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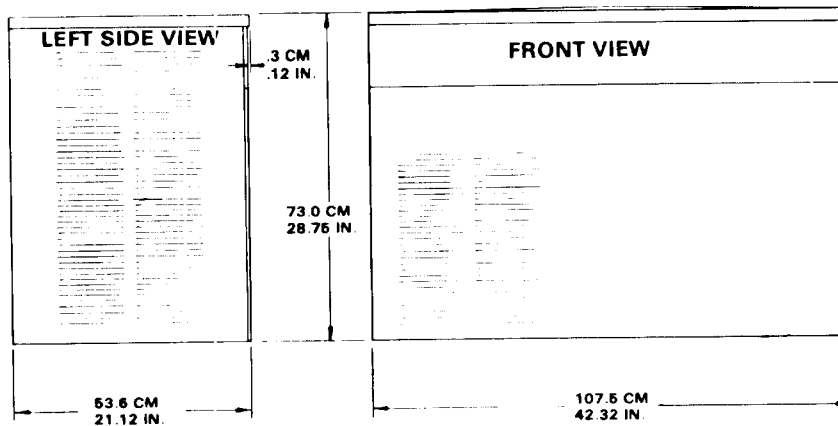
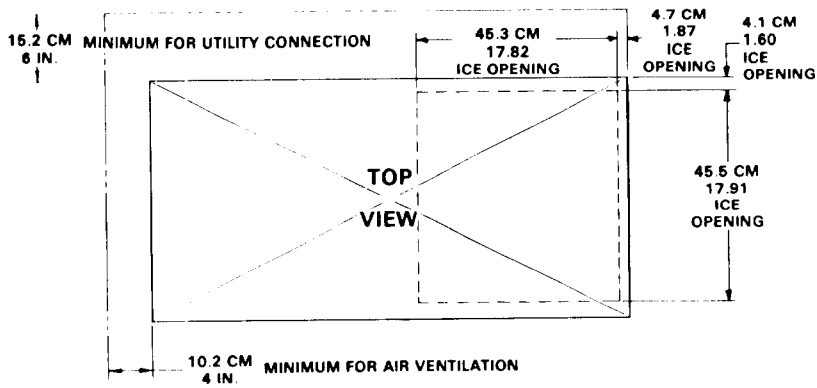
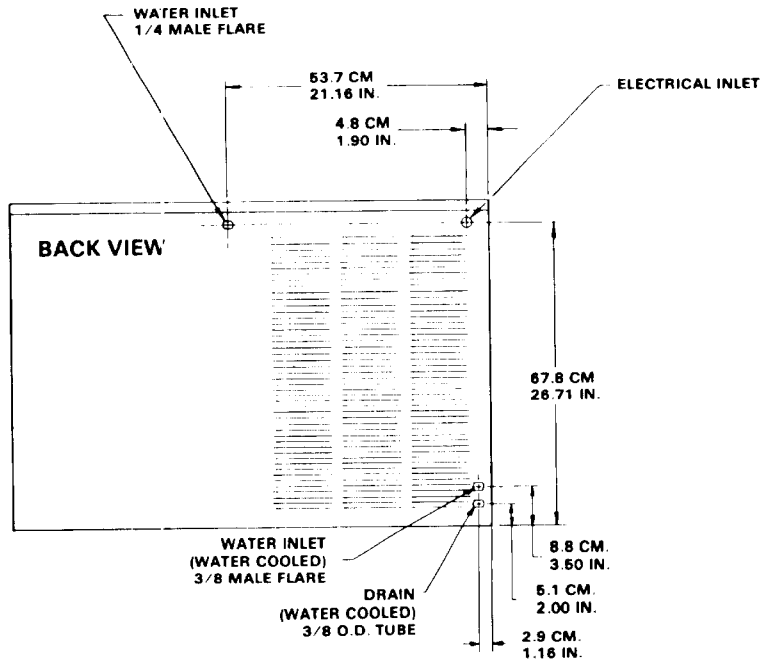
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CM850 SPECIFICATIONS



CM850 SPECIFICATIONS (CONT'D.)

MODEL CM850

Air-Cooled: Model CM850SAE

Water-Cooled: Model CM850SWE

Electrical: 230/60/1
230/50/1
208-230/60/3
208/60/1

Est. Ship Wt.: 260 lbs.

FRONT SERVICE ACCESS PANELS

OPTIONALS:

SPKCM850 - Stainless Steel Panels

B40 Bin - 350 Storage Capacity

B60 Bin - 550 lbs. Storage Capacity

MODEL NUMBER		MOTORS	VOLTS	HP/WATT	FLA	LRA
SERIAL NUMBER		COMP.				
		DRIVE				
REFRIGERANT 12	HEATER	FAN				
07	WATTS	OTHER				
TEST PRESSURE 140 LO - 235 HI						
A.C. SUPPLY VOLTAGE			WIRES	CYCLES	PHASE	
MAXIMUM FUSE SIZE	AMPS	MINIMUM CIRCUIT AMPACITY				
QUEEN PRODUCTS DIVISION KING SEELEY THERMO CO 305 FRONT ST. W. ALBERT LEA, MN 56007						

SEE NAMEPLATE, shown at left, for electrical and refrigeration specifications. NAMEPLATE located on rear service panel.

Remove Left Bottom Front Panel to locate the Model Serial Number plate, shown below, on the Chassis Front left vertical upright.

MODEL NUMBER	QUEEN PRODUCTS DIVISION KING SEELEY THERMO CO 305 FRONT ST. W. ALBERT LEA, MN 56007
SERIAL NUMBER	

We reserve the right to make product improvements at any time. Specifications and design are subject to change without notice.



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.

CM850
SECTION I

GENERAL INFORMATION & INSTALLATION

I. INTRODUCTION

These instructions provide the specifications and the step-by-step procedures for the installation, start up and operation for the Scotsman Model CM850 Modular Cuber.

The Model CM850 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 List.

DESCRIPTION

An attractive horizontal cabinet of leathergrain embossed steel with high gloss, almond baked enamel finish on all panels, with a contrasting charcoal brown upper front panel. 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.

STORAGE BIN

Since the Model CM850, 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 or B60 with 550 pounds (lbs.) capacity.

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, the left Side Panel, Top and three Front Panels, from

the cabinet, and inspect for any concealed damage. Notify carrier of any concealed damage claims, as stated in step 2, above.

4. Remove all internal support packing, tape and wire, if any, in machinery compartment. Remove bolts and hold down straps from the skid and base of the Cuber. **RETAIN BOLTS AND SUPPORTS.** See Figure 1-1.
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 compressor is snug on all mounting pads.
7. Use clean damp cloth or disposable paper wiper to wipe clean the exterior surfaces of the cabinet.
8. See NAMEPLATE on the top of the rear panel and check that the location source voltage corresponds with the voltage specified on the nameplate. Make certain that a Chassis-to-earth GROUND is installed.

CAUTION

Improper voltage supplied to the icemaker will void your parts replacement program. Improper grounding can cause electrical shocks and component failures.

9. Fill in all spaces in the Manufacturer's Registration Card 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 & LEVELING

WARNING

This Modular Cuber 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.

CM850
SECTION I GENERAL INFORMATION AND INSTALLATION

1. Position the selected Bin in its permanent location, which should have a minimum room temperature of 50-degrees F., and maximum room temperature of 100-degrees F. Level the bin, adjusting the leg levelers in both the front-to-rear and side-to-side directions. Select a well ventilated location for the air-cooled condenser.
2. Inspect the bin top mounting gasket, which should be flat, with no wrinkles, to provide a good water seal when the CM850 Cuber is installed on top of the bin.
3. Install the CM850 Modular Cuber on top of the selected Bin, using care to be sure a good seal is made between the two cabinets.
4. Align the two Mounting Straps, located at the bottom rear of the icemaker, with the two mounting holes at the rear of the Bin. When alignment and leveling have been completed, tighten the bolts to secure the two cabinets.
5. Remove plastic ties securing the Bin thermo Bracket in shipping position. Carefully relocate Bin Thermo Bracket and attach to lower left liner side wall using existing screws. When properly installed Bin Thermo Bracket should extend into the ice storage bin. See Figure 1-1.
6. Remove the nut & bolt securing each vertical support brace to each evaporator plate. Remove the two screws holding each vertical support brace to horizontal supports and

discard the vertical support braces. See Figure 1-1.

IV. ELECTRICAL CONNECTIONS

WARNING

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

SEE NAMEPLATE for current requirements to determine wire size to be used for electrical hookup. The Cuber requires a solid Chassis-to-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 an electrical permit and services of a licensed electrician will be required.

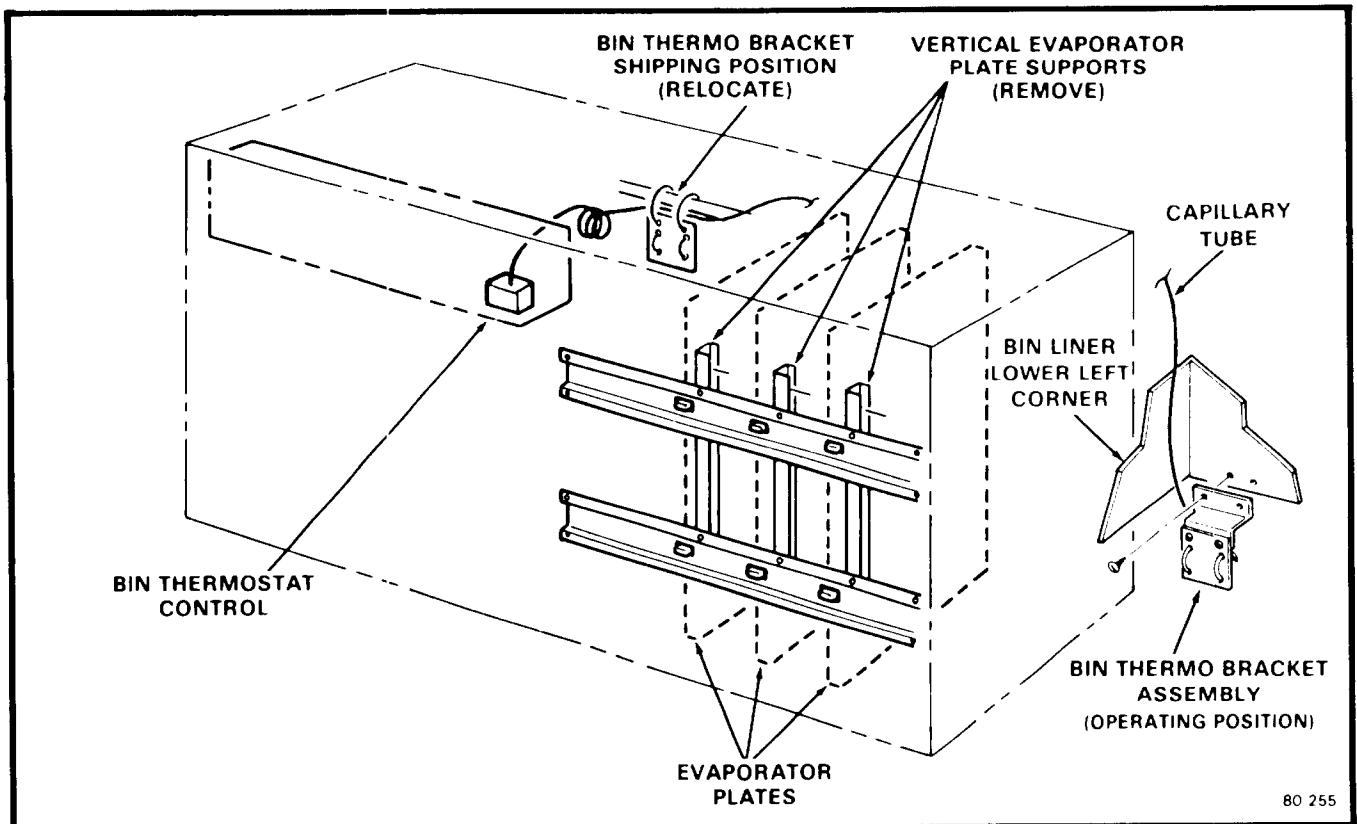
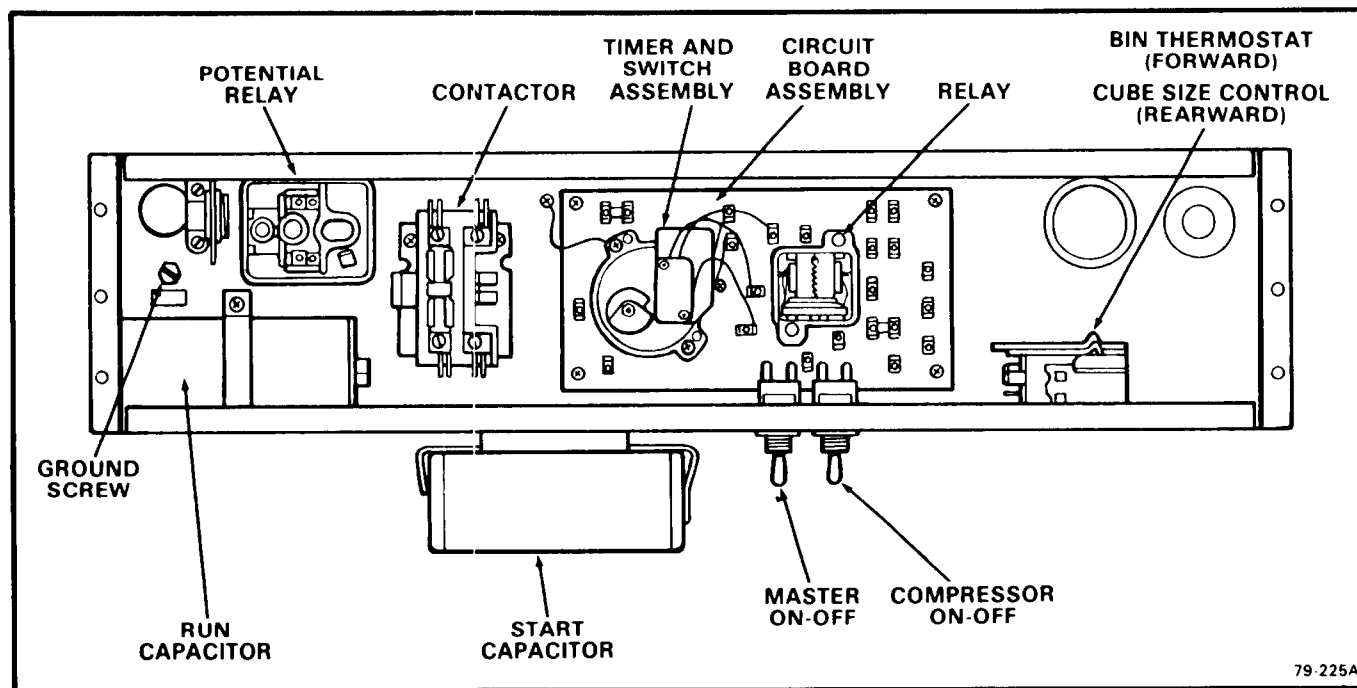
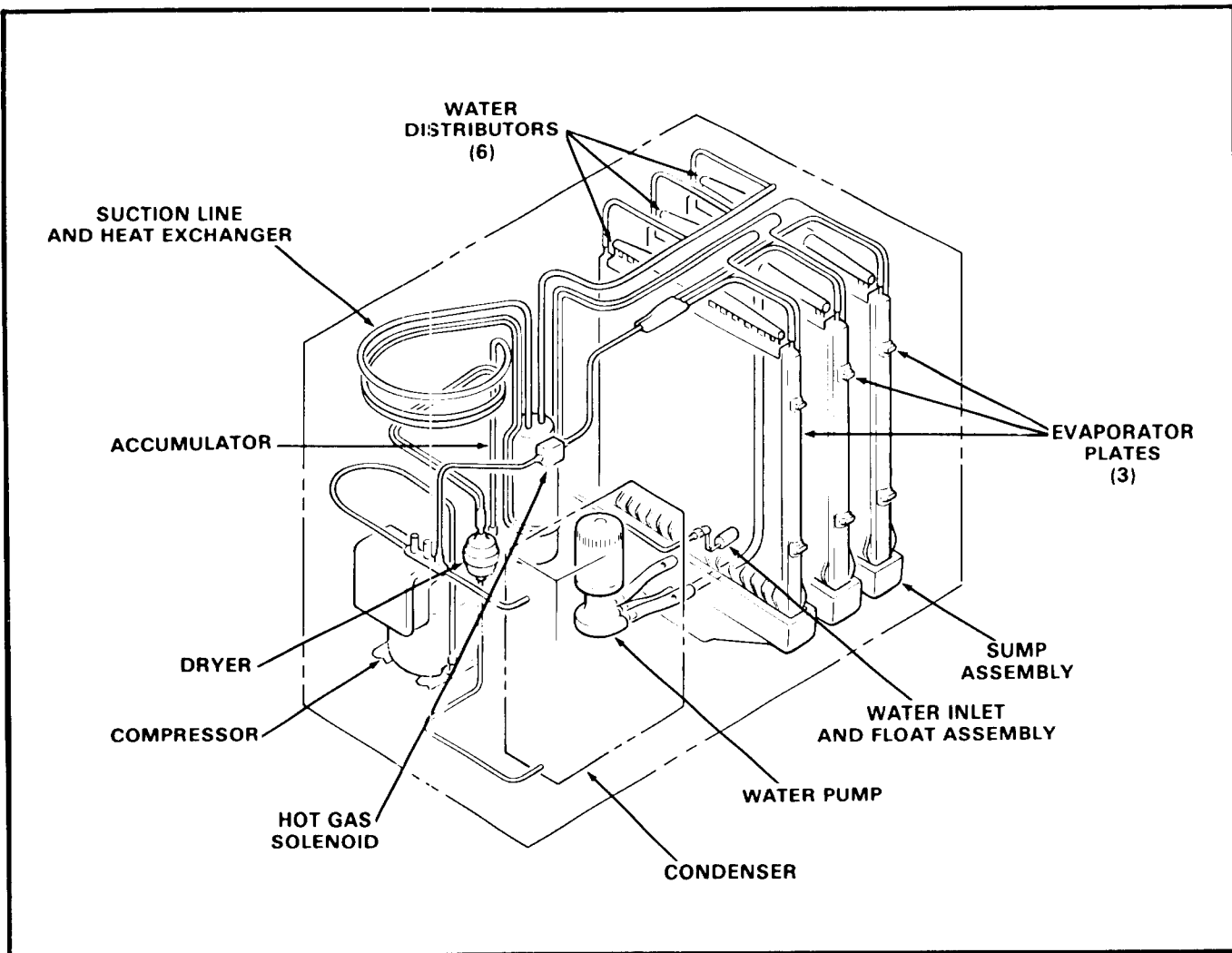


