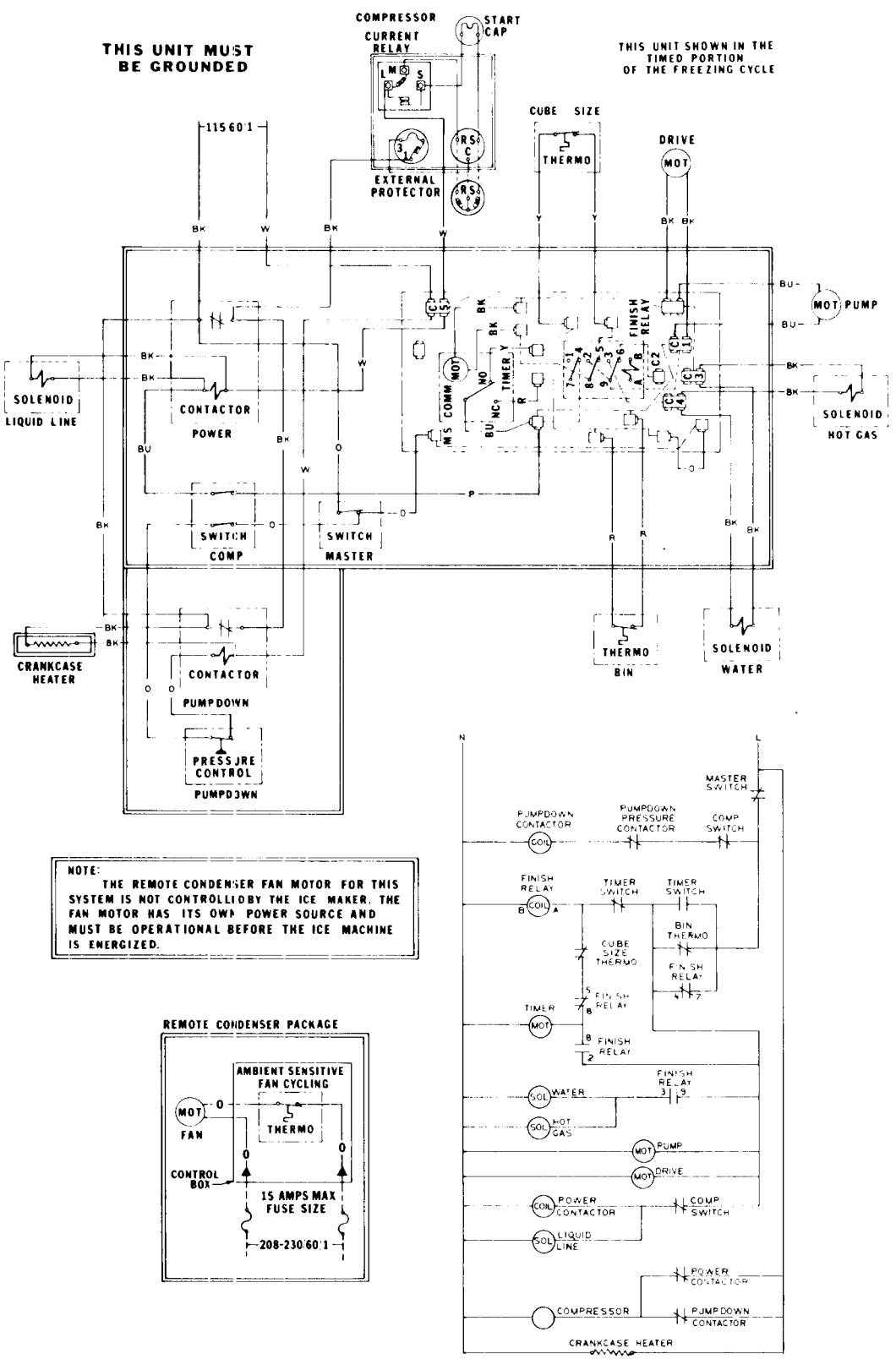


Figure 7-1. Wiring Diagram HC400R-1A - (115/60/1)

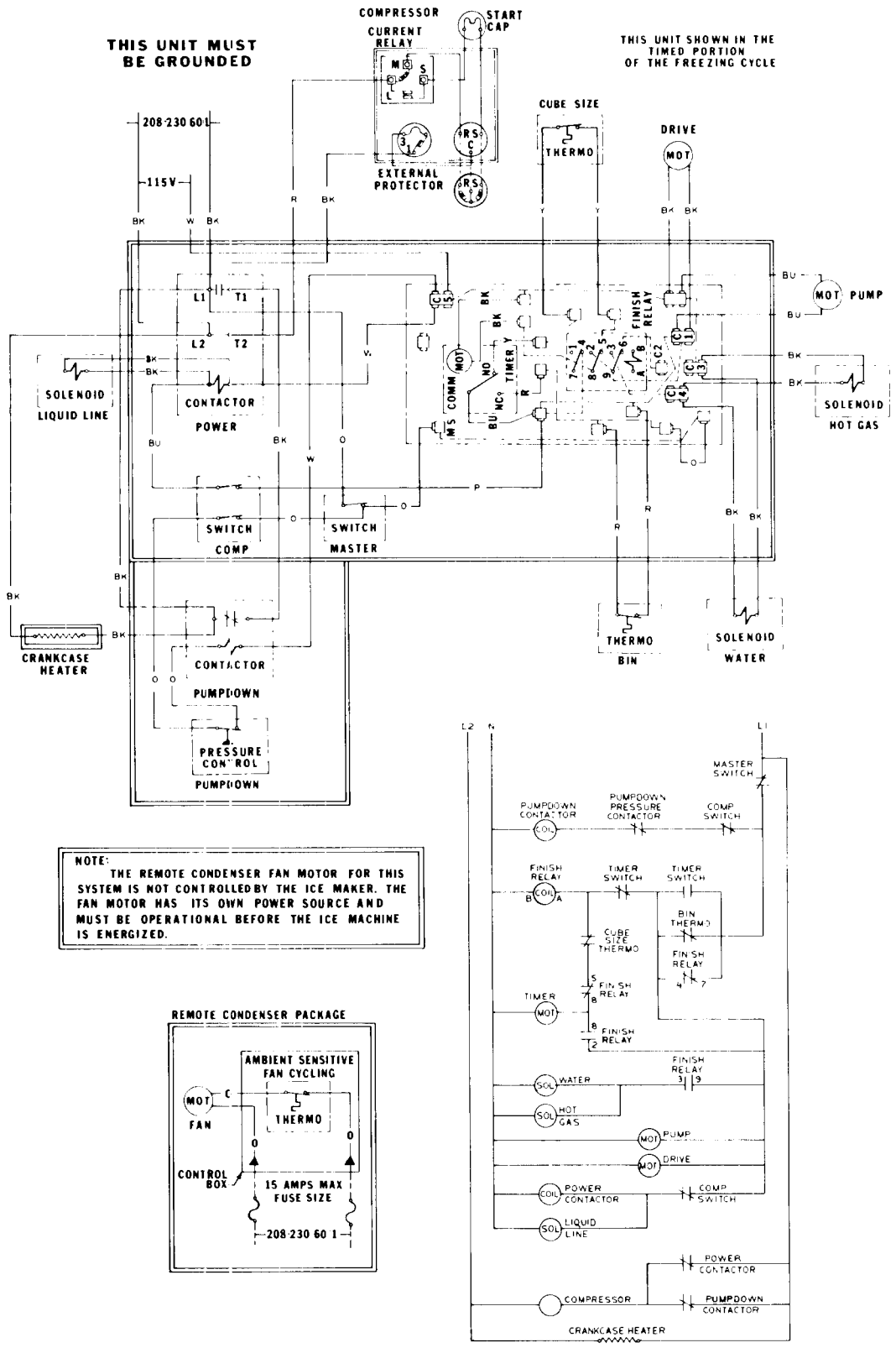


Figure 7-2. Wiring Diagram HC400R-31A - (115/208-230/60/1)

SECTION VIII
THE PARTS ILLUSTRATIONS AND PARTS LIST

I. GENERAL

This section contains the Parts Illustrations and the Parts List for each of the major assemblies in the HC400R Modular Cuber.

