

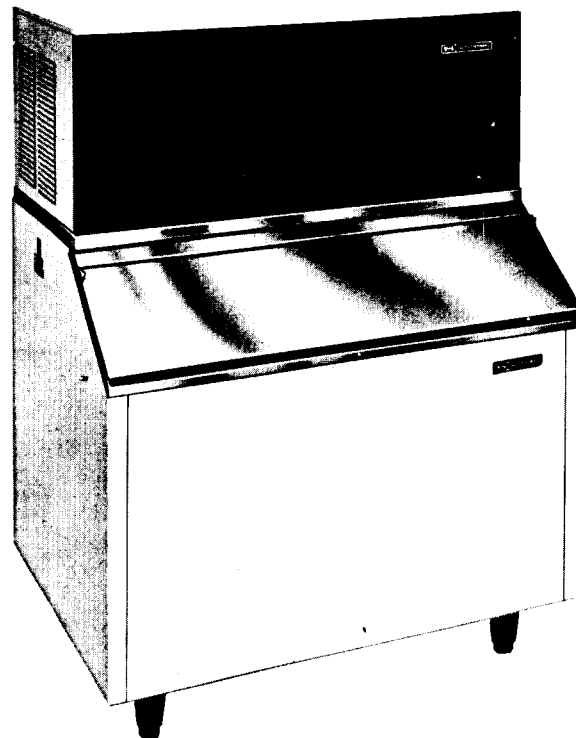
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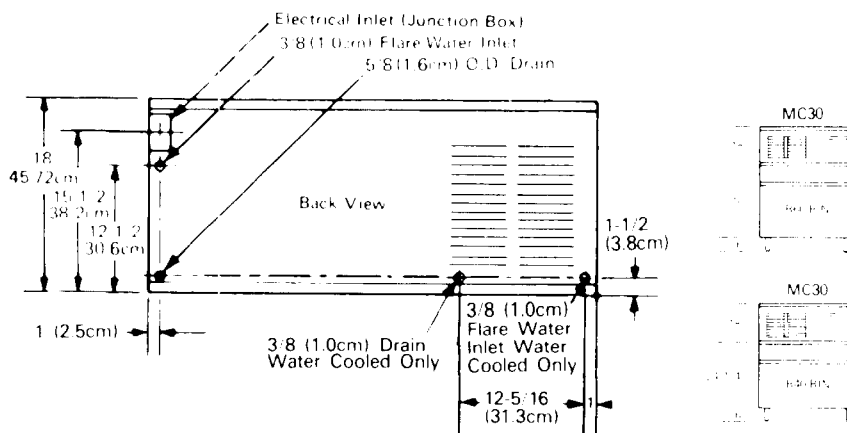
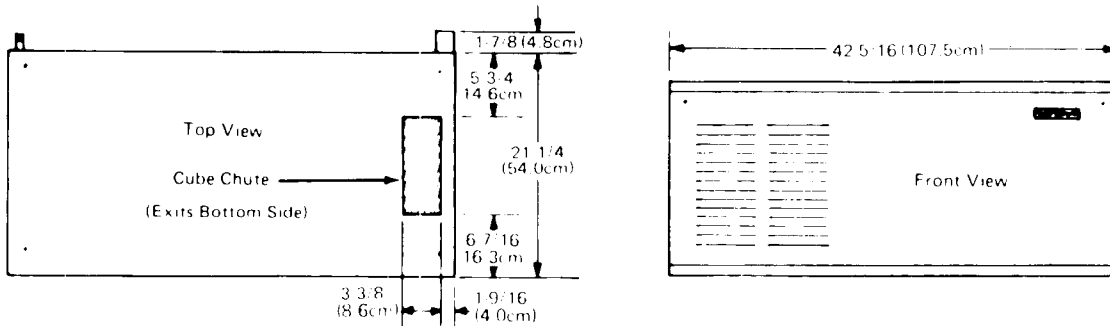
MODULAR CUBER MC30 SERIES



ice making capacity

Daily Ice Capacity is directly related to condenser air inlet temperature, water temperature, and age of machine. To keep you SCOTSMAN MODULAR CUBER performing at it's maximum capacity, it is necessary to perform periodic maintenance as outlined on page 43 of this manual.

MC30 modular cuber



MC30 MODULAR CUBER SPECIFICATIONS

Model	Condensing Unit	Compressor Horsepower	Finish *	Shipping Weight lbs. kg.
MC30MAE	Air	1	Enamel	250 114
MC30MWE	Water	1	Enamel	250 114
MC30SAE	Air	1	Enamel	250 114
MC30SWE	Water	1	Enamel	250 114

* Stainless steel panels available in kit form SPKMC1. Painted models have Sandalwood enamel micomatte finish, with walnut woodgrain vinyl front panel.

Basic Electricals	Total Amperages	
	MC30M	MC30S
Air Cooled- 115/60/1	15.4	15.4
Water Cooled- 115/60/1	14.5	14.5

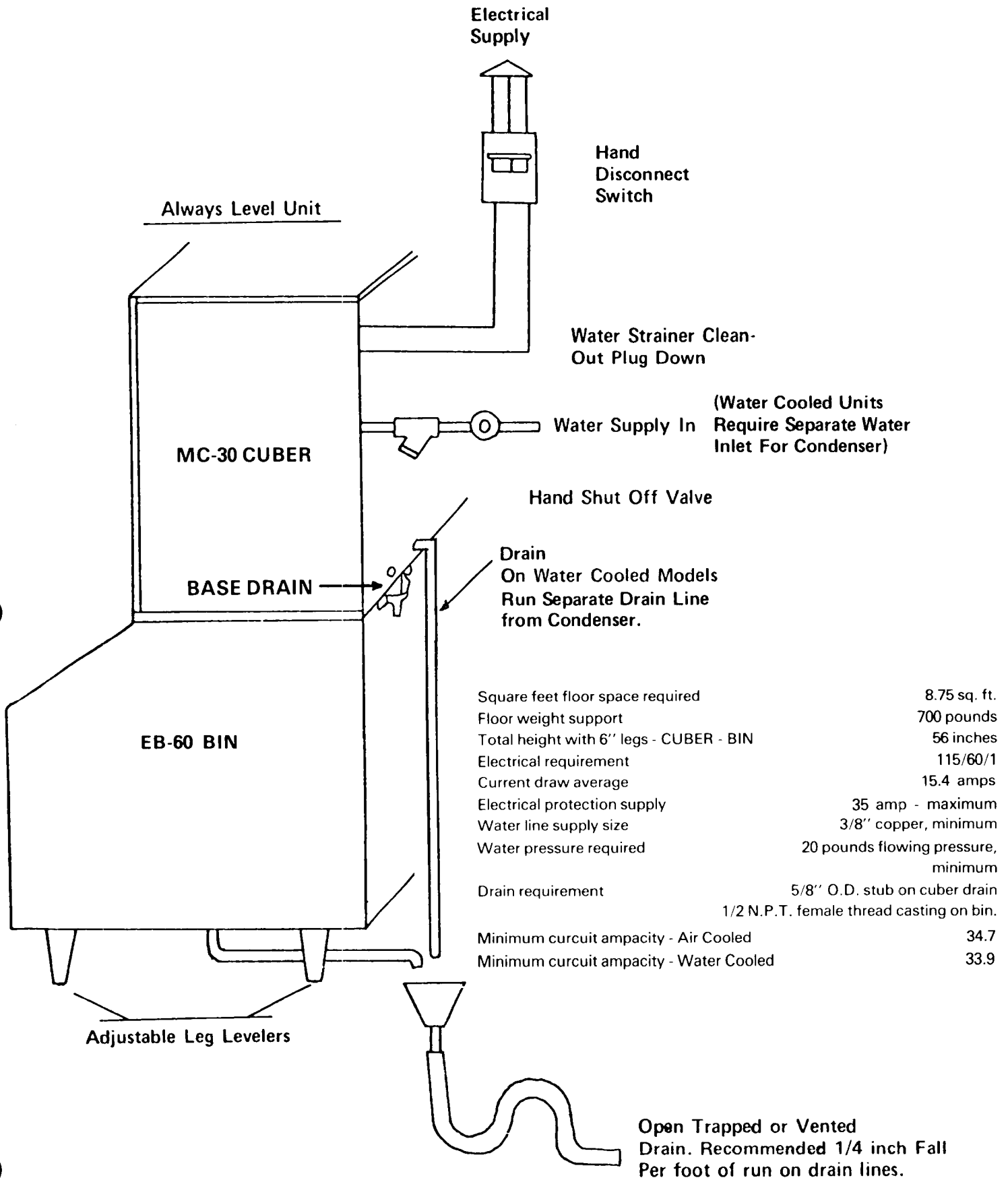
We reserve the right to make product improvements at any time. Specifications and design are subject to change without notice.

INSTALLATION INSTRUCTIONS

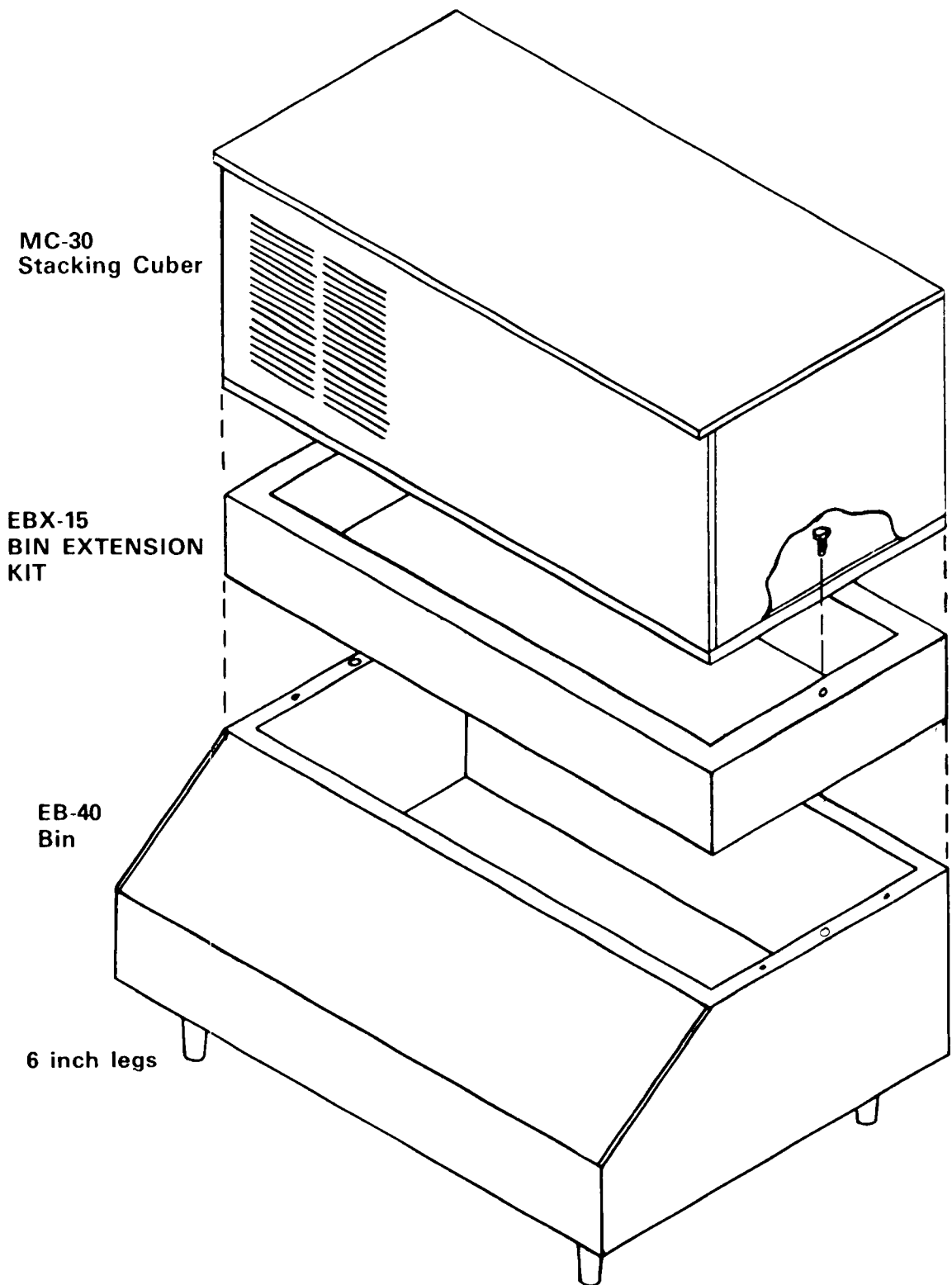
1. The following installation instructions pages 4 through 10 were written for use by an authorized tradesman only, not the user or customer. We suggest you call your local authorized Scotsman Service Agency for hook-up, start-up, and check out. He's listed under "Ice Making Machinery & Equipment" in your telephone book, yellow pages.
2. Uncrate unit using regular hammer and nail puller.
3. Remove top, front, left and right side panels (held by screws).
4. On base of machine at left and right ends are bolts that hold cuber to crate skid. Loosen the bolts to remove skid and save bolts to mount machine to SCOTSMAN Storage Bins.
5. Place unit on top of bin and secure to bin with two bolts taken out in Step 3.
6. Uncoil bin thermostat bulb and run it down thru machine base by pushing end of bulb thru plastic cap located between sump pump and freezing chamber. Next, take combination cube deflector and bulb holder, which is packed in storage bin, and install on upper right side of bin as described on Page 8.

NOTE: Regardless of what type of bin is used, it is essential that bin thermostat bulb be located in area immediately below cube chute opening of machine, in order to prevent ice from backing up into cube chute.

7. Remove junction box from top of cube chute and install on rear of machine. Wires are provided at rear of machine for electrical hookup.
8. Check unit nameplate voltage against building source voltage to be sure they correspond. Scotsman, like most manufacturers, purchases electrical motors that are rated to operate within a 10% variance above or below nameplate ratings. Improper voltages applied to Scotsman equipment can cause premature failures and burnouts. Failures of this type are not considered as factory fault or defect.
9. Remove shipping tape and check tubing, wiring and capillary control lines for rubbing or chafing; refashion as required.
10. Make water connection utilizing 3/8" O.D. copper water line.
11. Install drains and base drain cup. Per instruction tag 17-1278-01.
12. Use clean damp cloth to wipe out storage bin and cabinet exterior.
13. Replace all panels.
14. Check unit to be sure it is level side to side and front to rear.



TYPICAL INSTALLATION



WARNING: SCOTSMAN BINS ARE SPECIFICALLY ENGINEERED FOR USE WITH THE SCOTSMAN MODULAR CUBERS. USE OF OTHER THAN SCOTSMAN MANUFACTURED BIN MAY RESULT IN COMPONENT FAILURES WITHIN THE MODULAR CUBER.