Figure 1-1. Installing the Bin Thermo Bracket and Bin Thermostat Capillary Line.

CM850
SECTION I GENERAL INFORMATION AND INSTALLATION



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Figure 1-2. CM850 Control Box Location.

CM850
SECTION I GENERAL INFORMATION AND INSTALLATION

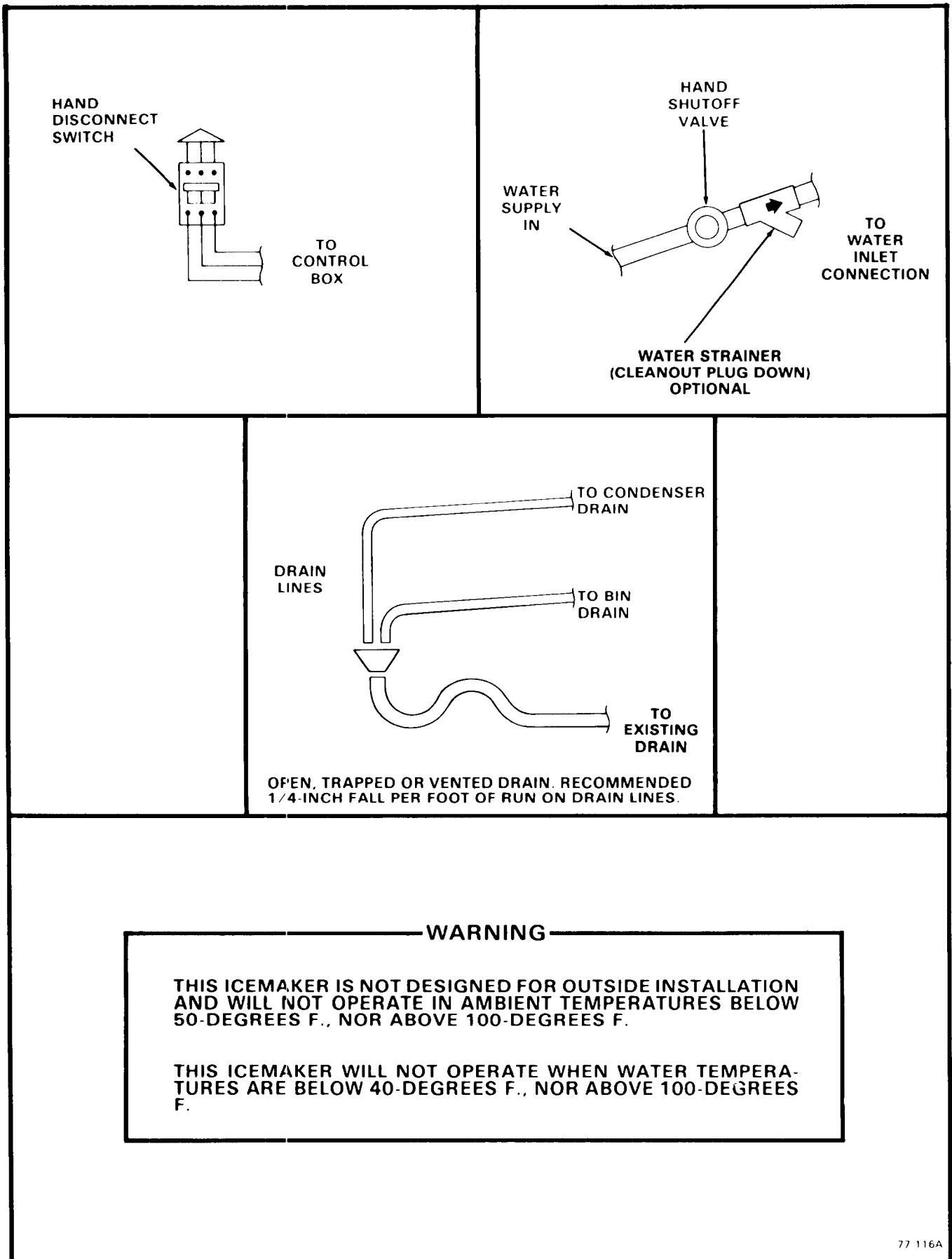


Figure 1-3. Installation Practice

SECTION I GENERAL INFORMATION AND INSTALLATION

V. WATER SUPPLY AND DRAIN CONNECTIONS

A. AIR-COOLED MODELS: The recommended water supply line is a 3/8-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. Install the optional strainer with clean out plug down, between the shutoff valve and the Cuber. In some cases a plumbing permit and services of a licensed plumber will be required.

B. WATER-COOLED MODELS: On water-cooled models, a separate cold water supply inlet is required, to be connected to a second 3/8-inch O.D. male flare fitting at the rear of the cabinet. Additional drain lines are required to drain the water-cooled condenser.

C. DRAIN CONNECTIONS: All drains are gravity type and must have a minimum of 1/4-inch fall per foot on horizontal runs. The drains to be installed to conform with the local plumbing code. Install separate drain line for discharge water from the water-cooled condenser. 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 1-3.

Recommended bin drain is 5/8-inch O.D. copper tubing and should be vented and run separately.

VI. INSTALLATION — OPTIONALS

Install optionals ordered with the CM850:

1. SPKCM850A — Stainless Steel Cabinet Panels.
2. B40 Bin — 350 lbs. storage capacity.
3. B60 Bin — 550 lbs. storage capacity.

VII. FINAL CHECK LIST

1. Is the Cabinet/Bin level? (IMPORTANT)
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 a six-inch clearance behind and around the cabinet for all connections and for proper air circulation?
4. All shipping tape removed from panels, doors, 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 line shutoff valve installed and opened and has the inlet water supply pressure been checked to ensure a minimum of 20 PSIG? And the valve closed?
8. Check to be sure the evaporator plate Vertical Support Shipping Braces have been removed.
9. Have the Compressor hold down bolts been checked to be sure the compressor is snug on the mounting pads?
10. Check all refrigerant lines and conduit lines to guard against vibration and possible failure.
11. Check the Bin Thermostat Control bulb and Bracket have been properly installed.
12. Has the Cuber and the Bin been wiped clean with clean damp cloths?
13. Has the owner/user been given the User Manual and instructed on how to operate the icemaker and the importance of periodic maintenance?
14. Has the owner/user been given the name and telephone number of the Authorized SCOTSMAN Distributor or Service Agency serving him?
15. 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

1. Remove screws and pull the bottom of the Bottom Front Panel out slightly, and slide the top of the panel down, to clear the top from behind the upper Front Panel.
2. Remove screws and remove the upper Front Panel.
3. Check that the two toggle switches, the MASTER ON-OFF toggle switch and the COMPRESSOR ON-OFF toggle switch are in the OFF position, on the Control Box.
4. OPEN the water supply line shutoff valve.

NOTE

Observe that the inlet water can be seen flowing into the Sump Assembly. Allow water to fill the Sump, about three minutes, until the water is at a level of about one third of the diameter of the uppermost tube, in the left end of the Sump, when the Float should cause the water flow to STOP. See Figure 2-1.

5. Remove four screws on the Control Box Cover and REMOVE the Cover.
6. Rotate the shaft of the Timer and Switch Assembly CLOCKWISE to start the Timer.

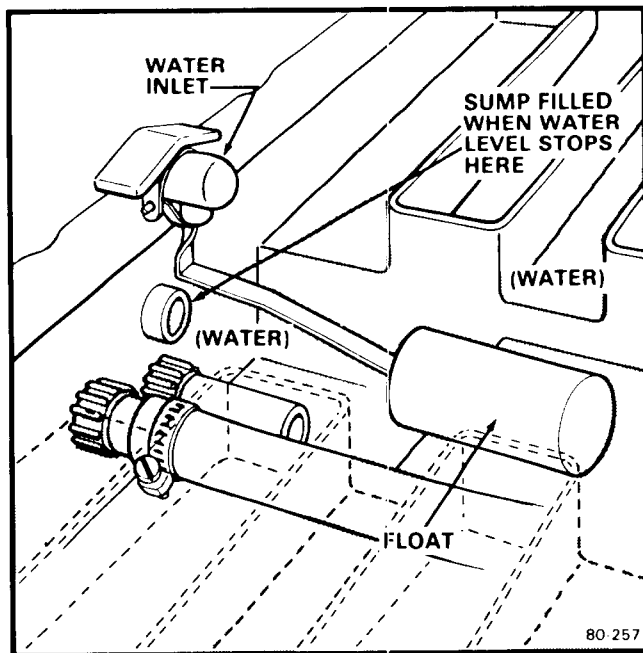


Figure 2-1. Sump Filled - Showing Water Level Line.

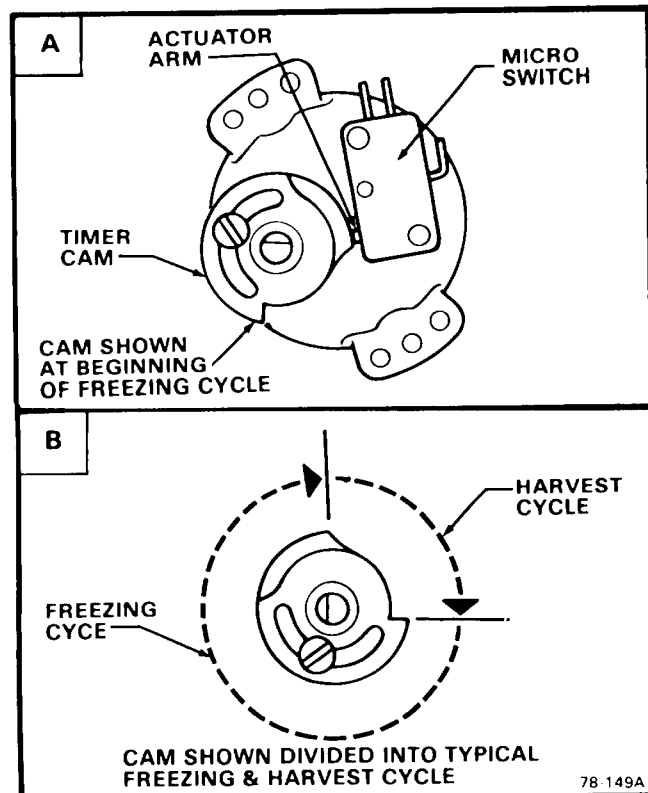


Figure 2-2. Timer Cam Positions.

NOTE

1. See Figure 2-2 and rotate the shaft of the Timer and Switch Assembly CLOCKWISE, past the drop off and slot of the Harvest Cycle, and continue until the actuator arm of the microswitch rides up out of the slot, stop rotating the shaft with the actuator arm at the beginning of the outer cam. This is the start point of the Freezing Cycle.
2. When the Float has risen from water filling the Sump Assembly, the water has forced all trapped air out of the Water Pump and pump tube, thus preventing the pumping of water filled with air bubbles. DO NOT start Water Pump when the Sump Assembly is FILLING with water, WAIT until the Sump is FILLED.
7. Move the MASTER ON-OFF toggle switch and the COMPRESSOR ON-OFF toggle switch to the ON position.
8. Check operation of the Freezing Cycle:
 - a. Compressor is operating.
 - b. Water Pump is operating, as seen by water moving through the Tygon tube between Evaporator Plates, up to the Water Manifold at the top of Evaporator Plates, where water is uniformly dispensed and

ascades down both sides of each Evaporator Plate and drains back into the Sump Assembly for recirculation.

- c. Icemaking process begins: feeling metal parts of Evaporator Plates reveals cold temperature, very shortly ice begins to form. Tubing will become frosted at the top of the Evaporator Plates.

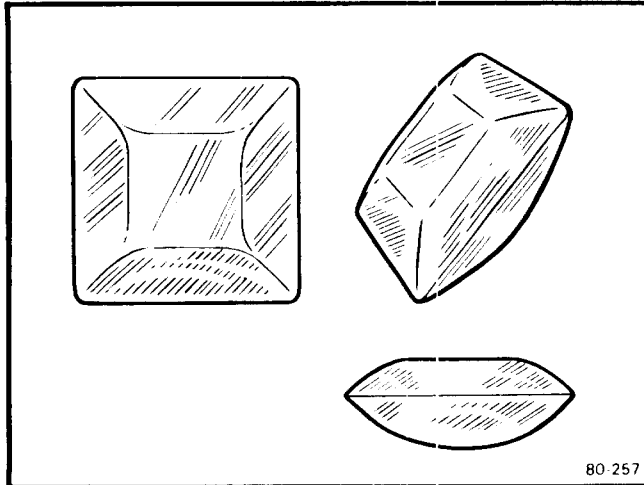


Figure 2-3. Ice Cube Size & Shape.