Each Parts Illustration shows an assembly as an exploded view, with an Index Number for each part or sub-assembly, given in disassembly order. These Index Numbers key with the Parts List for the assembly and are found in the Parts List Column headed Index Number. The Description Column gives the identifying nomenclature for the item indexed. The Part Number Column gives the number of item. The Number Required Column gives the number of items required per assembly, but not necessarily the total number of parts required per Cuber.

All assemblies are cross-referenced both from the major assembly listing where they first appear in the Parts Listing to their break-down listing, and from the break-down listing, back to the major assembly (next higher assembly) listing.

A *No Number* designation, when used in the Part Number Column indicates the unit is not available from SCOTSMAN as an assembly. This designation is used only for the convenience and clarity of division in cataloging.

When an Index Number is followed by a letter (e.g., la., lb.), the letter indicates the part listed is part of the assembly indexed by the basic Index Number. The number required of the part indexed by the number and letter combination is for only one of the assemblies indexed by the basic Index Number and not necessarily the total number or parts used in the Cuber. Where the notation *Ref* occurs in the Number Required Column the number of the assemblies or parts required for use in the Cuber will be found under a previous Index Number or in the next higher assembly Parts Listing. The next higher listing Figure/Index number is shown in the Description Column immediately following the items description.

II. HOW TO USE THE ILLUSTRATIONS AND PARTS LISTS

To find the part number of a required part of assembly, turn to the List of Illustrations and find the page number of the Parts Illustration of the major or sub-assembly containing the part. Turn to the indicated page and locate the part and its Index Number on the specific illustration. Find the Index Number on the required part in the Parts List to determine the complete description of the part.

III. HOW TO ORDER PARTS OR ASSEMBLIES

When ordering parts or assemblies, to avoid costly delays and errors in shipment, give the part number, the complete description shown in the list, and the quantities of each part or assembly required. Also include the Model name, the serial number of the Cuber for which the part is required, and for parts which require color matching, the color of the Cabinet. See Figure 8-00, at the end of this Section for detailed ordering instructions.

