

CM1200R

TABLE OF CONTENTS

GENERAL INFORMATION & INSTALLATION	
Introduction	3
Location and Leveling	4
Remote Condenser and Pre-Charged Lines — Installation	5
Coupling Instructions, Pre-Charged Tubing Kit	6
Electrical Connections	8
Water Supply and Drain Connections	8
Final Check List	9
OPERATING INSTRUCTIONS	
Start-Up	10
Adjustment of Cube Size	13
Operation - Freezing Cycle	14
Harvest Cycle	15
COMPONENT DESCRIPTION	16
ADJUSTMENT PROCEDURES	
Cube Size Control	34
Timer and Switch Assembly	34
REMOVAL AND REPLACEMENT PROCEDURES	
Bin Thermostat Control	35
Compressor Assembly	35
Cube Size Control	35
Drier	36
Evaporator Plate Assembly	36
Inlet Water Solenoid Valve Assembly	37
Sump Assembly	37
Water Distributor Tubes and Manifold Tubes	37
Water Pump Assembly	37
SERVICE DIAGNOSIS	38
MAINTENANCE AND CLEANING	
General	40
Icemaker	40
Remote Condenser	40
Cleaning — Icemaker	40

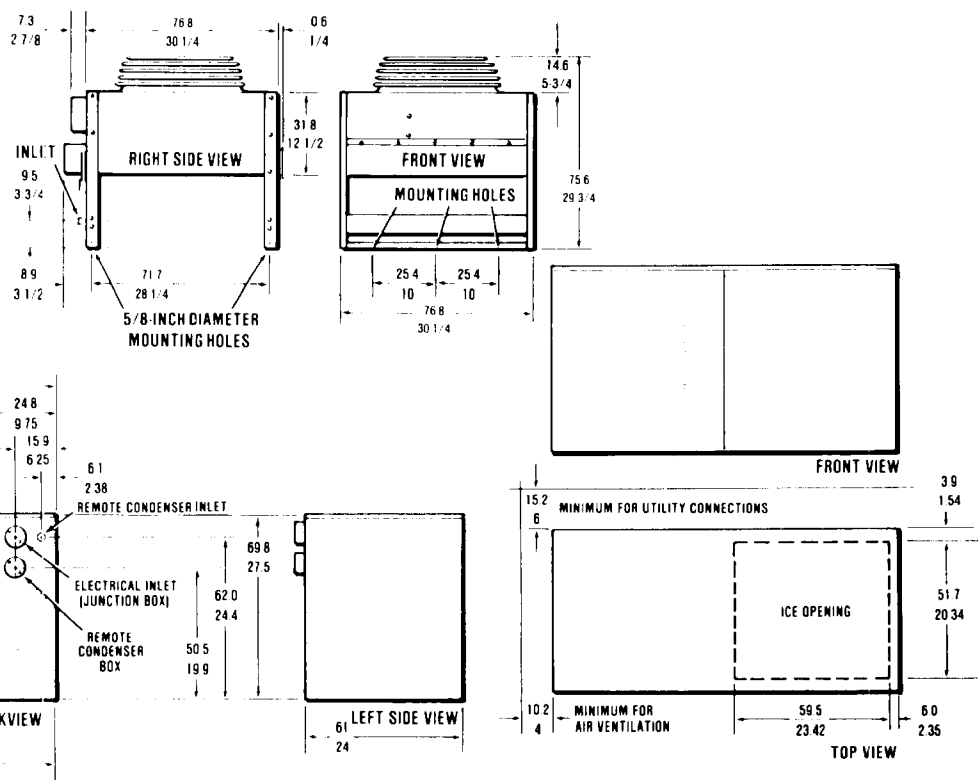
LIST OF ILLUSTRATIONS

Specifications	2
CM1200R — Locational	3
Mounting and Stacking Cubers	4
Pre-Charged Refrigerant Line Routing and Hook-Up	5
Installing the Bin Thermostat Bracket and Bin Thermostat Capillary Line	5
Installation, Electrical, Water Supply and Drain Connection	8
Final Checklist	9
Timer Cam Positions	10
Operation	11
Ice Cube Size & Shape	12
Cube Size Control Adjustment	13
Freezing Cycle	14
PARTS LIST & WIRING DIAGRAMS	
(Printed in Yellow)	17
PARTS LIST:	
Cabinet Assembly	18
Refrigeration System	20
Water System	22
Control Box	24
Remote Condenser	25
WIRING DIAGRAMS:	
CM1200RE-3A (208-230/60/3)	26
CM1200RE-32A (208-230/60/1)	27
Harvest Cycle	15
Component Description	33
Timer and Switch Assembly	34
Cleaning Remote Condenser	41
Cleaning Water System, Icemaker	42

**THIS PAGE
INTENTIONALLY
LEFT BLANK**

CM1200R MODULAR CONTOUR CUBER

These products qualify for these listings.



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

SPECIFICATIONS

Model Number	Dimensions H" x W" x D"	Cube Size	Cond. Unit	Finish **	Basic Electrical	Comp. H.P.	Run. Amps.	Max. Oper. Amps.	No. of Wires	Min. Circuit Ampacity †	Max. Fuse Size	Shpg. Wt. lbs./kg.
CM1200RE-3A	28 x 52 x 24	Contour	R-Air	ES	208-230/60/3	1.5	7.5	10.8	3	15	15	375/170
CM1200RE-32A	28 x 52 x 24	Contour	R-Air	ES	208-230/60/1	1.5	12.8	17.8	2	20	25	375/170

** (ES) Sandlewood, Leathergrain embossed steel with high gloss baked enamel finish.

† Use this value to determine minimum wire size as per National Electric Code Standards.

REMOTE CONDENSERS

FOR USE WITH

CM1200R CONTOUR CUBERS

		For Use With										
RC151-32B	29 1/4 x 30 1/4 x 33 1/4	(1) CM1200R	—	R-Air	Galv.	208-230/60/1	—	2.0	2.0	2	2.0	115/52
RC302-32B	29 1/4 x 30 1/4 x 33 1/4	(2) CM1200R	—	R-Air	Galv.	208-230/60/1	—	2.0	2.0	2	2.0	135/61

Order **RTCM225** - 25 foot pre-charged refrigerant tubing. **RTCM240** - 40 foot pre-charged refrigerant tubing.

IMPORTANT OPERATING REQUIREMENTS

	MINIMUM	MAXIMUM
Air Temperatures	50° F (10.0° C)	100° F (37.7° C)
Water Temperatures	40° F (4.4° C)	100° F (37.7° C)
Water Pressures	20 lbs. gauge	120 lbs. gauge

Electrical Voltage Variation

Voltage rating specified on nameplate

.....-10%

+10%

This does not include the Remote Condenser. Remote Condensers are designed to operate in outdoor installations in a temperature range of -20° to 120° F.

Extended periods of operation at temperatures exceeding these limitations constitutes misuse under the terms of Scotsman Manufacturer's Limited Warranty, resulting in a loss of warranty coverage.

PRE-CHARGED REFRIGERANT TUBE KITS

RTCM225 25 foot pre-charged with R12

Freon tubing with connectors

RTCM240 40 foot pre-charged with R12

Freon tubing with connectors.

OPTIONAL STAINLESS STEEL

PANEL KITS

SPKCM1200CA contains top, 2 front and 2 end panels. Not factory installed.

KRCM240 STACKING KIT

For use when electrically connecting (2) CM1200R icemakers to the RC302 remote condenser.

OPTIONAL BH750 STORAGE BIN

For use with one or two CM1200 icemakers.

GENERAL INFORMATION AND INSTALLATION

INTRODUCTION

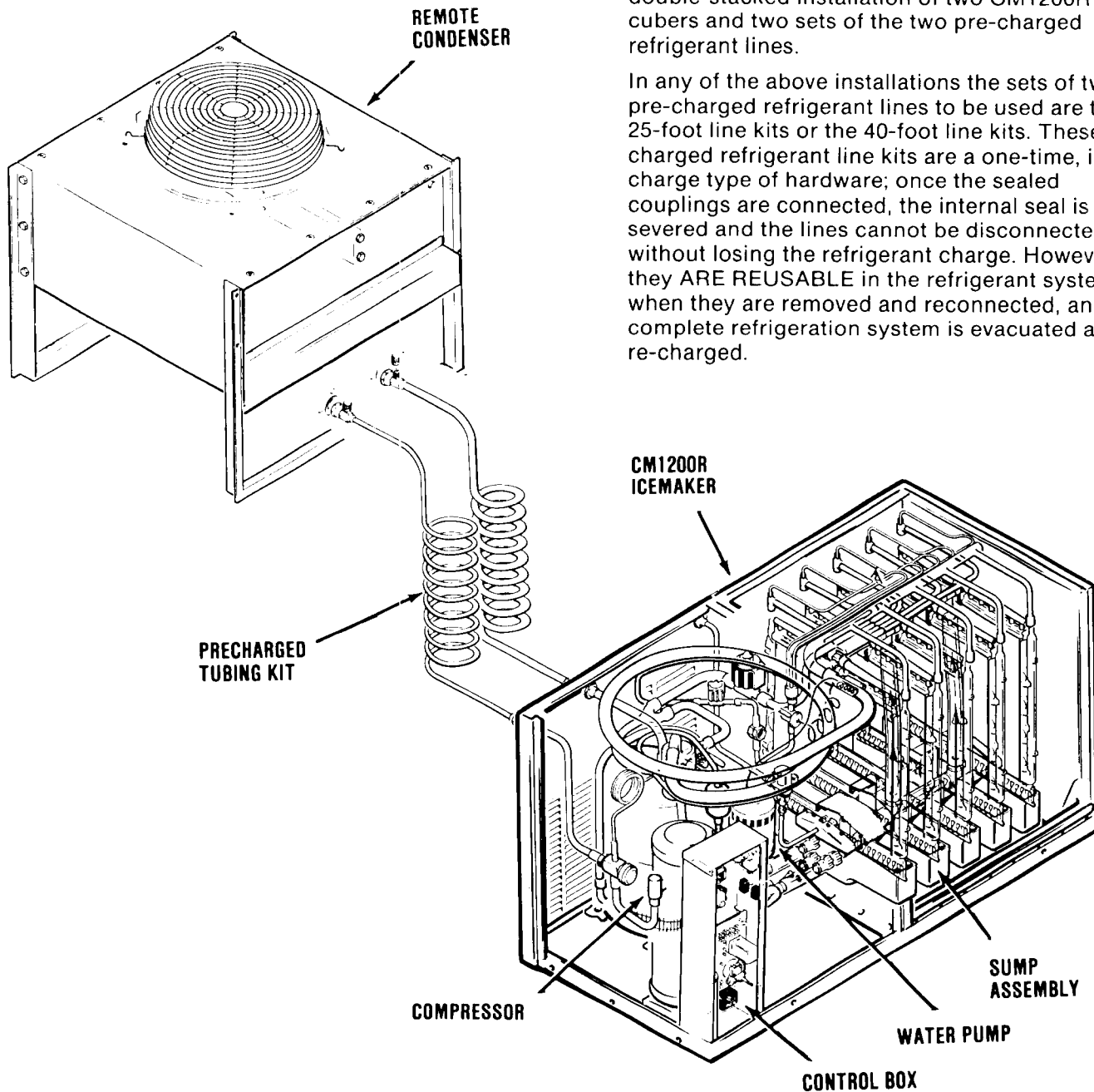
These instructions provide the specifications and the step-by-step procedures for the installation, start up and operation for the Scotsman Model CM1200R Modular Cuber with Remote Condenser.

The Model CM1200R 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.

The Model CM1200R modular cuber can be installed with any one of two remote condensers and with either of two lengths of pre-charged refrigerant lines and sealed couplings.

Single circuit and two circuit condensers are available. The single circuit condenser can accommodate a single CM1200R cuber and one set of two pre-charged refrigerant lines. The two circuit condenser can accommodate two separate CM1200R cubers at two different locations; or, a double-stacked installation of two CM1200R cubers and two sets of the two pre-charged refrigerant lines.

In any of the above 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; 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 evacuated and re-charged.



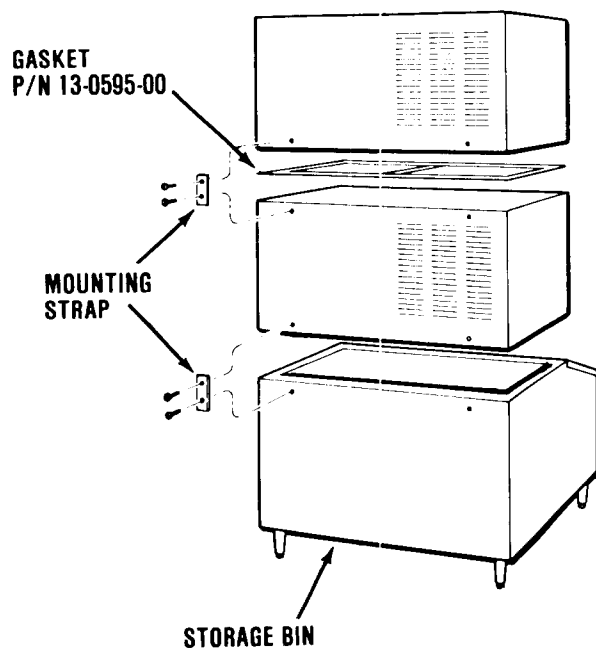
CM1200R — Component Location

CM1200R GENERAL INFORMATION & INSTALLATION

LOCATION & LEVELING

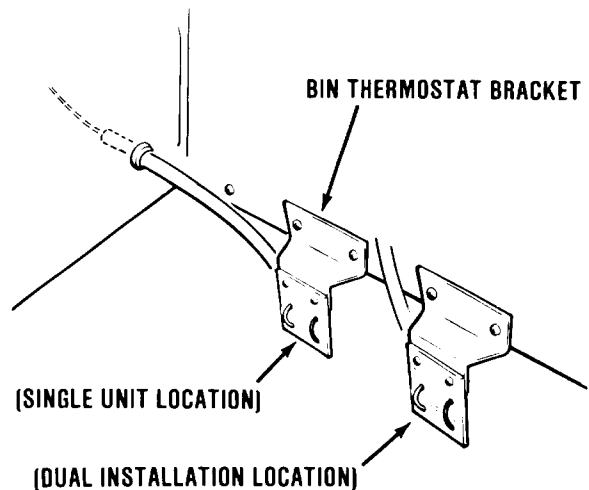
Component location determines the length of pre-charged refrigerant lines, 25-foot kit or 40 foot kit.

1. Position the Model BH750 Bin in the selected 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.
2. Inspect the bin top mounting gasket, which should be flat, with no wrinkles, to provide a good water seal when the CM1200 Cuber is installed on top of the bin.
3. Install the CM1200 Modular Cuber on top of the BH750 Bin, using care to be sure a good seal is made between the two cabinets. Align the holes in the bottom rear of the CM1200 cabinet to mate with the two mounting straps on the top rear of the BH750 Bin.
4. Use two bolts retained from the removal of the holddown straps during unpacking, to secure the mounting straps to the CM1200 in the two holes used for the holddown straps. When alignment and leveling are completed, tighten the bolts to secure the mounting straps.



