

TABLE OF CONTENTS
SM-210

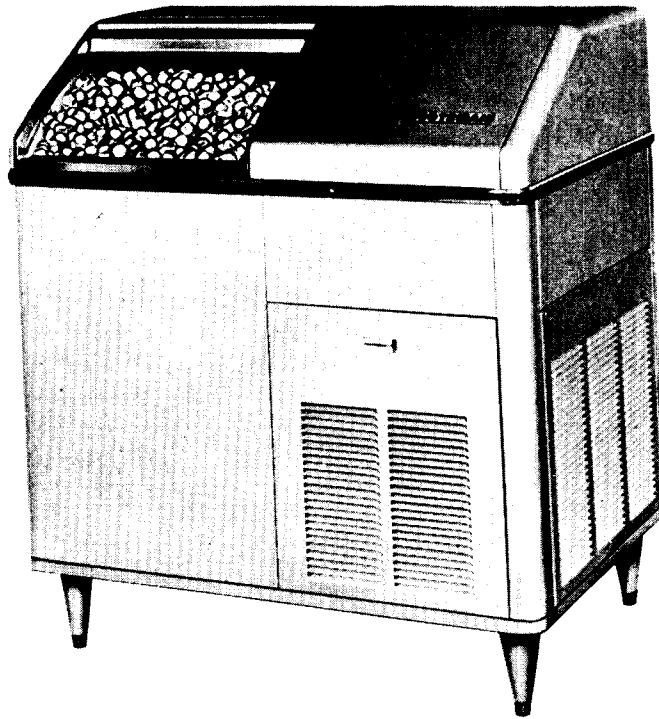
Foreward	1
Table of Contents	2
Photograph and Ice Making Capacity	3
Specifications and Dimensions	4-5
Selecting Location:	
Location	6
Uncrating	6
Preparation for Installation	6-7
Installation	7-8
Water Supply and Drain	11-12
Electrical Connection and Characteristics	8
Wiring Diagrams:	
Air Cooled	9
Water Cooled	10
Diagram Plumbing Connections	11
Diagram Installation Practice	12
Final Check List	13
Start-Up	14-15
Cycle of Operation:	
Harvest Cycle	16
Freezing Cycle	17
Service Analysis Charts	18-19
Exploded Views - Component Parts:	
Sump Pump	20
Control Box	21
Complete Unit (End View)	22
Complete Unit (Front View)	23
Case Parts	24
Hot Water Tank	25
Condensing Unit (Air Cooled)	26
Condensing Unit (Water Cooled)	27
Water Valve	28
Evaporator Assy	29
Service Information	
Installation of Water Valve Kit	30
Water Valve Assembled	31
Drive Linkage and Spray Bar	32
Functional Parts and Maintenance	33-35
Service Complete Unit	36-38
Maintenance Instructions	38
Parts List	39-40

**THIS PAGE
INTENTIONALLY
LEFT BLANK**

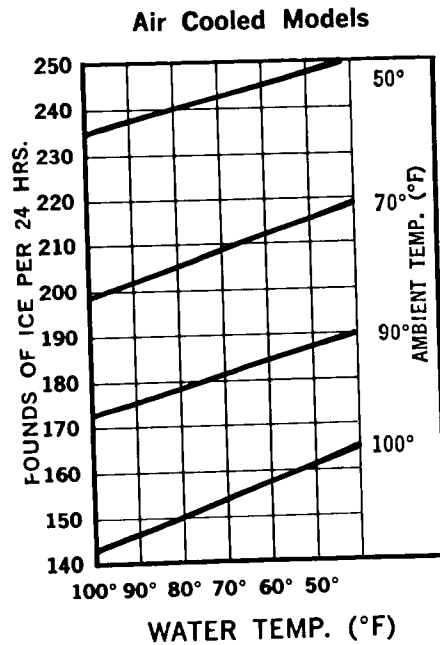
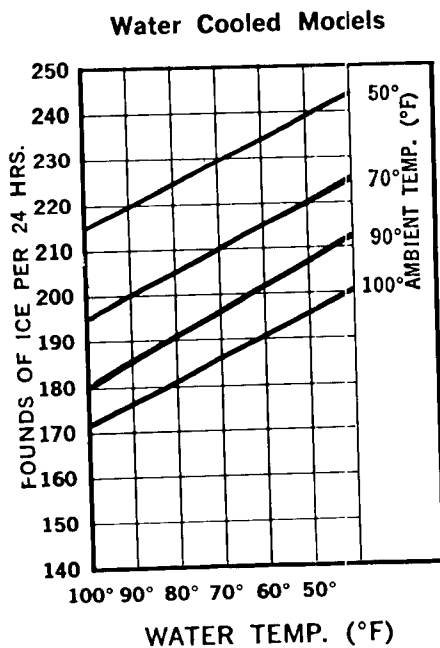
**THIS PAGE
INTENTIONALLY
LEFT BLANK**