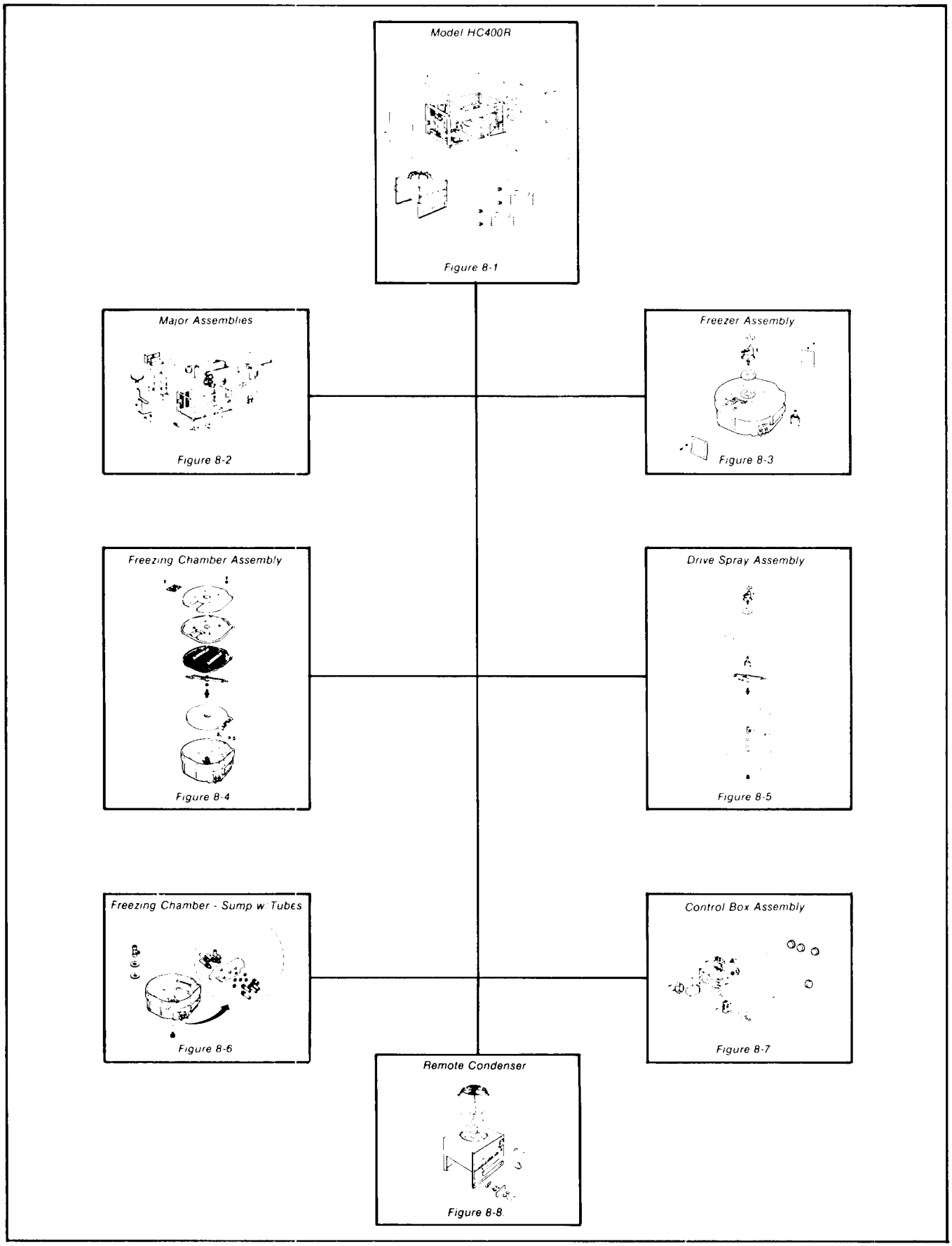


Figure 8-A. Model HC400R Flow Chart

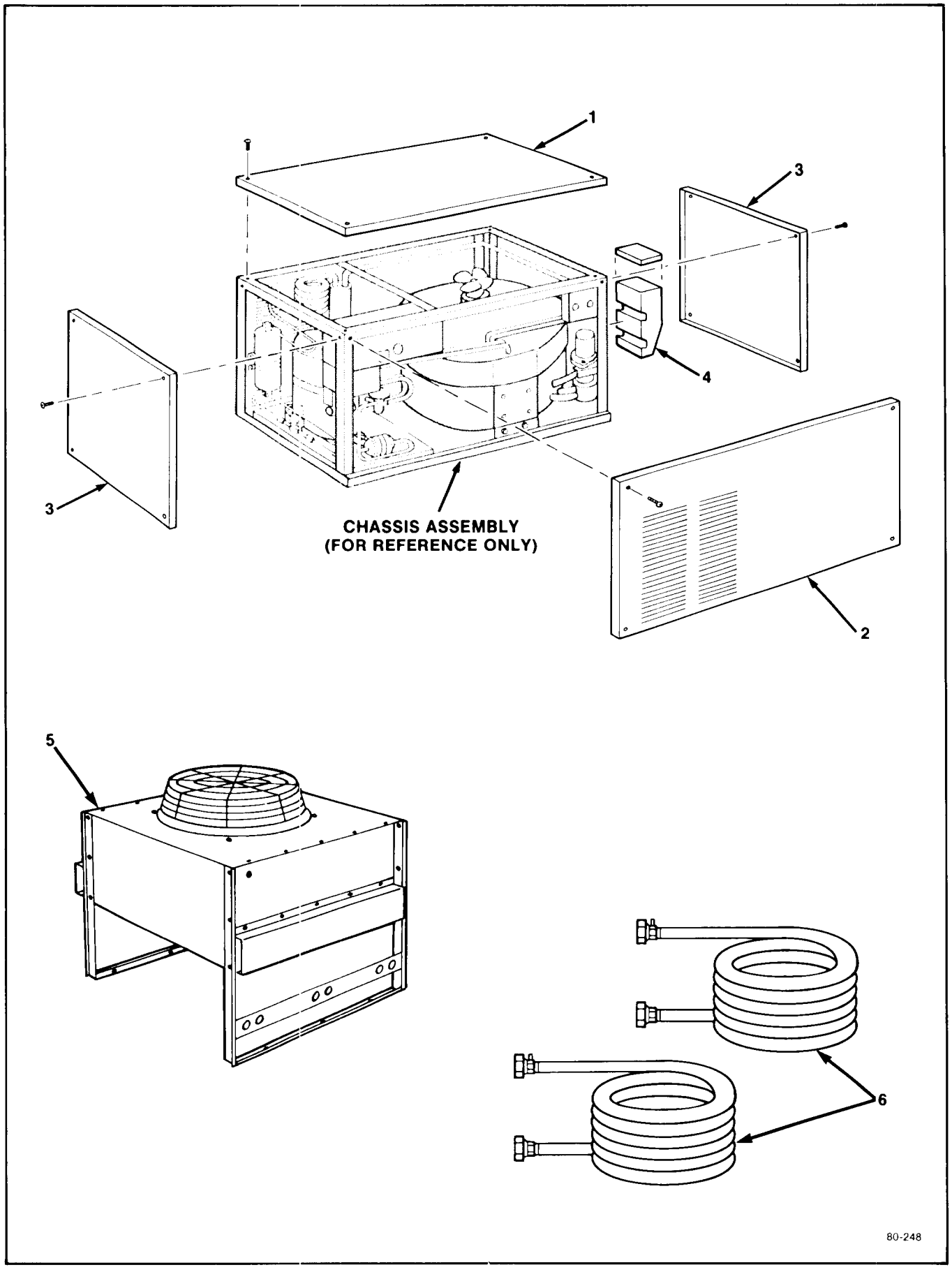


Figure 8-1. Model HC400R Cabinet and Remote Condenser

Figure 8-1. Model HC400R Cabinet and Remote Condenser

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Model HC400R Cabinet and Remote Condenser	No Number	1
	* * *		
1	Panel, Top	A23784-005	1
	attaching part, Index 1		
	Lockwasher, No. 8 Countersunk External Tooth	03-1417-15	6
	Screw, No. 8 x 1 1/4 S/T Flat Hd (SS) (Brown)	03-1419-09	6
	* * *		
2	Panel, Front	A23785-004	1
	attaching part, Index 2		
	Lockwasher, No. 8 Countersunk External Tooth	03-1417-15	2
	Screw, No. 8 x 1 1/4 S/T Flat Hd (SS) (Brown)	03-1419-09	2
	* * *		
3	Panel, Side - (Left and Right)	A23783-005	2
	attaching parts, Index 3		
	Screw, No. 8 x 1/2 T/F Tap	03-1404-10	2 (4)
	* * *		
4	Chute, Cube - W/Cover	A27821-001	1
	* * *		
5	Condenser, Remote - (Single-Pass)	RC-151-32A	1
	Condenser, Remote - (Two-Pass)	RC-202-32A	1
	Condenser, Remote - (Three-Pass)	RC-202-32A	1
	* * *		
6	Kit, Pre-Charged Remote Tubing - (25-foot)	RT-225	1
	Kit, Pre-Charged Remote Tubing - (40-foot)	RT-240	1
	* * *		

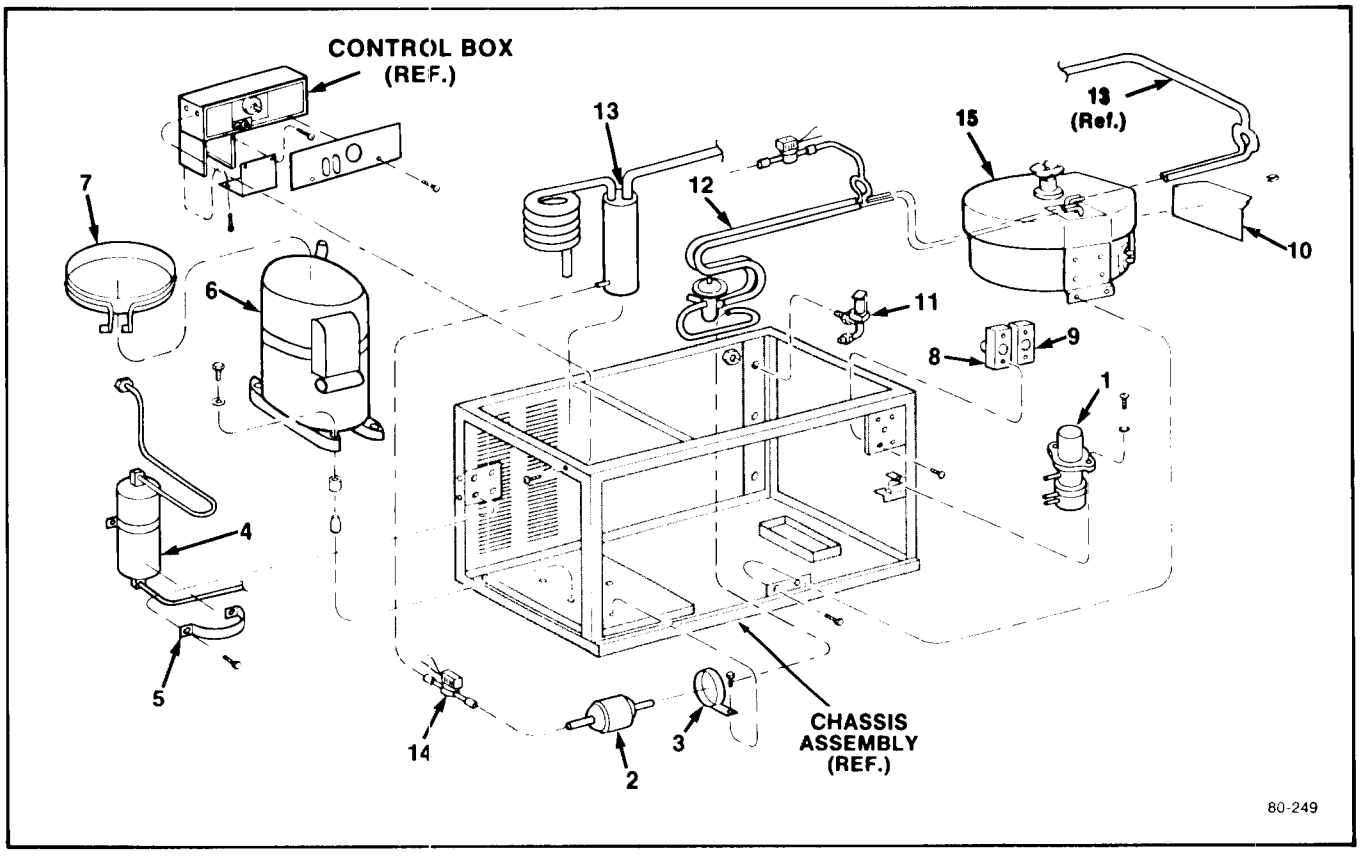


Figure 8-2. Major Assemblies

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Major Assemblies	No Number	Ref.
	* * *		
1	Pump Assembly, Water	12-1930-01	1
	attaching parts, Index 1		
	Washer, No. 1/4 Plain	03-1407-05	1
	Screw, No. 1/4 - 20 x 3/4 T/C Hex Hd		
	* * *		
2	Drier	02-0544-01	1
	* * *		
3	Clamp, Drier	A09388-001	1
	attaching parts, Index 2 & 3		
	Screw, No. 6 x 1/4 T/F Tap	03-1404-32	1
	* * *		
4	Receiver	A29661-020	1
	* * *		
5	Strap, Receiver Mounting	A29590-001	2
	attaching parts		
	Screw, No. 10-24 x 1 3/4 Phil Recess Pan Hd	03-1403-36	2
	* * *		