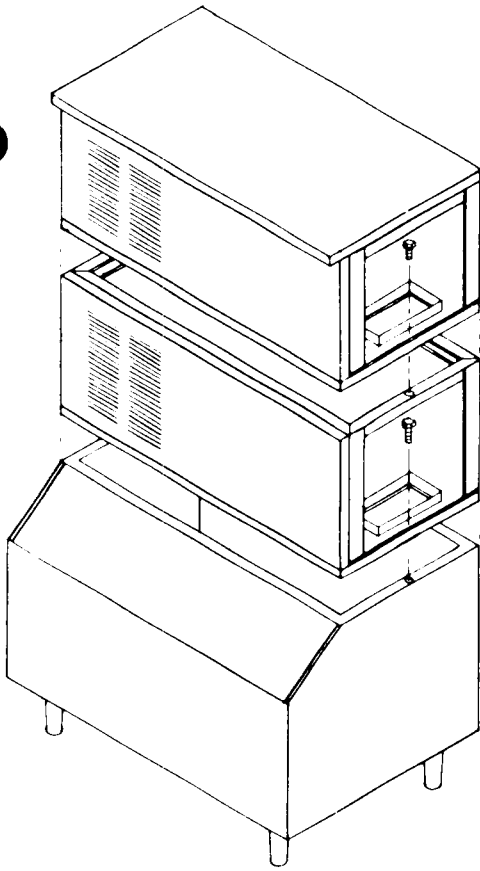


FIG. 1

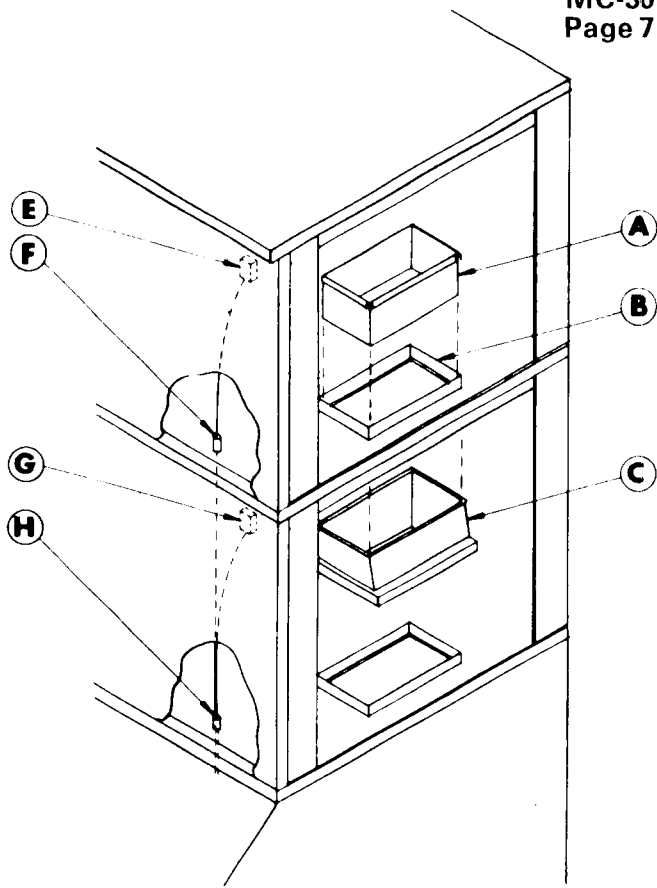


FIG. 2

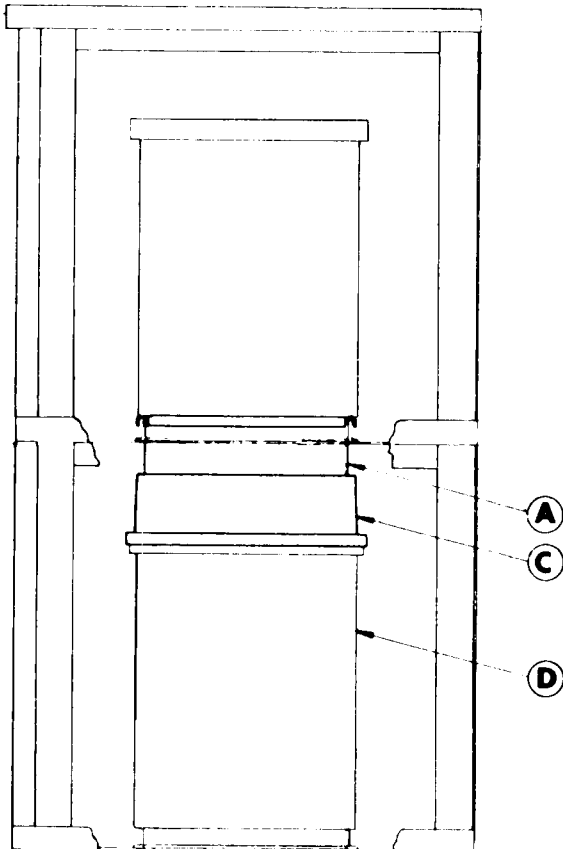


FIG. 3
COMPLETED INSTALLATION

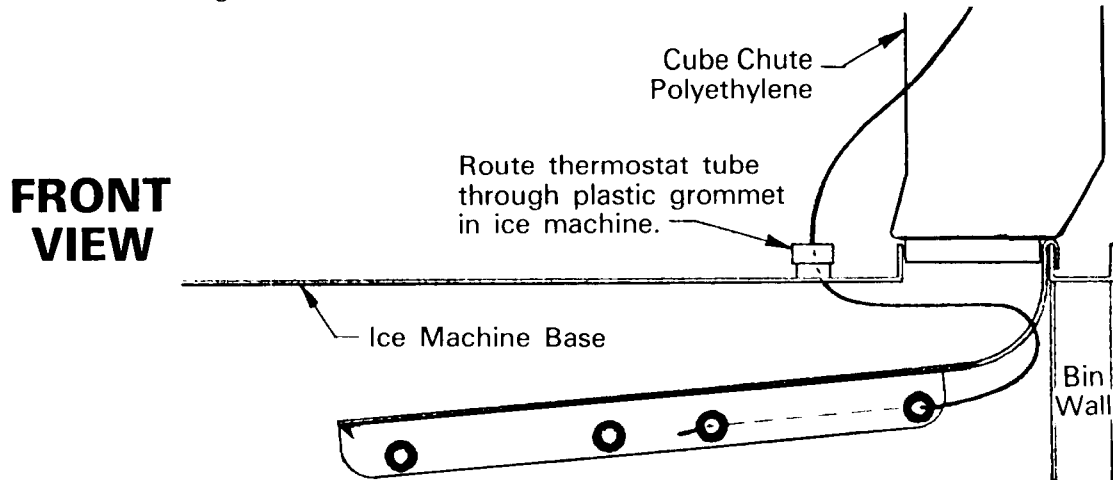
KSC1

STACKING KIT INSTRUCTIONS

1. Remove all panels from both machines. (Top panel of bottom machine may be set aside, as it is not used when machines are stacked) Remove cube chutes from both machines.
2. After mounting bottom cuber to storage bin, place upper machine directly on frame of lower machine. Bolt together with same bolts and holes used in holding machine to crate skid. Fig. 1
3. Insert stainless steel (A) thru cube opening (B) in base of upper cuber. Place stacking kit cover (C) over sleeve as shown and push to top of sleeve. (See Fig. 2)
4. Replace cube chute (D) in bottom cuber and slide cover (C) down over cube chute, as shown in Fig. 3.
5. Route upper machine thermostat bulb (E) thru cap (F) and together with lower machine thermostat bulb (G) push thru cap (H) and feed tubes into combination cube deflector and bulb holder at right side of bin. This will provide two independent ice making systems.
6. Run separate water, drain, and electrical supplies. Test and check out added cuber, ice making, thermostat function, etc.
7. Install cube chute & cover on top machine, and replace panels on both machines.

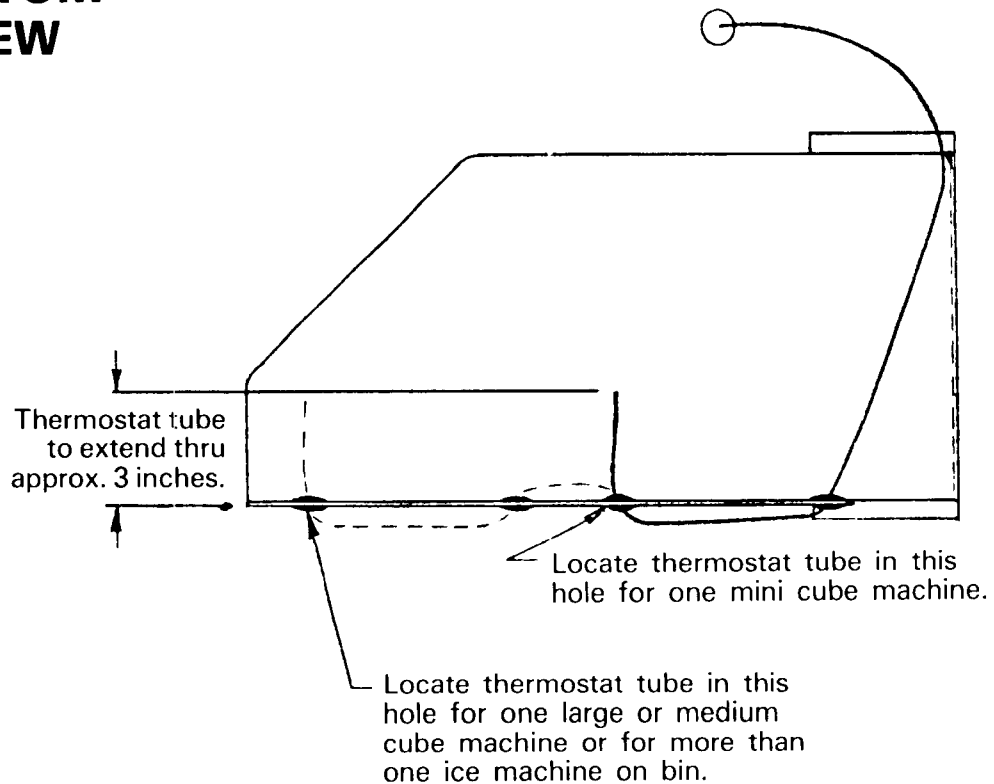
CUBE DEFLECTOR INSTALLATION INSTRUCTIONS

To install cube deflector, ice machine cube chute must be removed so cube deflector can be hooked over flange on base.



BOTTOM VIEW

Thermostat tube to be routed along the underside of the ice machine until it is located under cube deflector.



CAUTION: Thermostat tube can be located in any hole for maximum bin fill. However, when located, the ice machines must shut off before cubes can back up into the cube chute or extensive damage may result.

INSTALLATION LIMITATIONS

ELECTRICAL

1. Scotsman, like most manufacturers, purchases electrical motors that are rated to operate within 10% variance above or below nameplate ratings.

Improper voltages applied to Scotsman equipment can cause premature failures and burnouts. Failures of this type are not considered as factory fault or defect.

AMBIENT

2. **WARNING** – This machine is not designed for outdoor installations. This machine will not operate when air temperatures are below 50° F. or above 100° F.

NOTE: This unit incorporates a "hot gas" defrost system, therefore, it is vitally important that the operation head pressure are in the 135-155 pound PS1 gauge range. Water cooled models pose no problem since pressure can be regulated by adjustment to the water regulating valve.

Air cooled units require a minimum 50° fahrenheit ambient air, otherwise, the hot gas system will not defrost the formed ice cubes, resulting in a freeze up that will ruin the freezer section, necessitating a costly repair.

This unit was not fabricated nor intended to be installed outdoors.

WATER

3. Scotsman Ice Systems require 20 pounds flowing water pressure to operate satisfactorily. Pressures lower than 20 pounds or interruptions in the water supply can cause serious mechanical damage to this product.

This machine will not operate when water supply temperatures are below 40° F. or above 100° F.

ELECTRICAL CONNECTIONS AND CHARACTERISTICS

	Air Cooled	Water Cooled
115 volts, 60 cycle, single phase		
Compressor	25.6 Amperes	25.6 Amperes
Sump Motor	1.3 ea. Amperes	1.3 ea. Amperes
Fan - Air Cooled Models	.80 Amperes	None
Spray Bar Motor	.60 Amperes	.60 Amperes
TOTAL -- Full Load Amperes	28.3 Amperes	27.5 Amperes
Minimum Current Ampacity (Air Cooled)	34.7 Amperes	
Minimum Current Ampacity (Water Cooled)		33.9 Amperes

This unit should be wired to 35 Amp. circuit. Be certain that the Super Cubers are on their own circuit and individually fused. The maximum allowable voltage variation should not exceed 10 per cent of the nameplate rating even under starting conditions. Low voltage can cause erratic operation, and may be responsible for serious damage to the overload switches and motor windings.

All external wiring should conform with National, State and local code requirements. Check the voltage on the line before connecting the machine.

NOTE: All Scotsman cubers require a neutral wire and a solid earth ground wire.

WATER SUPPLY AND DRAIN CONNECTIONS

WATER SUPPLY — Air Cooled Models

The recommended water supply line is 3/8" OD copper tubing for air-cooled units. Connect to a cold water supply line with regular plumbing fittings with a shut-off valve installed in an accessible place between supply line and machine. The water strainer supplied with the unit should be mounted with clean-out plug down. Locate the strainer next to the machine and the arrow in the direction of the flow.

A 3/8" male flare fitting is provided on right rear corner for convenience in hook-up.

WATER SUPPLY — Water Cooled Models

Water Cooled models have separate inlet water supply for the water cooled condenser.

When choosing the water supply for this cuber, consideration should be given to:

- A. Length of run.
- B. Water clarity and purity.
- C. Adequate supply pressures.

Since water is the most important single ingredient in producing ice, you cannot overemphasize the three items mentioned above. Low water pressure (below 20 pounds) may cause malfunction of the unit. Water containing excessive minerals will tend to produce cloudy colored cubes and scale build-up on parts in the water system.

Heavily chlorinated water can be controlled using charcoal or carbon filters.

DRAIN: The recommended drain from the bin is 5/8 inch OD copper tubing. Must be run to an open trapped and vented drain. If drain is a long run, allow 1/4 inch pitch per foot. Drain must be installed to conform with local code. Run separate line for condenser discharge water on water-cooled models. Water supply must be installed to conform with local code. In some cases a licensed plumber and/or a plumbing permit will be required.

FINAL CHECK LIST

1. Is the unit level? (IMPORTANT)
2. Have all electrical and piping connections been made?
3. Has the voltage been tested and checked against the nameplate rating?
4. Have the compressor hold-down bolts been checked to insure the compressor is snug to its mounting pads?
5. Is the water supply valve open and the electric power properly hooked up?
6. All masking tape removed from doors, panels and inner freezer curtain?
7. Is the unit clean? Has storage bin been wiped clean with cold water cloth?
8. Has the owner been given the operating manual, and has he been instructed on to operate the machine?
9. Has the registration form been filled out? Check for correct model and serial numbers from serial plate on unit then promptly mail to factory.
10. Check all refrigerant and conduit lines to guard against vibrations and possible failure.
11. Is there 4" clearance behind and around unit for proper air circulation?
12. Is unit in a room where ambient temperatures are minimum 50° F. even in winter months?
13. Has water supply pressure been checked to insure at least a minimum pressure of 20 pounds?

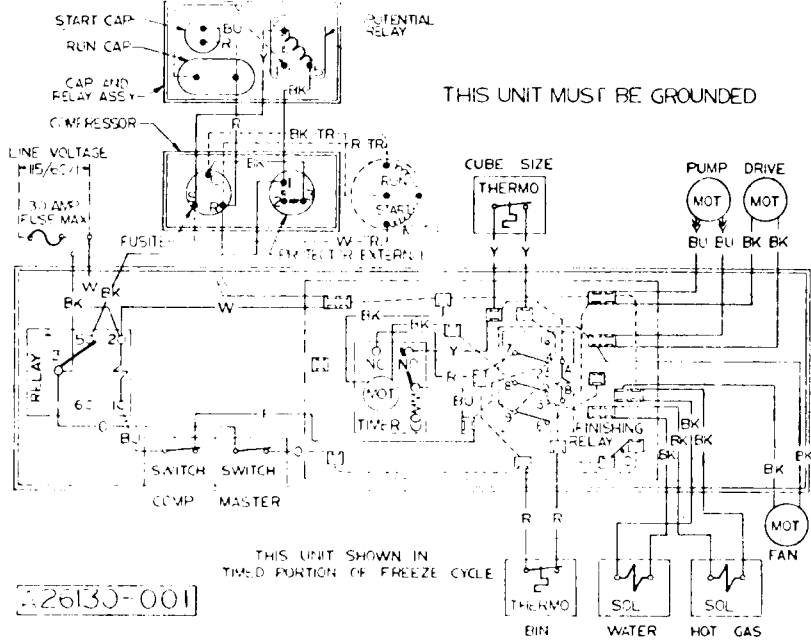
INSTALLATION – START UP

1. After water and electrical hookup is complete, turn time clock knob (protruding thru control box cover) clockwise until you hear the micro-switch actuator arm click into the cam slot. Turn master switch on. (Compressor switch should remain in off position.) At completion of harvest cycle (Approx. 3 minutes after harvest was started), rotate knob clockwise until once again harvest is initiated. At this point compressor switch should be placed in "ON" position. Unit is now ready for automatic operation.