NOTE

Freezing time will range between 14 and 15 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 17 to 21 minutes.

WARNING

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

9. Observe first ice cube harvest:
 - A. Check size of ice cubes.

NOTE

See Figure 2-3, for representative size and shape of ice cubes made by these SCOTSMAN Evaporator Plates. Maximum capacities of ice cubes harvested, from this three-plate Evaporator Assembly, are achieved when a total BATCH OF ICE weighs 7-1/2 pounds, when harvested.

- B. Check texture of ice cubes: when partially cloudy throughout, suggests icemaker is operating short of water; or, possibly an extreme problem water condition exists,

wherein filtering or purifying equipment is recommended. Contact SCOTSMAN—Queen Products Division, Service Department, Albert Lea, Minnesota 56007 for further details. See SERVICE DIAGNOSIS chart, for Shortage of Water symptoms and corrections.

10. 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.

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

NOTE

1. Air-Cooled Models:
 - a. Head pressure after 12 minutes of Freezing Cycle at 70-degrees F. ambient temperature will be about 95 to 100 PSIG.
 - b. Head pressure after 15 minutes of Freezing Cycle at 90-degrees F. ambient temperature will be about 135 PSIG.
 - c. The back pressure gradually pulls down to about 10 PSIG, just before the Harvest Cycle. During the Harvest Cycle the back pressure increases to about 40 PSIG.
 - d. Higher ambient temperatures or a dirty Condenser will cause increased pressures.
2. Water-Cooled Models: The Water Regulator Valve is factory set at 135 PSIG. Check the gauge indication and adjust, if necessary. Back pressure will operate the same as air-cooled models.

12. Remove refrigerant service gauges, and BE SURE to REPLACE the Schrader valve caps on Schrader valves, to prevent leaks.
13. Replace Control Box cover and all service panels.
14. 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

I. FREEZING CYCLE

Water from the sump in the reservoir of the Sump Assembly is pumped to a Water Distributor System, at the top of the Evaporator Plates. From the Water Distributors at the top of each Evaporator Plate, the water cascades by gravity over all cells of the Plates and to the Sump Assembly below, for recirculation. See Figure 3-1. At the beginning of the Freezing Cycle, the electrical circuit is completed to the Compressor and the Water Pump. The Water Pump operates continuously, through both the Freezing Cycle and the Harvest Cycle.

In Water-Cooled models, water also flows through the Condenser and out the drain. While in the Condenser, water removes heat from the refrigerant and allows the refrigerant to condense from a gas to a liquid.

In the Compressor, gaseous refrigerant is compressed and discharged into the Condenser, as a high pressure, high temperature gas. The refrigerant is cooled and condensed, by either air or water, and condenses into a high pressure, medium temperature liquid. This liquid refrigerant, then passes through a small capillary tube,

where the temperature and pressure of the liquid refrigerant are lowered and it next enters the Evaporator Plates. The refrigerant is warmed by the water cascading over the Evaporator Plates and begins to boil off and become a gas. The refrigerant next travels through the Accumulator, where any remaining liquid refrigerant boils off and returns to the Compressor as a low pressure, low temperature gas, and the cycle starts again.

During the Freezing Cycle, the Hot Gas Solenoid Valve is CLOSED.

When the ice cubes are partially formed, the Cube Size Control bulb located on the suction line out of the Evaporator Plates Assembly, 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 Freezing Cycle.

The Timer will keep the Icemaker operating in the Freezing Cycle for a selected length of time. This will give the ice cubes time to fully form. After that selected length of time, the Timer will switch the Icemaker into the Harvest cycle, through the contacts of the Timer Assembly microswitch.

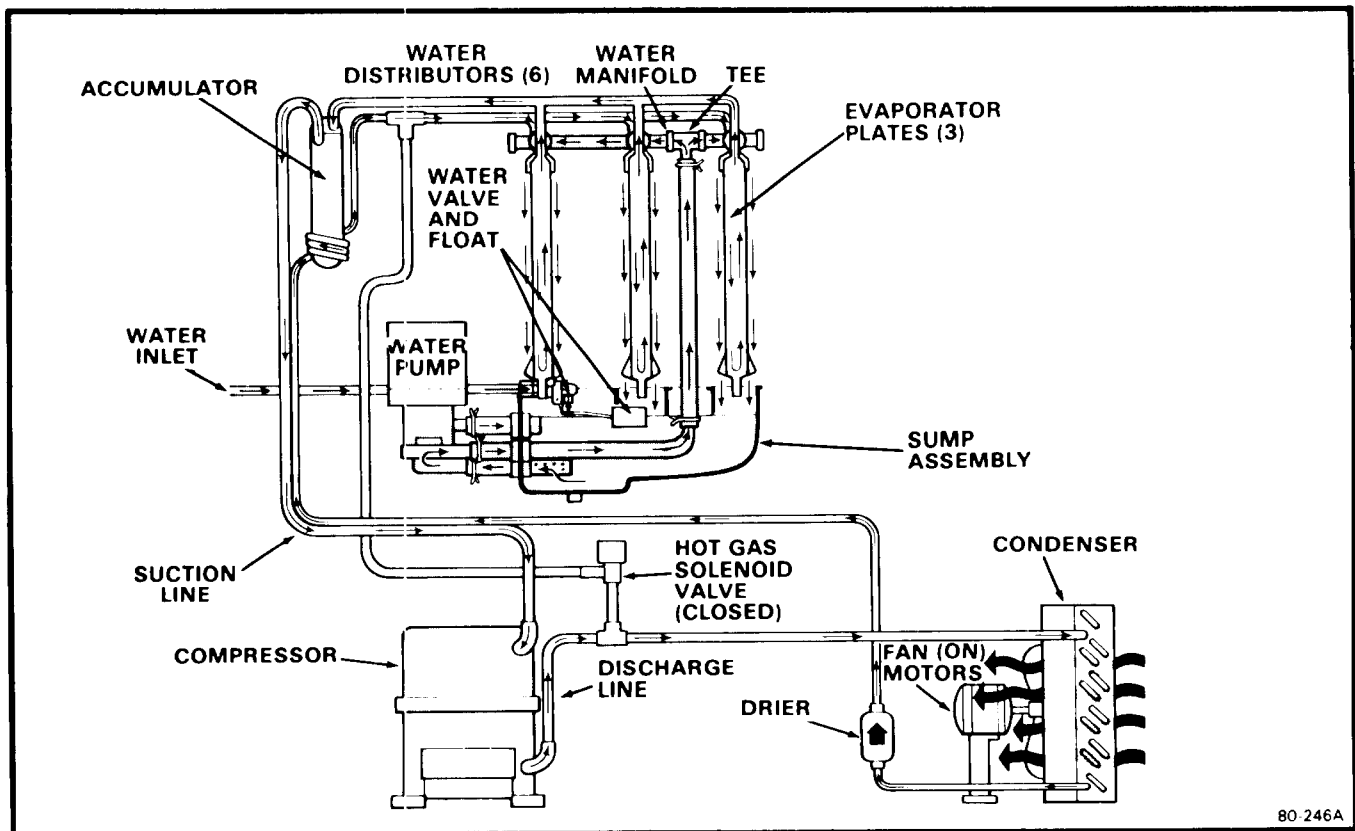


Figure 3-1. Freezing Cycle.

II. HARVEST CYCLE

When the Timer switches the Icemaker into the Harvest Cycle, high pressure, high temperature gas refrigerant being discharged from the Compressor is diverted from the Condenser through the Hot Gas Solenoid Valve into the Evaporator Plates Assembly. During this cycle, the gaseous high pressure, high temperature refrigerant circulates from the Compressor through the Evaporator Plates assembly and back again, bypassing the Condenser and the capillary tube. In the electrical circuit, both the Compressor and the Water Pump are operating and the Hot Gas Solenoid Valve is energized and OPEN. See Figure 3-2.

The finished ice cubes are released from the sides of the Evaporator Plates, by the warming effect of the hot gas flowing through the Evaporator Plate tubes and the water cascading over the ice cubes loosening from the warmed cells of the Plates. The released ice cubes drop into the ice storage bin below.

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. COMPONENT DESCRIPTION

A. BIN THERMOSTAT CONTROL

The Bin thermostat Control is located in the right end of the Control Box. The sensing capillary tube of the control is routed from the rear of the Control Box through an access cutout in the inner left wall in the Evaporator section, downward to the Bin Thermo Control Bracket hanging in the ice storage Bin. 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 screw at a time.

B. 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.

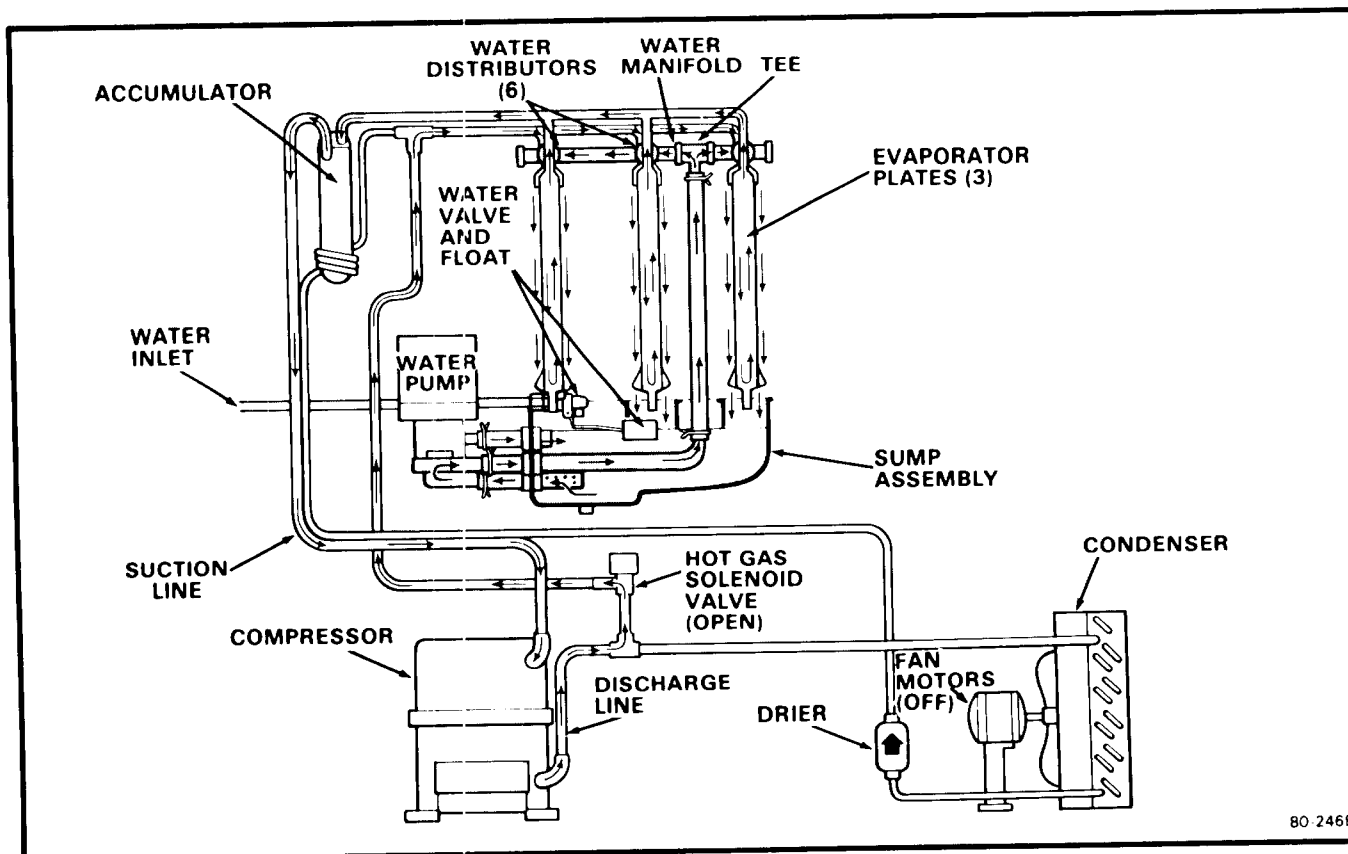


Figure 3-2. Harvest Cycle.

C. 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-I, Adjustment of the Cube Size Control, BEFORE attempting to adjust the control.

D. 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.

E. FINISHING TIMER - Timer & Switch Assembly

The function of the Finishing Timer begins when activated by the Cube Size Control. The outer surface, or large diameter lobe of the Timer cam, determines the Time Cycle for finish freezing of the ice cubes, while the inner surface, or small diameter lobe, determines the Time Cycle for the Harvest sequence. 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 time, as required.

F. HIGH PRESSURE CONTROL - Water-Cooled Model

The High Pressure Control, a safety control, is factory set at 250 PSIG. The control functions as a precautionary device, to shut OFF electrical power to the Icemaker, should a loss of water occur to the water-cooled Condenser. In addition to being a manual reset Control, there is an adjusting screw for raising or lowering the CUT-IN pressure.

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 Plates Assembly to release ice cubes from the 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. WATER INLET FLOAT VALVE

The Water Inlet Float Valve functions to maintain the proper operating level of water in the Sump Assembly reservoir. As water pumped from the sump cascades over the Evaporator Plates and partially freezes to the Evaporator Plates, the Water Inlet OPENS to allow replacement water to enter the Sump Assembly reservoir. When the icemaker shuts OFF, the water level rises causing the Float to shut OFF the inlet makeup water.

I. WATER DISTRIBUTION SYSTEM

The Water Distribution system functions to evenly supply water to all cells of the Evaporator Plates. The Water Pump pumps water from the Sump up the vertical Tygon tube to the Tee, from there water is channeled through Water Manifolds to six Water Distributors, two atop each Evaporator Plate, and from six holes within each Distributor, water is uniformly pressed against sheeting surfaces and to the cells of each side of the Evaporator Plates. Gravity flow returns the unfrozen excess portion of water to the Sump reservoir for recirculation.

J. WATER REGULATOR VALVE - Water-Cooled Model

The Water Regulator Valve functions to maintain a constant Compressor head pressure, by regulating the amount of inlet water flow through the Condenser, on water-cooled models. The valve operates through the refrigerant system high side pressure. Rotating the adjusting screw, located on top of the valve, can INCREASE or DECREASE the water flow through the water-cooled Condenser, which in turn, will DECREASE or INCREASE the Compressor operating head pressure.

NOTE

When installing a replacement Water Regulator Valve, be sure the replacement valve is installed with the arrow positioned in the direction of the water flow.

REFRIGERANT CHARGE

MODEL	CM850 Refrig. Chg.
Air-Cooled	5 lbs. 10 oz. R-12 (Approx.)
Water-Cooled	5 lbs. 10 oz. R-12 (Approx.)

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 CM850 Cubers, however it is important to CHECK NAMEPLATE for each Icemaker, especially when there are different Compressors.

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 CUBE SIZE CONTROL

CAUTION

BEFORE performing actual adjustment to the Cube Size Control, check other possible 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 cause either 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 lower right end of the Control Box.
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 lower right end of the Control Box.
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.

II. 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 thirteen minutes. Four 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 **COUNTERCLOCKWISE** will unscrew the shaft from the threaded stud on the Timer Cam.

To Adjust the Timer Switch Assembly:

A. HARVEST CYCLE: To start, slowly rotate the shaft of the Timer & Switch Assembly, located in the Control Box, **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 4-1.