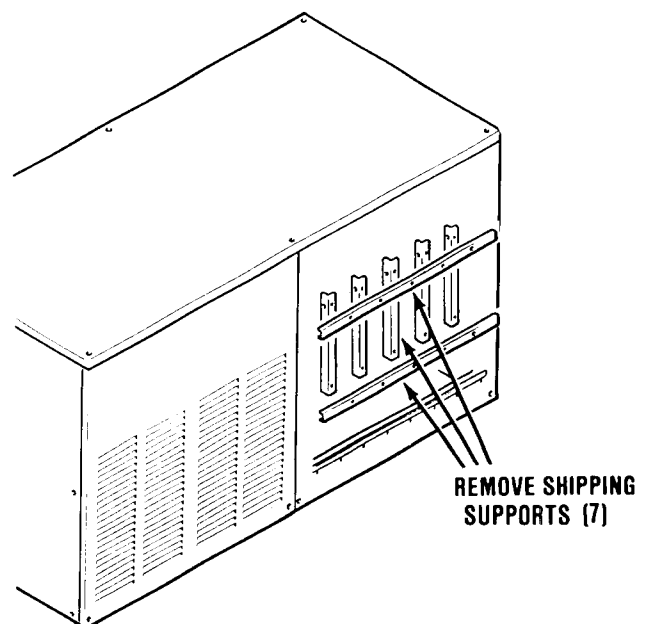
Mounting and Stacking Cubers

5. Remove nylon straps securing bin thermostat bracket to the front evaporator support and carefully reposition bin thermostat bracket on the back wall of the freezing section of the cabinet and attach using the second and third screws from the left corner. When properly installed, the capillary tube is insulated from the dividing wall to the bin thermostat bracket and the bin thermo bracket hangs DOWN, below the bottom of the icemaker chassis into the bin.



Installing the Bin Thermostat Bracket

6. Remove seven shipping supports from the evaporator supports.



Removing Shipping Supports

CM1200R GENERAL INFORMATION & INSTALLATION

REMOTE CONDENSER AND PRE-CHARGED LINES - INSTALLATION

Location Considerations:

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.

Best available location, protected from the extremes of dirt, dust, and sun.

Must meet local building code installation requirements. Usually the services of a certified electrician are required.

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. Refer to Wiring Diagram and connect the remote condenser fan motor electrically to the CM1200R at the junction box of the remote condenser and the lower junction box of the CM1200R.

CAUTION

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 possible damage to the Compressor, at **START-UP**.

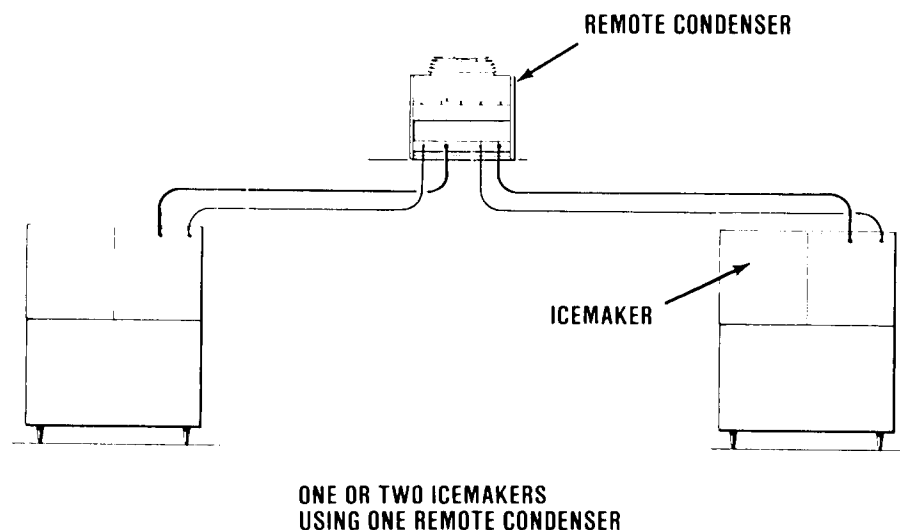
Pre-Charged Refrigerant Lines:

1. Each set of pre-charged refrigerant lines in the 25-foot length, or 40-foot length kits, consists of a 3/8-inch diameter, self-sealing LIQUID line and a 1/2-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: 1-3/4-inch diameter.
 - b. Two-pass Condenser: 2-inch diameter.
3. Whenever 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 exposed to outside temperatures that will be below freezing, for extended periods of time.



Pre-Charged Refrigerant Line Schematic

CM1200R

GENERAL INFORMATION & INSTALLATION

COUPLING INSTRUCTIONS, PRE-CHARGED TUBING KIT

CAUTION

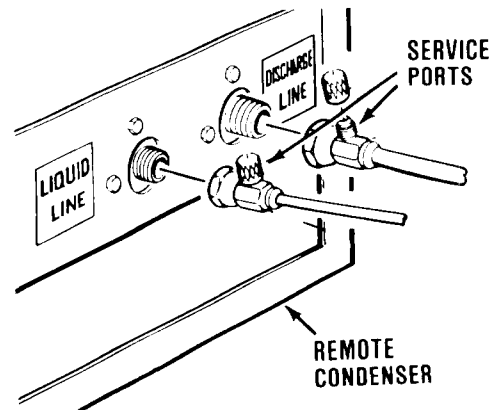
The couplings on the sets of pre-charged refrigerant lines, the refrigerant fittings on the Remote Condenser, and the rear of the Icemaker Chassis are SELF-SEALING and should be connected as follows:

1. Remove protector caps and plugs and if necessary, carefully wipe coupling seats and threaded surfaces with a clean cloth to prevent the inclusion of dirt or any foreign material in the system.
2. LUBRICATE male half diaphragm and synthetic rubber seal with refrigerant oil. Thread coupling halves together by hand to insure proper mating of threads. Use proper size wrenches (on coupling body hex and on union nut) and tighten until coupling bodies "bottom" or a definite resistance is felt.
3. Using a marker or ink pen, mark a line lengthwise from the coupling union nut to the bulkhead. Then tighten an additional 1/4 turn; the misalignment of the line will show the amount the coupling has been tightened. This final 1/4 turn is necessary to insure the formation of leakproof joint.

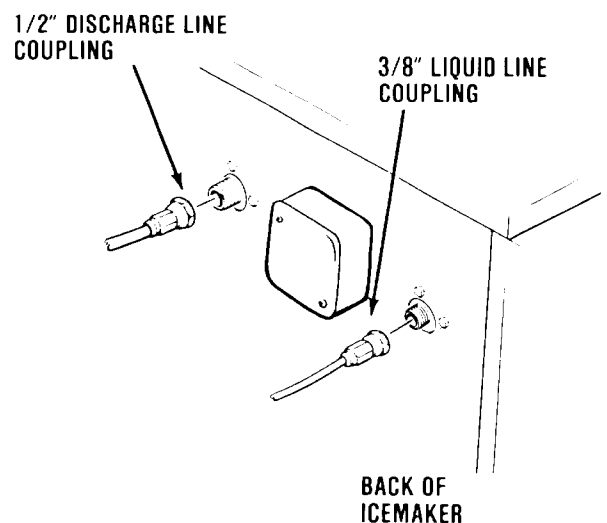
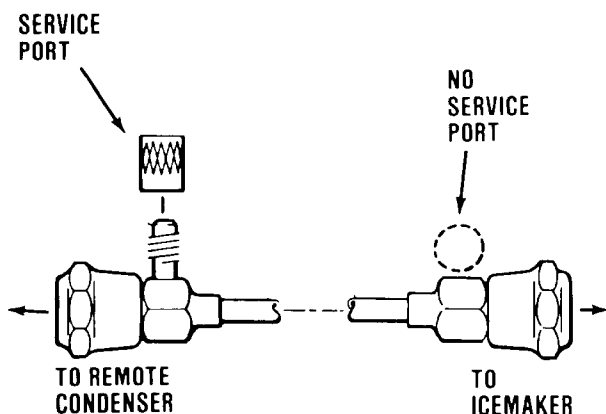
ALWAYS USE TWO WRENCHES WHEN TIGHTENING THESE FITTINGS, ONE AS BACKUP WRENCH TO PREVENT TWISTING OF TUBING AND POSSIBLE KINKING OR LINE RUPTURE.

BE SURE to connect the ends of the precharged 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 3/8-inch diameter refrigerant line coupling, with the SERVICE PORT fitting, to the remote condenser refrigerant fitting labeled: LIQUID LINE as detailed in Coupling Instructions.
5. Connect the 1/2-inch diameter refrigerant line coupling, with the CHARGING PORT fitting, to the Remote Condenser refrigerant fitting labeled: DISCHARGE LINE. Tighten as detailed in Coupling Instructions.



6. Connect the 3/8-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 Coupling Instructions.
7. Connect the 1/2-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.



Pre-Charged Refrigerant Line Connection

CM1200R

GENERAL INFORMATION & INSTALLATION

Excess Length of Pre-Charged Refrigerant Lines:

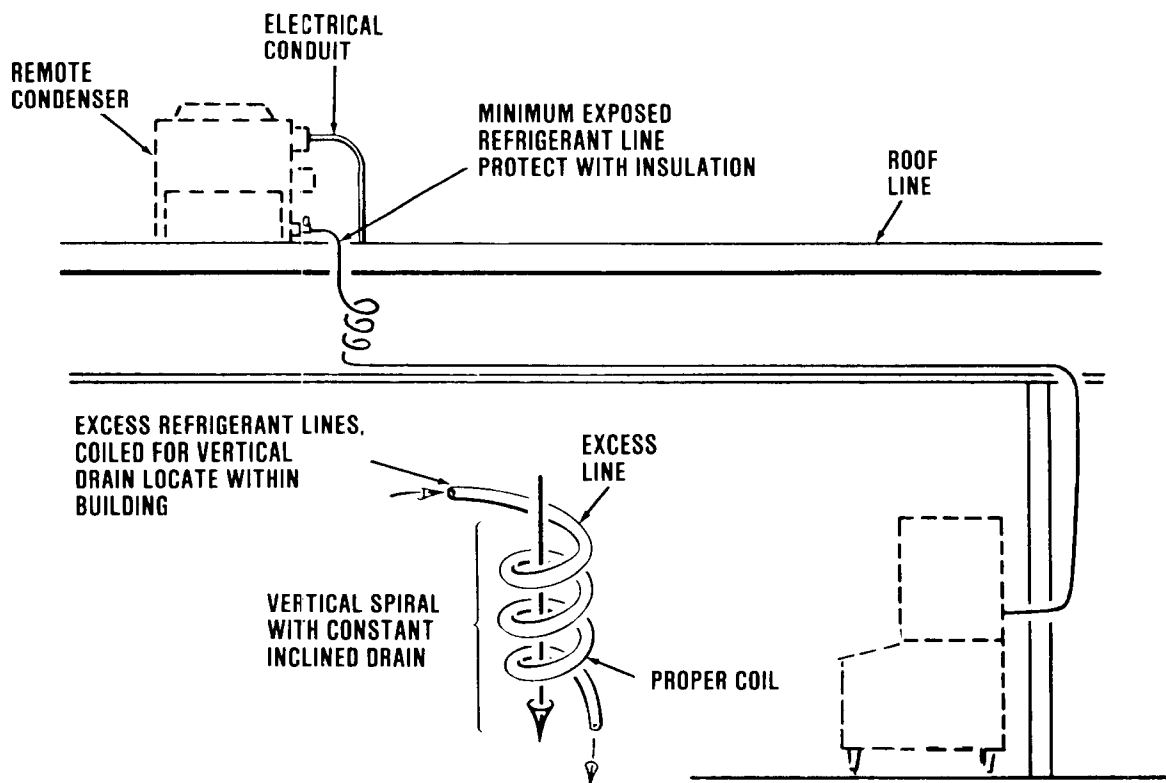
At installations where the icemaker Chassis-to-Remote Condenser refrigerant line path is substantially LESS than the 25-foot length or 40-foot length of pre-charged refrigerant line kit to be installed, route and dress the excess refrigerant line as follows:

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 *Pre-Charged Refrigerant Line Routing* illustration 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 *Pre-Charged Refrigerant Line Hook-Up*.



Pre-Charged Refrigerant Line Routing

CM1200R

GENERAL INFORMATION & INSTALLATION

ELECTRICAL CONNECTIONS

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. Voltage variation should not exceed \pm 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 icemaker.

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.

Electrically the remote condenser fan motor is connected to the CM1200R at the contactor terminals for the compressor and the fan motor operates whenever the compressor operates.

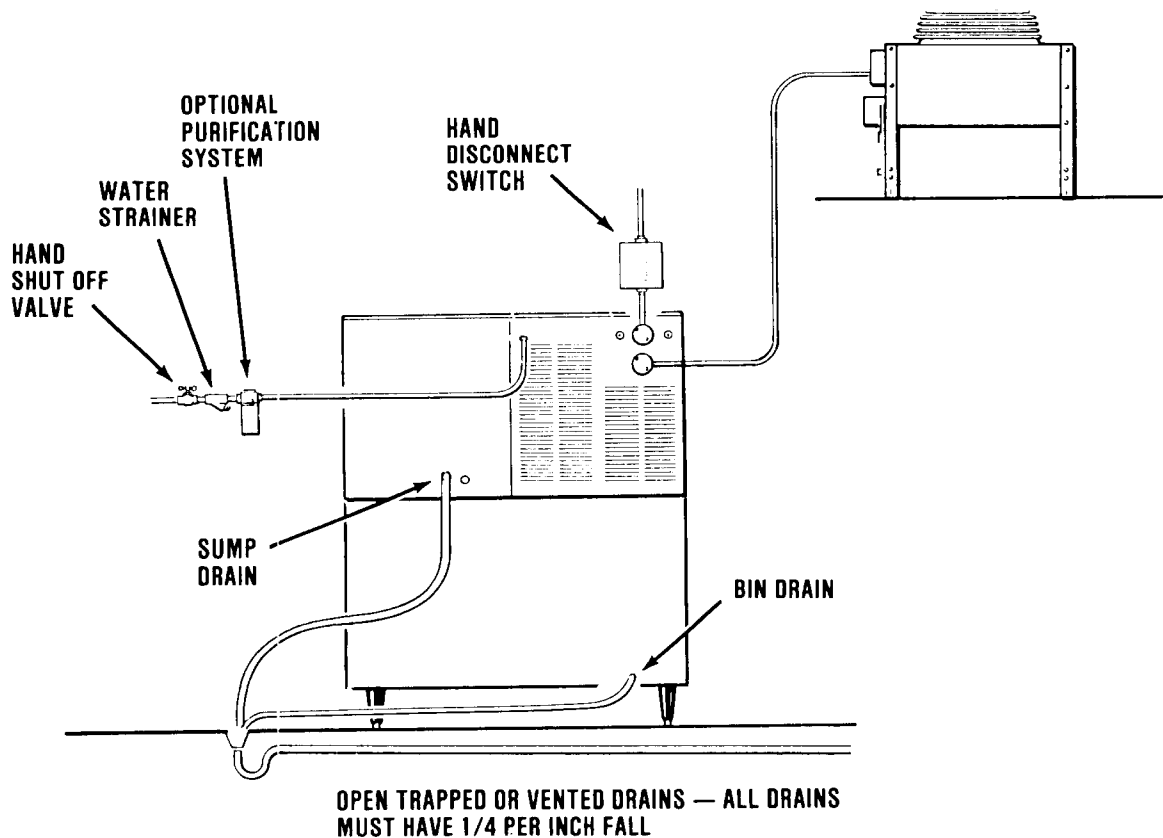
When connecting two CM1200R icemakers with a RC302 remote condenser electrically, refer to the instruction sheet supplied with the KCMR230 Stacking Kit.