NOTE: All cubers have two manual on-off switches. One is for motor compressor only during cleaning operation, one is master switch for complete unit.
2. When both switches are thrown "on", water inlet solenoid will be energized allowing water to enter cuber, thru solenoid and up into back side of freezer cup section. This will "fill" icemaker for the freezing cycle - Check operation of spray bar drive motor thru hood top panel. Spray bar motor should be running during harvest cycle.
3. NOTE: WATER PUMP OPERATES DURING THE DEFROST CYCLE.
Factory tests prove faster defrost and increased ice capacity by letting this pump operate continually.
4. Time clock dial does not rotate at the end of the harvest cycle; it is started latter by the cube size thermostat control located in the control box.
5. Freezing time will be approximately 20 to 30 minutes in a 70 degree ambient. (Longer if above, and shorter if below.) Average complete cycle time is 25 - 35 minutes.
6. Watch first cube harvest and check to make sure that plastic curtains have not been damaged in shipment. Also that curtains do not swing back into freezer and catch on spray bar.
7. Check size of cubes made: If too small, after a second cycle, adjust cube size control to lower or colder setting - until desired cube size is reached. Normal cube size is with a 1/4" depression in crown.
8. Check texture of cubes made: Partially cloudy cubes throughout suggest unit running short of water near end of freezing, or possibly an extremely bad water condition, which would indicate use of filtering or purifying equipment. Contact SCOTSMAN - Queen Products Division, Ice Machine Service Department, Albert Lea, Minnesota, for further details.
9. With unit on harvest cycle, take a handful of cubes made and hold on storage bin thermostat bulb. Should cut unit off at end of harvest cycle. Remove ice, unit should cut back on automatically in 3 or 4 minutes. Thermostat is factory set at 35 degrees out, 39 degrees in.
10. Install gauges and check head and back pressure: air-cooled models, head pressure after twenty minutes of freezing cycle at 70 degrees ambient will be approximately 125 pounds PSI. The back pressure starts out at approximately 50 pounds PSI and gradually pulls down to approximately 4 pounds PSI just before harvest cycle. Higher ambients and dirty condenser will cause higher pressures. Water-cooled models have water regulating valves factory set at 135 pounds PSI: check reading and adjust if necessary. Back pressure will operate the same as on air-cooled models.
11. Remove gauges, replace control box cover and all service panels.
12. Instruct owner on how to operate and clean machine.

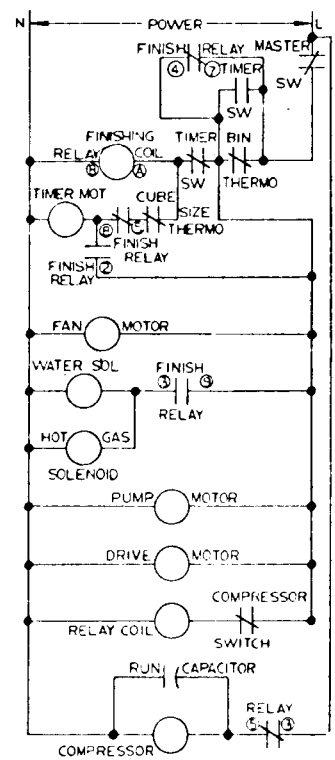
WIRING DIAGRAM
115/60/1
Air Cooled

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



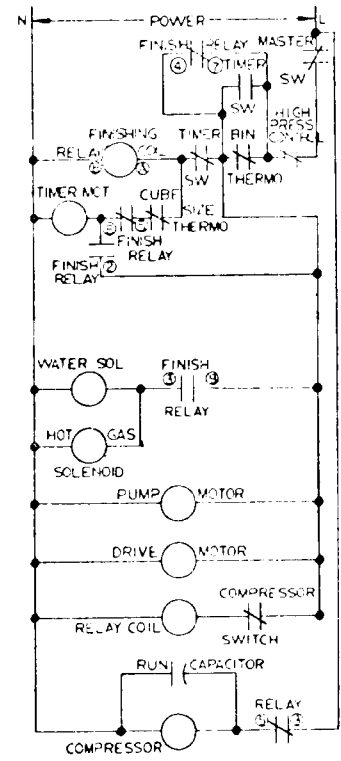
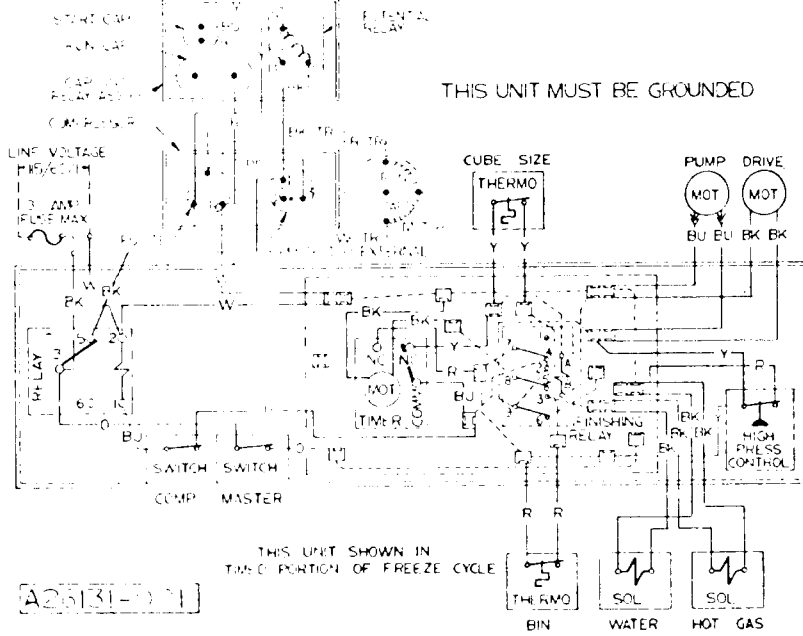
26130-001

THIS UNIT SHOWN IN
TIMED PORTION OF FREEZE CYCLE



WIRING DIAGRAM
115/60/1
Water Cooled

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



ELECTRICAL COMPONENTS AND FUNCTIONS

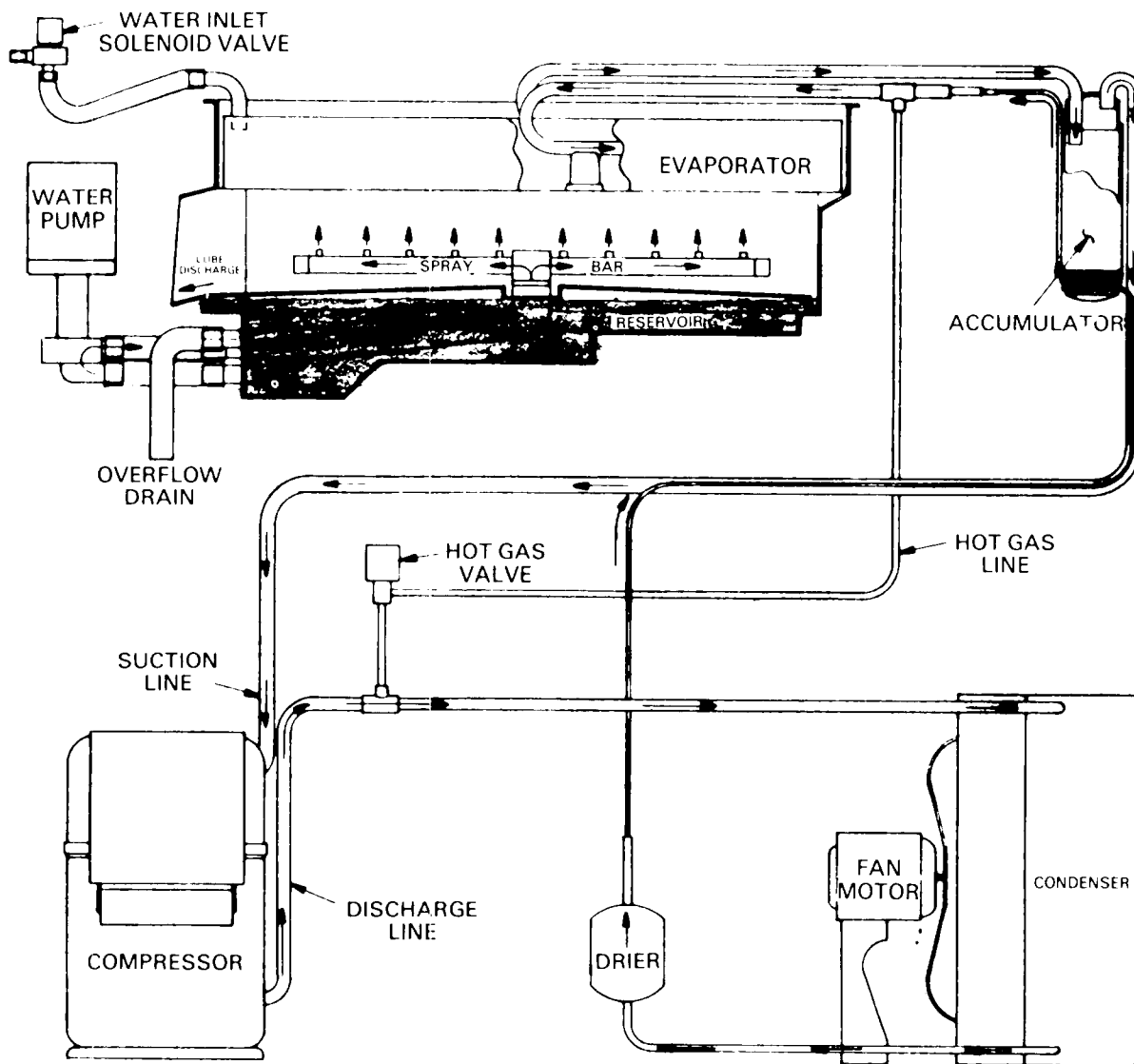
1. Bin Temperature Control: Purpose to automatically maintain a supply of ice in storage.
2. Compressor Toggle Switch: Control compressor ON-OFF only.
3. Master Toggle Switch: Manual ON-OFF of whole machine.
4. High Pressure Control: Cuts unit off in case of interrupted water to condenser. Water cooled models only.
5. Magnetic Contactor: To provide across the line starter of ample carrying capacity.
6. Relay: Function to hold unit in freezing and harvest cycles once they have started. This insures full cubes everytime a harvest occurs and prevents short cycling on bin thermostat.
7. Evaporator Temperature Control: Controls size of ice cube produced by machine. To increase cube size turn control to right. To decrease cube size, turn knob to left.
8. Timer: Function is to control harvest and part of freezing cycle. Timer is energized when reverse acting cube size control closes. Timer continues freezing cycle for 6 minutes and then switches unit into harvest cycle which runs for 2 minutes.
9. Refrigerant Used: R-12. Charge is, 20 oz. for Air Cooled. 18 oz. for Water Cooled.
10. Refrigerant Metering Device: Capillary Tube.

FREEZING CYCLE

As the freezing cycle starts, electrically the components operating are the compressor and fan motor, recirculating water pump and the sprayer tube drive motor.

During this portion of the freezing cycle the electrical brain is the reverse acting, cube size thermostat. This thermostat electrically is holding the freezing cycle components "live". When the ice cubes are about 3/4 formed, the decreasing suction pressure and temperature, activate the temperature sensing bulb of the reverse acting, cube size control, closing its contacts. This does not interrupt the freezing cycle, the closing of cube size thermostat contacts electrically transfers the finishing of the freezing cycle to the finishing clock motor or timer as it is sometimes called. One full revolution of the timer dial is 8 minutes. However, of the total 8 minutes on the timer dial, 2 minutes are used for the defrost or harvest cycle.

This means then that after the cube size contacts close they activate the timer motor. This control takes over and continues freezing cycle for another 6 minutes with timer dial now turning. When the 6 minutes are completed, an offset in the timer dial allows a micro switch with activating arm riding on that cam to drop into the slot, electrically stopping the freezing cycle and starting the 2 minutes harvest cycle - the clock motor continues thru harvest cycle. A notch on the timer dial now lifts micro switch arm up on dial, electrically stopping harvest cycle and starts back into a new freezing cycle.



SYMPTOM	POSSIBLE CAUSE	SUGGESTED CORRECTION
Unit will not run.	Blown fuse Bin thermostat set improperly Switch in Off position Inoperative master switch Timer contacts open	Replace fuse & check for cause of blown fuse. Replace. Turn switch to On Position. Replace switch Replace timer micro-switch
Compressor cycles intermittently	Low voltage Dirty condenser Air circulation blocked Inoperative condenser fan motor Non-condensable gases in system.	Check circuit for overloading. Check voltage at the supply to the building. If low, contact the power company. Clean with vacuum cleaner, air or stiff brush. (DO NOT use wire brush.) Allow sufficient air space all around unit. Check to see if defective, If defective, replace. Purge the system.
Cubes too small	Cube size control set too high Partially restricted capillary tube Moisture in system Shortage of water Shortage of refrigerant	Lower the setting. Turn towards colder. Blow charge, add new gas & drier, after evacuating system with suction pump. Same as above. See remedies for shortage of water. Check for leaks and recharge.
Cloudy cubes	Shortage of water Dirty water supply Accumulated impurities	See remedies for shortage of water. Use water softener or water filter. Use SCOTSMAN Ice Machine Cleaner.
Shortage of water	Water spraying out through curtains Water entering system too slowly Partial restrictions in water strainer.	Hang curtain in proper position. Check pressure at source - 20 lb. required. Dirt in solenoid and flow control - blow out. Clean Strainer.
Irregular size cubes and some cloudy	Some jets plugged Shortage of water Unit not level	Clean jets. See Shortage of Water Water overflowing air vent holes on low side burning cubes. Level as required.

SYMPTOM	POSSIBLE CAUSE	SUGGESTED CORRECTION
Cubes too large	Cube size control turned too cold	Turn setting on cube size control dial towards warmer
Decreased ice capacity	<p>Inefficient compressor</p> <p>High head pressure</p> <p>Non-condensable gas in the system</p> <p>Poor Air circulation or excessively hot location</p> <p>Overcharge of refrigerant</p> <p>Partially restricted cap tube</p>	<p>Replace.</p> <p>Dirty condenser. Clean. Bad fan motor. Replace.</p> <p>Purge the system.</p> <p>Relocate the unit, or provide for ventilation by cutting openings.</p> <p>Correct the charge. Purge off slowly.</p> <p>Purge & replace charge and drier</p>
Hole washed inside cube	Water over the top of the cube cups during harvest.	Level unit.
Poor harvests	<p>Too short defrost time</p> <p>Restriction in incoming water line.</p> <p>Insufficient quantity of hot gas.</p> <p>Water solenoid valve not opening.</p> <p>Air vent holes in upper cube cups plugged</p>	<p>Check and adjust harvest cycle. Timer should be set at 2 minutes.</p> <p>Check water feed line strainer and flow reducing valve. Do not remove flow control washers.</p> <p>Cold ambient - must be 50° minimum.</p> <p>Solenoid binding or burned out. Replace.</p> <p>Clean out holes.</p>
Unit won't Harvest.	Insufficient water pressure to ice maker.	Machine requires minimum of 20 lbs. flowing water pressure.
Excessive Water in Unit base	<p>Cube chute not positioned correctly.</p> <p>Water tubing leaking (Check during freeze & harvest cycle)</p>	<p>Reposition so that bottom edge of cube chute rests inside of cube guide soldered to the base.</p> <p>Check. Tighten or replace.</p>

MAINTENANCE PROCEDURES SECTION

WARNING: ALL STEPS LISTED BELOW SHOULD ONLY BE STARTED WHEN WATER AND ELECTRICAL SUPPLY ARE OFF TO PREVENT ACCIDENTS.

- A. To remove Cabinet top.
 - 1. Remove 4 screws in top of panel.
 - 2. Lift panel off unit.
- B. To remove cabinet front.
 - 1. Remove 2 screws in top front of panel.
 - 2. Tip top of panel back approximately 6" and lift up.
- C. To remove end panels.
 - 1. Remove 2 screws from top of panel.
 - 2. Tip top of panel back 6" and lift up.
- D. To remove water pump.
 - 1. Remove right end panel and front panel.
 - 2. Remove cube chute. (Tip top of cube chute out and lift up. When reinstalling, be sure cube chute rests inside of guide soldered to base.)
 - 3. Drain water from freezer sump tank. (Drain tube is connected to plug on pump.)
 - 4. Trace electrical leads to control box and disconnect.
 - 5. Disconnect hose clamps at upmp body. Disconnect pump
 - 6. Remove mounting bolt and mounting strap.
 - 7. Remove Pump.