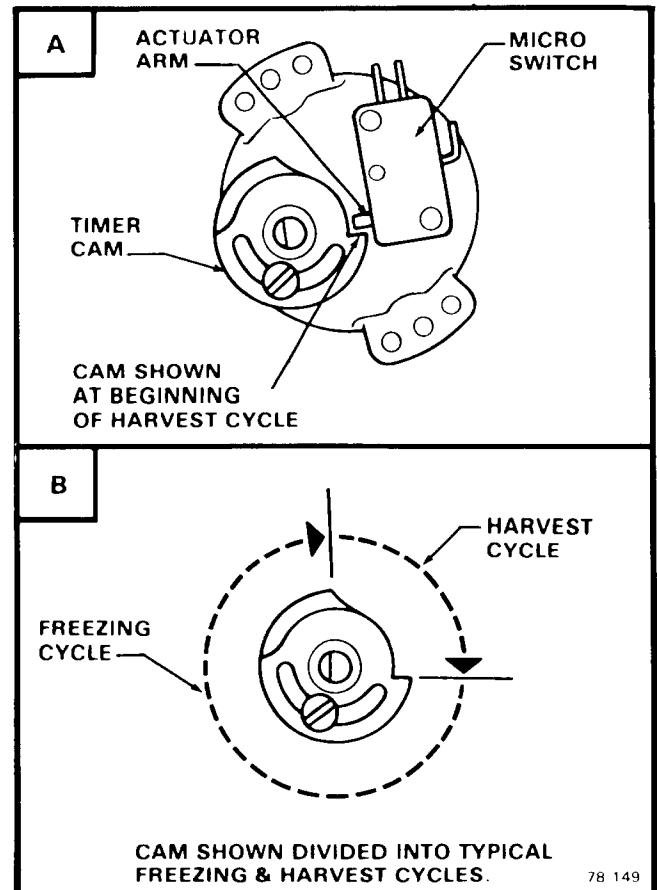


Figure 4-1. Adjustment of the Timer & Switch Assembly.

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

III. ADJUSTMENT OF THE WATER REGULATOR ASSEMBLY — WATER-COOLED MODELS

The correct Compressor head pressure on Water-Cooled Models is 135 PSIG. Adjusting the Water Regulator Valve increases or decreases the rate of flow of water, through the Water-Cooled Condenser; which increases or decreases the affected temperature/pressure of the Compressor head pressure. INCREASED water flow, results in DECREASED or LOWER head pressure: while, DECREASED water flow, results in INCREASED or HIGHER head pressure.

To adjust the Water Regulator Assembly:

- A. To INCREASE the head pressure: Rotate the adjusting screw COUNTER-CLOCKWISE.
- B. To DECREASE the head pressure: Rotate the adjusting screw CLOCKWISE.
- C. Check change in Compressor head pressure, and repeat step A or B as necessary, to achieve desired operating head pressure.

WARNING

Be sure the electrical power supply and the water supply to the icemaker are OFF BEFORE starting any of the following REMOVAL AND REPLACEMENT procedures, as a precaution to prevent possible personal injury or damage to equipment.

NOTE

For installations having stacked CM850 Cubers mounted on a Bin, disregard steps to remove the Top Panel. Access to all areas and parts can still be gained through removal of the necessary Front or Side Panels.

IV. REMOVAL AND REPLACEMENT OF THE BIN THERMOSTAT CONTROL

- A. To remove the Bin Thermostat Control:
 - 1. Remove screws and all Front Panels.
 - 2. Remove four screws at the sides of the Control Box and remove the Cover.

- 3. Remove two wires connecting the Bin Thermostat Control to the Control Board.
- 4. Unthread the capillary tube and remove from the Bin Thermo Control Bracket at the bottom rear of the Evaporator liner.
- 5. Remove two screws attaching the Bin Thermostat Control to the right end of the Control Box; then, carefully pull the capillary tube out of the Evaporator section, and carefully remove the Bin Thermostat Control and capillary tube from the Control Box and refrigeration section of the Cabinet.

B. To replace the Bin Thermostat Control, reverse the removal procedure.

V. REMOVAL AND REPLACEMENT OF THE COMPRESSOR ASSEMBLY

NOTE

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.

A. To remove the Compressor Assembly:

- 1. Remove screws and the top 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 three screws and electrical leads from the Compressor.
- 4. Unsolder the Refrigerant Tubes from the Compressor Assembly.
- 5. Remove four bolts and washers which secure the Compressor to the Chassis mounting base.
- 6. Remove the Compressor from the Cabinet.

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

VI. REMOVAL AND REPLACEMENT OF THE CONDENSER — AIR-COOLED MODELS

NOTE

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.

A. To remove the Condenser:

1. Remove screws and the Left Side Panel and two Front Panels.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder and disconnect refrigerant lines from the Condenser.
4. Unsolder and remove the Drier from the refrigerant lines connecting to the Condenser.
5. Remove screws, lockwashers and the Condenser from the Chassis base.

B. To replace the Air-Cooled Condenser, reverse the removal procedure.

VII. REMOVAL AND REPLACEMENT OF THE CONDENSER WATER-COOLED MODELS

NOTE

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.

A. To remove the Condenser:

1. Remove screws and the two Front Panels.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Check to be sure building source water inlet supply shutoff valve to rear of Chassis is OFF.
4. Disconnect Water-Cooled Condenser inlet water line at the Water Regulator Assembly outlet fitting.
5. Unsolder the refrigerant capillary tube distributor line at the outlet end of the Drier, the refrigerant outlet line from the bottom of the Condenser, and remove the Drier from the lines.
6. Unsolder the Compressor discharge line, at the top of the Water-Cooled Condenser.
7. Unsolder the Condenser water outlet line, at the top of the Water-Cooled Condenser.
8. Remove two screws and washers and the Water-Cooled Condenser from the Cabinet.

B. To replace the Water-Cooled Condenser, reverse the removal procedures.

VIII. REMOVAL AND REPLACEMENT OF THE CUBE SIZE CONTROL

A. To remove the Cube Size Control:

1. Remove screws and the two Front Panels and the Top 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 the coiled capillary tube bulb from the tube well on the suction line.

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.

IX. REMOVAL AND REPLACEMENT OF THE DRIER

NOTE

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.

A. To remove the Drier:

1. Remove screws and the Left Side Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder refrigeration lines at both ends of the Drier, and remove 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, taking precautions to NOT OVERHEAT the Drier body, during installation soldering.

3. Purge the system and check for leaks.

4. Thoroughly evacuate the system to remove moisture and non-condensables.

5. Charge the system with refrigerant, by weight. SEE NAMEPLATE.

6. Replace and attach the Left Side Panel.

X. REMOVAL AND REPLACEMENT OF THE EVAPORATOR PLATE ASSEMBLY - (THREE)

NOTE

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.

A. To Remove the Evaporator Plate:

1. Remove screws and the three Front Panels.
2. Remove screws and the Left Side Panel.
3. Remove screws and the front Upper and Lower Freezer Liners.
4. Remove hose clamp and rubber cap from bottom of Sump Assembly and drain all water. Replace rubber cap and hose clamp.
5. Slide three hose clamps off and unclamp Tygon tubes at left end of the Sump Assembly.
6. Remove Sump Covers.
7. Disconnect Tygon water inlet tube(s), at the Water Manifold Tee(s), above the Evaporator Plates.

8. Unsnap the Sump Assembly from the lower front and rear attachment points on each Evaporator Plate; then, CAREFULLY lower the RIGHT END of the Sump Assembly, to clear the bottom of the Plates, and work the connecting Tygon tubes OFF the LEFT end, and carefully remove the Sump Assembly so as not to split or break the plastic.

9. Slide the Water Distributor Tubes forward, about 1/8-inch along the top of the Evaporator Plate to be removed, until the rear Water Distributor Tube can be lifted upward. See Figure 4-2.

10. Lift the end of the rear Water Distributor Tube and slide the Distributors toward the rear along the top of the Evaporator Plate, until the flexible front notch is cleared.

11. Unsnap and disconnect each front and rear Water Distributor Tube from the Water Manifold section.

NOTE

If all six Water Distributor Tubes are being removed, disconnect the Water Manifold Tubes at the Tee(s) and remove the connected Water Distributors and Water Manifold Tubes as larger assemblies, from the tops of the Evaporator Plates; then, disassemble the individual parts at the workbench.

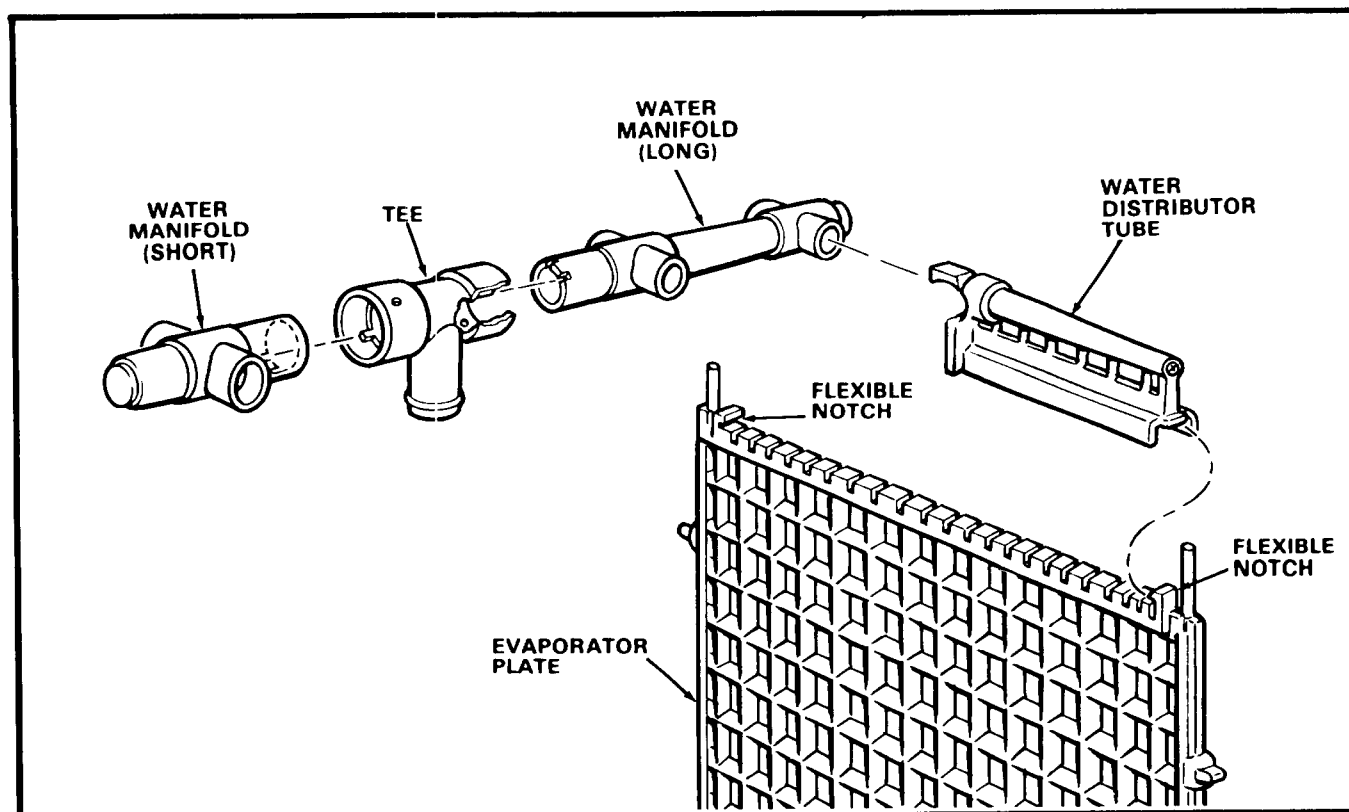


Figure 4-2. Removal of the Water Distributors, Manifold, Tees.

CAUTION

Use **EXTRA PRECAUTION** to protect the plastic parts during the next step to unsolder the refrigerant lines, two places, at the top of the Evaporator Plate. Position wet cloths over top of Plates, as well as over the plastic liner at the rear, or sides, to prevent accidental heat damage, or possible fire from torch flame.

12. Unsolder and remove the refrigerant lines at top front and rear of the Evaporator Plate to be replaced.
13. Remove screws at one end of the Front Braces, then, loosen the Braces just enough to remove the Evaporator Plate. Temporarily replace the Brace, to support the remaining Evaporator Plates.

B. To replace the Evaporator Plate, reverse the removal procedure.

XI. REMOVAL AND REPLACEMENT OF THE FAN MOTOR ASSEMBLY—AIR-COOLED MODELS

A. To remove the Fan Motor Assembly:

1. Remove screws and the Left Side Panel.
2. Disconnect the two electrical leads, from the Fan Motor, at the Control Box Assembly.

NOTE

BEFORE next step, measure or make accurate mental note of the distance the Fan Blades extend beyond the Fan Shroud, so during replacement the correct distance is maintained.

3. Remove screws and the Fan Motor and Bracket Assembly; remove the Fan Motor and Bracket from the Chassis base.
4. Loosen set screws on the Fan Blade and remove the Fan Blade from the Fan Motor. Mark or note position of Blade on the shaft of the Fan Motor, for replacement.
5. Remove screws and lockwashers and separate the Fan Motor from the Fan Motor Bracket.

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

NOTE

Be sure to replace the Fan Blade with the hub of the Fan Blade facing the Fan Motor, to ensure air flow

is toward the Fan Motor; and, is set at marked location on shaft and setscrews tightened on the FLAT part of the shaft of the Fan Motor.

XII. REMOVAL AND REPLACEMENT OF THE INLET WATER VALVE ASSEMBLY

A. To remove the Inlet Water Valve Assembly:

1. Remove Sump Assembly as in paragraph IV-XIII.
2. Loosen and remove inlet water line fitting from the inlet Water Valve Assembly, at the bottom left of the LEFT END Evaporator Plate; and slide the fitting away from the connection, to gain access to the hex nut.
3. Remove the hex nut, above, to detach the inlet Water Valve Assembly from the Evaporator Plate.
4. Slide the Valve body and attached Float to the RIGHT, out of the double-D hole in the Evaporator Plate and remove the inlet Water Valve Assembly from the Plate.

B. To replace the inlet Water Valve Assembly, reverse the removal procedure. Be sure the Valve body is properly positioned in the double-D hole and stays seated until the hex nut is tightened.

XIII. REMOVAL AND REPLACEMENT OF THE SUMP ASSEMBLY

A. To remove the Sump Assembly:

1. Remove screws and the two Front Panels.
2. Remove screws and the front Upper and Lower Freezer Lines.
3. Remove hose clamp and rubber cap from bottom of Sump Assembly and drain all water. Retain rubber cap and hose clamp.
4. Slide three hose clamps off and unclamp Tygon tubes at left end of Sump Assembly.
5. Remove screws and all Sump Covers.
6. Disconnect the Tygon tube at the Water Manifold Tee above the Evaporator Plates.
7. Unsnap the Sump Assembly from the lower front and rear attachment points on each Evaporator Plate; then, CAREFULLY lower the RIGHT END of the Sump Assembly, to clear the bottom of the Plates, and work the connecting Tygon tube OFF the LEFT end, and carefully remove the Sump Assembly so as not to split or break the plastic.

8. Unscrew to disassemble three Female Tubes and O-Rings, from the outside of the Sump Assembly, connected to one Pump Pick-up Tube and two Male Tubes, installed from inside the Sump Assembly.

B. To replace the Sump Assembly, reverse the removal procedure. BE SURE the Pump Pickup Tube, lowest of three tubes, is installed with the slotted opening facing DOWN, toward bottom of Sump.