WATER SUPPLY AND DRAIN CONNECTIONS

The recommended water supply line is a 3/8-inch O.D. copper tubing with a minimum operating pressure of 20 PSIG and a maximum of 120 PSIG. 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. In some cases a plumbing permit and services of a licensed plumber will be required.

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.

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



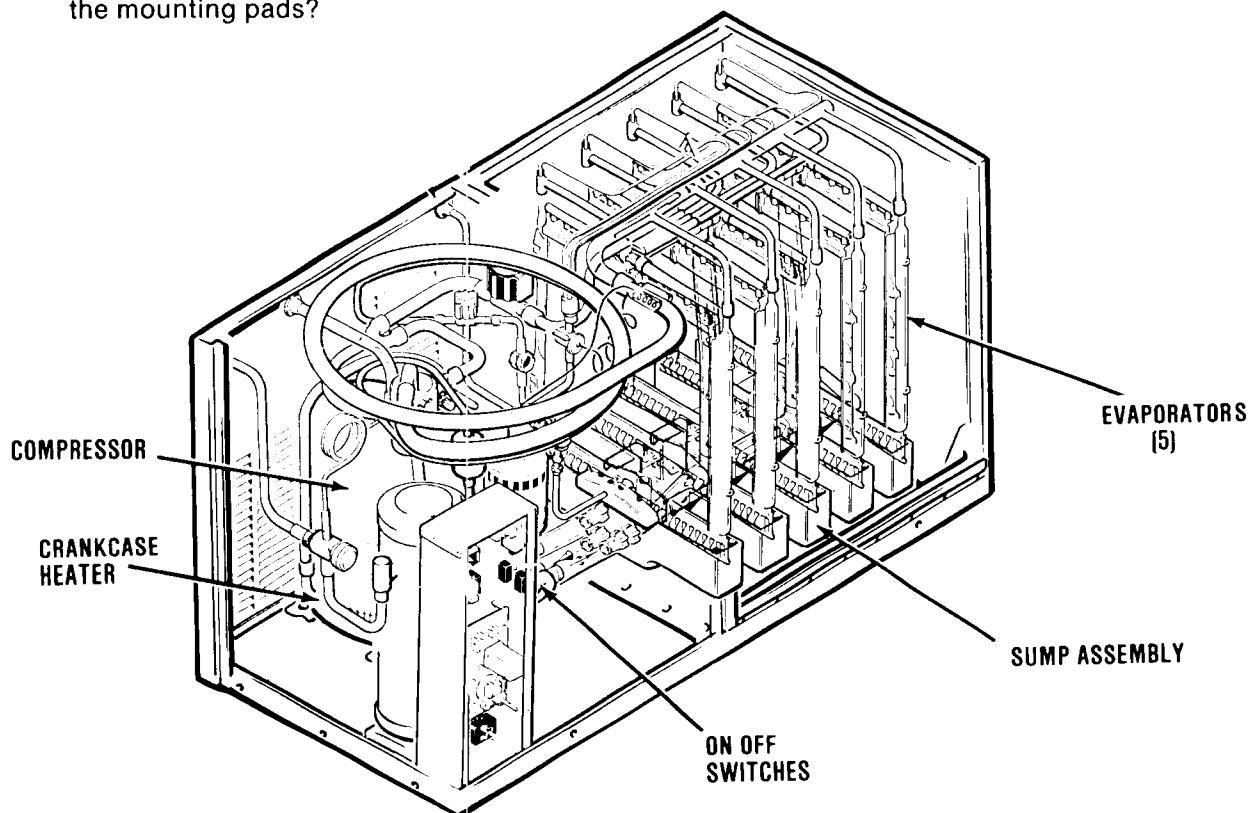
Installation, Water Supply and Drain Connection

CM1200R

GENERAL INFORMATION & INSTALLATION

FINAL CHECK LIST

1. Is the cabinet/bin level?
2. Is the cuber in a location where ambient temperatures are a minimum of 50-degrees F. all year around and do not exceed a maximum of 100°F?
3. Is there at least a six-inch clearance behind and around the cabinet for all connections and for proper air circulation?
4. Have all electrical and piping connections been made?
5. 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?
6. 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 a maximum of 120 PSIG?
7. Check the wood blocks, foam packing and front brace supports have been removed from the evaporator plates.
8. Check that the reservoir is properly secured to the bottom of the evaporator plates.
9. Check that the sump covers are properly secured to the bottom of the evaporator plates.
10. Have the compressor holddown bolts been checked to be sure the compressor is snug on the mounting pads?
11. Check all refrigerant lines and conduit lines to guard against vibration and possible failure.
12. Has the bin thermostat bracket been properly installed?
13. Has the cuber and the bin been wiped clean with clean damp cloths?
14. Has the remote condenser and pre-charged refrigerant lines been properly installed and connections made and checked?
15. Has the remote condenser fan motor been connected electrically to the CM1200R at the junction box of the remote condenser and the lower junction box of the CM1200R?
16. Has the electrical power to the icemaker been connected to start the 12-hour period of PRE-START crankcase heating?
17. Has the owner/user been given the User Manual and instructed on how to operate the icemaker and the importance of periodic maintenance?
18. Has the owner/user been given the name and telephone number of the Authorized Scotsman Distributor or Service Agency serving him?
19. 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.



Final Checklist

AUGUST 1983
Page 9

CM1200R

OPERATING INSTRUCTIONS

PRE-START

1. Verify that the MASTER SWITCH and the COMPRESSOR SWITCH are both in the OFF position.
2. Operate the switch at the building source to supply electrical power to the icemaker a minimum of 12 hours BEFORE start up.

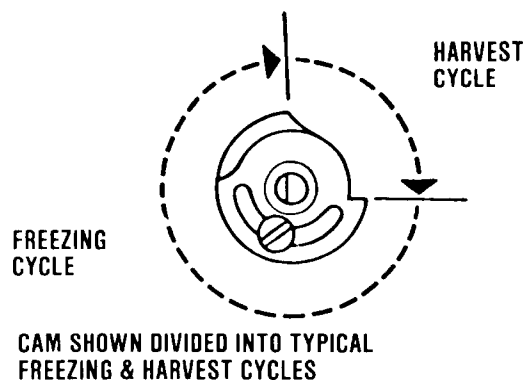
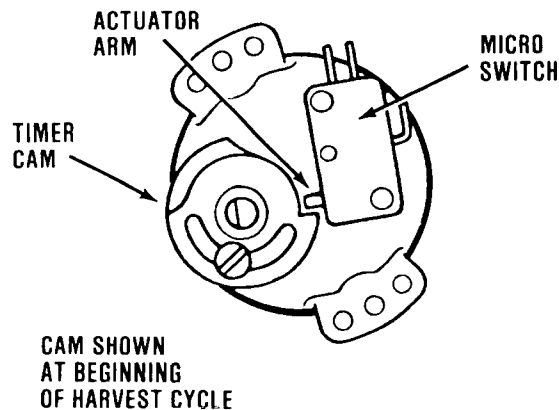
WARNING

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.

START-UP

1. Remove screws and remove both front panels.
2. 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.
3. Remove four screws on the control box and remove the cover.
4. OPEN the water supply line shutoff valve.
5. **Remove the stem cap from the receiver outlet (King) valve and fully open the valve. Replace the cap.**
6. Inside the control box is the shaft of the timer and the switch assembly. Rotate the shaft of the timer and switch assembly clockwise until the actuator arm on the microswitch drops off outer cam into cam slot. See Timer Cam Positions. An audible click can be heard, but in a noisy area, look at the cam and switch to observe the event.
7. Move the master ON-OFF toggle switch, the closest to the front in the control box, to the ON position.
8. Observe water fill cycle: Water inlet solenoid valve OPENS, incoming water flows from the valve through the tubing, the reservoir fills and excess water is overflowed through the stand pipe. This cycle will take about three minutes. Timer will close the water inlet solenoid valve and the water fill cycle is complete.

Advancing the shaft of the timer and switch assembly through the remaining cycle into a new harvest cycle, restarts the timer and



Timer Cam Positions

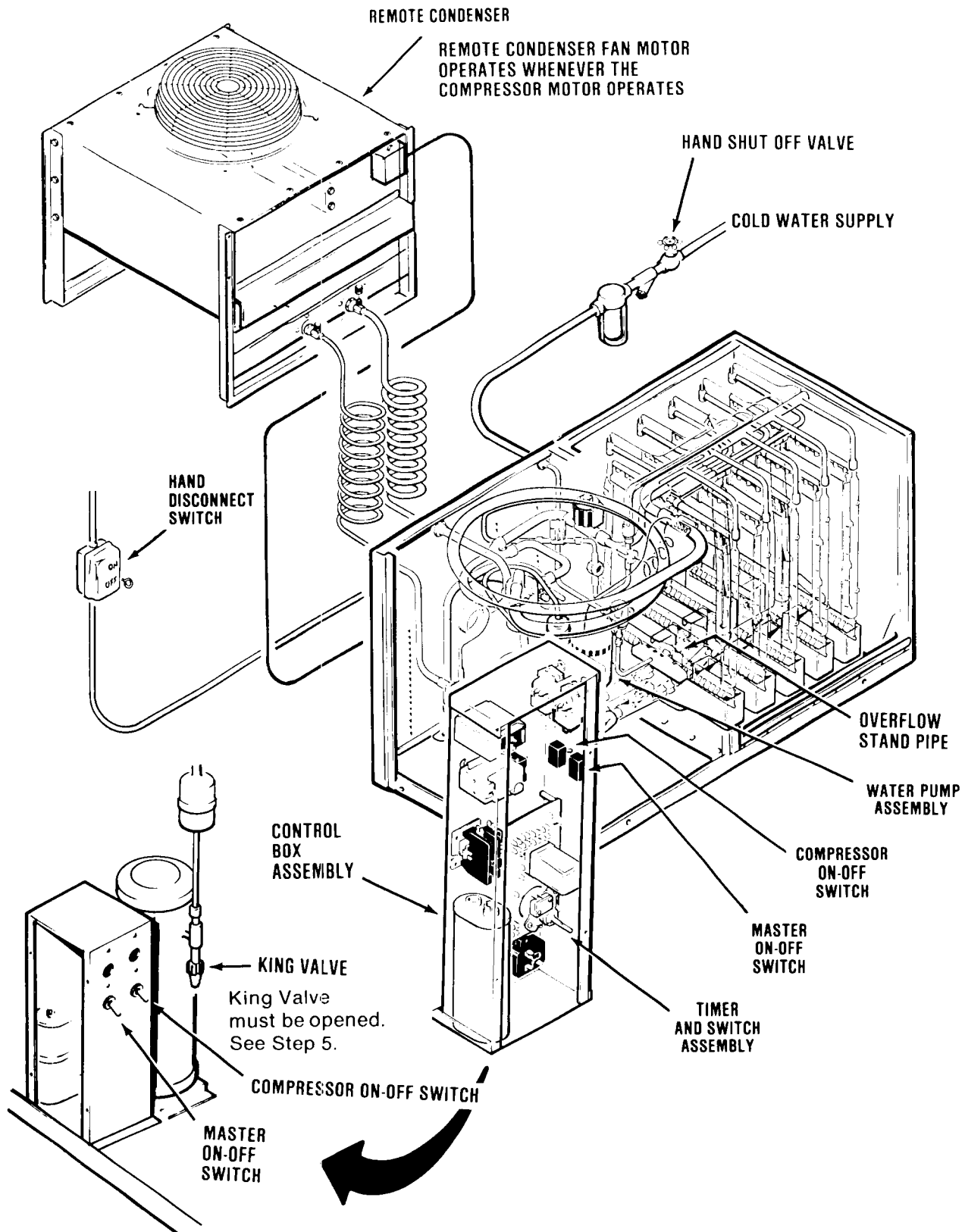
- allows a check that: Water inlet solenoid valve OPENS and the reservoir overflows through the stand pipe. Water inlet valve CLOSSES, stopping water overflow.
9. Check that the water cascades down over each cube mold and into the sump.
 10. When the second cycle is completed, move the compressor ON-OFF toggle switch, to the ON position. The compressor operates and the remote condenser fan operates.
 11. Check operation of the freezing cycle:

The water pump is operating, as seen by water moving through the two tygon tubes between evaporator plates, up to the water manifold at the top of the evaporator plates, where water is uniformly dispensed and cascades down both sides of each evaporator plate and drains back into the sump assembly for recirculation.

The icemaking process begins; feeling the metal parts of the evaporator plates reveals cold temperature, very shortly ice begins to form. Tubing will become frosted at the top of the evaporator plates.

(Continued on page 12)

CM1200R OPERATING INSTRUCTIONS



Operation

CM1200R OPERATING INSTRUCTIONS

Freezing time will range between 16 and 19 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 18 to 22 minutes.

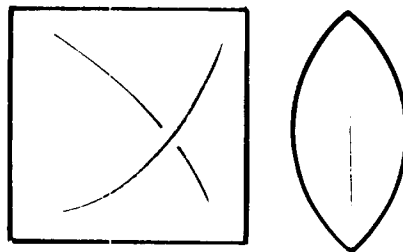
12. Observe first ice cube harvest:

Check size of SCOTSMAN CONTOUR CUBE

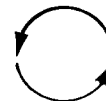
Unlike other SCOTSMAN cubes which are made in a definite molded shape, contour cubes are produced in indentations and many shapes and sizes of contour cubes may be produced — only ONE size and shape combination is correct.

An under-charged refrigeration system produces smaller cubes at the bottom of the evaporator plate and large cubes at the top. Charge system per NAMEPLATE specifications.

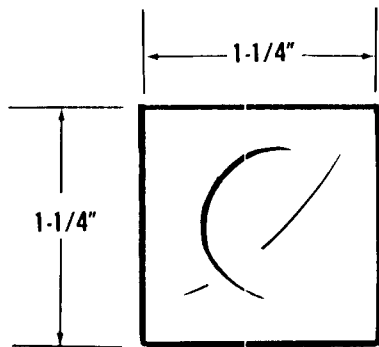
TOO LARGE



Too LARGE requires longer freezing cycle — may cause evaporator freeze ups. Adjust cube size control to obtain smaller cube.

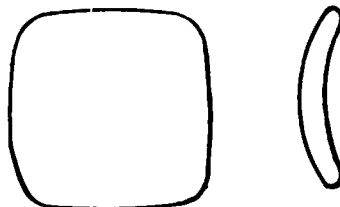


PROPER SIZE AND SHAPE

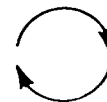


PROPER SIZE AND SHAPE of the contour cube. Icemaker operates at peak efficiency when a cube this size and shape is produced. A finely tuned system produces vertical strips of ice which easily break when they fall.