NOTE: Screw clamps should be installed on pump discharge tube when unit is reassembled.

- E. To remove water inlet solenoid valve.
 - 1. Remove right end panel.
 - 2. Disconnect electrical leads.
 - 3. Disconnect water inlet line from machine.
 - 4. Remove valve.
- F. To remove agitator motor.
 - 1. Remove front panel, right end panel and top panel if possible.
 - 2. Trace leads to control box and disconnect.
 - 3. Remove cube chute (Tip top of cube chute out and lift up. When reinstalling be certain cube chute rests inside of guide soldered to base.)
 - 4. Reach in thru curtained opening and remove spray bar by lifting upward releasing bar from center hub. Next remove drive fork from drive shaft attached to motor. (NOTE: Drive fork has left hand threads and must be removed with drive extension to motor if top panel is not removed from unit.)
 - 5. Remove 4 screws holding drive motor to freezer top.
 - 6. Remove drive motor.
- G. To remove Cube size control.
 - 1. Remove front panel and right end panel.
 - 2. Remove 2 screws mounting control to corner gusset.
 - 3. Trace capillary tube to suction line and peel back insulating tape.

NOTE: do not make any adjustments on new control until control bulb has been reinsulated to suction line.

H. To remove bin control.

1. Remove front panel and right end panel.
2. Remove 2 screws holding control to corner gusset.
3. Trace capillary tube to insure new control capillary tube is routed in same manner.

NOTE: do not attempt to adjust this control. If storage bin is not filling to the capillary or is filling above the capillary into the cube chute, the control should be replaced.

I. To remove plastic curtain.

1. Remove right end panel.
2. Remove plastic cube chute. (Tip top of chute out and lift up. When reinstalling be certain cube chute rests inside of cube guide soldered to the base.)
3. Pull off 3 retainer clips holding curtain in place.

NOTE: When reinstalling curtain be certain the side with the extruding point is positioned towards the left of opening. Also, that the edge of the curtain lines up with the upper edge of the freezer opening.

J. To remove spray bar.

1. Remove right end panel.
2. Remove cube chute. (Tip top of cube chute out and lift up.)
3. Remove plastic curtain.
4. Reach thru ice opening and feel for spray bar.
5. Follow spray bar to center hub, turn spray bar so one end points towards curtain opening.
6. Lift straight up on spray bar, then out after spray bar comes off center hub.

K. To remove freezing chamber sump tank.

1. Remove front panel and right end panel. If possible, remove top panel.
2. Remove agitator motor. NOTE: It is not necessary to disconnect electrical leads in control box.
3. Remove drive fork from spray bar drive in freezing chamber.
4. Remove tygon tubes from pump to freezing chamber and set aside.
5. Remove harvest water fitting from top corner of freezing chamber assy.
6. Remove cube chute.
7. Disconnect water line from flow control to freezer.
8. Remove 4 screws holding freezer to back panel.
9. Remove front bracket attached to freezing chamber.
10. Lift whole freezing chamber up and out.

NOTE: When replacing the foamed plastic chamber, with a new plastic chamber, it is necessary to drill holes thru the front freezer bracket and the back panel into the bracket foamed onto the freezer assy. Drill depth must not exceed 3/8". Freezer assy should slope 3/8" down towards the ice cube opening.)

FUNCTIONAL PARTS AND MAINTENANCE

PART NAME: Spray Bar Assembly

NUMBER: A-25480-001

FUNCTION: This tube acts as a water distributor for the ice cube cups. The tube has jets over its length. Supply water is forced into the jet tubes by the sump pump and is directed upward in a continuous stream. Drive motor thru drive shaft rotates the spray bar to get a full coverage spray.

REPAIRABLE: No.

MAINTENANCE: All jets should be cleaned by running Scotsman Ice Machine Cleaner through unit. This step will eliminate hand cleaning. Partially plugged jets will produce cloudy or partial cubes. Wholly plugged jet will not produce a cube in cube cups it normally covers.

PART NAME: Spray Tube Drive Fork.

NUMBER: 02-2194-01

FUNCTION: Drives spray tube during freezing cycle to produce clear cubes and also drives spray tube during harvest cycle to eject cubes thru ice opening.

REPAIRABLE: No. Replace defective parts. Left hand thread.

MAINTENANCE: None.

PART NAME: Relay — Ameco or Potter Brumfield — 2 P.D.T.

NUMBER: 12-1879-02

FUNCTION: Relay is used as a by-pass on the bin thermostat when it tries to cut unit off on a full bin of cubes during a freezing cycle. This insures full cubes every time a harvest occurs and prevents short cycling on bin thermostat.

SETTING: Factory set.

REPAIRABLE: No. Replace when inoperative.

MAINTENANCE: Check electrical connections.

PART NAME: Bin Thermostat.

NUMBER: 11-353-3

FUNCTION: To automatically cut machine off when ice level in storage bin reaches thermobulb. Automatically starts machine when ice level in bin falls below bulb location.

SETTING: Factory set.

REPAIRABLE: No. Replace when inoperative or out of adjustment.

MAINTENANCE: Check capillary for cracks or worn spots due to vibration.

PART NAME: Inlet Water Solenoid
NUMBER: 12-1900-07
FUNCTION: During freezing cycle this valve is closed, keeps water from entering sump tank and also from leaking out of tank.
During harvest or defrost cycle this valve opens and allows inlet water to pass thru flow control orifice and thence to push water across back of cup molds, to assist the hot gas in defrosting cubes.
SETTING: Factory set. (.75 gallons per minute flow rate.)
REPAIRABLE: Yes.
MAINTENANCE: Flush control each six months.

PART NAME: Fan Motor.
NUMBER: 12-1681-01 ESPL-16EMI
Electric Motor Specialties Co.
FUNCTION: Maintain proper head pressures by circulating air across air cooled condenser.
REPAIRABLE: No.
MAINTENANCE: None.

PART NAME: Water Regulating Valve (Water Cooled Models only).
NUMBER: 11-198-02 — Penn or Singer.
FUNCTION: To maintain constant head pressures by regulating amount of incoming water thru water cooled condenser.
REPAIRABLE: No, however, valve can be flushed out.
MAINTENANCE: None.

PART NAME: Hermetic Motor Compressor — Copelaweld SSC4-0100-CAA
NUMBER: 18-4200-01
FUNCTION: Circulates and retrieves refrigerant throughout entire system.
MAINTENANCE: Keeps clean and free of dust, grease, etc.

PART NAME: Contactor - Relay
NUMBER: 12-419-
FUNCTION: Across the line contactor used to provide protection for hi voltage compressor only. Contactor is wired so any of the controls in pilot circuit such as bin thermostat will cause contactor holding coil to drop contact points when actuated. There are no overloads or resets on this control.
SETTINGS: Factory set, no adjustments necessary.
REPAIRABLE: No. Replace.
MAINTENANCE: Check control for loose electrical connections and blow free any dust, dirt, etc.

PART NAME: Reverse Acting Temperature Control - Cube Size
NUMBER: 11-345-02
FUNCTION: Reverse acting temperature control, closes on temperature decrease, opens on temperature rise. Control determines length of freezing cycle and by the same token, the cube size. A lower setting on control will produce larger cubes, a higher setting, smaller cubes, This control actuates time clock motor, which then takes over balance of freezing cycle (6 minutes) and also defrosts period 2 minutes.
SETTINGS: Adjustable by screw driver slot.
REPAIRABLE: No. Replace when inoperative.
MAINTENANCE: Check electrical connections. Blow points free of dust, dirt, lint, etc.

PART NAME: Sump Pump
NUMBER: 12-1930-01
FUNCTION: Recirculating pump used to pump supply water in reservoir to jet tube during freezing cycle and harvest cycle.
SETTING: Factory set.
REPAIRABLE: Yes, see parts breakdown.
MAINTENANCE: Flush out reservoir and sump pump intake with Scotsman ice machine cleaner.

PART NAME: High pressure cut out control.
NUMBER: 11-388-02 Water cooled models.
S.P.S.T. Manual reset - Adjustable.
FUNCTION: Control opens at 250 pounds PSIG due to interruptions in water supply.
MAINTENANCE: None.

PART NAME: Agitator Drive Motor — Merkle Korff

NUMBER: A24656-001

FUNCTION: This motor is used to drive the linkage mechanism which in turn drives the rotating jet spray tubes. This provides a constant spray movement to all the inverted cube molds and by so doing also aerates the water producing clear, solid Scotsman cubes. Also ejects cubes thru ice opening during harvest cycle.

SETTING: No settings on motor.

REPAIRABLE: Yes - to some extent. Not recommended although front bearings and windings could possibly be replaced by electric motor shop. Normally replace motors.

MAINTENANCE: Oil every six months or less as use indicates. Use SAE 20 oil. There are two wick oil cups on the motor and a gear case slotted screw which has to be removed to add or change oil in gear case proper. Drive linkage should be inspected to insure free movement with no bindings or drag on drive motor.

PART NAME: Time-Finishing Clock — Assembled by Queen Products Div.

NUMBER: 12-1980-01

FUNCTION: Heart of cyclematic control system is the reverse acting cube size control, No.11-345-02, and the time clock it actuates. All electrical components are connected to the time clock terminal board and are shunted by means of a double pole single throw micro-switch to either the freezing cycle or harvest cycle. Micro-switch is in turn actuated by a cam that is directly connected to the electric timer clock motor. Timer has 8 minute cycle, 6 minutes on freezing cycle after being cut on by lo temperature control and 2 minutes on defrost cycle.

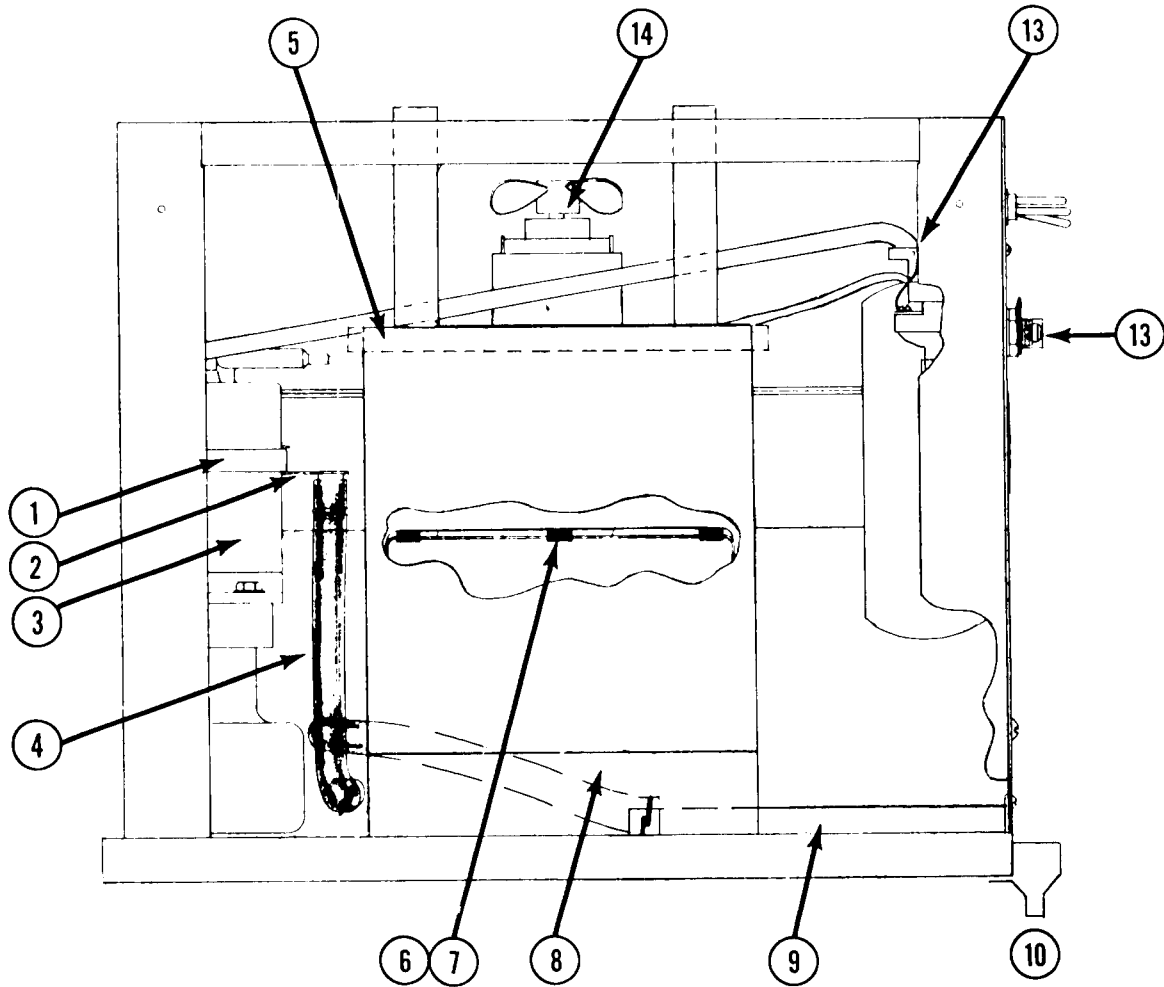
The cam assembly on the timer consists of two discs which can be adjusted to lengthen or shorten the defrost cycle. consists

SETTING: Normal setting for defrost is 2 minutes.

REPAIRABLE: No - replace.

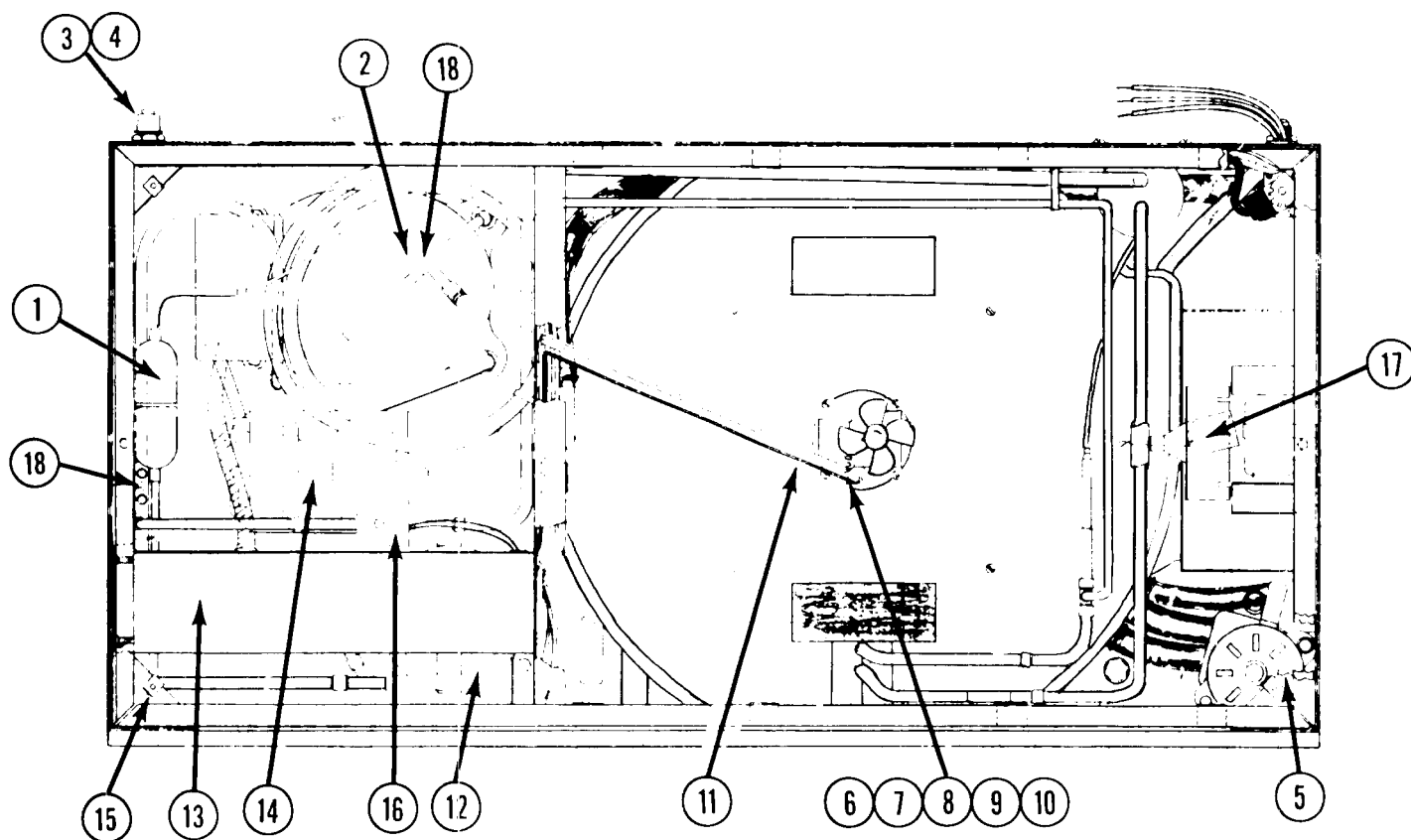
MAINTENANCE: Check all electrical connections, blow contact points free of dust, dirt, etc.