XIV. REMOVAL AND REPLACEMENT OF THE WATER DISTRIBUTOR TUBES AND MANIFOLD TUBES

A. To remove the Water Distributor Tubes and Manifold Tubes:

1. Remove screws and the two Front Panels.
2. Remove screws and the front Upper and Lower Freezer Liners.
3. Slide the Water Distributor Tube to be removed, forward about 1/8-inch along the top of the Evaporator Plate, until the rear Water Distributor Tube can be lifted upward.
4. Lift the end of the rear Water Distributor Tube and slide the Distributors toward the rear along the top of the Evaporator Plate until the flexible front notch is cleared.
5. Unsnap and disconnect each front and rear Water Distributor Tube from the Water Manifold section.

NOTE

If all six Water Distributor Tubes are being removed, disconnect the Water Manifold Tube at the Tee and remove the connected Water Distributors and Water Manifold Tubes as larger assemblies, from the tops of the Evaporator Plates; then, disassemble the individual parts at the workbench.

B. To replace the Water Distributor Tubes and Manifold Tubes, reverse the removal procedure. BE SURE the notches in the Water Manifold Tubes properly engage the alignment keys in the Tee. BE SURE each front Water Distributor Tube is securely fastened at the notch at the top front of the Evaporator Plate; and, check identical attachment for each rear Water Distributor Tube and notch; also, that the Distributor/Manifold connections at the top center of each Evaporator Plate is snug against the top of the Plate.

XV. REMOVAL AND REPLACEMENT OF THE WATER PUMP ASSEMBLY

NOTE

This procedure is written to assist the serviceman in removing and replacing the Water Pump Assembly, in an air-cooled model, when an installation is built-in; or, has limited overhead space for working from the top. In an open area, removal of the Top Panel, or Left Side Panel, will provide easier access to the Water Pump Assembly.

A. To remove the Water Pump Assembly:

1. Remove screws and Lower Front Panel.
2. Remove screws and Lower Front Freezer Liner.
3. Remove three hose clamps connecting three Tygon Tubes to the left end of the Sump Assembly.
4. Disconnect electrical leads and ground wire from the Water Pump Assembly.
5. Remove four screws and washers, attaching the Water Pump Bracket to the machine base then, work the Tygon Tube loose from the Sump Assembly and remove the Water Pump and bracket assembly.
6. Remove two screws and washers attaching the water pump assembly to the water pump bracket and separate the water pump from the bracket.

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

XVI. REMOVAL AND REPLACEMENT OF THE WATER REGULATOR ASSEMBLY—WATER-COOLED MODELS

NOTE

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.

A. To Remove the Water Regulator Assembly:

1. Remove screws and the Bottom Front Panel.
2. Check to be sure building source water inlet supply shutoff valve to rear of Chassis is OFF.
3. Bleed off or blow the refrigerant charge through the Schrader valve.
4. Disconnect water inlet supply line at the left bottom rear of the Chassis.
5. Disconnect water line at the inlet and outlet fittings on the Water Regulator Assembly.
6. Unsolder the Water Regulator Valve capillary tube from the Compressor refrigerant discharge line.
7. Remove two screws and the Water Regulator Assembly from the Chassis Base.

B. To replace the Water Regulator Assembly reverse the removal procedure.

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.

WARNING

During maintenance or cleaning procedures it is sometimes necessary to operate or observe equipment with electrical power ON; extra care should be exercised to PREVENT PERSONAL INJURY.

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 or service any optional water treatment devices, if any installed.
2. Check that the CM850 Cabinet is level, in the side-to-side and front-to-rear directions.
3. Clean the water system, Evaporator Plates and Sump Assembly, using a solution of SCOTSMAN Ice Machine Cleaner. Refer to Procedure III-III, 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 water system parts, Evaporator Plates and the Sump Assembly before and after cleaning will indicate frequency and procedure to be followed in local areas.

4. Check that each Evaporator Plate Assembly is snug and secure on each wall support on the bin rear wall, in the holes of the Front Brace, and in each indent recessed in each arm of the Sump Assembly, below the bottom corners of the Evaporator Plates.
5. Check and tighten all bolts and screws.
6. Check and tighten all electrical connections.
7. Check hot gas solenoid valve for correct operation.
8. With MASTER ON-OFF toggle switch and

COMPRESSOR ON-OFF toggle switch in the OFF position, clean the Condenser using vacuum cleaner, whisk broom or brush. Instruct customer to clean Condenser frequently. DO NOT USE A WIRE BRUSH.

9. Check for water leaks and make corrections.
10. Check the Bin Thermostat Control bulb to test shut off. Holding ice against Bin Thermostat Control bulb should cause the icemaker to shut off at the end of the Harvest Cycle.

NOTE

Soon after ice is removed from the Bin Thermostat Control bulb, the icemaker will restart.

III. CLEANING - Icemaker

1. Check that both toggle switches on the Control Box are in the OFF position.
2. CLOSE the shutoff valve in the water INLET line to shut OFF water supply to the icemaker.
3. Position a container for catching drain water under the rubber plug at the bottom of the Sump Assembly.
4. Remove hose clamp, the rubber plug, and drain all water from the Sump Assembly into the container.
5. Replace rubber plug and hose clamp.

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.

6. Prepare cleaning solution: Mix eight ounces of SCOTSMAN Ice Machine Cleaner with six pints of fresh, potable warm water.
7. Carefully pour the cleaning solution into the Sump Assembly.
8. Immediately move the MASTER ON-OFF toggle switch, on the Control Box, to the ON position.
9. Allow the system to operate for about thirty minutes.

SECTION V MAINTENANCE & CLEANING INSTRUCTIONS

NOTE

No ice cubes will be made, because the COMPRESSOR ON-OFF toggle switch is OFF.

10. At the end of thirty minutes, move the MASTER ON-OFF toggle switch on the Control Box to the OFF position.
11. Repeat steps 3, 4 and 5.
12. OPEN the shutoff valve to all inlet water to fill the Sump to operating level.
13. Move the MASTER ON-OFF toggle switch, to the ON position, and allow the system to operate ten to fifteen minutes, to flush the system.
14. Repeat step 3, 4 and 5 to flush the system three times, after dumping the cleaning solution.
15. After flushing the system three times, check for proper water level in the Sump; then, move both toggle switches, the MASTER ON-OFF and the COMPRESSOR ON-OFF, to the ON position.

NOTE

If, after completing the cleaning and flushing procedure, inspection of the water flow, reveals that one or more Evaporator Plates does not have a full

flow of water for each vertical row of cubes, shutdown the operation and remove the particular Water Distributor Tube above that portion of the Evaporator Plate indicating insufficient water flow, and remove obstruction.

CAUTION

DO NOT use ice cubes produced from the cleaning solution. Be sure none remains in the bin.

16. Add hot water to the bin to melt the ice cubes and thoroughly wash and rinse all inner surfaces in the bin.
17. Check each ice cube harvest until the ice cubes are clear and the acid taste eliminated.
18. Wash and wipe down all interior surfaces of the Evaporator section of the Cabinet, with a clean cloth, or disposable paper wipers, soaked in the cleaning solution.
19. Wipe all washed surfaces dry, including the bin, with clean dry cloths, or clean dry disposable paper wipers.
20. Replace all panels.
21. 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 Ice-making-Refrigeration System.

I. ICEMAKING - REFRIGERATION SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Irregular size cubes some cloudy.	Some distributor holes plugged. Shortage of water. Unit not level.	Clean distributor holes. See Shortage of water CORRECTION. 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. Partially restricted capillary tube. Moisture in system. Shortage of water. Loss of refrigerant.	Rotate Cube Size Control dial toward COLDER. Blow refrigerant charge; re- place drier; evacuate system; add refrigerant charge. Same as above CORRECTION. See Shortage of water CORRECTION Check for refrigerant leaks, correct leaks; recharge system.
Cloudy Cubes.	Shortage of water. Dirty water supply. Accumulated impurities.	See Shortage of water SYMPTOM. Install water filter or softener. Use SCOTSMAN Ice Machine Cleaner. Procedure V-III.
Shortage of water.	Water leak in sump area. Partial restrictions in water strainer.	Locate leak and repair or correct condition. Clean or replace strainer.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Decreased ice capacity.	Defective Compressor. High head pressure, result of dirty Condenser or faulty Fan Motor. Non-condensable gas in the system. Poor circulation or extreme hot location. Overcharge of refrigerant. Hot gas solenoid valve leaking. Partially restricted capillary tube.	Replace Compressor. Clean Condenser. Repair or replace Fan Motor. Purge the system and recharge per nameplate requirements. Relocate the cabinet; or provide ventilation by cutting openings. Slowly purge off to correct charge. Replace valve. See Cubes Too Small CORRECTION.
Poor harvests.	Too short defrost time. Restriction in water inlet line. Hot gas solenoid does not open. Binds or burned out. Undercharge of refrigerant.	Check and adjust harvest cycle. Check strainer and flow check valve. Replace solenoid. Charge to nameplate requirements.
Icemaker does not harvest.	Water pressure too low.	Check for 20 PSI flowing water.
Compressor cycles intermittently.	Low voltage. Dirty Condenser. Air circulation blocked. Defective Fan Motor. Non-condensable gases in system.	Check for circuit overload. Check building supply voltage, if low, contact power company. Clean Condenser with vacuum cleaner or brush. DO NOT USE A WIRE BURSH. Locate cabinet with adequate air space for proper air flow. Replace Fan Motor. Purge the system and recharge per nameplate requirements.
Icemaker will not operate.	Blown fuse in line. Master switch in OFF position. Faulty Master switch. Timer contacts open.	Replace fuse and check for cause. Set switch to ON position. Replace switch. Replace Timer microswitch.

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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 CM850
Air-Cooled (115/208-220/60/3).
- Figure 7-2. Wiring Diagram CM850
Water-Cooled (115/208-220/60/3).
- Figure 7-3. Wiring Diagram CM850
Air-Cooled (115/208/60/1).
- Figure 7-4. Wiring Diagram 850
Water Cooled (115/208/60/1).
- Figure 7-5. Wiring Diagram CM850
Air-Cooled (115/230/60/1).
- Figure 7-6. Wiring Diagram CM850.
Water Cooled (115/230/60/1).

CM850
SECTION VII WIRING DIAGRAMS

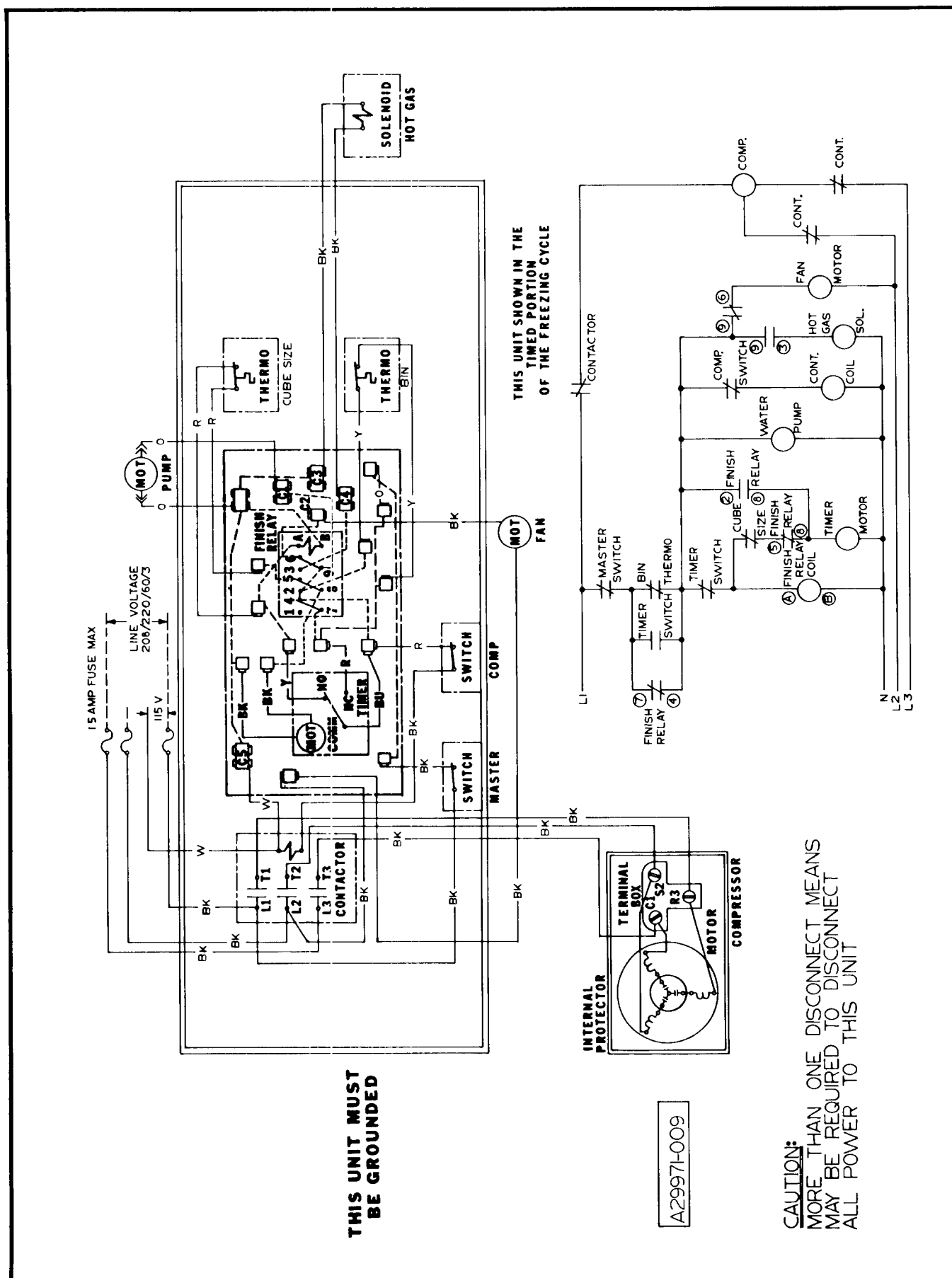
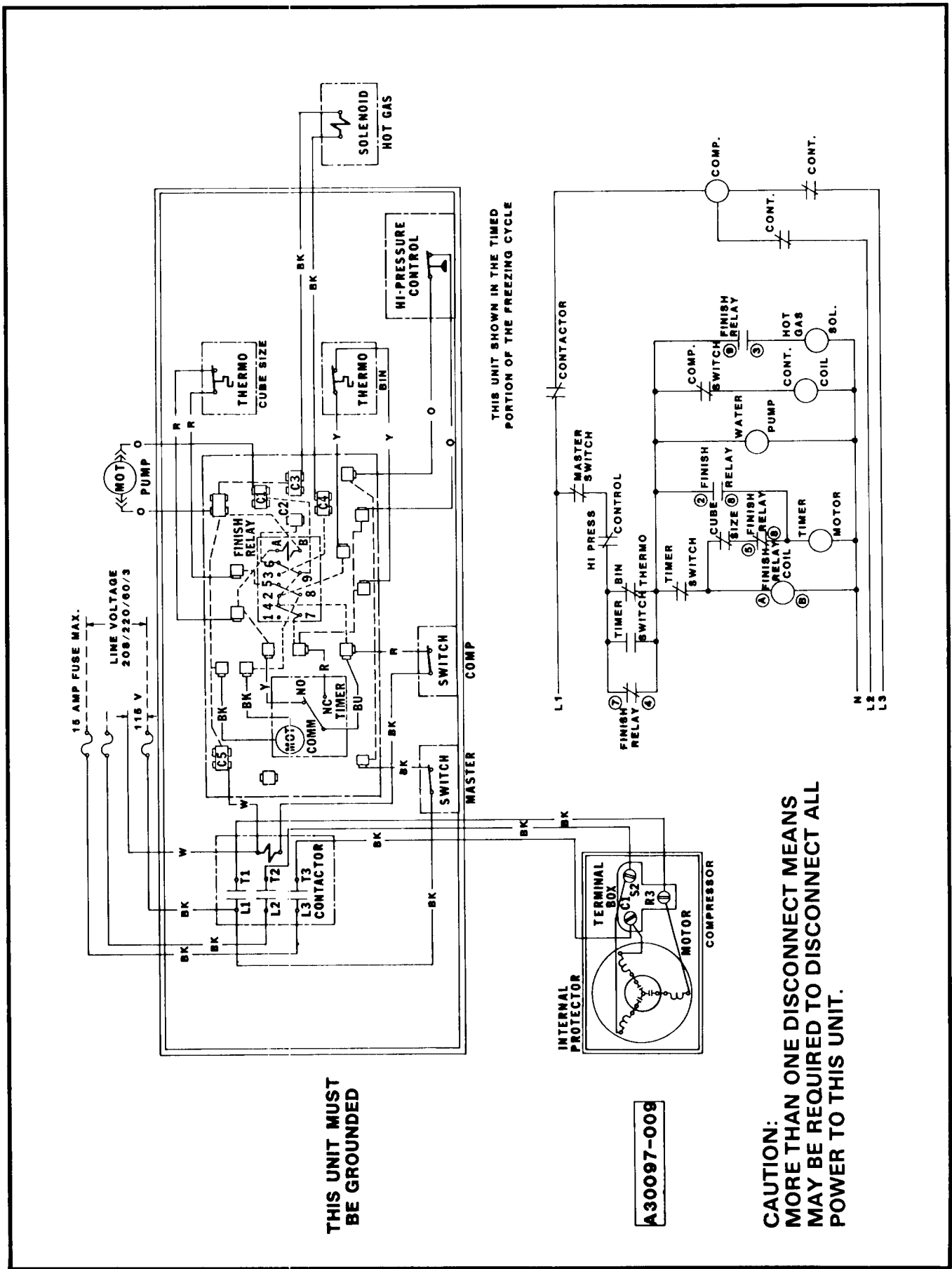


Figure 7-1. Wiring Diagram CM850—Air-Cooled (115/208-220/60/3).