Figure 8-2. Major Assemblies (Cont'd)

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
6	Compressor (115/60/1)	18-3900-01	1
	Compressor (115/208-230/60/1)	18-3900-02	1
	attaching parts, Index 6		
	Sleeve, Mounting	18-2200-27	4
	Grommet, Mounting	18-2200-28	4
	Washer, No. 5/16 Plain	03-1407-07	4
	Screw, No. 5/16 x 1 1/2 Hex Cap	03-1405-20	4
	* * *		
7	Heater, Crankcase (115/60/1)	12-1868-01	1
	Heater, Crankcase (115/208-230/60/1)	12-1868-02	1
	* * *		
8	Control, Cube Size	11-0345-02	1
	* * *		
9	Control, Bin	11-0353-03	1
	attaching parts, Index 8 & 9		
	Screw, No. 8-32 x 3/16 Phil Recess Pan Hd	03-1403-14	2 (4)
	* * *		
10	Curtain Assembly	02-2038-01	1
	attaching part, Index 10		
	Clip, U-Type	03-1526-01	3
	* * *		
11	Valve, Solenoid - Water Inlet	12-1900-07	1
	attaching part, Index 11		
	Nut, Pal	A29668-020	1
	* * *		
12	Valve Assembly, Thermostatic Expansion	A29660-020	1
	(includes Distributor and two tubes soldered into valve)		
	* * *		
13	Accumulator Assembly	A29660-001	1
	* * *		
14	Valve, Solenoid - Liquid Line	12-2189-01	1
	* * *		
15	Freezer Assembly	No Number	1
	(See Figure 8-3)		
	attaching parts, Index 15		
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd	02-0571-00	4
	* * *		

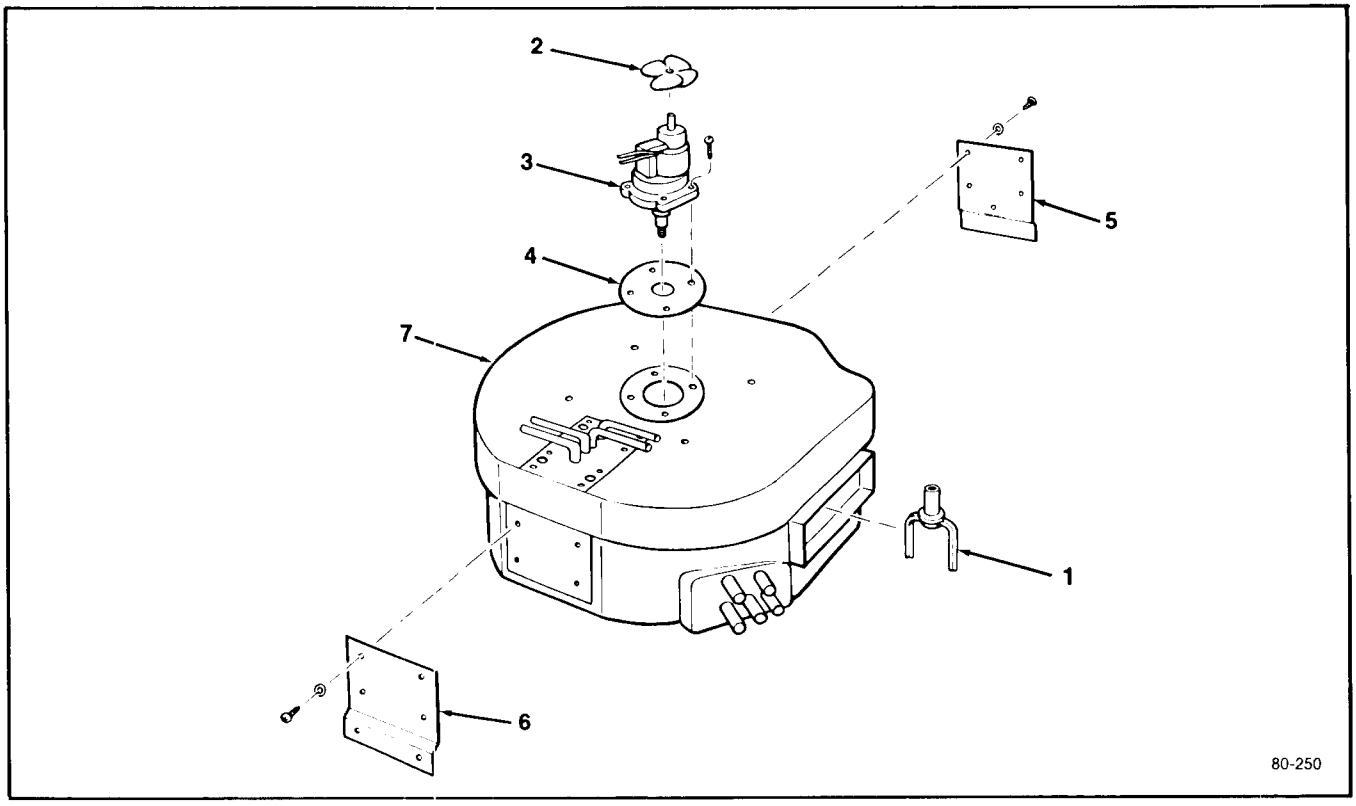


Figure 8-3. Freezer Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Freezer Assembly **(See Figure/Index 8-2/15** for next higher Assembly)	No Number	Ref.
	* * *		
1	Fork, Drive	02-2369-02	1
	* * *		
2	Blade, Fan - Drivemotor	12-0675-25	1
	* * *		
3	Drivemotor Assembly, Agitator	A24656-001	1
4	Gasket, Drivemotor	13-0176-00	1
	attaching parts, Index 3 & 4		
	Screw, No. 6 x 1 T/F Tap	03-1404-28	4
	* * *		
5	Mount, Rear	No Number	1
6	Mount, Front	No Number	1
	attaching parts, Index 5 & 6		
	Lockwasher, No. 10 External Tooth	03-1417-05	6
	Screw, No. 10 - 16 x 5/8 T/F Tap (Front & Rear)	03-1404-18	4
	Screw, No. 10 - 16 x 1/2 S/T Tap (Front, Middle)	03-1360-00	2
	* * *		
7	Chamber, Freezing **(see Figure 8-4)**	No Number	1
	* * *		