MC30 RIGHT END VIEW



ITEM NO.	PART NO.	DESCRIPTION
1.	2-706	Clamp
2.	A24056-1	Tube Bracket
3.	12-1930-01	Water Pump
4.	13-674-7/per ft.	Tube
5.		
6.	3-1526-1	Curtain Clips
7.	2-2038-1	Curtain Assy.
8.	02-2148-01	Cube Chute/with cover
9.		Sump Drain
10.	02-2296-01	Drain Cup
13.	12-1900-07	Water Inlet Solenoid
14.	A24656-001	Agitator Motor

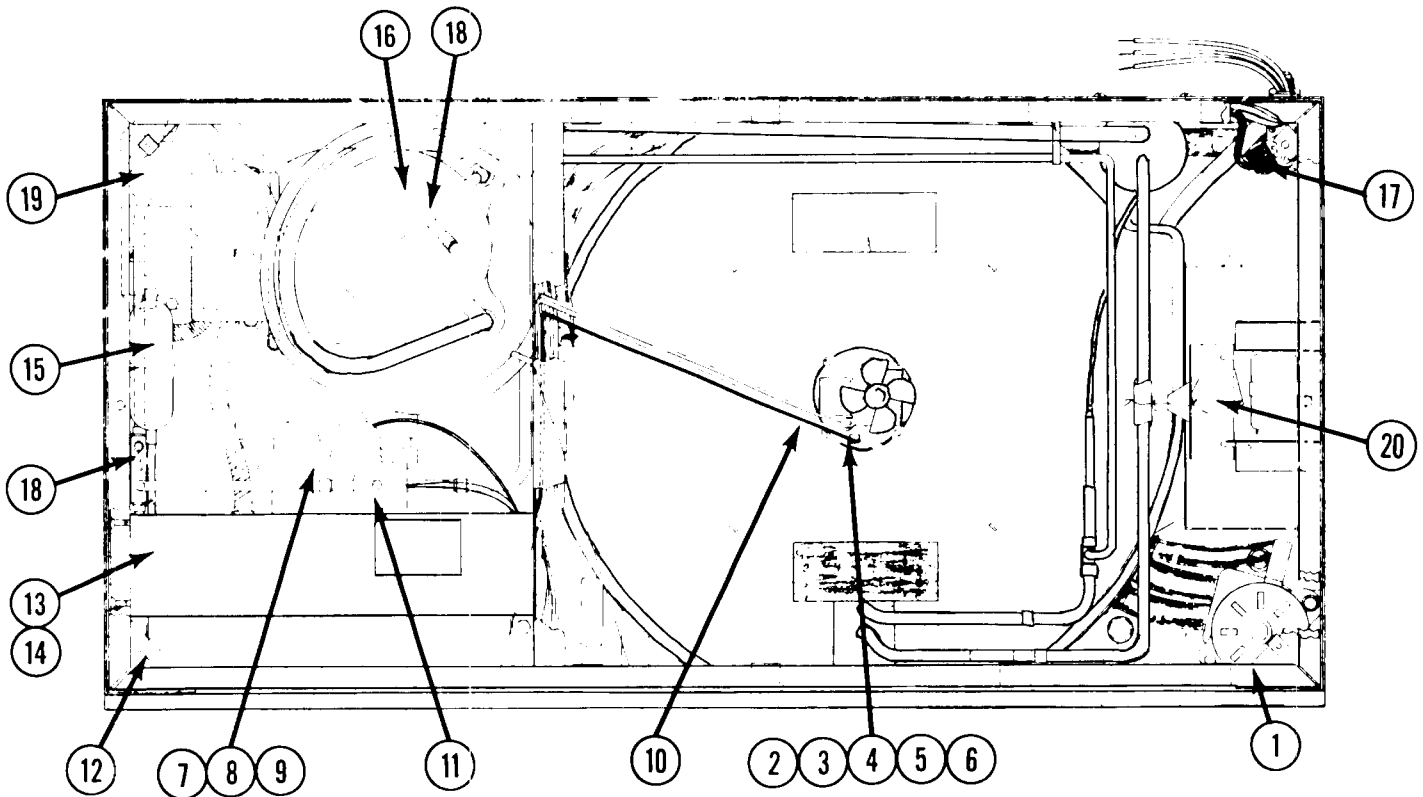
MC30 WATER COOLED
Top View



ITEM NO. PART NO. DESCRIPTION

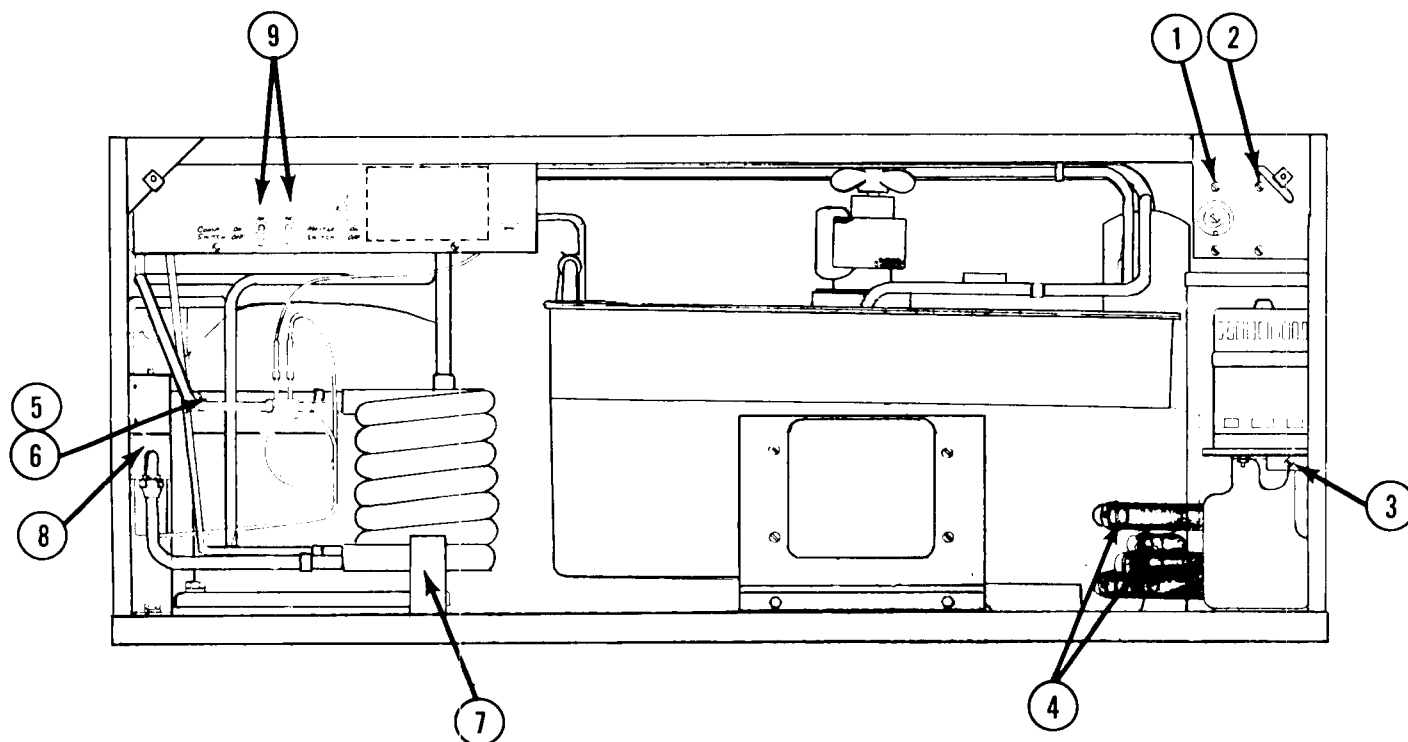
1.	2-544-1	Drier
2.	18-4200-01	compressor
3.	3-1409-6	Fiber Washer
4.	3-1394-1	Pal Nut
5.	12-1930-01	Water Pump
6.	A24656-001	Agitator Mtor
7.	A23830-1	Drive Shaft
8.	2-2194-01	Drive Arm Assy.
9.	3-1403-6	Screw
10.	13-176	Drive Motor Gasket
11.	A23835-01	Wire Guard No Longer Used.
12.	18-3306-02	Water Cooled Condenser
13.		Control Box
14.		Capacitor - Relay Ass'y. See page 35.
15.	3-1423-02	Speed Nut
16.	12-2023-01	Hot Gas Solenoid
17.	02-2296-01	Base Drain Cup.
18.		Service Valve Ports

MC30 AIR COOLED
Top View



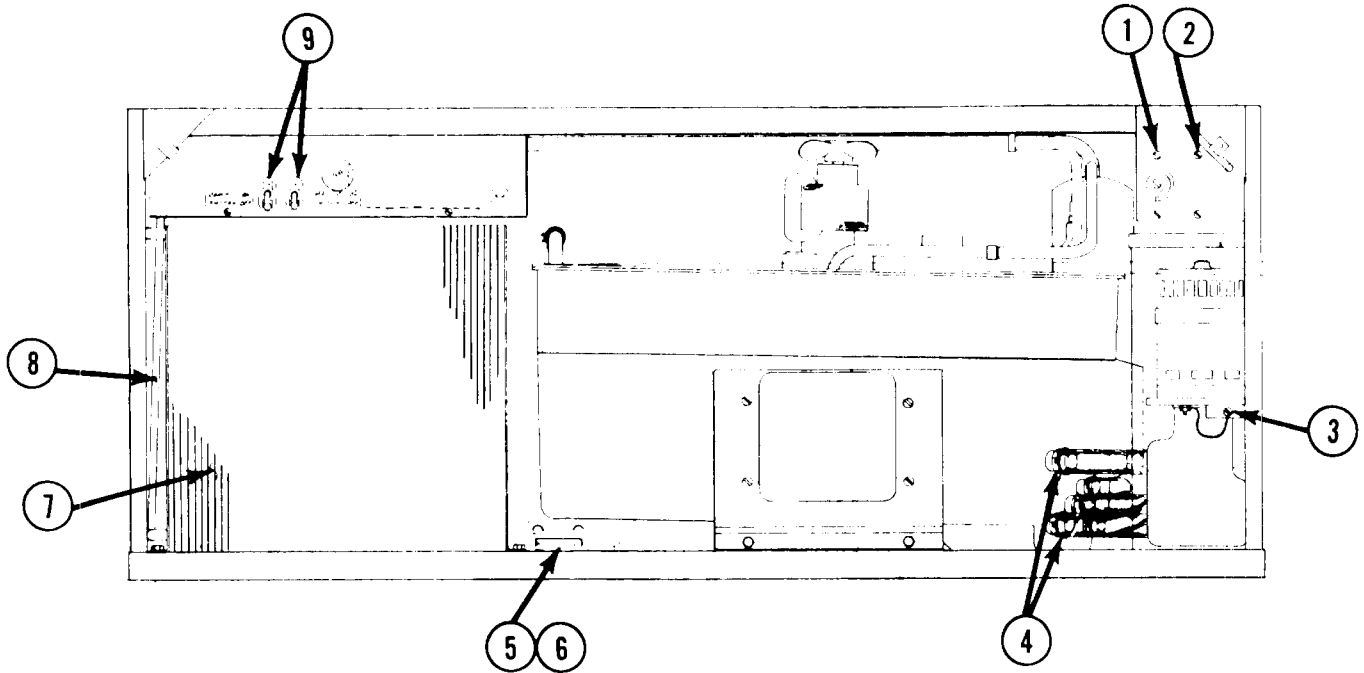
ITEM NO.	PART NO.	DESCRIPTION
1.	12-1930-01	Water Pump
2.	A24656-001	Agitator Motor
3.	A23830-1	Drive Shaft
4.	3-1403-6	Screw
5.	13-176	Drive Motor Gasket
6.	2-2194-01	Drive Arm Assy.
7.	12-1681-1	Fan Motor
8.	18-625-00	Fan Blade
9.	A25548-01	Fan Motor Bracket
10.	A23835-01	Wire Guard
11.	12-2023-01	Hot Gas Solenoid
12.	3-1423-02	Speed Nut
13.	18-3703-01	Condenser
14.	A23825-01	Condenser Shroud
15.	2-544-1	Drier
16.	18-4200-01	Compressor
17.	12-1900-07	Water Inlet Solenoid
18.		Service Valve Ports
19.		Capacitor - Relay Assy. See Page 35.
20.	02-2296-01	Base Drain Cup

MC30 WATER COOLED
Front View



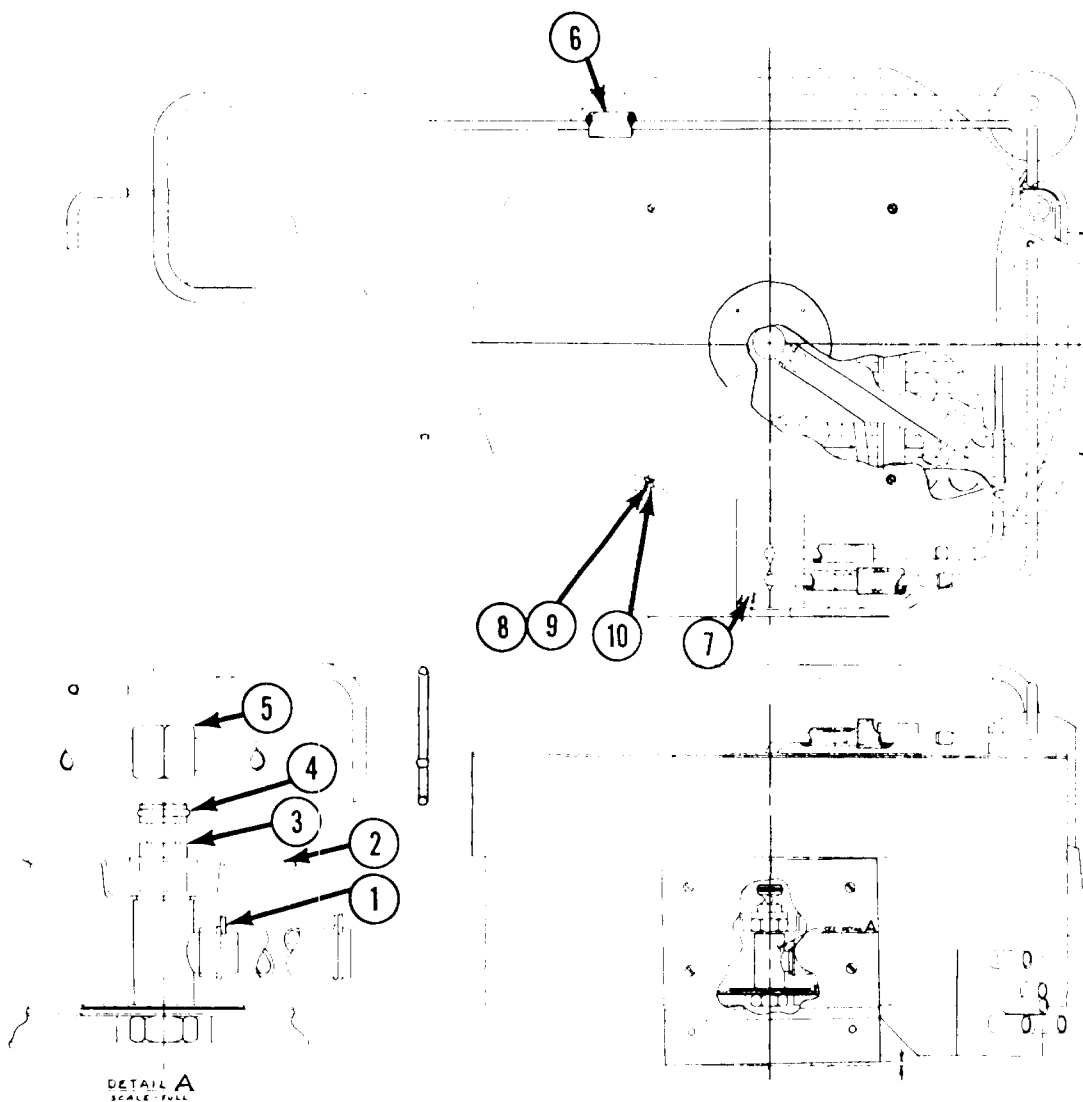
ITEM NO.	PART NO.	DESCRIPTION
1.	11-0345-02	Cube Size Control
2.	11-353-03	Bin Thermostat - All
3.	12-1930-01	Water Pump
4.	2-1358	Hose Clamps (4)
5.	16-560	Service Valve Core
6.	16-563	Service Valve Cap
7.	18-3306-02	W.C. Condenser
8.	11-198-02	Water Regulating Valve
9.	12-426-01	Toggle Switches