CM850
SECTION VII WIRING DIAGRAMS



THIS UNIT MUST BE GROUNDED

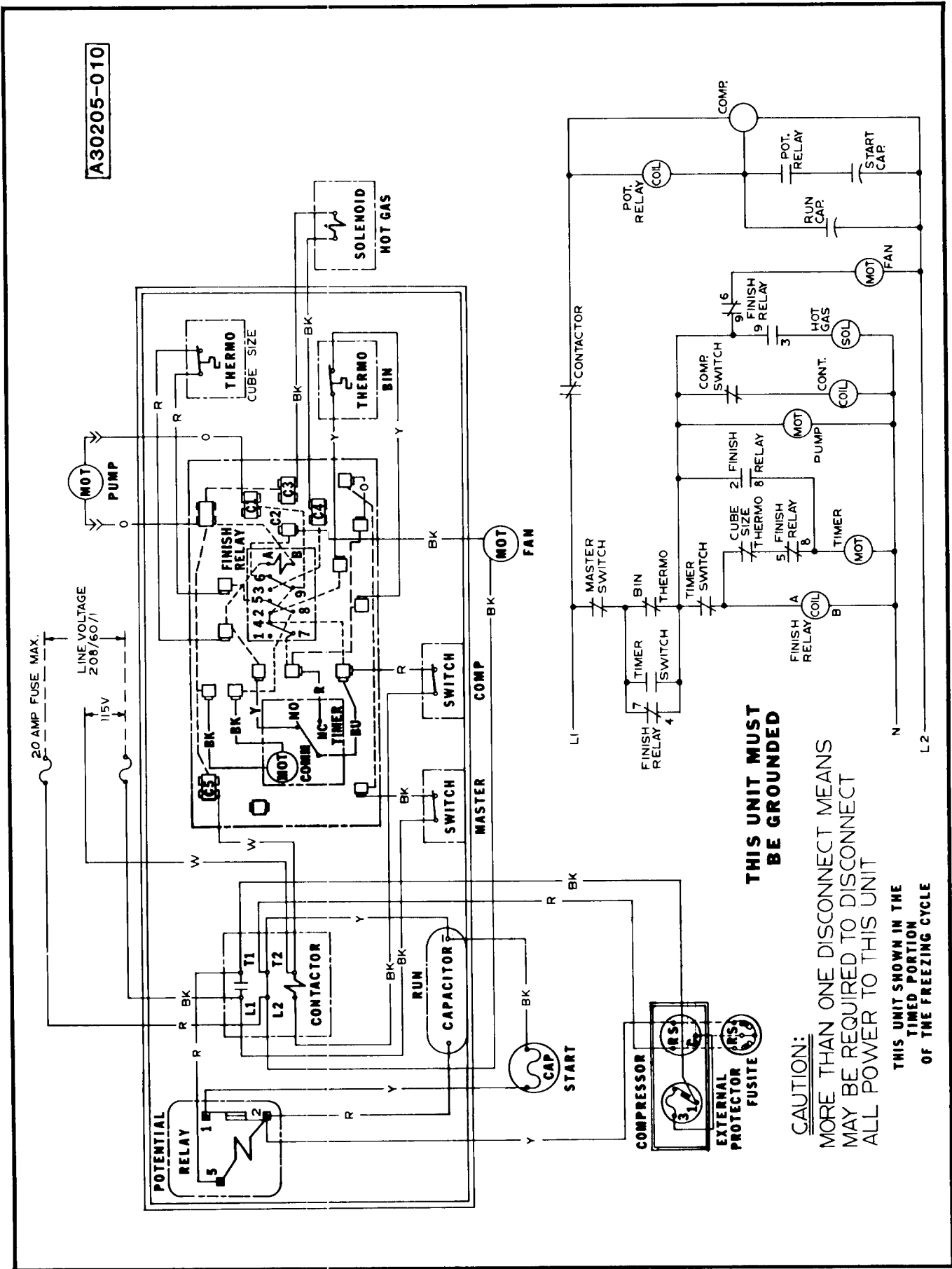
A30097-008

CAUTION: MORE THAN ONE DISCONNECT MEANS MAY BE REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT.

THIS UNIT SHOWN IN THE TIMED PORTION OF THE FREEZING CYCLE

Figure 7-2. Wiring Diagram CM850—Water-Cooled (115/208-220/60/3).

A30205-010

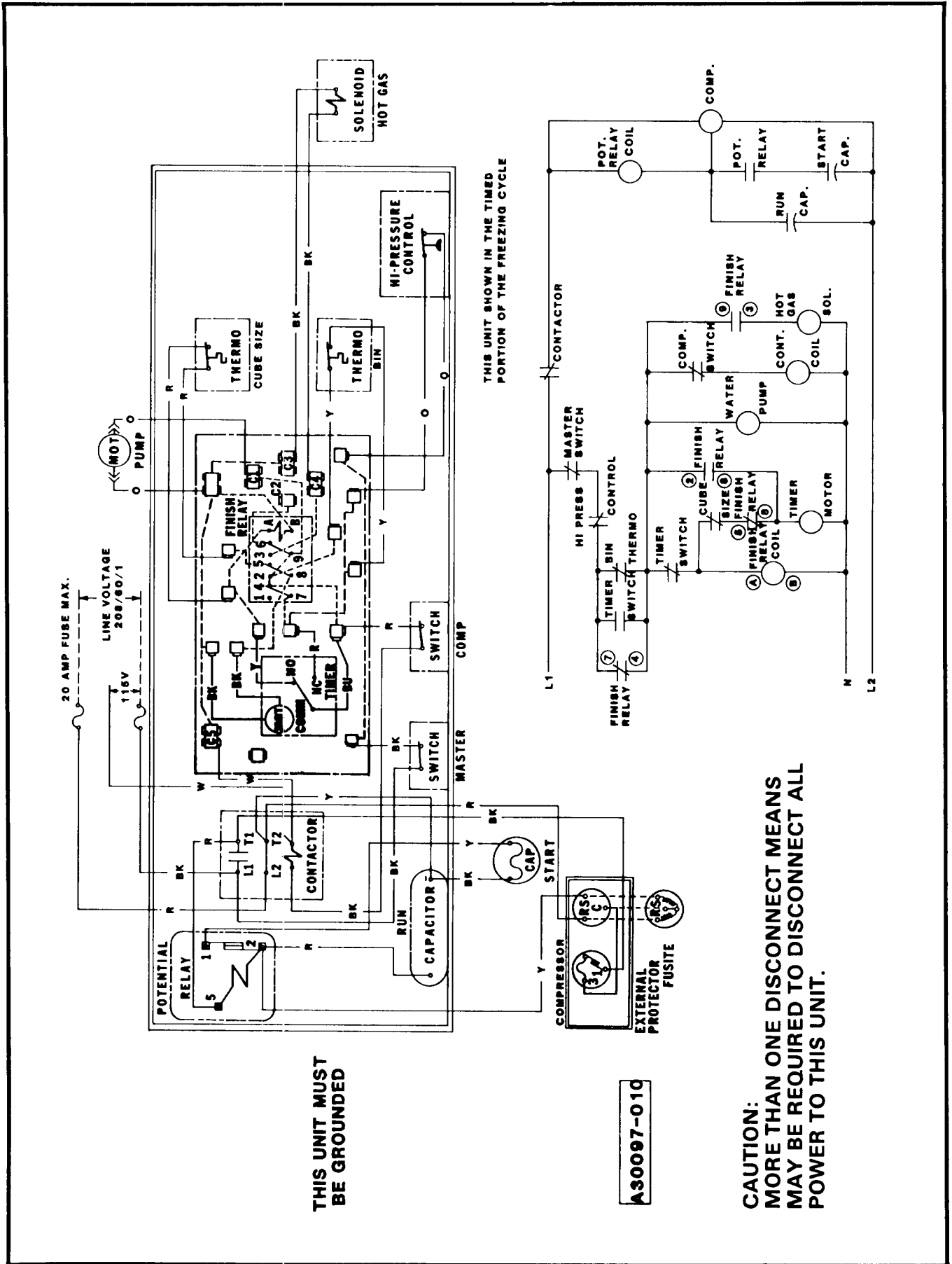


THIS UNIT MUST BE GROUNDED

CAUTION:
MORE THAN ONE DISCONNECT MEANS
MAY BE REQUIRED TO DISCONNECT
ALL POWER TO THIS UNIT

THIS UNIT SHOWN IN THE
TIMED PORTION
OF THE FREEZING CYCLE

Figure 7-3. Wiring Diagram CM850—Air-Cooled (115/208/60/1).



THIS UNIT MUST BE GROUNDED

CAUTION: MORE THAN ONE DISCONNECT MEANS MAY BE REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT.

Figure 7-4. Wiring Diagram CM850—Water-Cooled (115/208/60/1).

CM850
SECTION VII WIRING DIAGRAMS

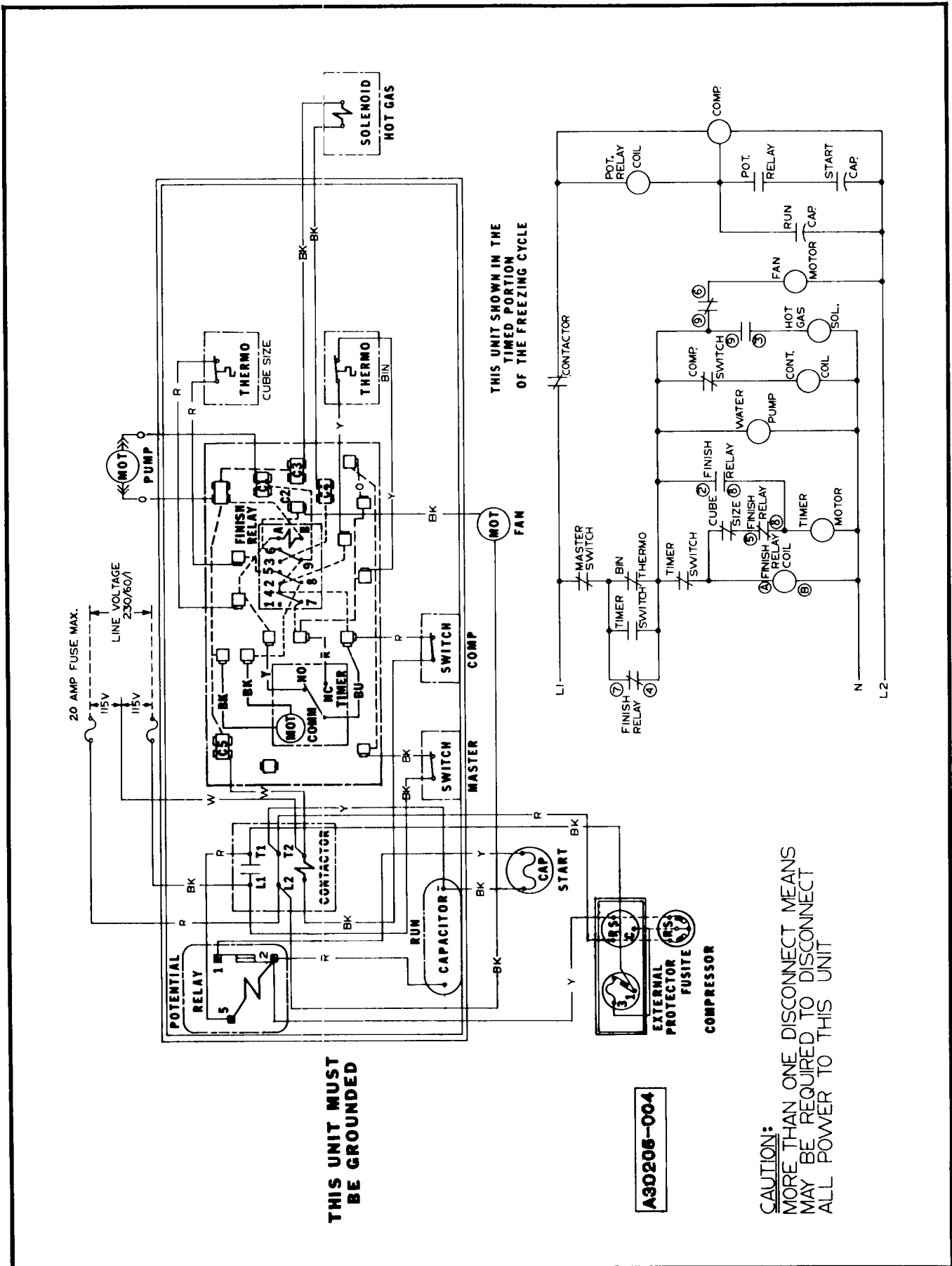
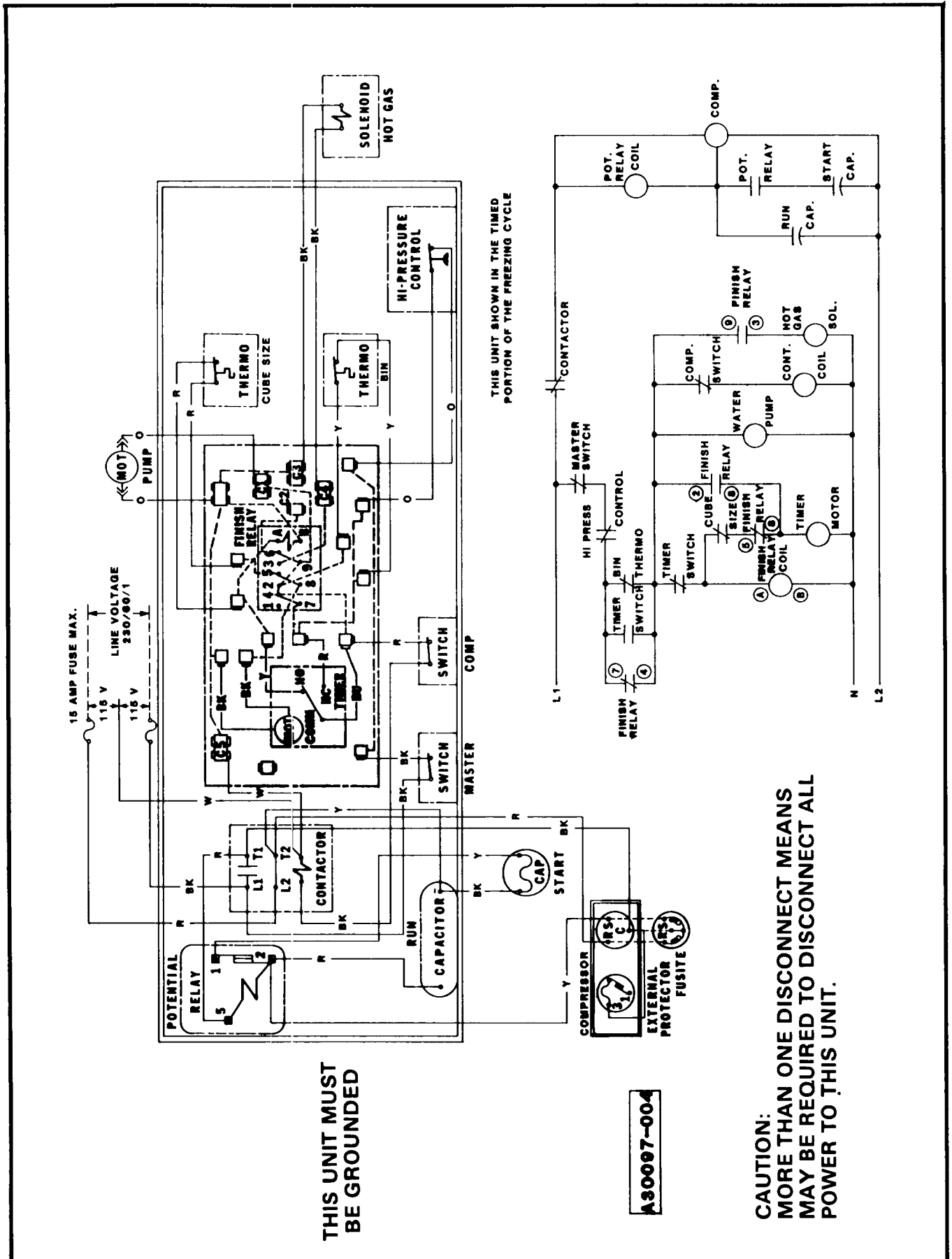