TOO SMALL



TOO SMALL. Adjust cube size control. Any cubes this size or shape are too small and cause excessive cycling to produce a equal quality of production. Can also lead to freeze up problems due to poor harvest.



CM1200R OPERATING INSTRUCTIONS

ADJUSTMENT OF CUBE SIZE

To produce LARGER sized ice cubes:

Locate cube size control, in the top right back section of the control box.

Rotate the adjusting screw one-eighth of a turn **CLOCKWISE** to **COLDER**.

Observe size of ice cubes in the next two cube harvests and adjust in one-eighth turn or less increments, until desired ice cube size is achieved.

To produce SMALLER sized ice cubes:

Locate cube size control, in the top right back section of the control box.

Rotate the adjusting screw one-eighth of a turn **COUNTERCLOCKWISE** to **WARMER**.

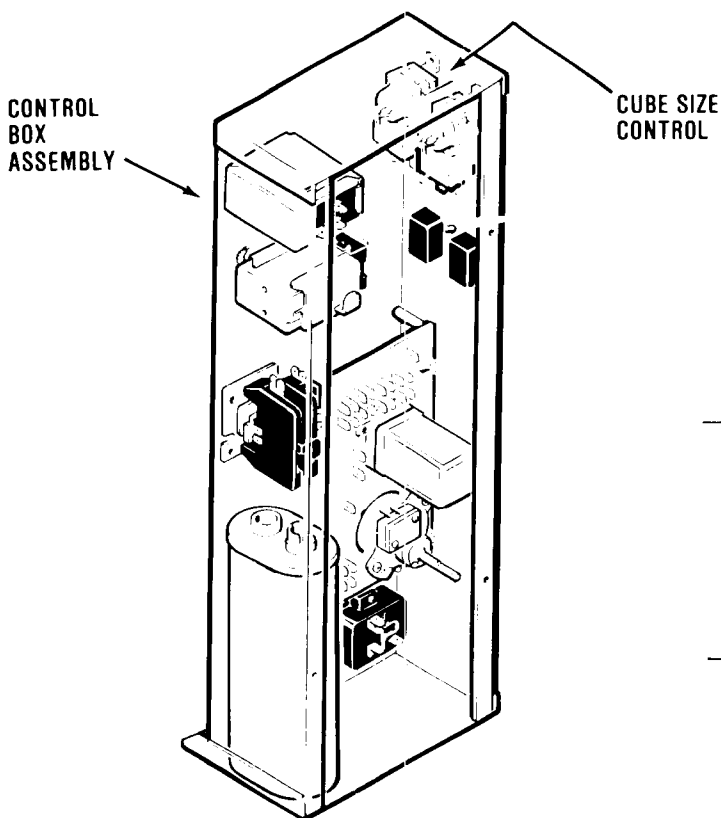
Observe size of the ice cubes in the next two ice cube harvests and adjust in one-eighth turn or less increments, until desired ice cube size is achieved.

13. 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 ICE SYSTEMS, Service Department, Albert Lea, Minnesota 56007 for further details.

With the icemaker in the harvest cycle, hold ice against the bin thermostat control bulb to test shutoff at the **END OF THE HARVEST CYCLE**. If the bin thermostat is **OPEN**, the liquid line solenoid valve will close, shutting off refrigerant flow to the evaporator and allowing the compressor to pump any refrigerant left in the evaporators into the high pressure receiver. When the evaporator pressure is lowered to approximately 3 PSIG, the low pressure switch opens, shutting off the compressor, remote fan and water pump.

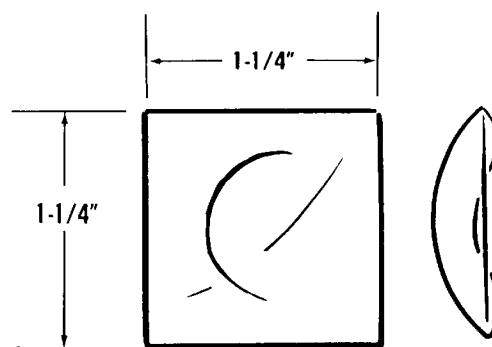
Within minutes after the ice is removed from the sensing bulb, the bulb will warm up and cause the icemaker to restart. This control is factory set and should not be reset until testing is performed.

14. Replace control box cover and all cabinet panels and screws.
15. 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.



ROTATE ADJUSTMENT SCREW COUNTER
CLOCKWISE TO PRODUCE SMALLER CUBES

ROTATE ADJUSTMENT SCREW CLOCKWISE
TO PRODUCE LARGER CUBES



CORRECT SIZE AND
SHAPE OF SCOTSMAN
CONTOUR CUBE

Cube Size Control Adjustment

CM1200R OPERATING INSTRUCTIONS

FREEZING CYCLE

Water from the sump assembly is pumped to the 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. At the beginning of the freezing cycle, the electrical circuit is completed to the compressor and the water pump. The water pump and the remote fan motor operate continuously, through both the freezing cycle and the harvest cycle.

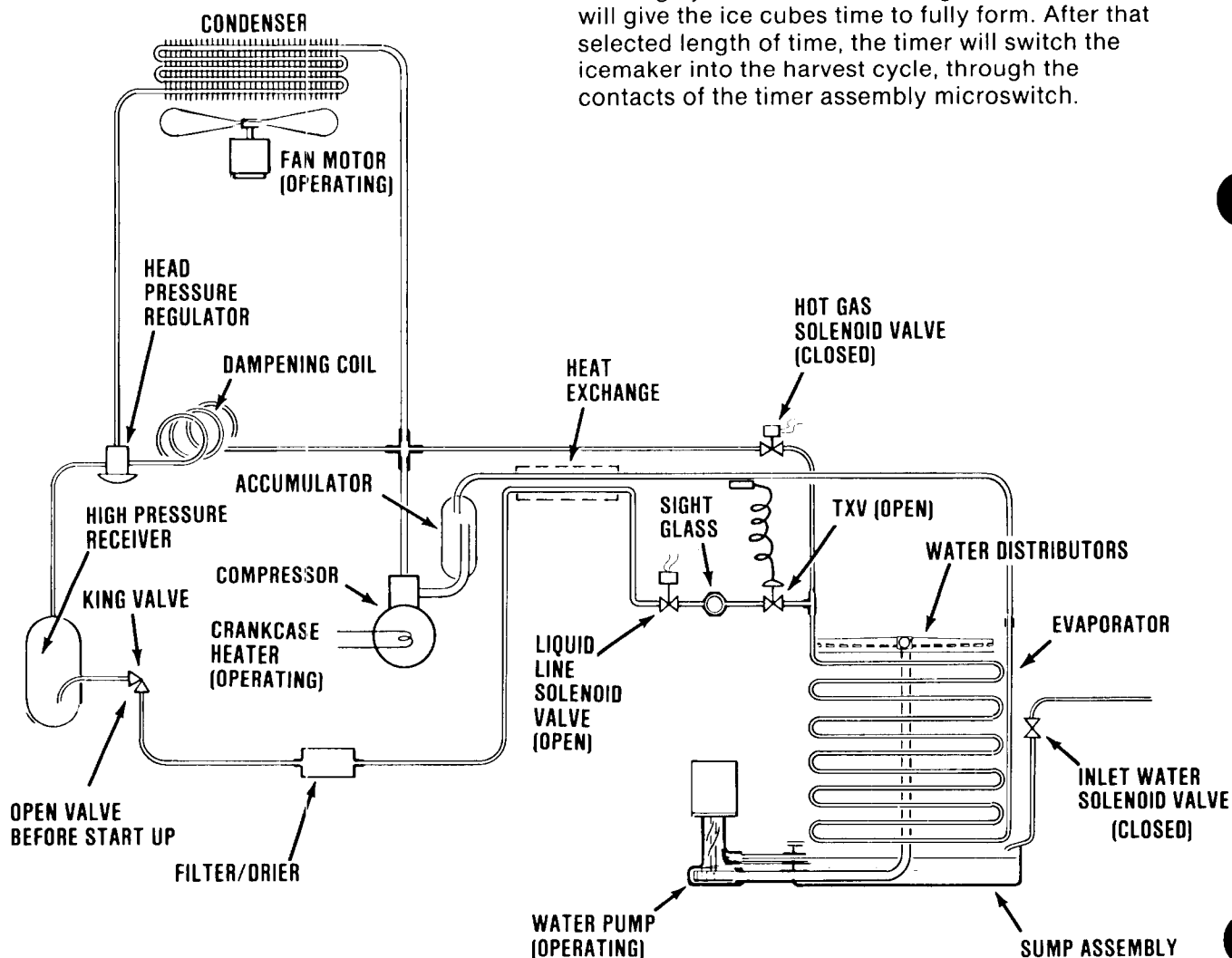
In the compressor, gaseous refrigerant is compressed and discharged into the condenser, as a high pressure, high temperature gas. The refrigerant is cooled by air and condenses into a high pressure, high temperature liquid. The liquid refrigerant then passes through a Receiver, which stores excess refrigerant not required at high

condensing temperatures; then, on to the liquid line solenoid valve and Thermostatic Expansion Valve where the temperature and pressure of the liquid refrigerant are lowered. This liquid refrigerant is then distributed through capillary tubes to 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 travels through the heat exchange area of the suction line 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 and the water inlet solenoid valve is CLOSED.

When the ice cubes are partially formed, the cube size control 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.



Freezing Cycle Schematic

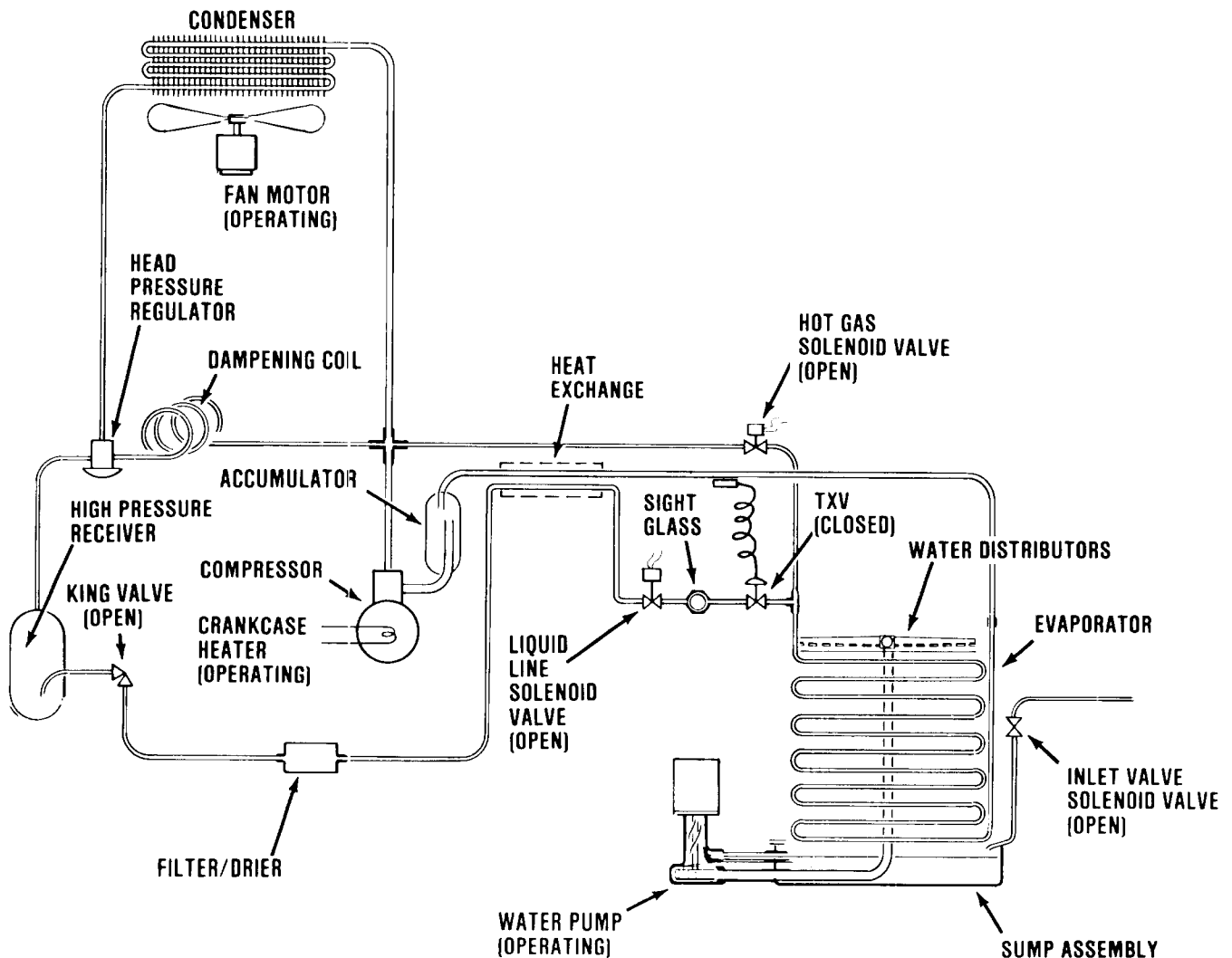
CM1200R OPERATING INSTRUCTIONS

HARVEST CYCLE

When the timer switches the icemaker into the harvest cycle, high pressure, high temperature gaseous refrigerant being discharged from the compressor is diverted from the condenser through the hot gas solenoid valve into the evaporator plates. During this cycle, the gaseous high pressure, high temperature refrigerant circulates from the compressor through the evaporator plates and back again, bypassing the condenser, and the thermostatic expansion valve. In the electrical circuit, both the compressor and the water pump are operating and the hot gas solenoid valve is energized and OPEN and the water inlet solenoid valve is OPEN.

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 plates and the water cascading over the ice cubes. 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 liquid line solenoid valve will close, shutting off refrigerant flow to the evaporator and allowing the compressor to pump any refrigerant left in the evaporators into the high pressure receiver. When the evaporator pressure is lowered to approximately 3 PSIG, the low pressure switch opens, shutting off the compressor, remote fan and water pump.



CM1200R

COMPONENT DESCRIPTION

BIN THERMOSTAT CONTROL

The bin thermostat control is located in the top of the control box. The sensing capillary tube of the control is routed from the control box through the inner left wall in the evaporator section, 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.

Bin thermostat control adjustment should ONLY be performed if premature shut off occurs or ice backs up into the freezing section of the cabinet. Adjust only in increments of one eighth turn of a screw at a time.

COMPRESSOR CONTACTOR

The compressor contactor functions to carry the compressor line current. The contactor is wired so any control in the pilot circuit, such as the bin thermostat, low pressure and high pressure controls, etc., will cause the contactor holding coil to be de-energized, when the control contact OPENS, thereby breaking the circuit to the compressor through the contactor points.

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.

See *Cube Size Adjustment* BEFORE attempting to adjust the control.

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.

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 timer 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 double-throw microswitch. The microswitch is actuated by a cam assembly directly connected to the timer motor. The timer cam can be adjusted to vary the defrost line, as required.