MC30 AIR COOLED
Front View



ITEM NO.	PART NO.	DESCRIPTION
1.	11-345-02	Cube Size control
2.	11-353-03	Bin Thermostat - All
3.	12-1930-01	Water Pump
4.	2-1358	Hose Clamps (4)
5.	16-560	Service Valve Core
6.	16-563	Service Valve Cap
7.	18-3703-01	Consenser
8.	A23825-01	Condenser Shroud
9.	12-0426-01	Toggle Switches

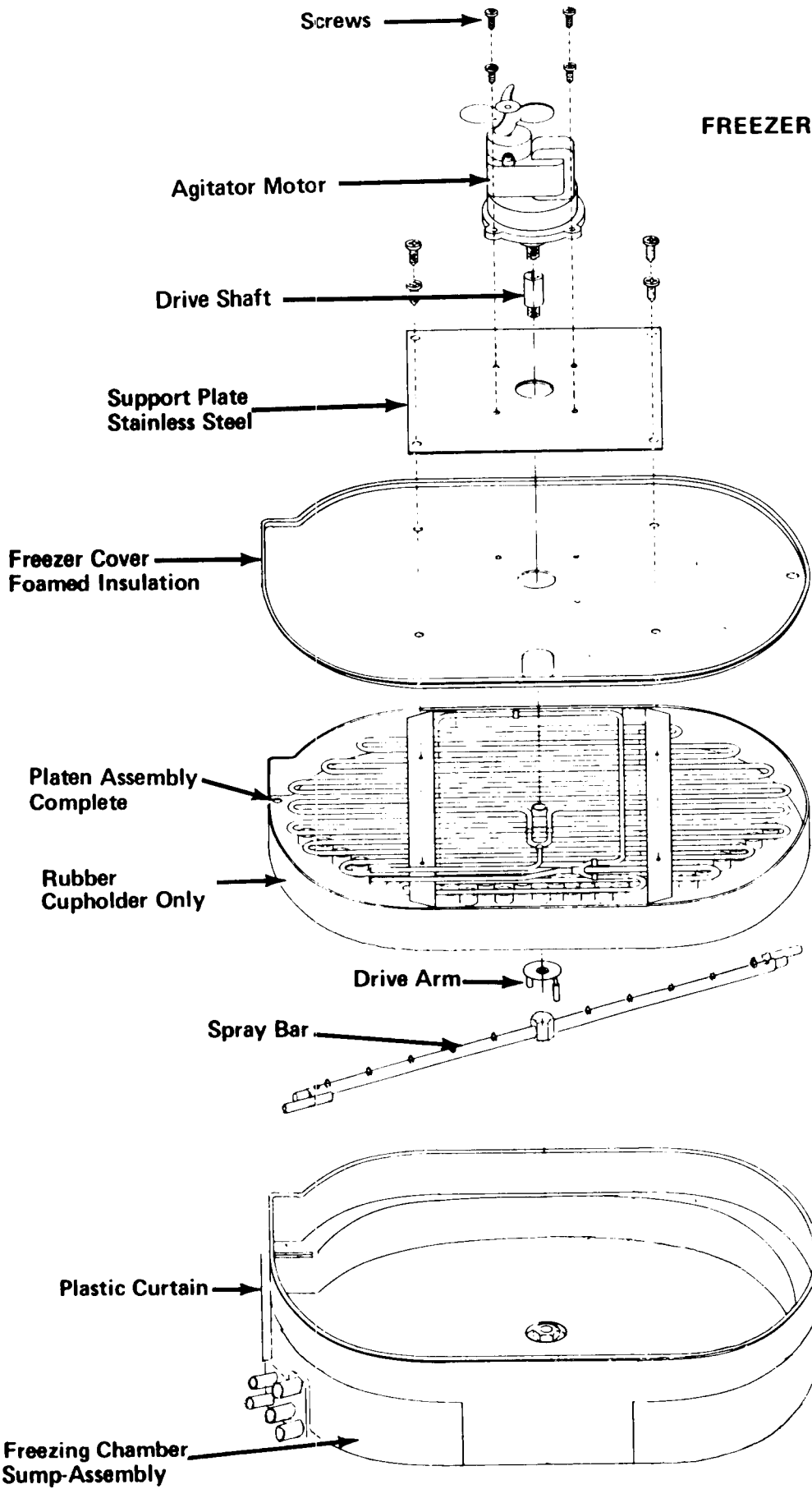
MC30 FREEZER ASSEMBLY



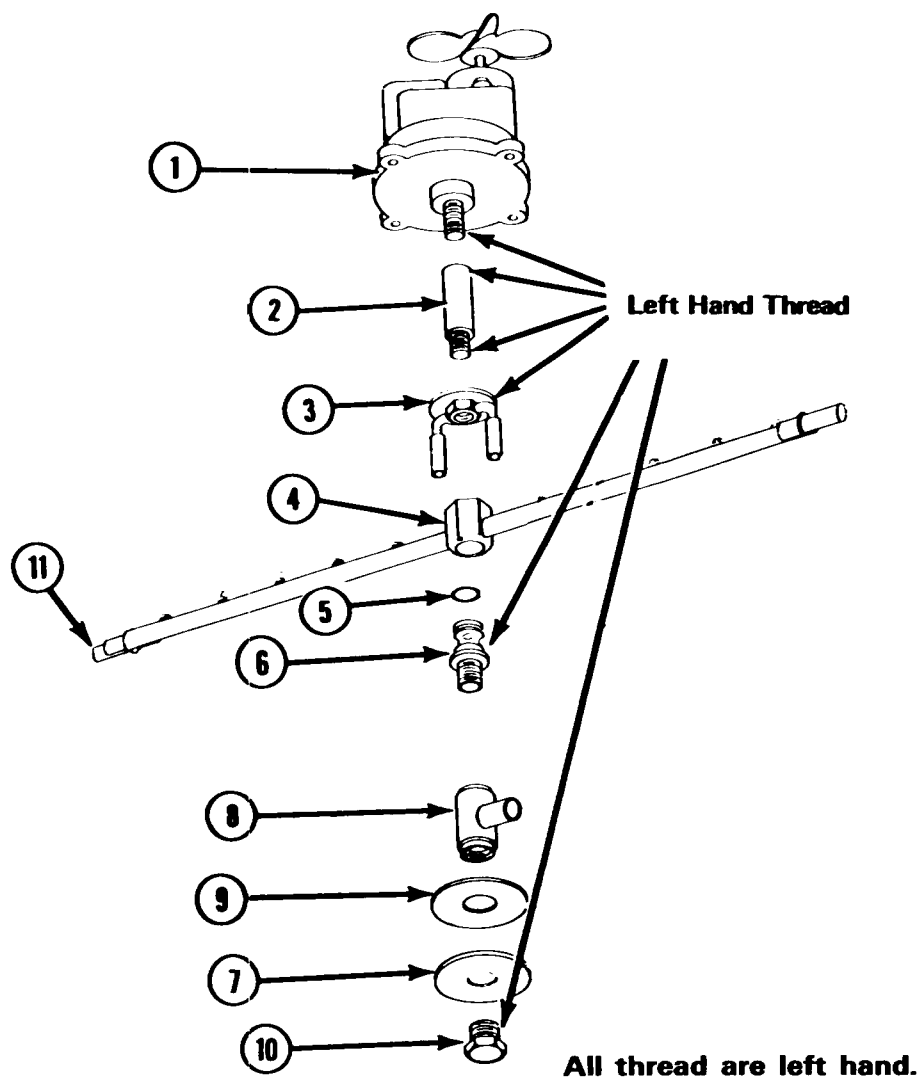
DETAIL A
SCALE: FULL

ITEM NO.	PART NO.	DESCRIPTION
1.	2-1358-01	Hose Clamps
2.	02-2028-01	Inner Bottom
3.	02-2120-01	Spray Bar Bearing
4.	13-0617-25	O-Ring
5.	A25480-01	Spray Bar
6.		Rubber Insulation
7.	2-2065-02	Hole Plug
8.	3-1422-04	Speed Nut
9.	A24830-01	Centering Washer
10.	3-1404-10	St. St. Screw

FREEZER - SPRAY DRIVE

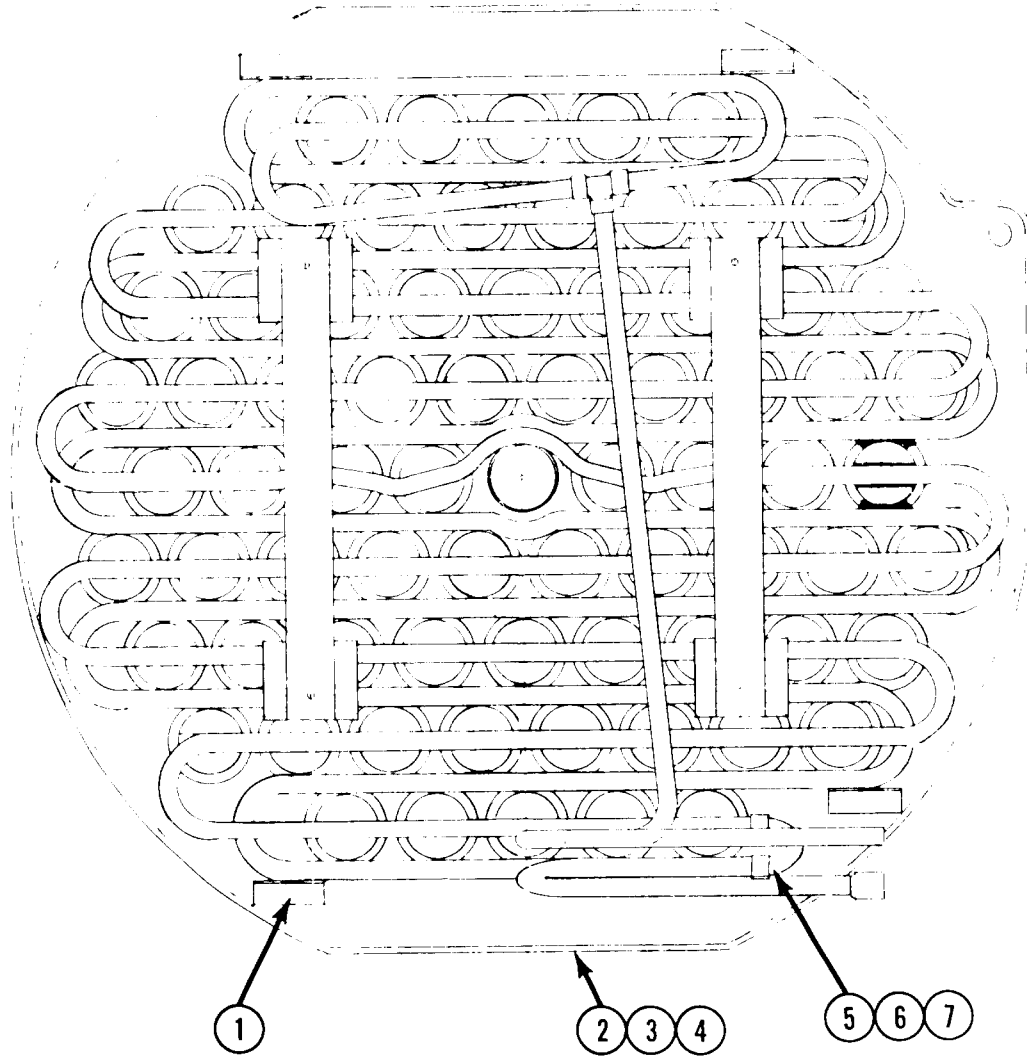


**MC30 CUBER
DRIVE ASSEMBLY**



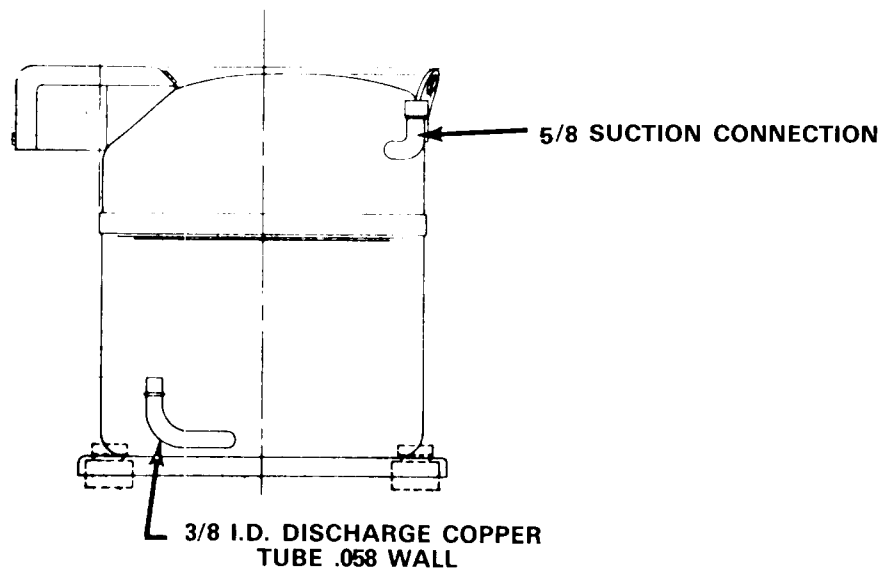
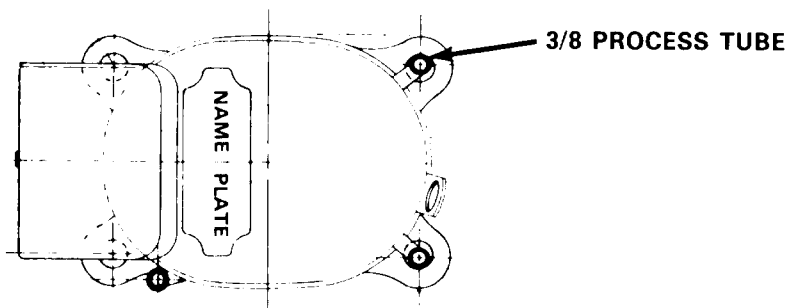
ITEM NO.	PART NO.	DESCRIPTION
1.	A24656-001	Agitator - Drive Motor
2.	A-23830-01	Drive Shaft
3.	2-2194-01	Drive Fork
4.	A25480-001	Spray Bar
5.	13-0617-25	O-Ring
6.	2-2120-01	Jet Bearing Shaft
7.	03-1409-11	Rubber Washer
8.	2-2121-01	Inlet Housing Assy.
9.	A-23827-001	Support Plate
10.	2-2122-01	Bottom Pan Plug
11.	13-0653-00	Rubber Tips