Figure 7-5. Wiring Diagram CM850—Air-Cooled (115/208-220/60/3).

CM850
SECTION VII WIRING DIAGRAMS



THIS UNIT MUST BE GROUNDED

A30097-004

CAUTION: MORE THAN ONE DISCONNECT MEANS MAY BE REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT.

Figure 7-6. Wiring Diagram CM850—Water-Cooled (115/208-220/60/3).

SECTION VIII

THE PARTS ILLUSTRATIONS AND PARTS LISTS

I. GENERAL

This section contains the Parts Illustrations and the Parts List for each of the major assemblies in the Model CM850 Dispenser.

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.

II. 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 icemaker for which the part is required, and for parts which require color matching, the color of the Cabinet.

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.

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.

Write an order for the Part. (Use SCOTSMAN Parts Order Form DN103) Be sure to include:

- 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.)

CM850
SECTION VIII ILLUSTRATED PARTS LISTING

CM850

1	03-1404-14	SCREW, NO. 8 x 1-1/4	7	A29950-002	PANEL, LEFT SIDE (STAINLESS STEEL)
2	03-1417-02	LOCKWASHER, EXTERNAL TOOTH	8	A29935-001	PANEL, BACK
3	A29953-001	PANEL, TOP (ENAMEL)	9	03-1404-10	SCREW, NO. 8 x 1/2 PHIL RECESS TAP S.S.
3	A29953-002	PANEL, TOP (STAINLESS STEEL)	10	A29982-001	LINER LOWER FRONT ASS'Y.
4	A29949-001	PANEL, RIGHT SIDE (ENAMEL)	11	13-0595-01	GASKET
4	A29949-002	PANEL, RIGHT SIDE (STAINLESS STEEL)	12	02-2642-01	MOUNT, PLASTIC PLATE
5	A29983-001	PANEL, UPPER FRONT ASS'Y. (ENAMEL)	13	A29976-001	LINER
5	A29983-002	PANEL, UPPER FRONT ASS'Y. (STAINLESS STEEL)	14	03-1394-00	NUT, PAL
6	A29951-001	PANEL, LOWER FRONT (ENAMEL)	15	03-1404-09	SCREW, NO. 8 x 1/2 PHIL RECESS TAP
6	A29951-002	PANEL, LOWER FRONT (STAINLESS STEEL)	16	A29984-001	LINER, ASSEMBLY TOP
7	A29950-001	PANEL, LEFT SIDE (ENAMEL)	17	15-0667-01	LOGO PLATE

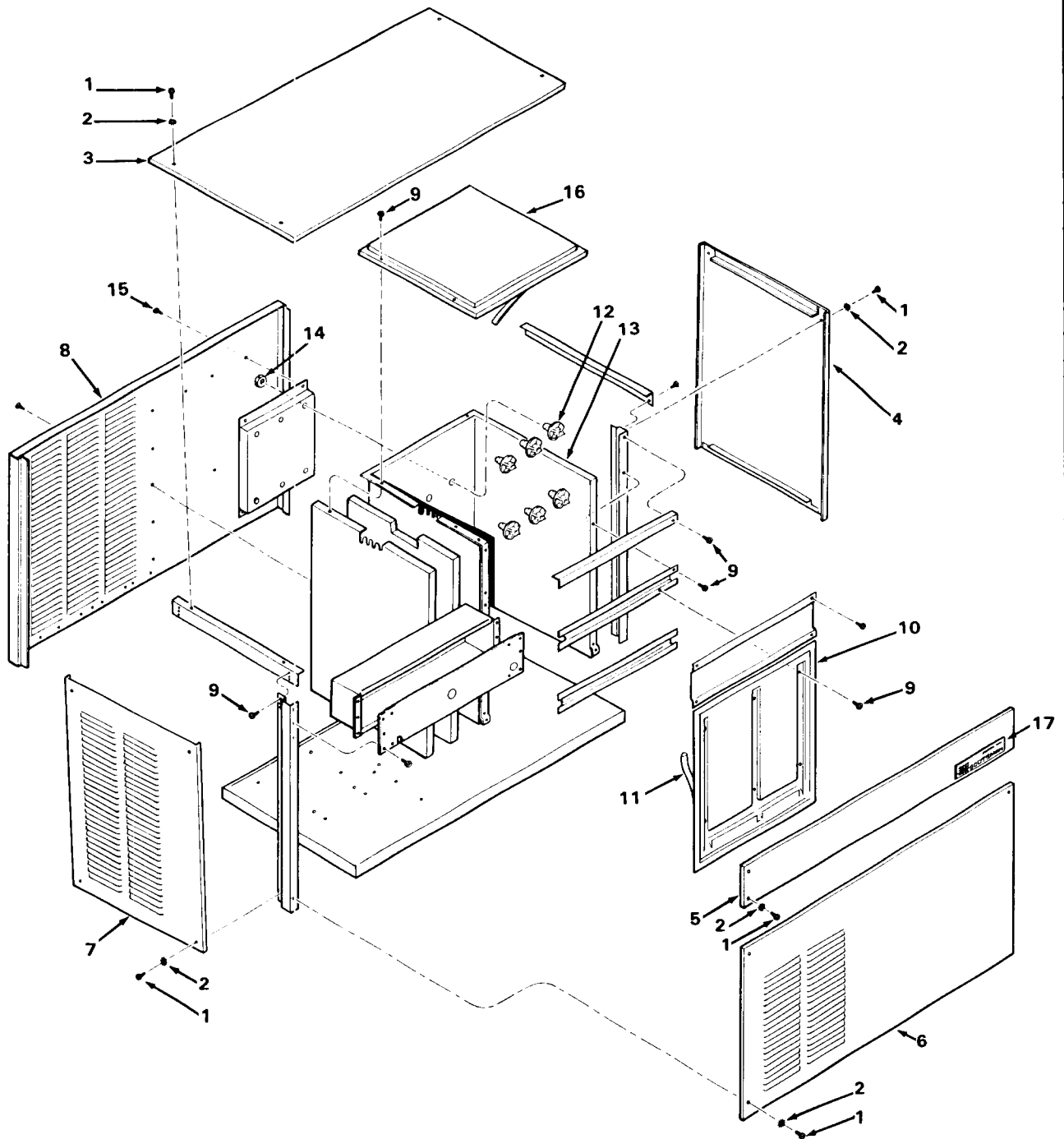


Figure 8-1. CM850 Cabinet Assembly.

**CM850
SECTION VIII ILLUSTRATED PARTS LISTING**

MAJOR ASSEMBLY-AIR-COOLED

1	03-1405-20	SCREW, NO. 5/16-18 x 1-1/2 HEX CAP
2	03-1407-07	WASHER, 5/16 PLAIN
3	18-2300-26	SLEEVE
4	18-2300-27	GROMMET
5	18-3800-02	COMPRESSOR ASSEMBLY (230/60/1)
5	18-3800-03	COMPRESSOR ASSEMBLY (208-220/60/3)
5	18-3800-07	COMPRESSOR ASSEMBLY (208/60/1)
6	03-0571-00	SCREW, NO. 1/4-20 x 1/2 T/C HEX
7	12-1930-01	WATER PUMP ASSEMBLY (115/60/1)
8	03-0571-01	SCREW, NO. 1/4-20 x 3/4 T/C HEX
9	03-1407-05	WASHER, 1/4 PLAIN
10	02-1530-00	CLAMP, HOSE
11	13-0674-07	TUBE, POTABLE WATER
12	13-0227-00	TUBE COVERING
13	12-2135-01	HOT GAS VALVE (120/60/1)
14	A29968-020	HEAT EXCHANGER/ACCUMULATOR ASS'Y
15	13-0003-01	GROMMET
16	13-0844-01	GROMMET
17	03-0571-00	SCREW, NO. 1/4-20 x 1/2 T/C HEX
18	18-0398-01	CONDENSER
19	02-2558-01	SHROUD
20	NO NUMBER	BRACKET, DRIER
21	02-2426-02	DRIER
22	18-3732-01	FAN BLADE
23	18-5105-02	MOTOR, FAN (230/6C/1)
	18-5105-05	MOTOR, FAN (208/6C/1)
24	A24068-001	SPACER
25	18-0597-00	BRACKET, MOTOR MOUNT

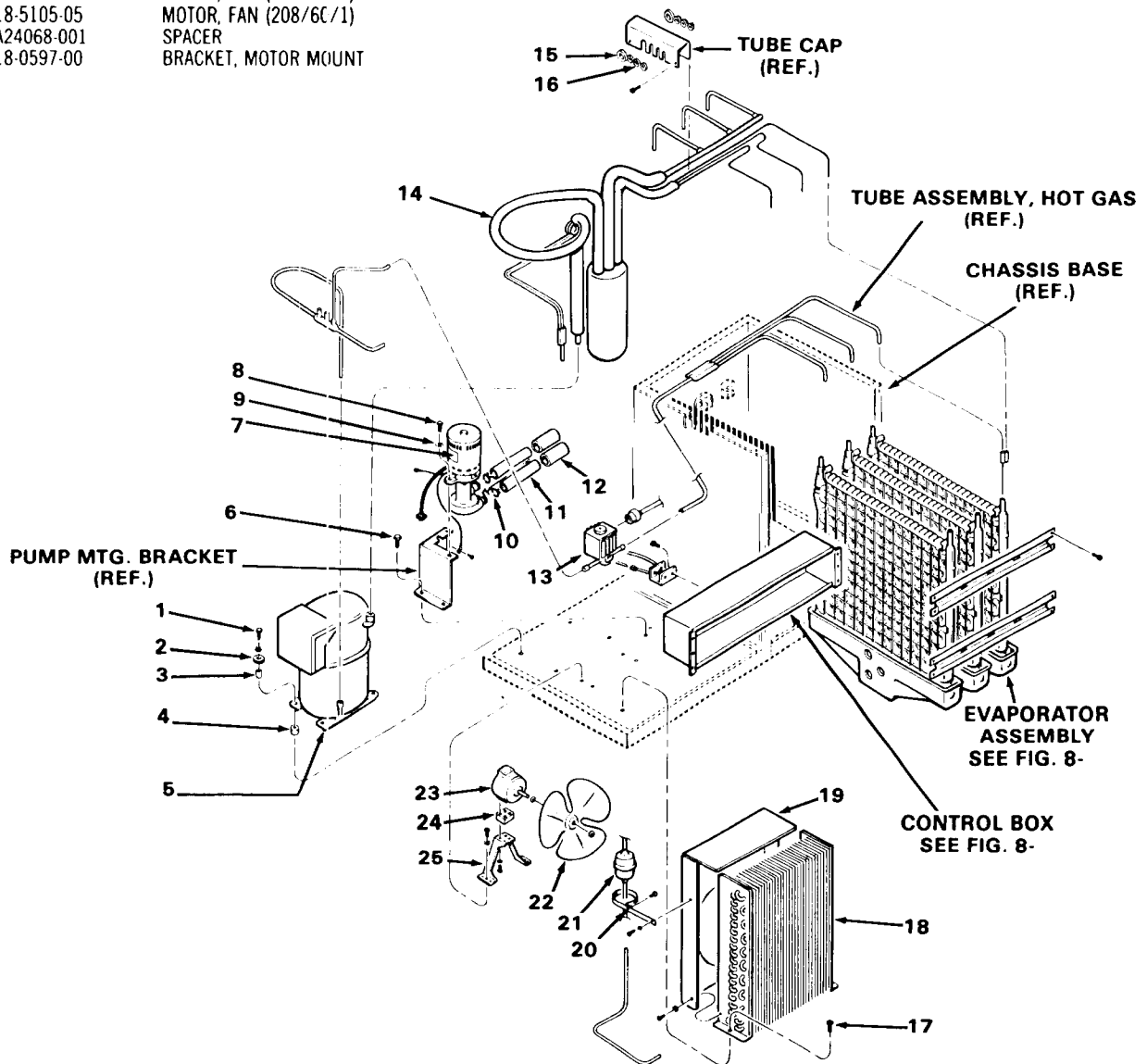


Figure 8-2. CM850 Major Assemblies—Air-Cooled.