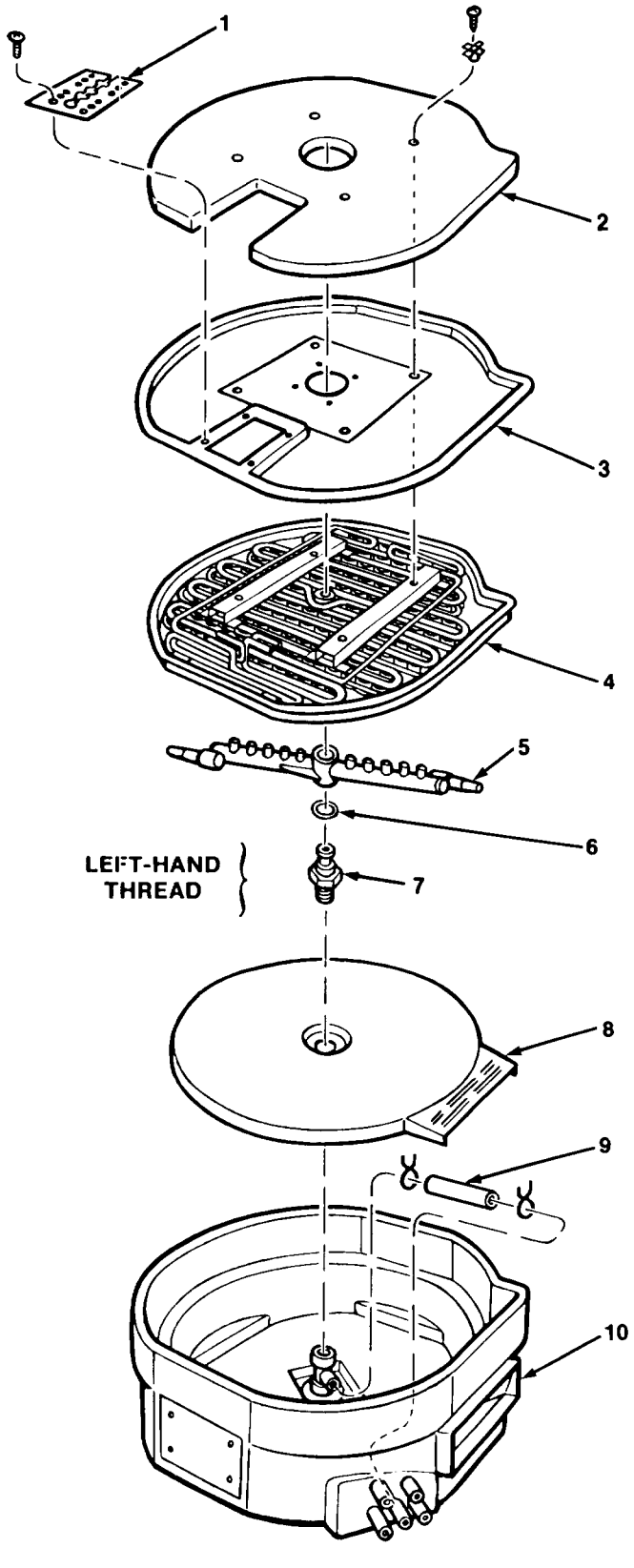


Figure 8-4. Freezing Chamber Assembly

Figure 8-4. Freezing Chamber Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Freezing Chamber Assembly **(See Figure 8-3** for next higher Assembly) * * *	No Number	Ref.
1	Spacer, Tube attaching part, Index 1 Plug, Hole * * *	02-2594-01 02-2065-02	1 4
2	Cover, Insulation	02-2124-01	1
3	Cover, Freezing Chamber	A24803-001	1
4	Platen Assembly, Cup (ice cube cups) attaching parts, Index 2, 3, 4 Washer, Centering Screw, No. 8 x 1/2 T/F Tap (Stainless Steel) * * *	A29605-020 A24830-001 03-1404-10	1 4 4
5	Bar Assembly, Spray (includes Rubber Tips) * * *	A25480-001	1
6	O-Ring * * *	13-0617-25	1
7	Bearing, Spray Bar (Used in LOWER Chamber) (Also order P/N 13-0168-00 Water Seal with Index 7) * * *	02-2120-01	1
8	Bottom, Inner * * *	02-2028-01	1
9	Tube, Tygon (8-inch lg.) (Order by the foot) attaching part, Index 9 Clamp, Hose * * *	13-0674-07 02-1358-01	1 2
10	Sump, Freezing Chamber (See Figure 8-6) * * *	No Number	1