HIGH PRESSURE RECEIVER

Provides storage volume for refrigerant during cross ambient operation. The high pressure receiver is sized large enough to hold the entire refrigerant charge. During cold operation there is enough liquid in the receiver to maintain a liquid seal to the liquid line.

LIQUID LINE SOLENOID VALVE

The liquid line solenoid valve provides positive shutoff of refrigerant flow for off cycle evaporator pump down.

HOT GAS SOLENOID VALVE

The hot gas solenoid valve opens during the harvest cycle, to divert the hot discharge gas from the compressor, directly into 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 and plunger and the coil and 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.

WATER INLET SOLENOID VALVE

The water inlet solenoid valve opens during harvest to fill the sump assembly with water. Excess water overflows through a stand pipe located at the back of the sump to flush minerals from the sump.

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 two vertical tygon tubes to two tees. From there water is channeled through water manifolds to ten water distributors, two atop each evaporator plate, and distributed evenly down both sides of each evaporator plate. Gravity flow returns the water to the sump reservoir for recirculation.

(Continued on page 33)

THE PARTS ILLUSTRATIONS AND PARTS LISTS

GENERAL

This section contains the Parts Illustrations and the Parts List for each of the major assemblies in the Model CM1200R 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.

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.

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.

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:

- ☐ Distributor Name.
- ☐ (Use for DROP-SHIP order ONLY.)
- ☐ Distributor Purchase Order Number.
- ☐ Carrier.
- ☐ How shipped (Truck, Rail, UPS, etc.)
- ☐ Date ordered.
- ☐ Part Catalog Number. (Use full TEN digits (spaces) listed in Parts Manual, including dashes between numbers.)
- ☐ Description - as listed in Parts Manual.
- ☐ Quantity - number of parts ordered. (Use far right column.)

WIRING DIAGRAMS

This section is provided as an aid in understanding the electrical circuitry of the modular cuber:

The wiring diagrams in this Section are:

CM1200RE—3A 208-230/60/3

CM1200RE-32A 208-230/60/1

//////////////////// 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.

////////////////////////////////////

CM1200R

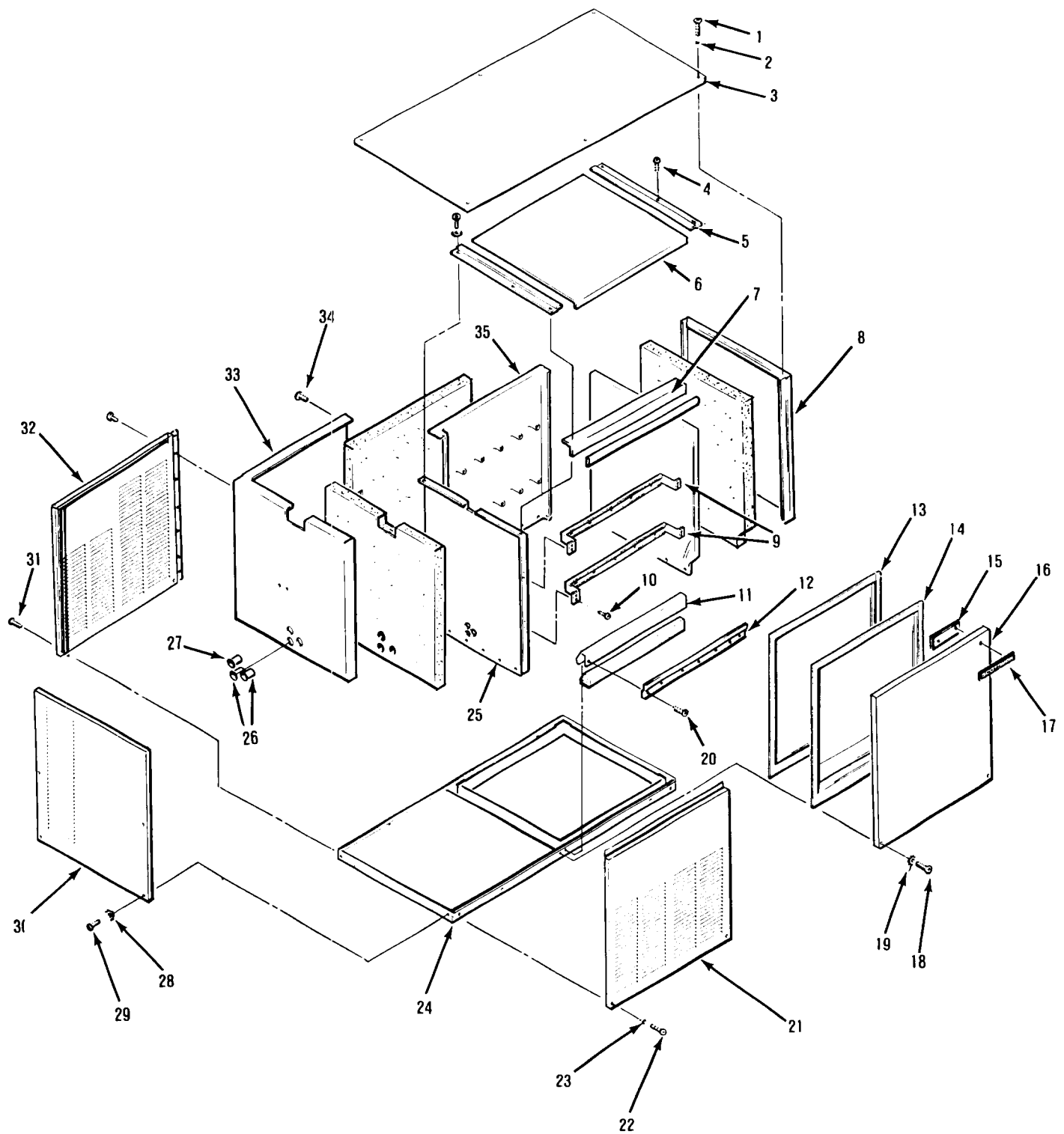
THE PARTS ILLUSTRATIONS AND PARTS LISTS

CABINET ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION
1	03-1404-09	(6) Screws, 8 x 1/2
2	03-1407-03	(2) Washers
3	A30744-001	Panel Top (Enamel)
	A30744-002	Panel Top (Stainless Steel)
4	03-1404-10	Screw, 8 x 1/2 (Stainless Steel)
5	<i>No Number</i>	Liner Guide
6	A30329-001	Liner Top
7	<i>No Number</i>	Upper Front Brace
8	A29164-003	Right Panel (Enamel)
	A29164-002	Right Panel (Stainless Steel)
9	A29204-001	Brace Front
10	03-1404-10	Screw 8 x 1/2 (Stainless Steel)
11	02-2532-01	Liner Cap
12	<i>No Number</i>	Liner Guide
13	13-0595-00	Gasket — Foam
14	02-2795-01	Liner Front Panel
15	03-0271-00	(2) Speed Clip
16	A30743-001	Panel, right front (Enamel)
	A30743-001	Panel, right front (Stainless Steel)
17	15-0711-01	Emblem
18	03-1404-19	(2) Screws, 8 x 1
19	03-1417-03	(2) Washers
20	03-1404-10	(8) Screws, 8 x 1/2 (Stainless Steel)
21	A30742-001	Panel, left front (Enamel)
	A30742-002	Panel, left front (Stainless Steel)
22	03-1404-19	(2) Screws 8 x 1
23	03-1417-03	(2) Washers
24	<i>No Number</i>	Base Fab Assembly
25	02-2533-01	Liner Left Side
26	<i>No Number</i>	(4) Bushing
27	<i>No Number</i>	(2) Bushing
28	03-1407-03	(2) Washer
29	03-1404-10	(4) Screws 8 x 1/2 (Stainless Steel)
30	A29168-003	Panel, left side (Enamel)
	A29168-002	Panel, left side (Stainless Steel)
31	03-1404-09	(4) Screws, 8 x 1/2
32	A30604-001	Panel, left back
33	<i>No Number</i>	Retainer
34	03-1404-09	(4) Screws 8 x 1/2
35	02-2531-01	Liner back

CM1200R

THE PARTS ILLUSTRATIONS AND PARTS LISTS



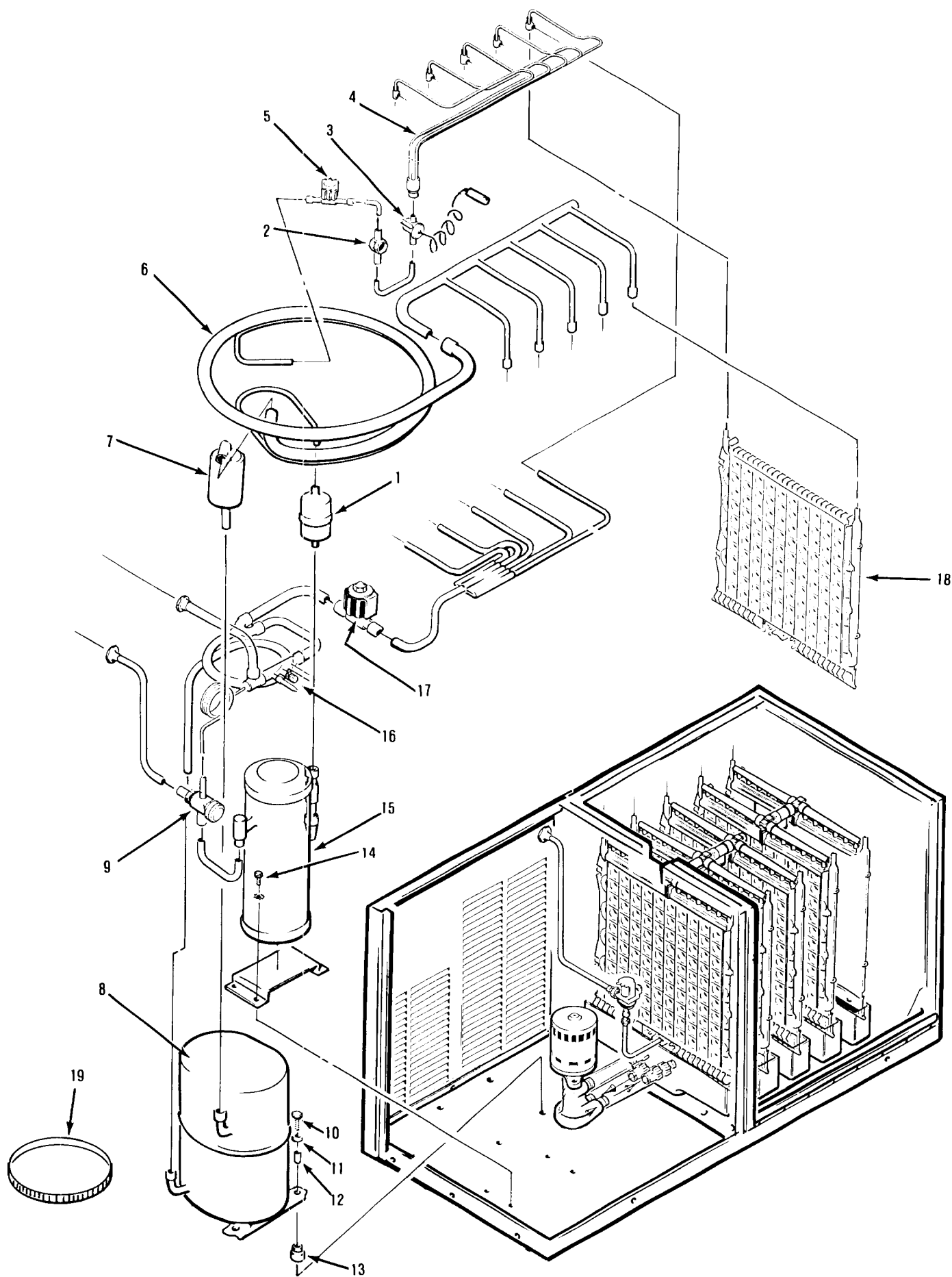
CM1200R
THE PARTS ILLUSTRATIONS AND PARTS LISTS

REFRIGERATION SYSTEM

ITEM NUMBER	PART NUMBER	DESCRIPTION
1	02-2426-02	Drier
2	16-0762-01	Sight Glass
3	16-0758-01	Thermostatic Expansion Valve
4	A30631-001	Evaporator Inlet Assembly
5	12-2257-01	Liquid Line Solenoid Valve
6	A30620-001	Suction Line Heat Exchange
7	16-0760-01	Accumulator
8	18-5100-02	Compressor 208-230/60/1
	18-5100-03	Compressor 230/60/3
9	11-0422-01	Head Pressure Regulator
10	03-1405-20	Screw 5/16 - 18 x 1-1/2
11	03-1407-07	Washer
12	18-5100-50	Sleeve
13	18-5100-51	Grommets
14	13-0571-01	Screw 1/4-20 x 3/4
15	16-0761-01	Receiver
16	16-0673-35	Process Header
17	12-2146-02	Hot Gas Valve
18	A30296-020	Evaporator Plate
19	12-1868-03	Crankcase Heater