**CM850
SECTION VIII ILLUSTRATED PARTS LISTING**

MAJOR ASSEMBLY-WATER-COOLED

1	03-1405-20	SCREW, NO. 5/16-18 x 1-1/2 HEX CAP
2	03-1407-07	WASHER, 5/16 PLAIN
3	18-2300-26	SLEEVE
4	18-2300-27	GROMMET
5	18-3800-02	COMPRESSOR ASSEMBLY (230/60/1)
	18-3800-03	COMPRESSOR ASSEMBLY (208-220/60/3)
	18-3800-07	COMPRESSOR ASSEMBLY (208/60/1)
6	03-0571-00	SCREW, NO. 1/4-20 x 1/2 T/C HEX
7	12-1930-01	WATER PUMP ASSEMBLY (115/60/1)
8	03-0571-01	SCREW, NO. 1/4-20 x 3/4 T/C HEX
9	03-1407-05	WASHER, 1/4 PLAIN
10	02-1530-00	CLAMP, HOSE
11	13-0674-07	TUBE, POTABLE WATER
12		TUBE COVERING
13	12-2135-01	HOT GAS VALVE (120/60/1)
14	A29968-020	HEAT EXCHANGER/ACCUMULATOR ASSY
15	13-0003-01	GROMMET
16	13-0844-01	GROMMET
17	03-0571-00	SCREW, NO. 1/4-20 x 1/2 T/C HEX
18	03-1407-05	WASHER, 1/4 PLAIN
19	18-3306-02	CONDENSER
20	A29985-001	PIPE NIPPLE ASSY
21	11-0198-02	WATER REGULATOR
22	NO NUMBER	ELBOW
23	02-2628-01	RECEIVER
24	02-2426-02	DRIER

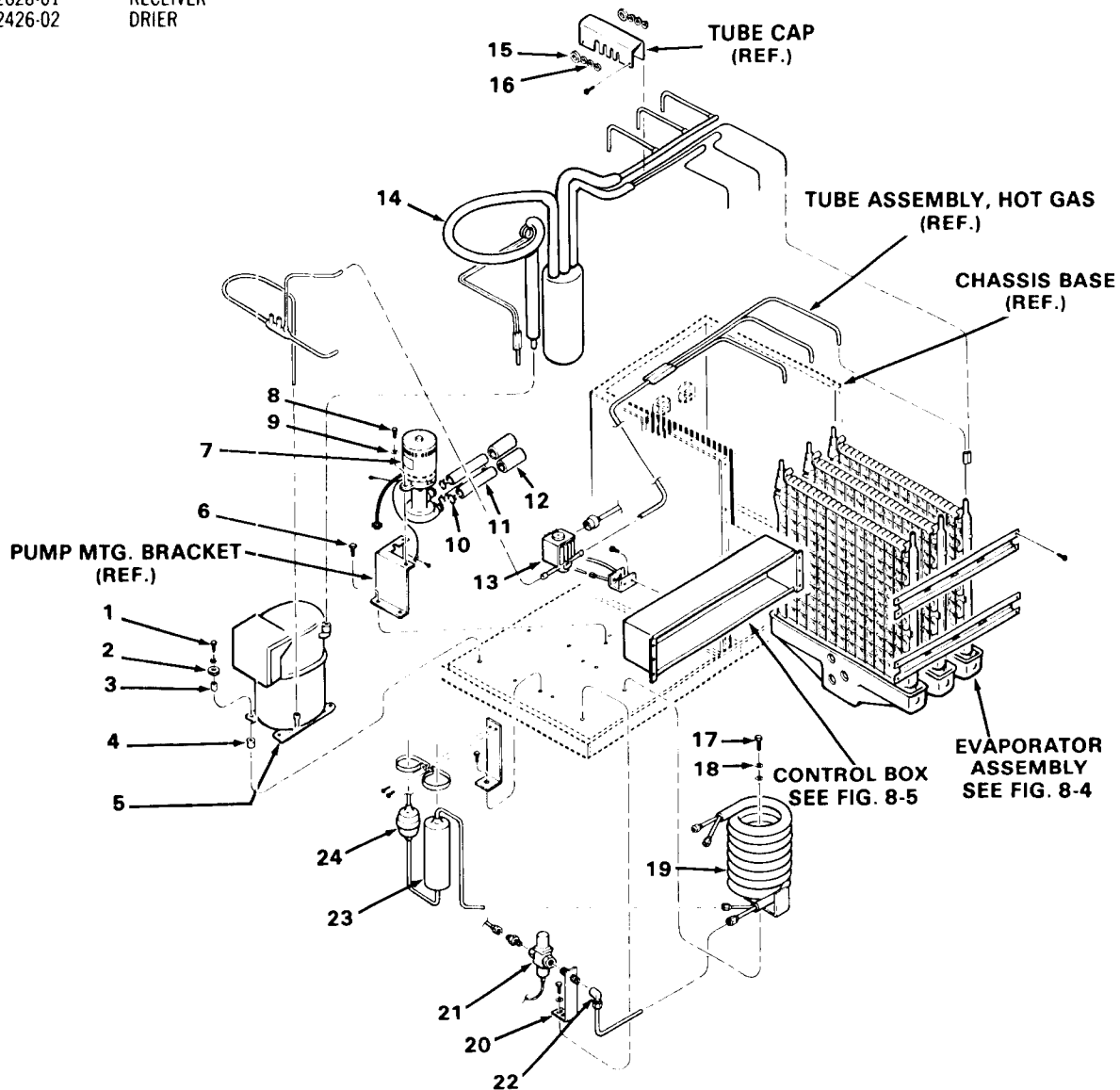


Figure 8-3. CM850 Major Assemblies—Water-Cooled.

CM850
SECTION VIII ILLUSTRATED PARTS LISTING

EVAPORATOR ASSEMBLY

- | | | |
|----|------------|--|
| 1 | 02-2527-01 | TUBE, WATER DISTRIBUTER |
| 2 | 02-2521-01 | MANIFOLD, WATER (LONG) |
| 3 | 02-2519-01 | TEE |
| 4 | A29703-001 | MANIFOLD, WATER (SHORT) |
| 5 | 02-1530-01 | CLAMP, HOSE (S.S.) |
| 6 | 13-0674-07 | TUBE, POTABLE WATER |
| 7 | 02-2542-01 | VALVE ASSEMBLY, FLOAT AND JAM NUT |
| 8 | NO NUMBER | TUBING, WATER INLET ASSEMBLY |
| 9 | 03-1394-00 | PAL NUT |
| 10 | A29969-001 | SUMP ASSEMBLY |
| 11 | A29428-020 | EVAPORATOR PLATE |
| 12 | 02-2523-01 | END COVER, SUMP |
| 13 | 02-2520-01 | COVER, SUMP |
| 14 | 02-2544-01 | COVER, SUMP CTR. |
| 15 | 03-1404-10 | SCREW, NO. 8 x 1/2 PHIL RECESS
T/F TAP S.S. |

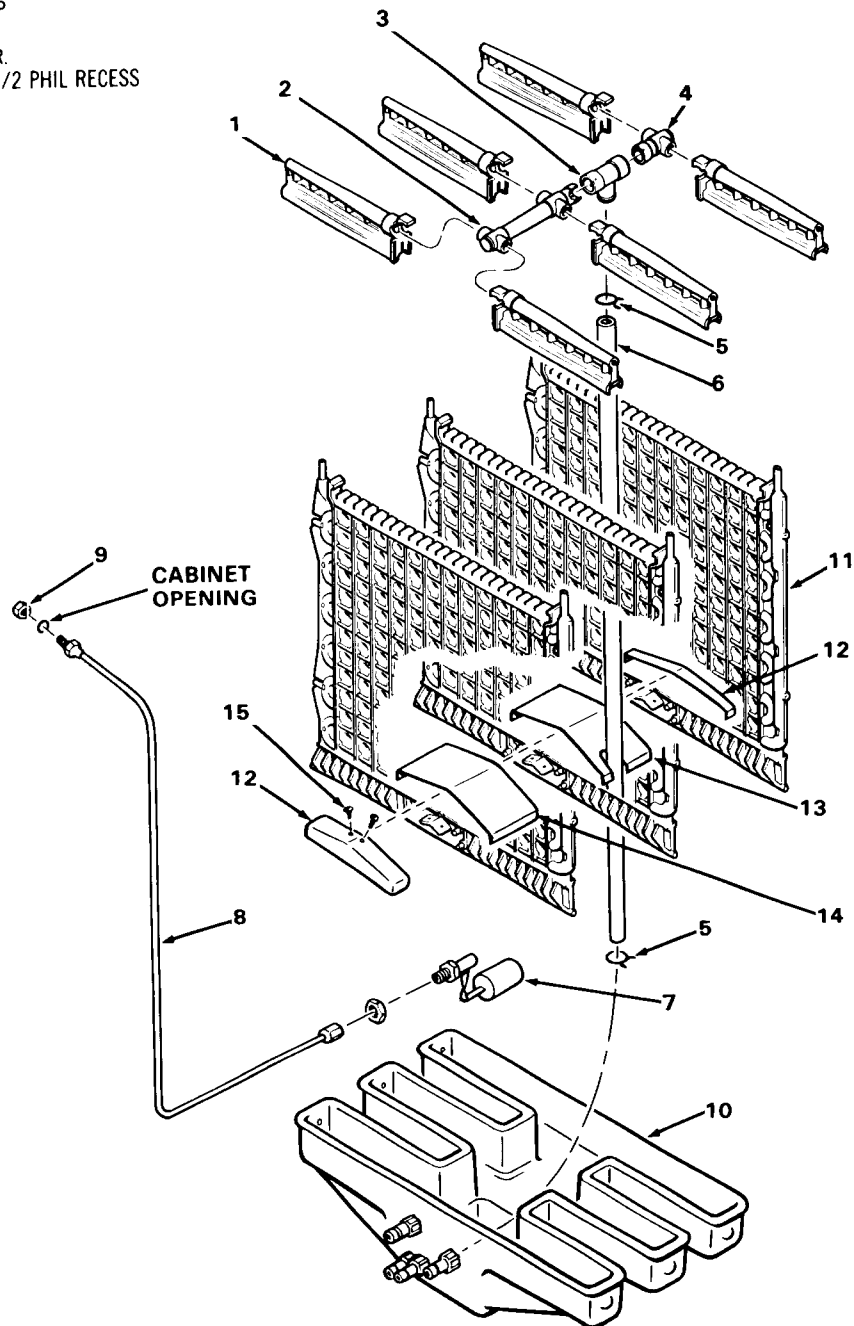


Figure 8-4. CM850 Evaporator Assembly.

CM850
SECTION VIII ILLUSTRATED PARTS LISTING

CONTROL BOX ASSEMBLY

1	03-1578-01	GROUND SCREW	13	12-1879-03	RELAY (9A)
2	NO NUMBER	SNAP BUSHING	14	03-1403-02	SCREW, NO. 6-32 x 1/4 PHIL RECESS PAN HD
3	12-0426-01	SWITCH (MASTER)	15	12-2107-01	TIMER & SWITCH ASSEMBLY
4	12-0426-01	SWITCH (COMPRESSOR)	16	02-2242-01	STAND OFF
5	12-1213-13	SNAP BUSHING	17	12-2037-01	CONTACTOR (10A) (4A)
6	13-0124-00	GROMMET	17	12-0739-01	CONTACTOR (9A)
7	11-0351-03	CUBE SIZE CONTROL	18	18-1901-15	START CAP (NOT USED ON -9)
8	11-0353-03	BIN THERMOSTAT	19	18-1903-34	POT, RELAY (NOT USED ON -9)
9	11-0388-02	HI REFRIGERANT PRESSURE CONTROL (W/C ONLY)	20	NO NUMBER	BRACKET, CAP (NOT USED ON -9)
10	02-2242-01	7/8 INCH STAND OFF	21	18-1902-34	CAPACITOR, RUN
11	12-1912-01	CIRCUIT BOARD	22	03-1404-09	SCREW, NO. 8 x 1/2 PHIL RECESS T/F TAP
12	03-1403-02	SCREW, NO. 6-32 x 1/4 PHIL RECESS PAN HD	23	NO NUMBER	COVER, CONTROL BOX
13	12-1879-02	RELAY	24	03-1403-14	SCREW, NO. 8 x 3/16 PHIL RECESS PAN HD

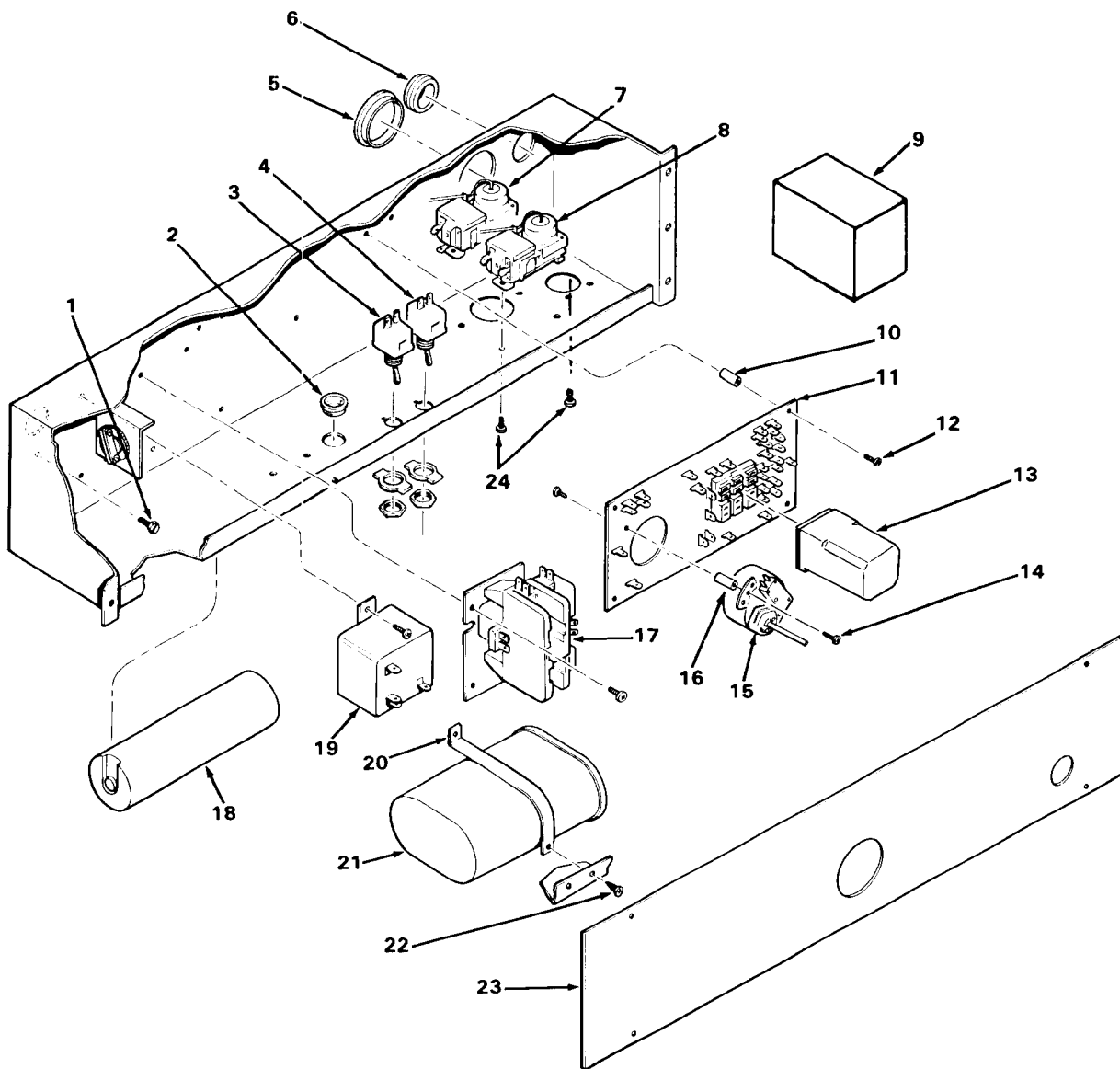


Figure 8-5. CM850 Control Box Assembly.