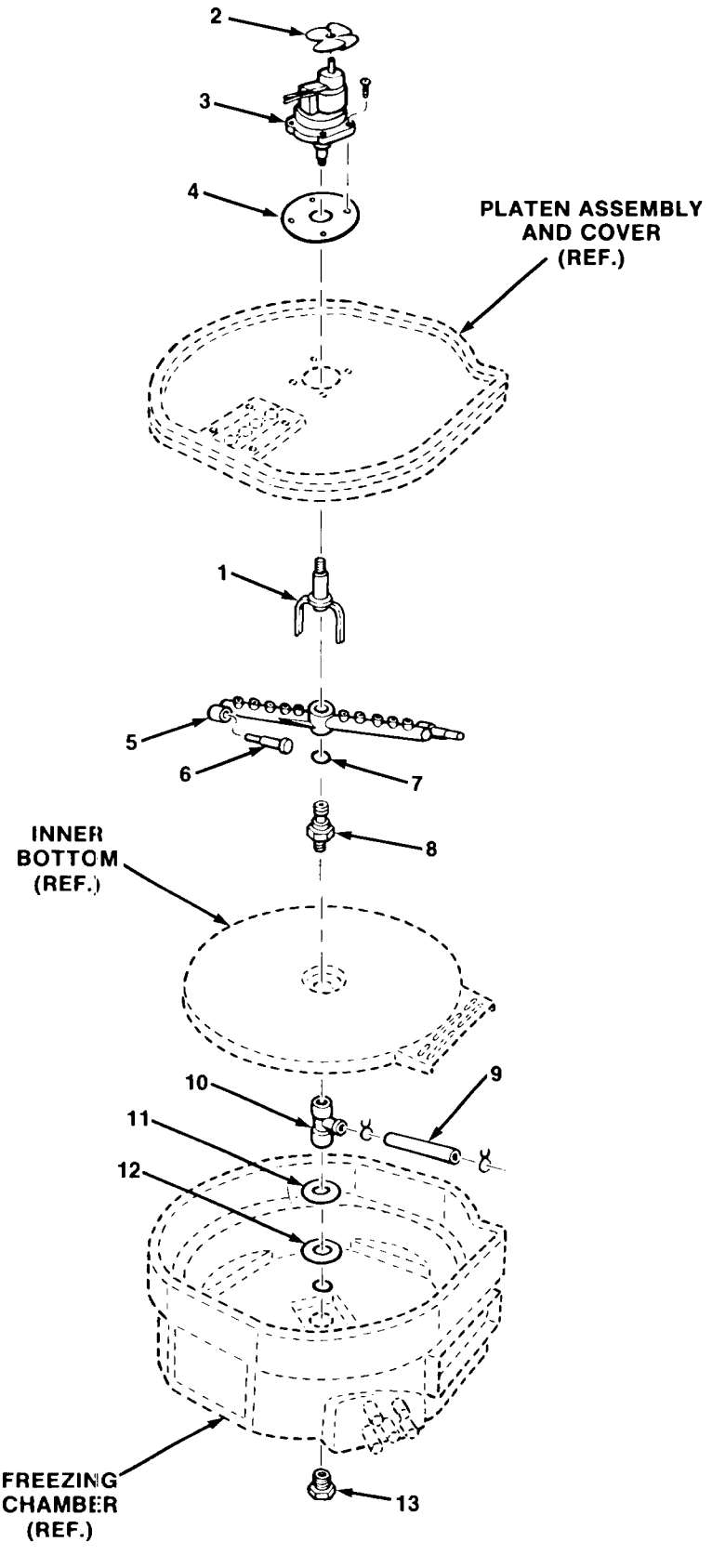


Figure 8-5. Drive Spray Assembly

Figure 8-5. Drive Spray Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Drive Spray Assembly (See Figures 8-3, 8-4 for next higher Assembly)	No Number	1
	* * *		
1	Fork, Drive	02-2369-02	Ref.
	* * *		
2	Blade, Fan - Drivemotor	12-0675-25	Ref.
	* * *		
3	Drivemotor Assembly, Agitator	A24656-001	Ref.
4	Gasket, Drivemotor	13-0176-00	Ref.
	attaching parts, Index 3 & 4		
	Screw, No. 6 x 1 T/F Tap	03-1404-28	4
	* * *		
5	Bar Assembly, Spray (W/Rubber Tips)	A25480-001	1
	* * *		
6	Rubber - Spray Bar	13-0653-00	2
	* * *		
7	O-Ring	13-0617-25	1
	* * *		
8	Bearing, Spray Bar	02-2120-01	1
	* * *		
9	Tube, Tygon (8-inch lg.) (Order by the foot)	13-0674-07	1
	attaching part, Index 9		
	Clamp, Hose	02-1358-01	2
	* * *		
10	Housing, Inlet	02-2121-01	1
	* * *		
11	Plate, Support - Spray Bar	A23827-001	1
	* * *		
12	Washer, Non-Metallic - (7/8-inch I.D.)	03-1409-11	1
	* * *		
13	Plug, Bottom	02-2122-01	1
	* * *		

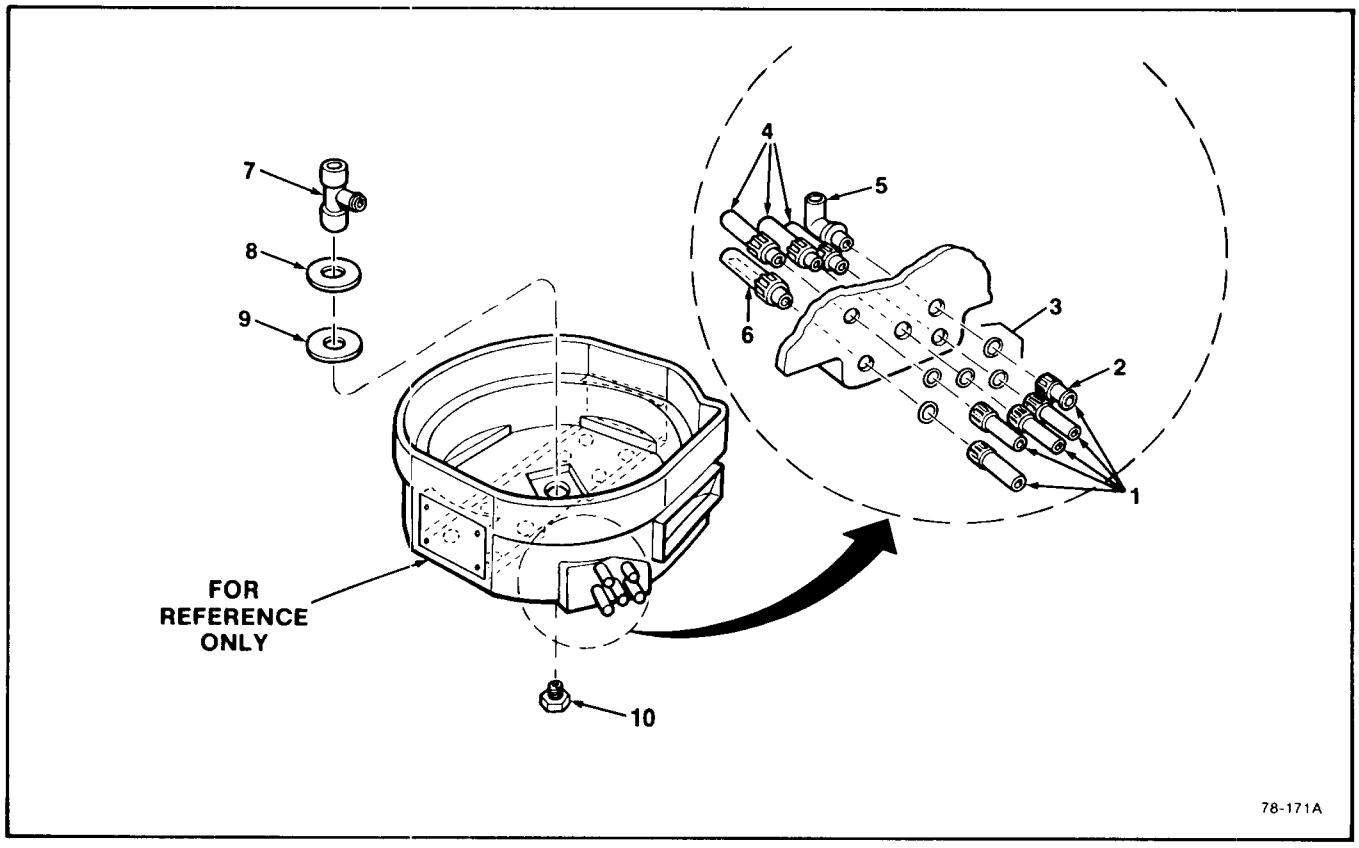


Figure 8-6. Freezing Chamber - Sump w/Tubes

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Freezing Chamber - Sump w/Tubes (See Figure 8-4/10 for next higher Assembly) * * *	A24819-001	Ref.
1	Tube, Female * * *	02-2081-01	4
2	Tube, Female - (Cut off) * * *	A24379-001	1
3	O-Ring * * *	13-0617-02	5
4	Tube, Male * * *	02-2080-01	3
5	Pipe, Stand * * *	02-2125-01	1
6	Tube, Pick-Up - Pump * * *	02-2082-01	1
7	Housing, Inlet * * *	02-2121-01	1

Figure 8-6. Freezing Chamber - Sump w/Tubes (Cont'd)

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
8	Plate, Support - Spray Bar * * *	A23827-001	1
9	Washer, Non-Metallic - 7/8-inch I.D. * * *	03-1409-11	1
10	Plug, Bottom * * *	02-2122-01	1