CM1200R

THE PARTS ILLUSTRATIONS AND PARTS LISTS



CM1200R
THE PARTS ILLUSTRATIONS AND PARTS LISTS

WATER SYSTEM

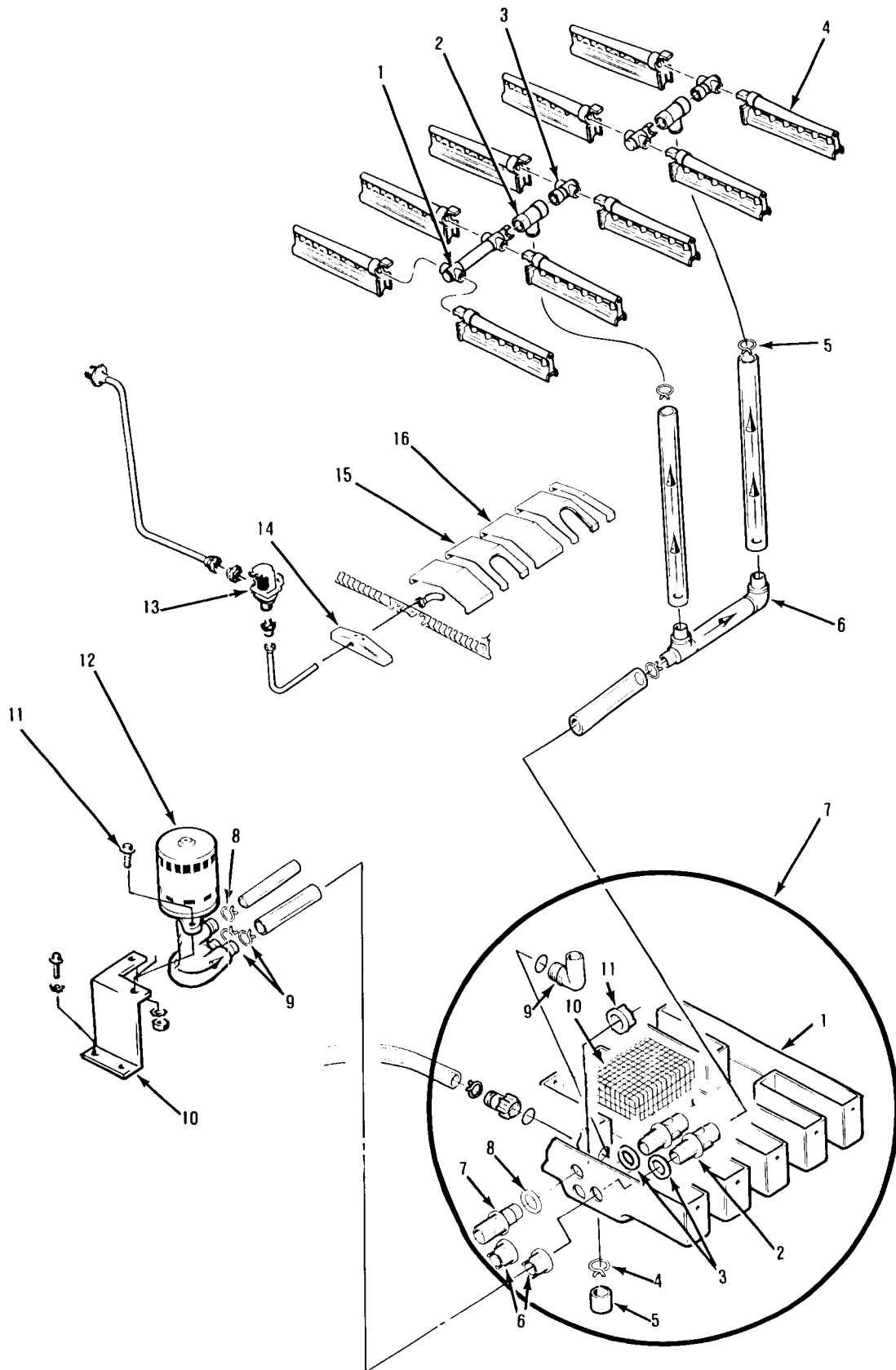
ITEM NUMBER	PART NUMBER	DESCRIPTION
1	02-2521-01	Manifold Water (Long)
2	02-2519-01	Tee
3	A29703-001	Manifold Water (Short)
4	02-2527-01	Tube, Water Distributor
5	02-1358-01	Clamp
6	A29730-001	Water Tube Assembly)
7	A30761-020	Sump Assembly
8	02-1530-01	Clamp
9	02-1800-01	Clamp
10	A29746-001	Pump Bracket
11	13-0571-01	Screw 1/4-20 x 3/4
12	A30751-022	Water Pump
13	12-1646-04	Water Valve
14	02-2523-01	End Cover - Sump
15	02-2520-01	Sump Cover
16	02-2520-02	Sump Cover - Center

SUMP ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION
1	A30761-020	Sump (Complete Assembly)
2	02-2787-01	Tube - Pick Up
3	03-1409-23	Washer - Rubber
4	02-1530-01	Clamp
5	13-0796-01	Rubber Cap
6	02-2786-01	Tube - Inlet
7	02-2788-01	Nut - Water Inlet
8	13-0617-02	"O" Ring
9	02-2125-01	Elbow
10	A30760-001	Screen
11	02-1800-01	Hose Clamp

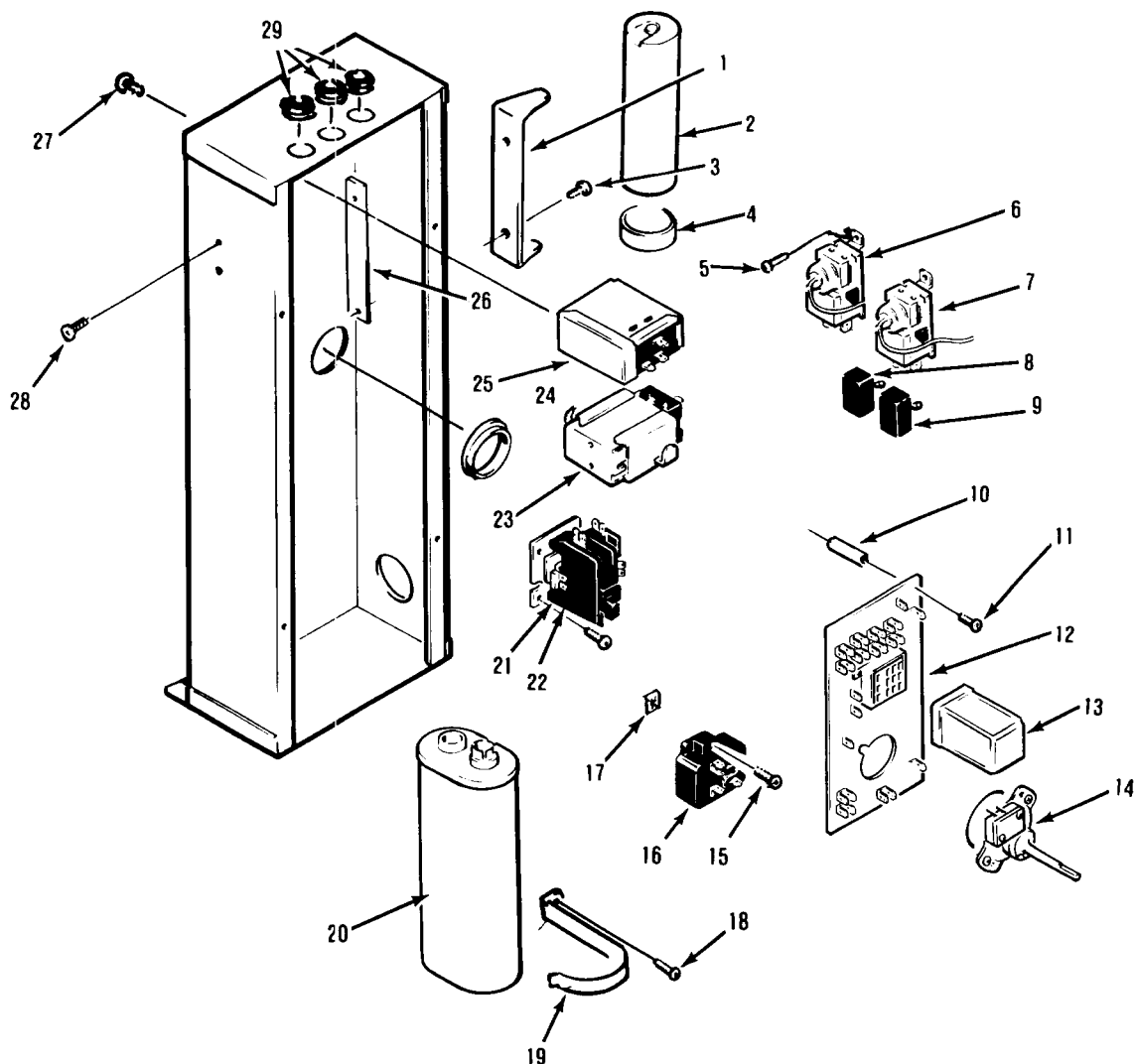
CM1200R

THE PARTS ILLUSTRATIONS AND PARTS LISTS



CM1200R

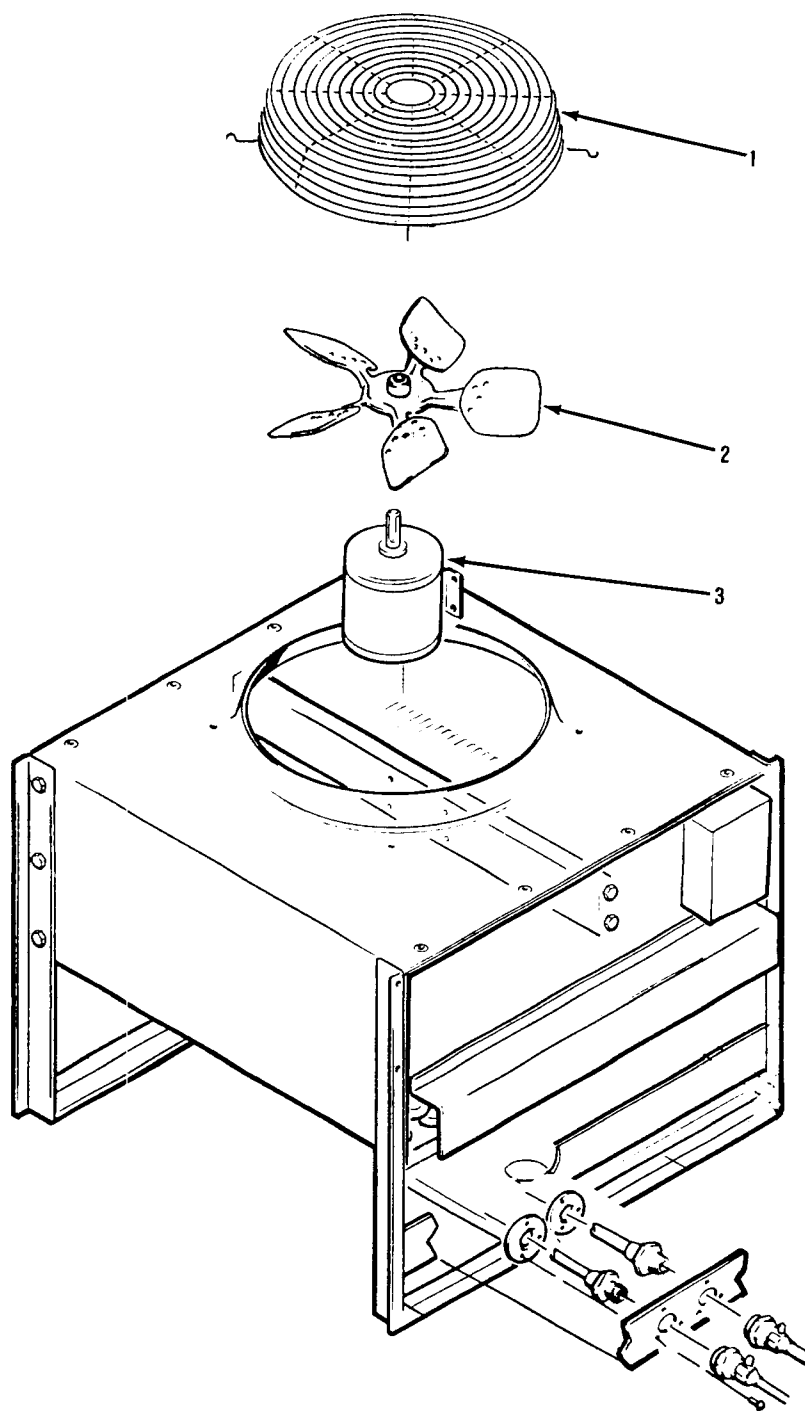
THE PARTS ILLUSTRATIONS AND PARTS LISTS



CONTROL BOX ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION			
1	No Number	Capacitor Bracket	15	03-1463-04	Screw 6 x 3/8
2	18-1901-40	Capacitor Start	16	18-1903-01	Potential Relay
3	No Number	Screw	17	03-1423-01	Speed Nut
4	18-3850-38	Capacitor Cap	18	03-1403-21	Screw 8 x 3/8
5	03-1403-17	Screw 8 x 3/8	19	No Number	Bracket
6	11-0419-01	Bin Thermostat	20	18-1902-51	Run Capacitor
7	11-0351-02	Cube Size Control	21	03-1403-17	Screw 8 x 3/8
8	12-2255-01	Toggle Switch DPDT, Clean	22	12-0739-02	Contactor - 230/60/3
9	12-0426-01	Switch SPST, Compressor			Contactor - 208-230/60/1
10	12-1213-12	Bushing 1-3/8	23	11-0410-01	Hi Pressure Control
11	03-1403-04	Screw 6 x 3/8	24	12-1213-12	Snap Bushing 1-3/8
12	12-1912-01	Circuit Board	25	11-0420-01	Low Pressure Control
13	12-1879-03	Relay	26	No Number	Twin Speed Nut
14	12-1979-32	Time Switch Assembly	27	03-1403-04	Screw 6 x 3/8
			28	03-1403-04	Screw 6 x 3/8
			29	03-0557-00	Grommet

CM1200R
THE PARTS ILLUSTRATIONS AND PARTS LISTS

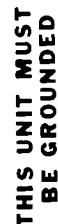


REMOTE CONDENSER RC151-32B
RC302-32B

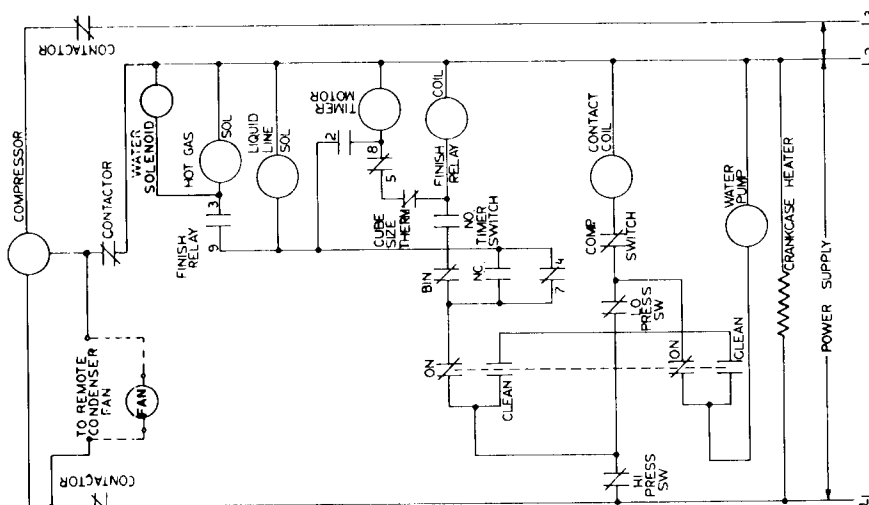
ITEM NUMBER	PART NUMBER	DESCRIPTION
1	02-2618-01	Guard, Fan
2	18-3733-01	Blade, Fan
3	18-3734-01	Motor, Fan

A30617-003

NOTE:  DASHED LINES INDICATE FIELD WIRING WHICH MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE USING A MINIMUM OF 14 GA. AWG WIRE.