**PLATEN ASSEMBLY
MC30 Series**



ITEM NO.	PART NO.	DESCRIPTION
1.		Coil Support
2.	13-756-01	Rubber Cupholder MC30 S
3.	13-757-01	Rubber Cupholder MC30 M
4.	13-758-01	Rubber Cupholder MC30 L
5.	A-23803-002	Cup Platen For MC30 S
6.	A-23880-002	Cup Platen For MC30 M
7.	A-24129-002	Cup Platen For MC30 L

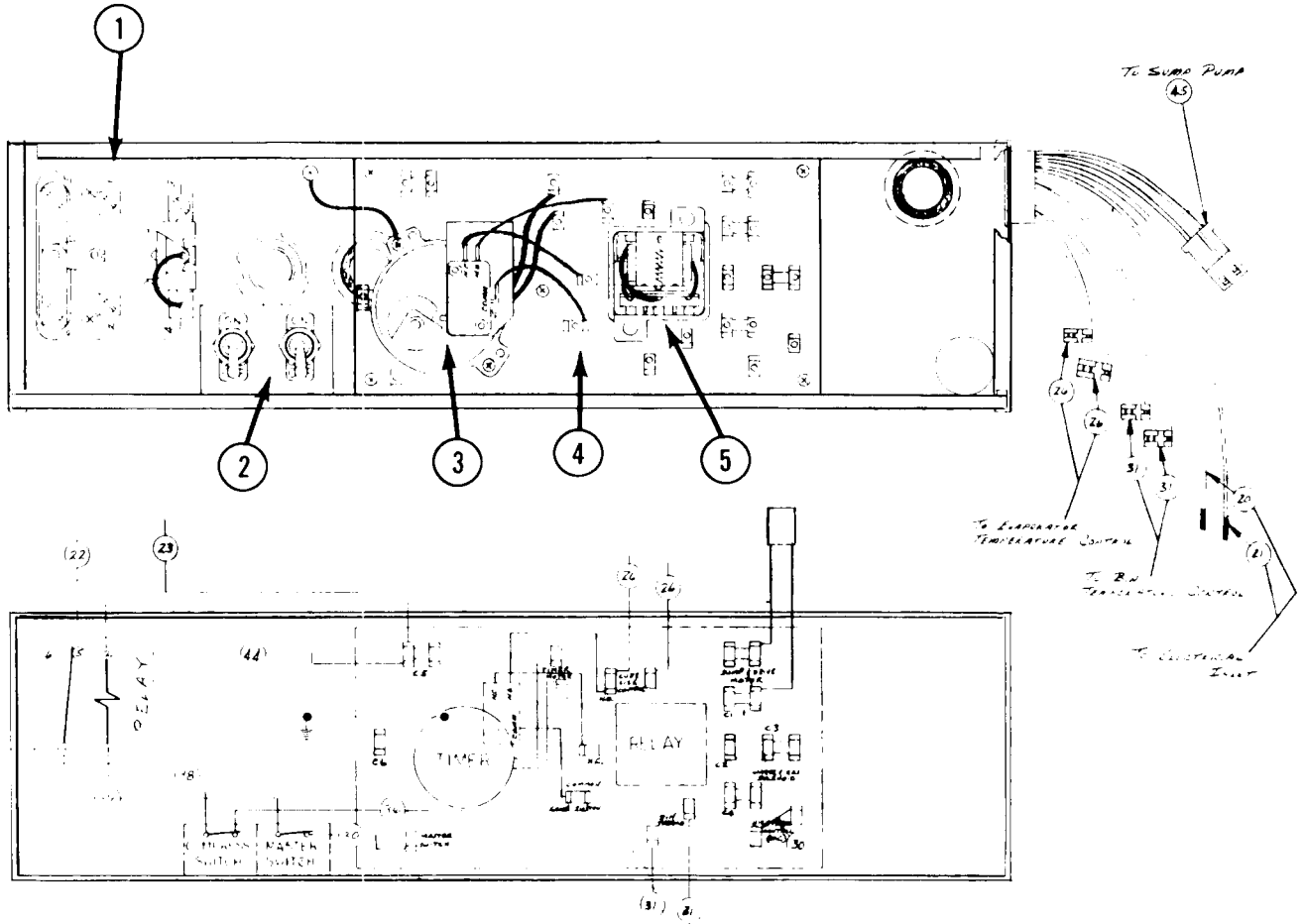
COPELAWELD COMPRESSOR
3500 RPM



115/60/1

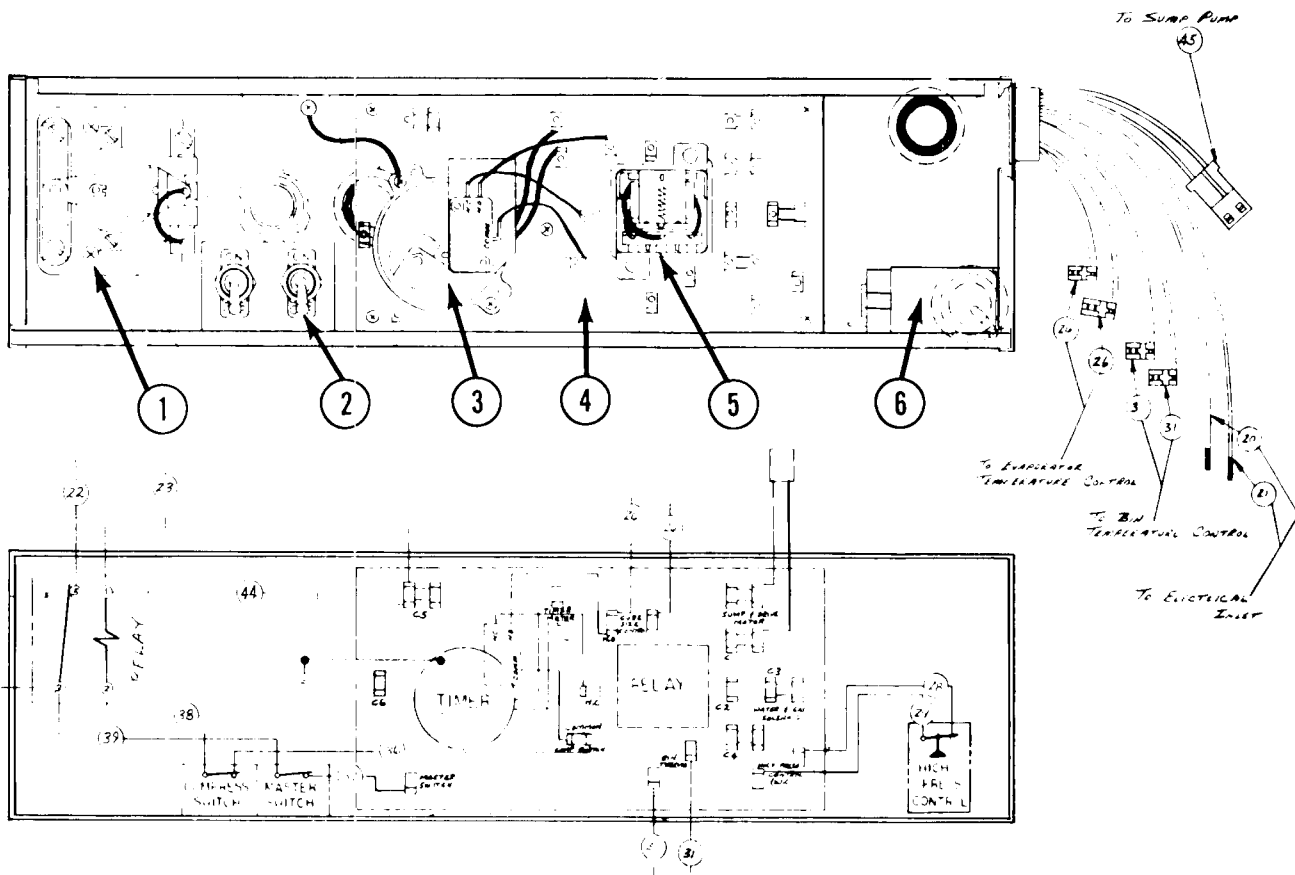
- | | |
|------------|-----------------------------------|
| 18-4200-01 | Compressor Cope No. SSC4-0100-CAA |
| 18-4200-40 | Compressor Overload |
| 18-1901-09 | Start Capacitor |
| 18-1902-45 | Run Capacitor |
| 18-1903-33 | Relay |

CONTROL BOX
Air Cooled
115/60/1



ITEM NO.	PART NO.	DESCRIPTION
1.	12-419-00	Relay - Contactor
2.	12-426-01	Switches
3.	12-1980-01	Timer
4.	12-1912-01	P.C. Board
5.	12-1879-02	Relay

**CONTROL BOX
Water Cooled
115/60/1**



ITEM NO.	PART NO.	DESCRIPTION
1.	12-419-00	Relay - Contactor
2.	12-426-01	Switches
3.	12-1980-01	Timer
4.	12-1912-01	P.C. Board
5.	12-1879-02	Relay
6.	11-388-02	Hi Pressure Control

PS-1-75
2-15-75

TO: ALL MASTER MANUAL HOLDERS

**SUBJECT: WATER PUMP ASSEMBLY
12-1849 and 12-1930**

It is impractical to replace the Motor only or the Pump Body on these Water Pumps at the field level.

In the assembly procedure of the Motor and Body, it is necessary that the motor be centered properly to avoid damage to the impeller.

The supplier of these pumps uses special tools in assembly to center the motor body correctly.

On page thirty-nine is a listing of the replacement parts that are available and can be replaced on these pumps at the field level.

These pumps 12-1849 and 12-1930 are identical except for the length and design of the electrical leads.

12-1849 60'' electrical leads with 1/4'' quick connect ends.

12-1930 6'' electrical lead with pin plug connection

Wire assemblies used with 12-1930 pump.

12-1940-02 12'' electrical lead with pin plug socket

Usage: AC30

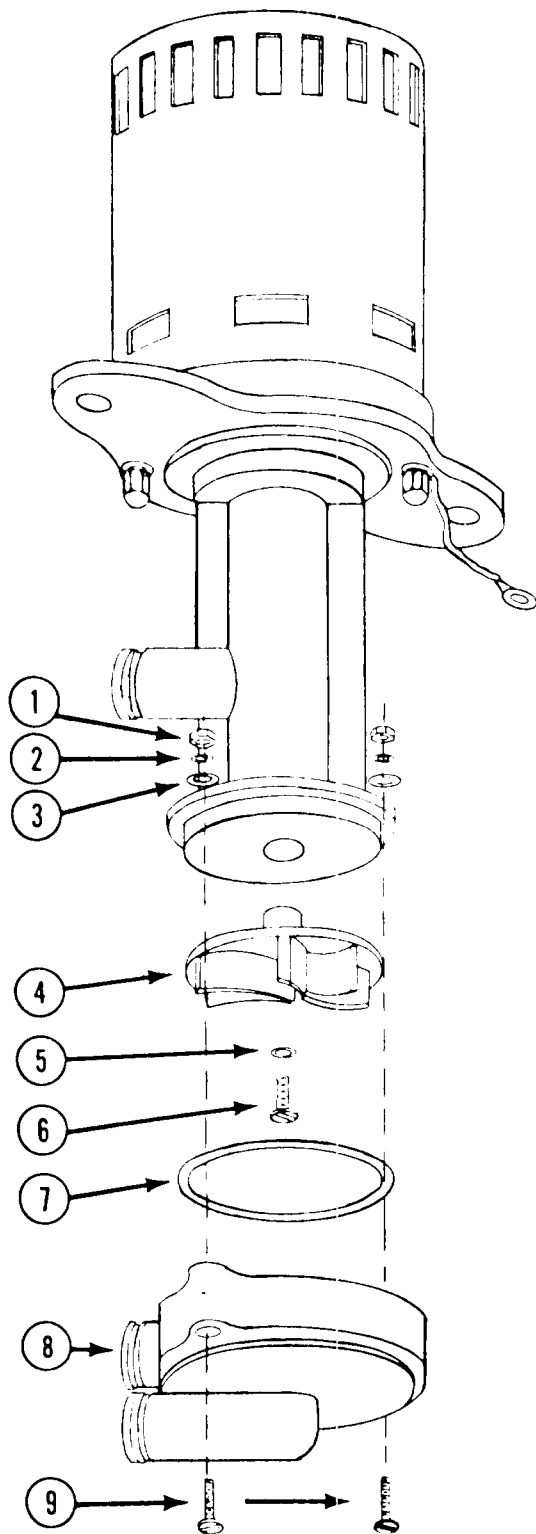
12-1940-02 40'' electrical lead with pin plug socket

Usage: MC25 and Top Chamber MC35

12-1940-03 50'' electrical lead with pin plug socket

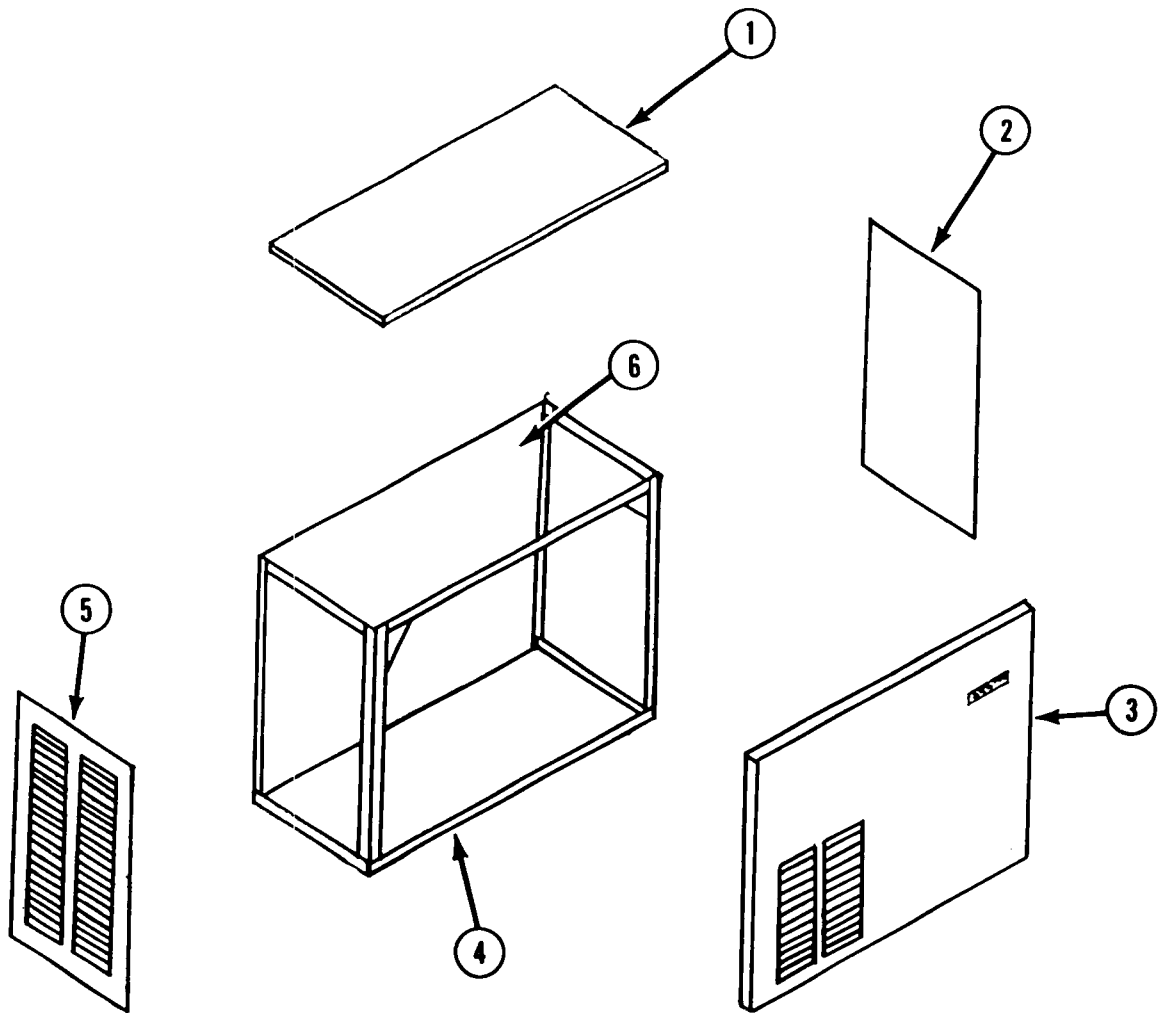
Usage: MC35 Lower Chamber

COMPLETE PUMP ASSY. — 12-1930-01 (115/60/1)