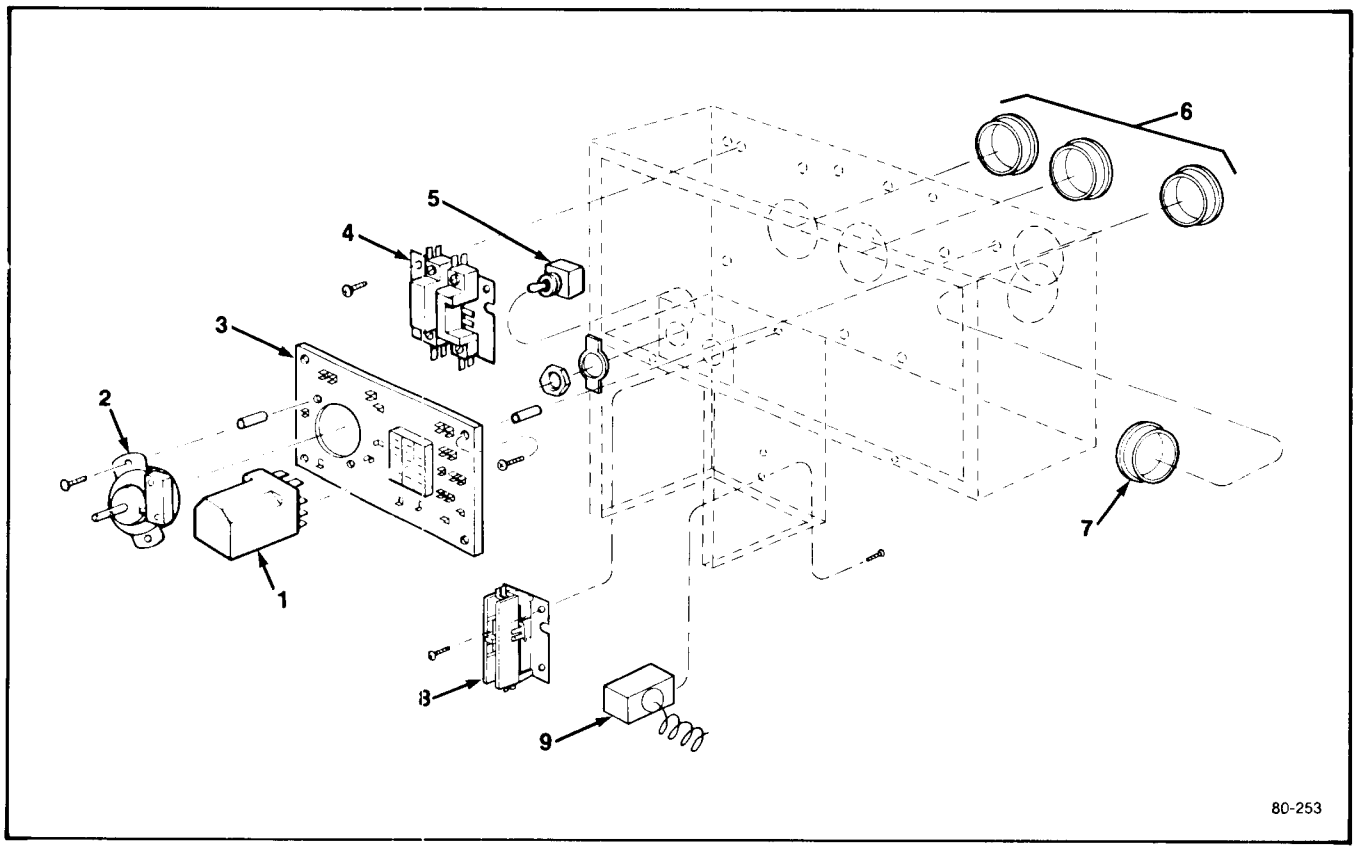


Figure 8-7. Control Box Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Control Box Assembly	No Number	Ref.
	(See Figure 8-2		
	for next higher Assembly)		
	* * *		
1	Relay	12-1879-02	1
	* * *		
2	Timer & Switch Assembly	12-1980-01	1
	attaching parts, Index 2		
	Stand-Off - (7/8-inch lg.)	02-2242-01	2
	Screw, No. 6-32 x 1/4 Phil Recess Pan Hd	03-1403-02	4
	* * *		
3	Board Assembly, Circuit	12-1912-01	1
	attaching parts, Index 3		
	Stand-Off - (5/8-inch lg.)	02-2242-02	5
	Screw, No. 6 - 32 x 3/8 Phil Recess Pan Hd	03-1403-04	5
	* * *		

Figure 8-7. Control Box Assembly (cont'd)

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
4	Contactor (115/60/1) (Main)	12-2041-01	1
	Contactor (115/208-230/60/1) (Main)	12-2037-01	1
	attaching parts, Index 4		
	Screw, No. 8 - 32 x 3/8 Phil Recess Pan Hd	03-1403-17	2
	* * *		
5	Switch, Toggle	12-0426-01	2
	* * *		
6	Bushing, Snap - (3/4-inch dia.)	12-1213-10	3
	* * *		
7	Bushing, Snap - (1 1/2-inch dia.)	12-1213-13	1
	* * *		
8	Contactor (115/60/1) (Pump Down)	12-2041-01	1
	* * *		
9	Control, Pressure (Pump Down)	11-0415-01	1
	* * *		