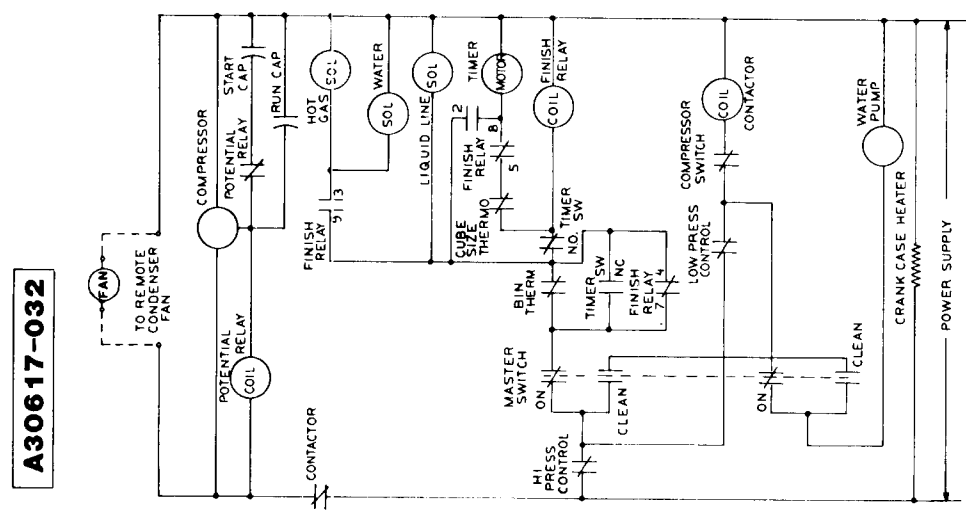
CAUTION: MORE THAN ONE DISCONNECT MEANS MAY BE REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT



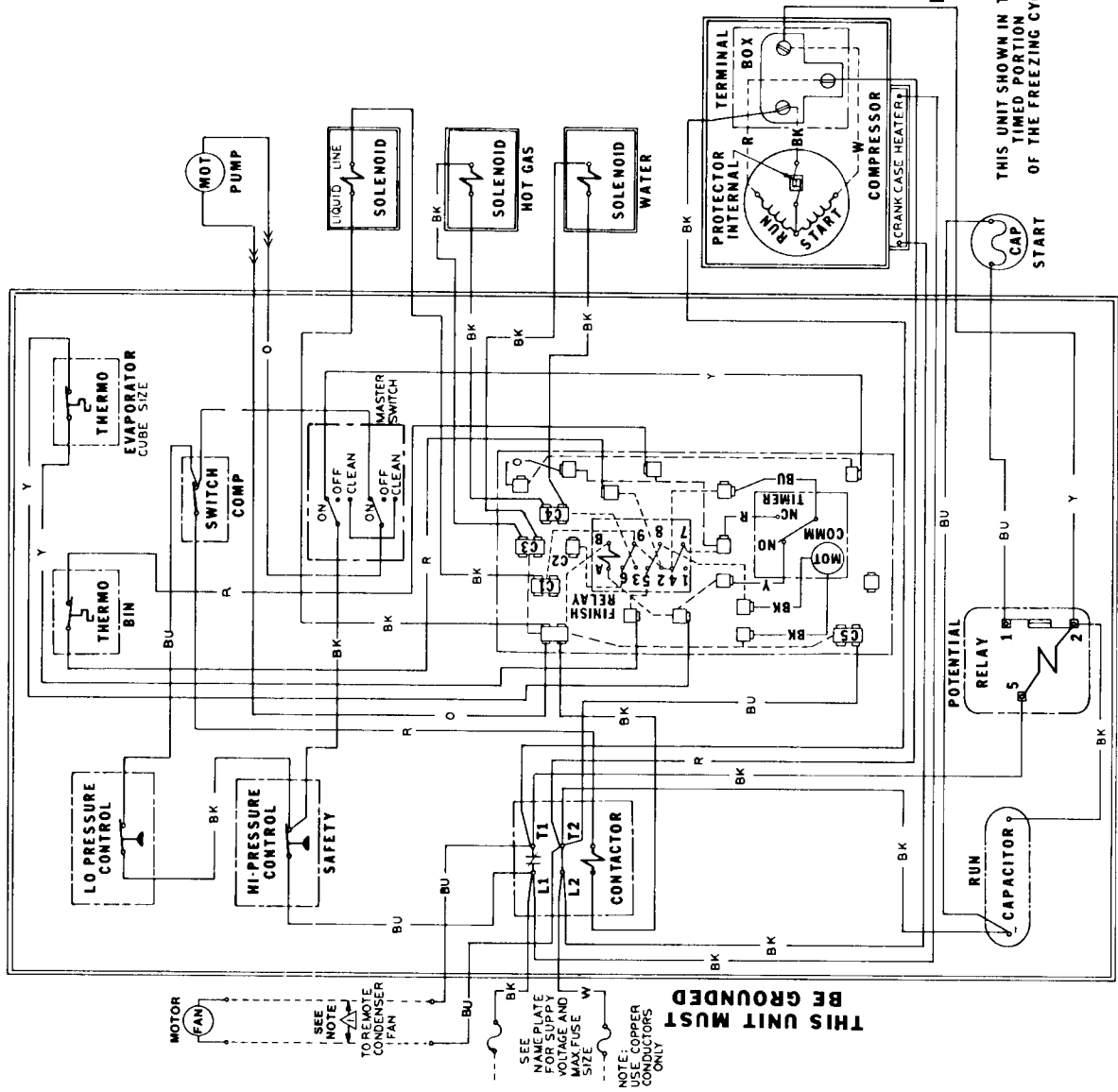
AUGUST 1983
Page 26

CM1200R WIRING DIAGRAM 32A-208-230/60/1

A30617-032



NOTE: △ DASHED LINES INDICATE FIELD WIRING WHICH MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE USING A MINIMUM OF 14 GA. AWG WIRE.



THIS UNIT SHOWN IN THE
TIMED PORTION
OF THE FREEZING CYCLE

THIS UNIT MUST
BE GROUNDED

Wiring Diagram CM1200RE-32A 208-230/60/1

COMPONENT DESCRIPTION

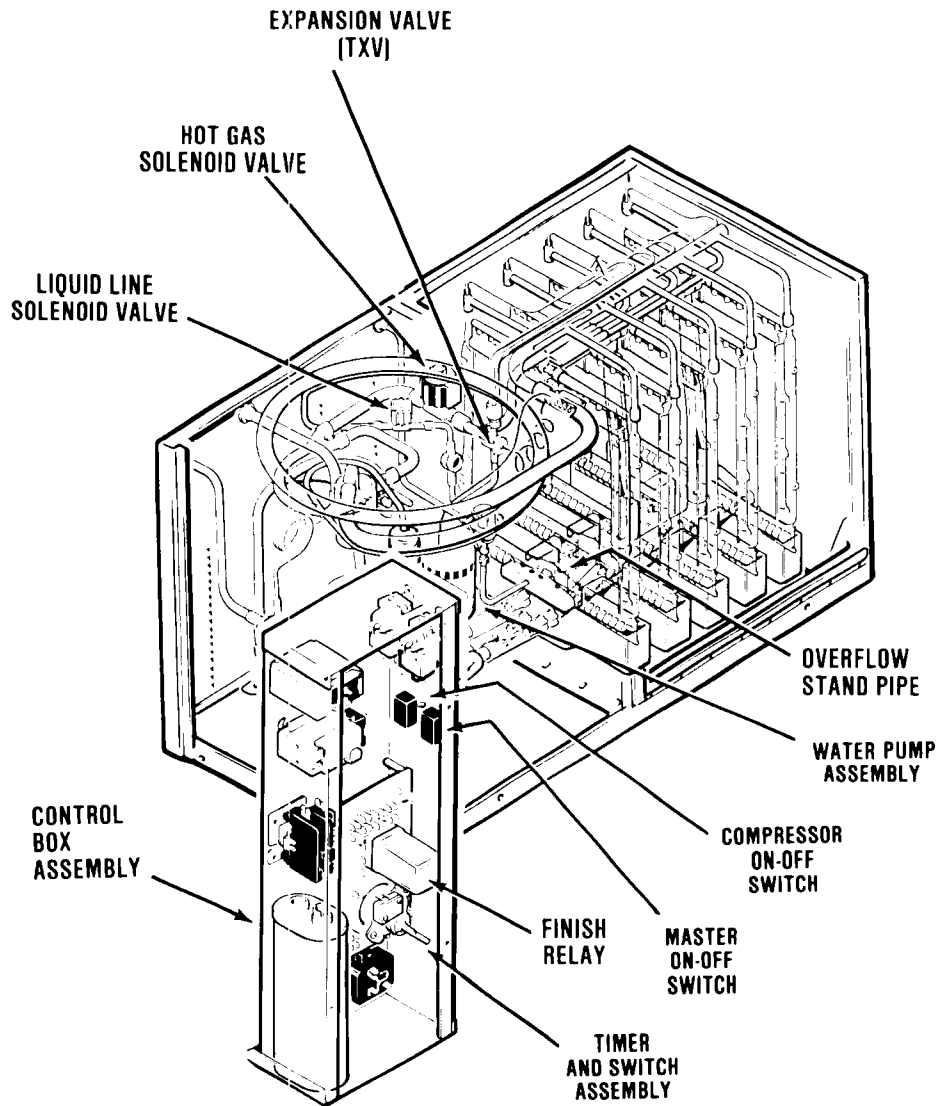
(Continued from page 16)

THERMOSTATIC EXPANSION VALVE (TXV)

The thermostatic expansion valve regulates the flow of refrigerant to the evaporator, and reduces pressure of liquid refrigerant from condensing pressure to evaporating pressure.

ACCUMULATOR

The accumulator traps liquid overfeed from the evaporator during harvest and meters it into the compressor at a controlled rate.



ADJUSTMENT PROCEDURES

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.

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 **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.

Adjustment on the cube size control is performed to cause either larger sized ice cubes or smaller sized ice cubes to be produced.

To produce **LARGER** sized ice cubes:

1. Locate the cube size control, in the left 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.

To produce **SMALLER** sized ice cubes:

1. Locate the cube size control, in the left 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 adjust in one-eighth turn increments, until desired ice cube size is achieved.

ADJUSTMENT OF THE TIMER & SWITCH ASSEMBLY

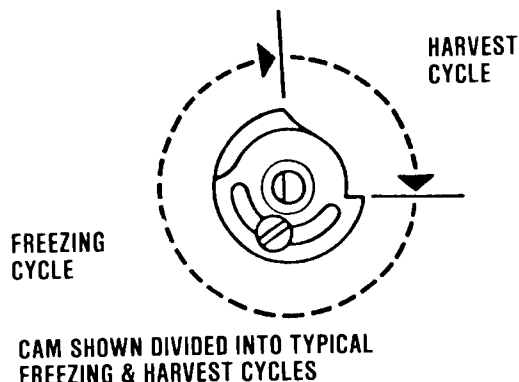
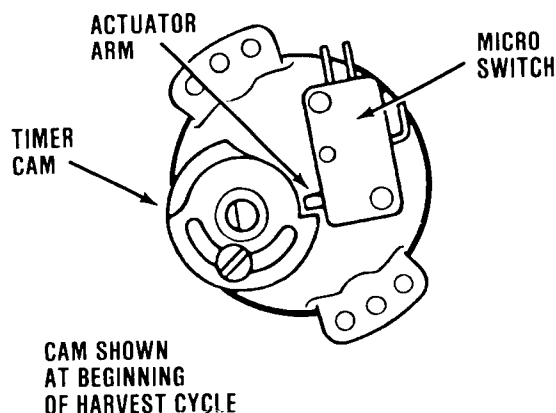
The timer and switch assembly is factory set, so one complete revolution of the cam on the timer represents 15 minutes. 11-1/2 minutes comprise the freezing cycle event during cam rotation, and the final three and one-half minutes program the defrost and harvest cycle.

WARNING

Disconnect electrical power supply to icemaker whenever adjustment procedures are performed.

TO ADJUST THE TIMER & SWITCH ASSEMBLY:

- A. **HARVEST CYCLE:** Slowly rotate the shaft of the timer and switch assembly, located in the control box, **CLOCKWISE**, until the actuator arm on the microswitch initiates the harvest cycle. An audible click can be heard, but in a noisy area, look at the cam and switch to observe the event.



CM1200R ADJUSTMENT PROCEDURES

- B. **FREEZING CYCLE:** Slowly rotate the shaft of the timer and switch assembly, located in the control box, **CLOCKWISE**, until the actuator arm on the microswitch initiates the freezing cycle.
- C. The length of the harvest cycle can be changed by loosening the adjustment screw on the cam. The minimum harvest setting is two minutes; the maximum is seven minutes. It is important that the length of the harvest cycle allow enough time for all the ice cubes to fall from the evaporator. Too short of a time will cause the evaporator to freeze up and stop ejecting ice into the bin. Too much time

wastes icemaking capacity, energy and water. Adjustment of the harvest cycle may require a corresponding adjustment of the cube size control.

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.

CM1200R

REMOVAL AND REPLACEMENT PROCEDURES

For installations having stacked CM1200 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, side or rear panels.

REMOVAL AND REPLACEMENT OF THE BIN THERMOSTAT CONTROL

To remove the bin thermostat control:

1. Remove screws and two front panels.
2. Remove four screws and the control box cover.
3. Remove wire leads from the bin thermostat control.
4. Unthread the capillary tube and remove from the bin thermostat control bracket at the bottom left side of the evaporator section.
5. Remove two screws attaching the bin thermostat control to the top side of the control box; then, carefully pull the capillary tube out of the evaporator section through the grommet at the lower rear corner of the left wall of the evaporator section. Carefully remove the bin thermostat control and capillary tube from the control box.

To replace the bin thermostat control, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE COMPRESSOR ASSEMBLY

To remove the compressor assembly:

1. Remove screws and the top panel, left side panel and left front panel.
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 tubing connections from the compressor.
5. Remove four bolts and washers which secure the compressor to the chassis mounting base.
6. Remove the compressor from the cabinet.

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.

To replace the Compressor, reverse the removal procedures.

REMOVAL AND REPLACEMENT OF THE CUBE SIZE CONTROL

To remove the cube size control:

1. Remove screws and the left front panel.
2. Remove cover from control box.
3. Trace capillary tube, from the cube size control, to the refrigerant suction line; then peel back the insulation.
4. Remove the coiled capillary tube bulb from the tube well on the suction line.
5. Remove electrical leads from the cube size control.
6. Remove screws and the cube size control.

To replace the cube size control, reverse the removal procedure.

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.

CMT200R REMOVAL AND REPLACEMENT PROCEDURES

REMOVAL AND REPLACEMENT OF THE DRIER

To remove the drier:

1. Remove screws and the left front 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.

To replace the drier:

//////////////// CAUTION //////////////////

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.

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.
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 front panel.

REMOVAL AND REPLACEMENT OF THE EVAPORATOR PLATE ASSEMBLY

To remove the evaporator plate:

1. Remove the front and top panels. Remove top liner.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Remove hose clamp and rubber cap from bottom of sump assembly and drain all water. Replace rubber cap and hose clamp.
4. Slide three hose clamps off and unclamp Tygon tubes at left end of the sump assembly.
5. Remove overflow Tygon tube at rear of sump.
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 *Removal of the Water Distributors, Manifolds and Tees*.

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.

If all ten 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.

//////////////// 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 braces, to support the remaining evaporator plates.

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.

To replace the evaporator plate, reverse the removal procedure.

CM1200R REMOVAL AND REPLACEMENT PROCEDURES

REMOVAL AND REPLACEMENT OF THE INLET WATER SOLENOID VALVE ASSEMBLY

To remove the inlet water valve assembly:

1. Remove left front panel.
2. Loosen and remove inlet water line fitting from the inlet water solenoid valve assembly.
3. Loosen and remove the valve outlet water line.
4. Remove leads.
5. Remove water valve assembly from the dividing wall.