ITEM NO.	PART NO.	DESCRIPTION
1.	12-1849-54	Nut (Hex)
2.	12-1849-55	Washer
3.	12-1849-56	Washer
4.	12-1849-57	Impeller
5.	12-1849-58	Lockwasher
6.	12-1849-59	Screw
7.	12-1849-60	O-Ring
8.	12-1849-61	Pump Housing
9.	12-1849-62	Screw

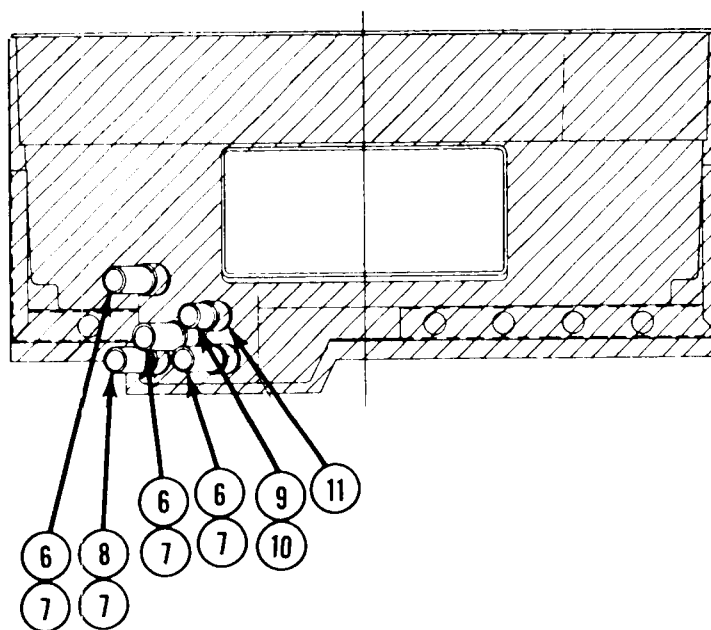
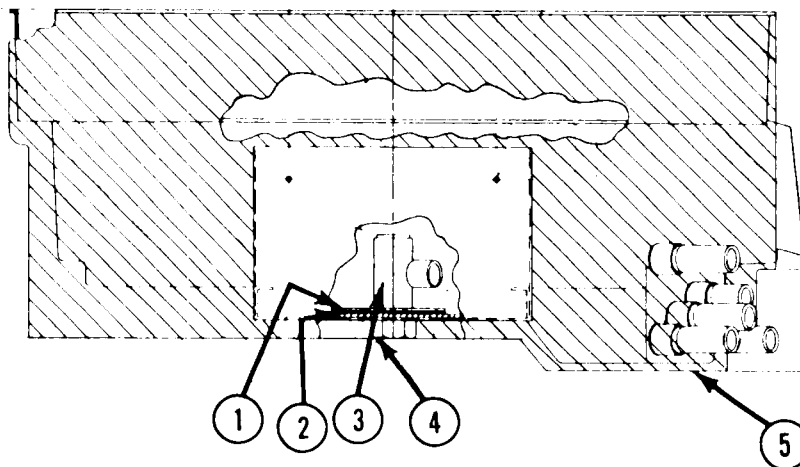
CABINET PARTS



	Enamel	Stainless Steel
1. Top Panel	A23784-001	A23784-002
2. Panel, Right Side	A23783-001	A23783-002
3. Panel, Front	A23785-001 Vinyl	A23785-002
4. Cabinet Assy.	A23770-001	A23770-001
5. Panel left side	A23782-001	A23782-002
6. Back Panel	Fixed	A24833-001

*Panel Conversion Kit: (Enamel to Stainless Steel) (Kit Includes Items 1, 2, 3, 5 and 6) — Part No. SPK-MC1

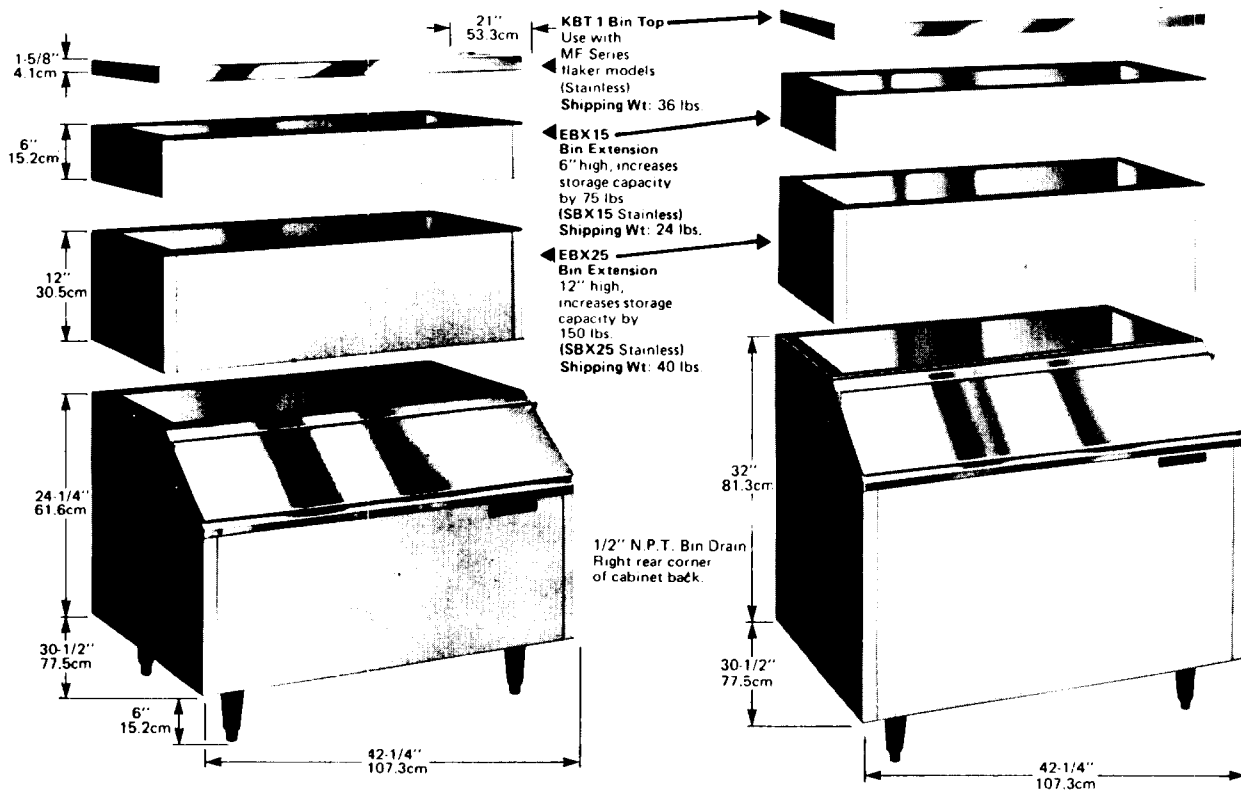
FREEZER CHAMBER — SUMP



ITEM NO.	PART NO.	DESCRIPTION
1.	A-23827-01	Metal Plate Support
2.	3-1409-11	Rubber Washer
3.	2-2121-01	Water Inlet Housing
4.	2-2122-01	Plug Nut
6.	2-2080-01	Foam Insulation
6.	2-2080-01	Tube - Male
7.	2-2081-01	Tube - Female
7.	2-2081-01	Tube - Female
7.	2-2081-01	Tube - Female
7.	2-2081-01	Tube - Female
7.	2-2081-01	Tube - Female
7.	2-2081-01	Tube - Female
8.	2-2082-01	Tube - Pump Pick-up Position With Opening Down
9.	2-2125-01	90° Standpipe - Position up
10.	A-24379-01	Tube - Female
11.	13-617-02	O-Rings - 5/Unit



ICE STORAGE BINS



B40 Bin

Has a 350-lb. storage capacity, hinged door opening 9 3/4" x 39". Designed to accept the MC25 and MC35 Series cubers or MF3, MF4 and MF5 Series flakers. Ice makers can be mounted on top of bin or flake ice can be transported from a remote location. Stainless steel bin liner.

EB40: Sandalwood enamel exterior, black enamel legs.
SB40: Stainless steel exterior, chrome plated legs.

Shipping Wt: 156 lbs.

B60 Bin

Has a 550-lb. storage capacity, hinged door opening 9 3/4" x 39". Designed to accept the MC25 and MC35 Series cubers or MF3, MF4 and MF5 Series flakers. Ice makers can be mounted on top of bin or flake ice can be transported from a remote location. Stainless steel bin liner.

EB60: Sandalwood enamel exterior, black enamel legs.
SB60: Stainless steel exterior, chrome plated legs.

Shipping Wt: 194 lbs.

MAINTENANCE INSTRUCTION FOR SCOTSMAN CUBERS

THE FOLLOWING MAINTENANCE SHOULD BE SCHEDULED EACH (6) SIX MONTHS ON ALL SCOTSMAN CUBERS. CALL YOUR AUTHORIZED SCOTSMAN SERVICE DEPARTMENT.

1. Clean air-cooled condenser; This is to be done frequently with the machine shut off.
2. Clean water system and evaporator, sump tank and screen, using Scotsman Ice Machine Cleaner or equivalent.
3. Remove jet tube and manually clean jets.
4. Check curtain assembly.
5. Tighten all electrical connections.
6. Tighten all bolts.
7. Check water supply. Check water pressure flow through flow control. Clean water strainer.
8. Oil jet tubes drive motor two (2) places. Use SAE 20 oil - 2 oil cups.
9. Oil Condenser fan motor. Punch sealed cap or remove screws where possible.
10. Check for refrigeration leaks.
11. Check for water leaks. Tighten drain line connections.
12. Check size and condition of cubes. Adjust as required.
13. Check bin thermostat setting. Factory set at 35 degrees out, 39 degrees in.

PROCEDURE FOR USE OF SCOTSMAN ICE MACHINE CLEANER

1. Remove front panel, right side panel, and cube chute.
2. Locate control box with time clock knob protruding thru cover. Turn master and compressor switches to off position.
3. Start unit thru harvest cycle manually. This is done by slowly turning time clock knob clockwise until you hear the micro-switch actuator arm click into the cam slot.
4. Locate and remove defrost water tube which protrudes thru freezing chamber cover at top left of freezing chamber.
5. Dilute 16 oz. of Scotsman Ice Machine Cleaner in 1 quart of fresh hot potable water in a clean container. Pour this cleaning solution into freezing chamber thru defrost tube hole. Replace defrost tubes and IMMEDIATELY TURN ON MASTER SWITCH.
6. Let unit operate normally for 20 minutes into the freezing cycle. No ice will be made because the compressor is not in operation.
7. At the end of this time, rotate the timer knob until the harvest cycle starts again. Allow the machine to run normally thru this harvest cycle. When the harvest has been completed, then rotate knob manually thru the freeze cycle until the harvest cycle starts once again. Do this 3 times. Cube chute should be washed in solution of household bleach and water (1 oz. of bleach in 1 gal. of water)
8. Turn the compressor switch back on. Use a damp cloth to wipe off curtain and cube chute. Place cube chute and curtain in position.
9. Check each new batch of cubes until they are clear and until acid taste has been removed from cubes.
10. Pour hot water in storage bin to melt the cubes and thereby clean the bin and drains with the same solution that has just cleaned the unit.
11. Replace all doors.
12. Unit is now ready for continued automatic operation.

CARE OF STAINLESS STEEL STORAGE BIN LINERS

All commercial grades of stainless steel will corrode or rust when in contact with certain chemicals or salts. **One element that attacks stainless readily, is chlorine**, and most compounds of chlorine, such as hydrochloric acid, and certain salts containing chlorine. The "speed" with which this corrosion takes place depends on the concentration of the chlorine, and the length of time it is left in contact with the stainless steel.

ICE BIN LINER RUSTING

In many ice bin applications, a rust stain, or brown deposit, will appear at the top of the side and rear walls of the bin liner, and also on any exposed stainless parts inside the bin, which do not normally get covered with ice; such as stainless steel door back pans. The lower portions of the liner walls usually stay clean if the bin is being used regularly, due to the "washing" action of the ice and meltage water draining down these walls. This brown staining on the liner may appear more rapidly in some installations than other, depending on the way the ice is being made in the ice machine, and the water conditions.

This staining or rusting, can come from basically two sources:

1. **Foreign materials** — For example, many ice machine casings are made of painted steel. If this steel should be exposed at the joint where the ice machine sits on the bin, it could rust, and the rust stain could "drip" down the liner walls. Also, particles of plain steel could fall down into the bin and, in turn, start rusting.
2. **Materials expelled during ice making** — Practically all icemakers produce clear ice by "freezing out the impurities" normally found in tap water. Chlorine gas, other gases and solids, are expelled during the making of ice. Being heavier than air, these foreign materials drop down into the bin through the same opening that the ice enters the bin. (This oftentimes explains why this staining is more noticeable on an installation where the opening on the bottom of the ice machine is quite large). **The chlorine gas will combine with water vapor and condense on the liner walls as a mild hydrochloric acid.** Above the normal ice level, this never gets removed by the action of the ice, and will eventually form a brown stain.

CLEANING OF A STAINLESS STEEL BIN LINER

Because the brown staining or rusting is due to expelled material during ice-making, **every bin liner should be cleaned periodically**, to prevent this staining from causing pitting of the stainless steel. The time between cleanings will depend on the water conditions, type of ice machine, etc. **It may be necessary only every 3 to 6 months.**

1. **General Cleaning** – When the staining is light, it can usually be removed by washing with ordinary cleaning powder, such as Bon-Ami, or Copper-Glo, and water. (Do not use cleaners that contain bleaching agents, as most of these are compounds of chlorine.) After cleaning, rinse thoroughly with clear water.

It may be necessary to use a stainless steel wool to remove bad stains. **DO NOT USE** plain steel wool, as the steel particles will get imbedded in the liner and cause more serious rusting.

2. **Cleaning of heavy deposits**—If the liner has not been cleaned for a long time, and heavy deposits and pitting have occurred, a chemical cleaner may be necessary. Several of these are as follows:

Oakite No. 33, Oakite Products, Inc., 19 Rector St., New York, N.Y. Texo No. 12, and Texo-NY, Texo Corp., 2200 Dana Ave. Cincinnati 7, Ohio. Metalprep No. 10, Nelson Chem. Co., 6564 Benson St., Detroit 7, Mich, Dilac, Diversey Corp., 1820 Roscoe St., Chicago 13, Illinois.

A solution of one part cleaner and two parts water is used. First, wash the bin liner thoroughly with water and soap as described above. Then simply swab the solution on the area to be cleaned, and allow to stand for about 20 minutes. Rinse with clear water. If this doesn't completely remove the deposit, repeat the procedure.

Synthetic rubber gloves should be used by the operator, and goggles and aprons are advisable even though the solution is relatively nonhazardous.

These cleaners may possibly harm paint, wood, or fabrics, They will probably cause a dull grey color on galvanized steel and should not be allowed to remain long in contact with rubber. Therefore, provision should be made to avoid contact with such materials when cleaning stainless.

3. **Protection of Stainless Steel against further staining** – After the stainless steel has been cleaned, installations where the staining is recurring so frequently, the surface should be rejuvenated. This process restores the characterisitc to the surface of the stainless, that best prevents corrosion.

First, be sure that the liner is clean and is thoroughly rinsed with water. Then use a nitric acid solution of two parts water to one part nitric acid (by volume). Swab this on the liner and allow to stand for about 30 minutes. Rinse the liner with clean water. This will then provide maximum corrosion resistance.