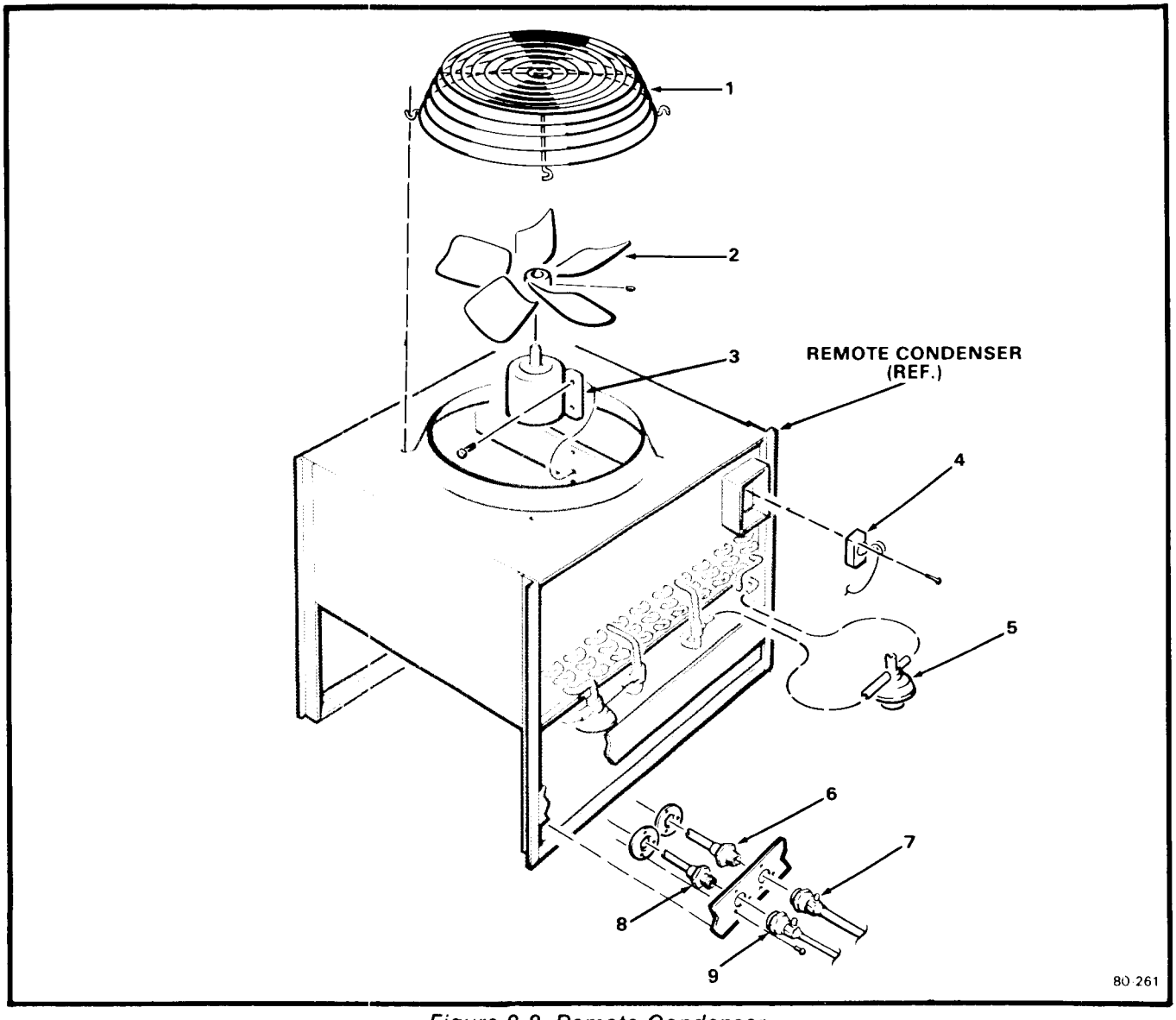


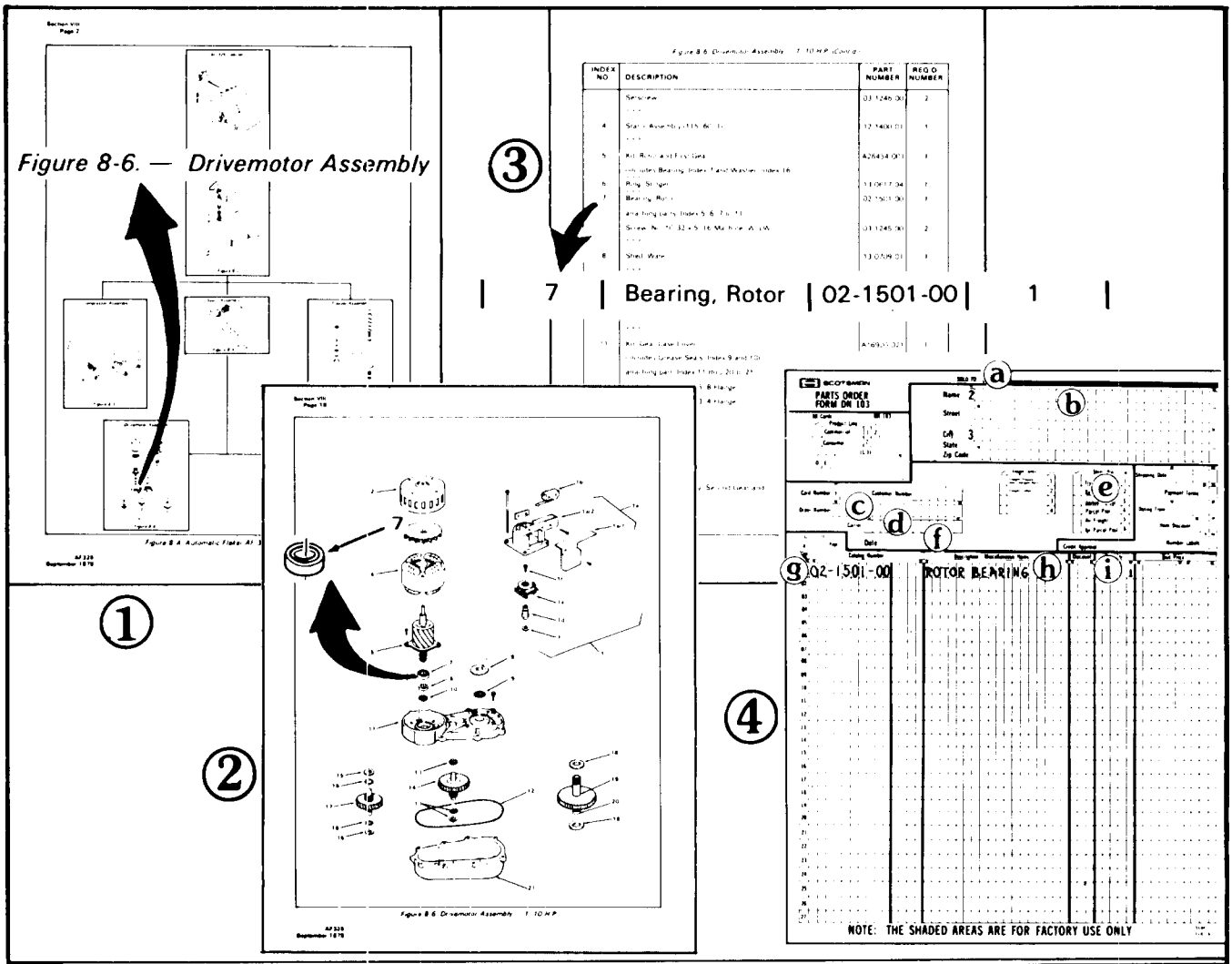
Figure 8-8. Remote Condenser

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Remote Condenser (See Figure/Index 8-1/5 for next higher Assembly) * * *	No Number	Ref.
1	Guard, Fan * * *	02-2618-01	1
2	Blade, Fan * * *	18-3733-01	1
3	Motor, Fan * * *	18-3734-01	1
4	Thermostat, Control * * *	12-2184-01	1

Figure 8-8. Remote Condenser (Cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
5	Valve, Head Pressure Control - Single-Pass (RC151)	11-0414-01	1
	Valve, Head Pressure Control - Two-Pass (RC202)	11-0414-01	2
	Valve, Head Pressure Control - Three-Pass (RC303)	11-0414-01	3
	* * *		
6	Connector, 1/4-inch tubing, male	No Number	1
	* * *		
7	Connector, 1/4-inch tubing, female	No Number	1
	* * *		
8	Connector, 3/8-inch tubing, male	No Number	1
	* * *		
9	Connector, 3/8-inch tubing, female	No Number	1
	* * *		

Figure 8-6. — Drivemotor Assembly



HOW TO USE A SCOTSMAN PARTS MANUAL WHEN ORDERING PARTS FOR ICE SYSTEMS PRODUCTS

IMPORTANT A. All Part Numbers have TEN DIGITS (spaces), required for use in the Computer System. BE SURE to fill in **ALL SPACES** in the CATALOG NUMBER column, on the Parts Order form as shown above.

B. Enter the QUANTITY of the Parts ordered, in the last digit column under the QUANTITY column heading, the one under the small 55 number, for parts from 1 thru 9. For 10 or more parts use two columns.

To be sure you receive the proper parts in the proper quantities, ALWAYS use the PART NUMBERS and DESCRIPTIONS given in the Parts Manuals.

The figures above illustrate the way a Parts Manual would be used, if the Part being ordered were the ROTOR BEARING that is used in the DRIVEMOTOR ASSEMBLY of ar AF325 Automatic Flaker, for example.

PROCEDURE:

1. At the beginning of Section VIII, THE PARTS ILLUSTRATIONS AND PARTS LISTS, in each Parts and Service Manual, is Figure 8-A; which, is a flow chart prepared from exploded views in Section VIII. Use the flow chart to quickly determine which Figure contains the Assembly, Component or Part.

FIGURE 1: Since the Part required in the above example is in the DRIVEMOTOR ASSEMBLY, shown as FIGURE 8-6.

2. Open the Manual to page showing FIGURE 8-6.

3. Locate the PART and its INDEX NUMBER on the exploded view illustration.

FIGURE 2: The INDEX NUMBER for the PART is 7.

4. Check the numerical sequence in the associated Parts List following the illustration.

5. LOCATE the INDEX NUMBER 7, in the INDEX NO. column, the first column on the left side of the Parts List page.

FIGURE 3: INDEX NO. 7 is listed as a BEARING, ROTOR in the DESCRIPTION column. The Part Number for the Rotor Bearing is 02-1501-00 as listed in the PART NUMBER column on the right side of the Parts List page. And, one Rotor Bearing is listed in the REQ'D NUMBER column, or that ONLY one of those parts is required for one Drivemotor Assembly.

6. Write an order for the Part. (Use SCOTSMAN Parts Order Form DN103)

FIGURE 4: a. Distributor Name.
b. (Use for DROP-SHIP order ONLY).
c. Distributor Purchase Order Number.
d. Carrier
e. How shipped (Truck, Rail, UPS, etc.)
f. Date ordered
g. Part Catalog Number
(use full TEN digits (spaces) listed in Parts Manual, including dashes between numbers.
h. Description - as listed in Parts Manual.
i. Quantity - number of parts ordered.
(use far right column)

Figure 8-00. How To Use The Illustrated Parts List.