To replace the inlet water valve assembly, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE SUMP ASSEMBLY

To remove the sump assembly:

1. Remove screws and the right front panel.
2. Remove hose clamp and rubber cap from bottom of sump assembly and drain all water. Retain rubber cap and hose clamp.
3. Slide three hose clamps off and unclamp Tygon tubes at left end of sump assembly.
4. Disconnect the two Tygon tubes at the water manifold tees above the evaporator plates and remove overflow Tygon tube.
5. 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 carefully work the connecting Tygon tubes OFF the left end, to prevent damage to the plastic.
6. Unsnap the sump assembly from the lower front and rear attachment points on each evaporator plate. 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, carefully to prevent damage to the plastic.

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.

REMOVAL AND REPLACEMENT OF THE WATER DISTRIBUTOR TUBES AND MANIFOLD TUBES

To remove the water distributor tubes and manifold tubes:

1. Remove screws and the right front panel.
2. Pull forward on lock tab at upper front corner of the evaporator plate and lift up on the water distributor.
3. Slide each water distributor tube 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.

If all ten 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.

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(s).

BE SURE each front water distributor tube is securely fastened at the notch at the top front of the evaporator plate.

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.

REMOVAL AND REPLACEMENT OF THE WATER PUMP ASSEMBLY

To remove the water pump assembly:

1. Remove screws and two front panels.
2. Remove three hose clamps connecting three Tygon tubes to the left end of the sump assembly.
3. Disconnect electrical leads from the water pump assembly.
4. Remove three screws and washers, attaching the water pump bracket to the machine base; then, work the Tygon tubes loose from the sump assembly and remove the water pump assembly.
5. Remove two screws and ground wire to remove pump from bracket.
6. Remove clamps and Tygon tubes from pump.

To replace the water pump assembly, reverse the removal procedure.

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 chart lists corrective actions for the causes of known symptoms of certain problems that can occur in the icemaking-refrigeration system.

ICEMAKING - REFRIGERATION SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Irregular size cubes some cloudy.	Some distributor holes plugged.	Clean distributor holes.
	Shortage of water.	Clean water sump. See Shortage of water CORRECTION.
	Unit not level.	Level cabinet, as required.
Cubes too large.	Dirty air-cooled condenser.	Clean remote condenser.
	Cube Size Control set too cold.	Rotate Cube Size Control dial toward WARMER.
	Loss of refrigerant.	Check for refrigerant leaks, correct leaks; recharge system.
Cubes too small.	Cube Size Control set too warm.	Rotate Cube Size Control dial toward COLDER.
	Moisture in refrigeration system.	Blow refrigerant charge; replace drier; evacuate system; add proper refrigerant charge.
	Shortage of water.	See Shortage of water CORRECTION.
	TXV valve super heat too high.	Replace valve.
Cloudy Cubes.	Shortage of water.	See Shortage of water SYMPTOM.
	Dirty water supply.	Install water filter or treatment system.
	Accumulated impurities.	Use SCOTSMAN Ice Machine Cleaner. Procedure V-III.
Shortage of water.	Short Harvest Cycle.	Adjust cam of timer and switch assembly.
	Water leak in sump area.	Locate Leak and correct condition.
	Partial restrictions in water strainer.	Clean or replace strainer.
	Low water pressure.	Check for incorrect supply line size or blockage. Check for low main pressure. If low, contact water company.

CM1200R SERVICE DIAGNOSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Decreased Ice capacity.	High head pressure, result of dirty Condenser or faulty Fan Motor.	Clean Remote Condenser Fins. Repair or replace Fan Motor.
	Non-condensable gas in the system.	Purge the system and recharge per nameplate requirements.
	Overcharge of refrigerant.	Slowly purge off to correct charge.
	Hot gas solenoid valve leaking.	Replace valve.
	Defective Compressor.	Replace Compressor.
	Leaky inlet water valve.	Replace valve.
Poor harvests. Icemaker does not harvest.	Too short defrost time.	Check and adjust harvest cycle.
	Restriction in water inlet line.	Check strainer and flow check valve.
	Hot gas solenoid does not open. Binds or burned out.	Replace solenoid.
	Undercharge of refrigerant.	Charge to nameplate requirements.
	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.
Unit Trips on Hi Pressure Cut Out.	Dirty Condenser.	Clean Condenser with vacuum cleaner or brush. DO NOT USE A WIRE BRUSH.
	Defective Fan Motor.	Replace Fan Motor.
	Non-condensable gases in system.	Purge the system and recharge per nameplate requirements.
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.
	Improperly wired.	Contact electrical contractor for correction.

MAINTENANCE & CLEANING INSTRUCTIONS

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.

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 the CM1200 cabinet is level, in the side-to-side and front-to-back directions.
3. Clean the water system, evaporator plates and sump assembly, using a solution of SCOTSMAN Ice Machine Cleaner. Refer to CLEANING - Icemaker.

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. Check for water leaks and make corrections.
9. Check the bin thermostat control bulb to test shut off. Holding ice against bin thermostat control bulb should cause the icemaker and the remote condenser fan motor to shut off at the end of the harvest cycle.

Within minutes after ice is removed from the bin thermostat control bulb, the icemaker will restart.

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 building source electrical power OFF to the icemaker, clean the Remote Condenser fins, using a vacuum cleaner, whisk broom or brush. DO NOT USE A WIRE BRUSH. Instruct customer to clean frequently.
2. Check that Fan Blade moves freely, is not touching any surfaces, is 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.

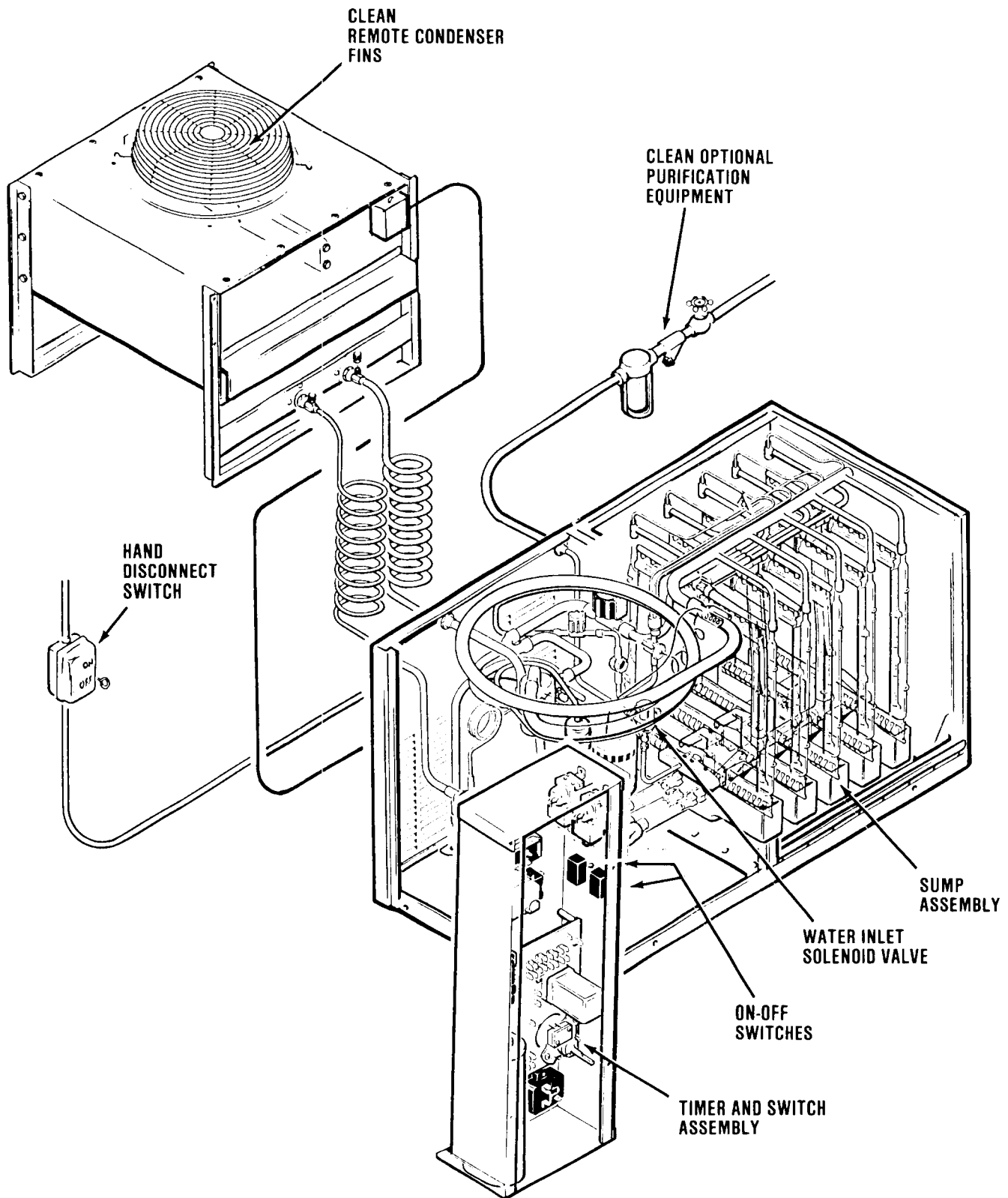
CLEANING - Icemaker

1. Remove screws and the front panels.
2. Move the master switch to the CENTER position, leave the compressor switch in the ON position.
3. Rotate the shaft of the timer and switch assembly, located in the control box, CLOCKWISE, until the actuator arm on the microswitch rides up out of the cam slot, to the outer surface of the cam, then stop. This is the start position for the freezing cycle. See START Positions for the Freeze/Harvest Cycles.
4. Position a container for catching drain water under the rubber plug at the bottom of the sump assembly.
5. Remove hose clamp, the rubber plug, and drain all water from the sump assembly into the container. Replace rubber plug and hose clamp.
6. Prepare cleaning solution: Mix twenty-four ounces of SCOTSMAN Ice Machine Cleaner with two gallons of fresh, potable warm water.

WARNING

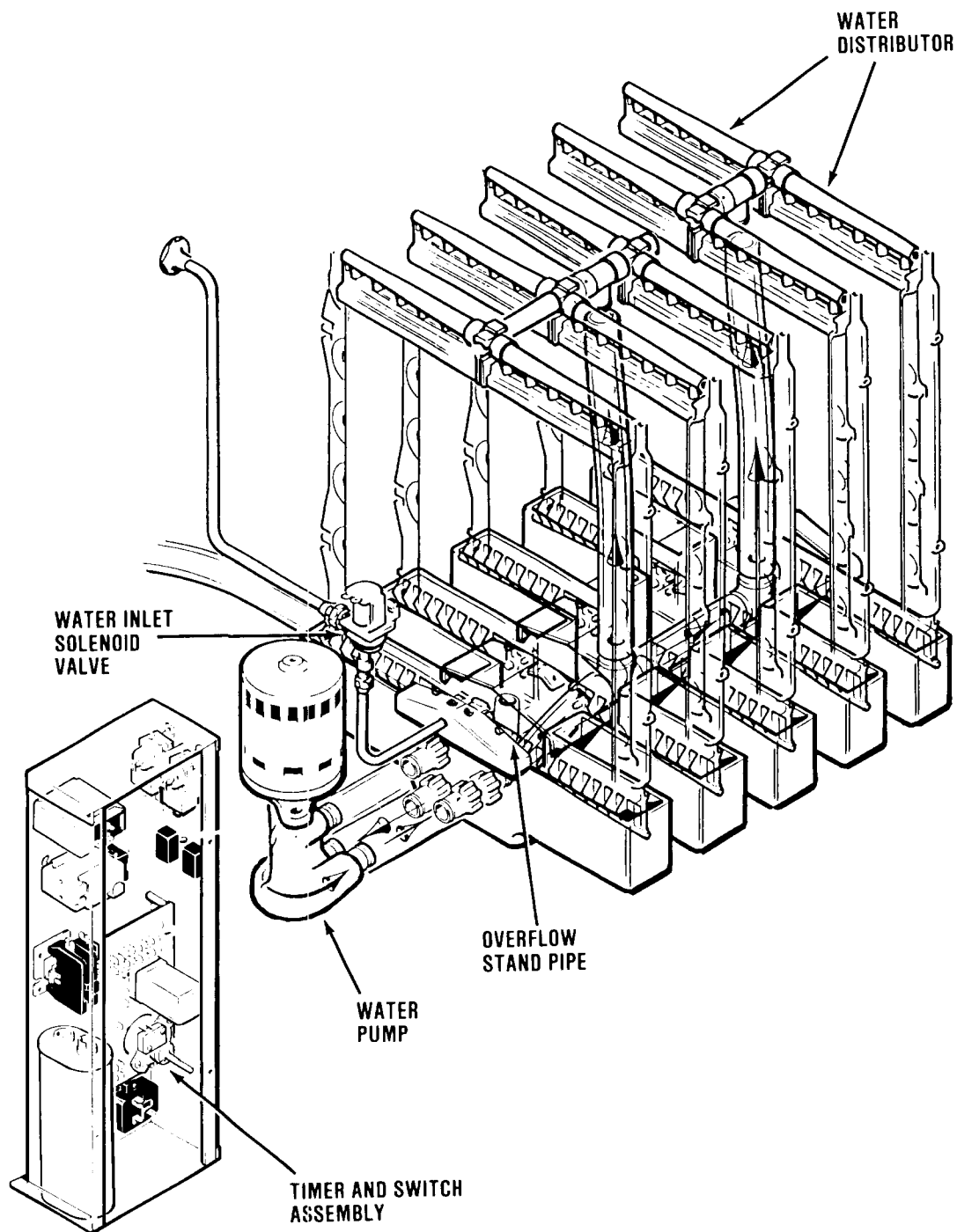
SCOTSMAN Ice Machine Cleaner contains Phosphoric and Hydroxyacetic acids. These compounds are corrosive and may cause burns, if swallowed. DO NOT induce vomiting. Give large amounts of water or milk. Call physician immediately. In case of external contact, flush with water. KEEP OUT OF THE REACH OF CHILDREN.

CM1200R MAINTENANCE AND CLEANING



Cleaning Remote Condenser

CM1200R MAINTENANCE AND CLEANING



Cleaning Water System, Icemaker

CM1200R MAINTENANCE AND CLEANING

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 CLEAN position.
 9. Allow the system to operate for about thirty minutes.
 10. At the end of thirty minutes, move the master switch to the CENTER position. Remove the plug and drain the cleaning solution from the sump and rinse. Replace the drain plug.
 11. Add two gallons of fresh water to the sump, move the master switch to the clean position, operate for 5 minutes and drain. Repeat this procedure two more times.
 12. Rotate the shaft of the timer and switch assembly, located in the control box, CLOCKWISE, until the actuator arm on the microswitch drops off the outer cam into the cam slot, then stop. This is the start position for the harvest cycle. See START positions for the Freeze/Harvest Cycles. The water inlet solenoid valve opens and a supply of water enters the sump.
- 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, shut down the operation and remove and clean all water distributor tubes. Then reinstall the water distribution system.

13. Move the master switch to the ON position to start the icemaking process. 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.

14. Add hot water to the bin to melt the ice cubes and thoroughly wash and rinse inner surfaces of the bin.
15. Check each ice cube harvest until the ice cubes are clear and the acid taste is eliminated.
16. 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.
17. Replace all panels.
18. Clean and sanitize the interior bin surfaces each week.