SCOTSMAN®

SUPER CUBER SM-210 SERIES

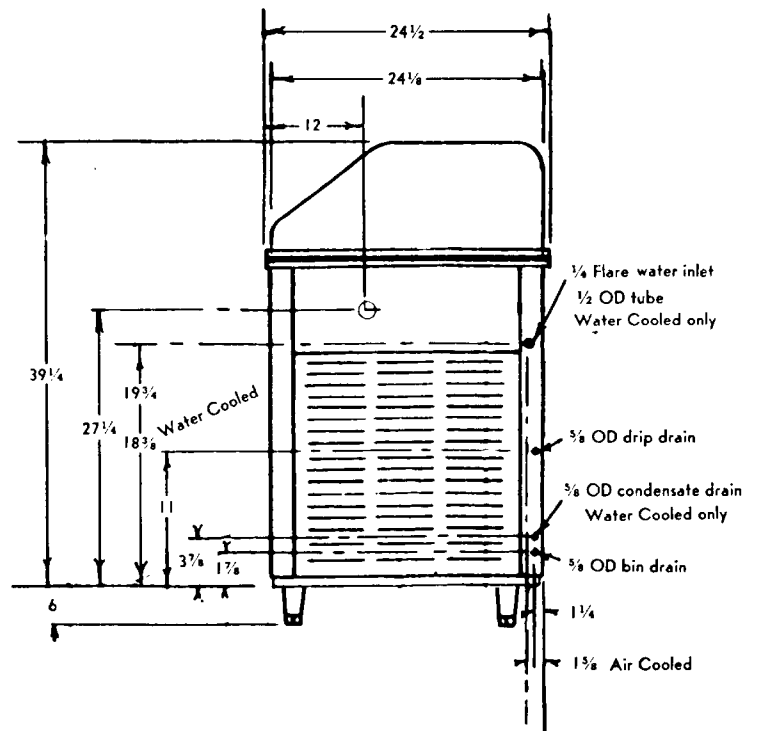
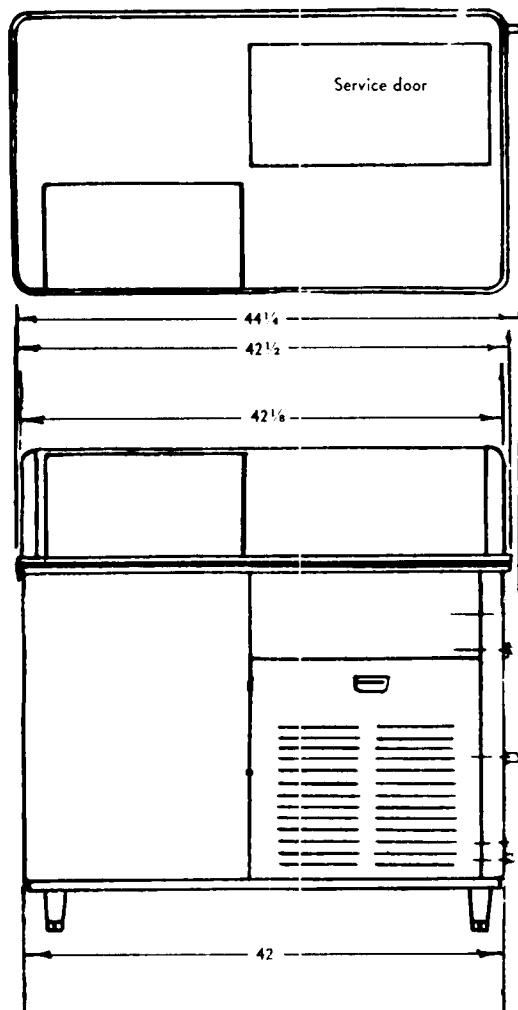


ice making capacity



SPECIFICATIONS

SUPER CUBER SM-210 SERIES	MODEL SM210H	MODEL SM210WH	MODEL SM-210H-SS	MODEL SM210WH-SS
Daily capacity up to 225 lbs.	X	X	X	X
Self-contained 150 lb. capacity storage bin	X	X	X	X
Air cooled condenser	X		X	
Water cooled condenser		X		X
Heavy duty 1/2 HP. Compressor	X	X	X	X
Standard 115 V, 60 cy, 1 ph, AC—	X	X	X	X
1/4" water inlet SAE Flare	X		X	
1/2" water condenser inlet OD Copper		X		X
5/8" OD copper condensate drain	X	X	X	X
5/8" OD copper storage bin drain	X	X	X	X
5/8" water outlet Copper	X	X	X	X
Hammerloid grey exterior	X	X		
Stainless steel exterior			X	X
Stainless steel lined storage bin	X	X	X	X
45 1/4" high (with legs)	X	X	X	X
39 1/4" high (without legs)	X	X	X	X
44 1/4" wide	X	X	X	X
24 1/2" depth	X	X	X	X
Approximate shipping weight	420	420	420	420



SPECIFICATIONS

	MODEL SM-210	MODEL SM-210
Compressor 1/2 H.P.	115/60/1	115/60/1
Condenser	Air Cooled	Water Cooled
Refrigerant	Refrigerant 12	Refrigerant 12
Refrigerant Charge	24 ounces	24 ounces
Power Consumption	17 Amperes	17 Amperes
Cubes per Harvest	102 Compact sized cubes	102 Compact sized cubes
Water Consumption to Produce Ice	2 Gallons per Hour	2 Gallons per Hour
Water Used by the Condensing Unit		30 Gallons per Hour Average - Varies with Water Tempera- ture.

DIMENSIONS

Height-with 6" Legs	45 1/4"	45 1/4"
Height-Less 6" Legs	39 1/4"	39 1/4"
Width	44 1/4"	44 1/4"
Depth	24 1/2"	24 1/2"

WEIGHTS

Uncrated	400 lbs.	400 lbs.
Crated	420 lbs	420 lbs

INSTALLATION

UNCRATING OF MACHINE

1. The complete machine comes in one crate. After the crate is removed, inspect for concealed damage. Remove the bottom skid by removing all bolts. Then cut all wires holding support packing from refrigerant line. Then loosen shipping bolts on the compressor. Be sure the compressor is floating free on spring mounts. Then check all refrigerant lines for rubbing or touching other surfaces. Also check for possible transportation damage.
2. Remove all service doors and panels.
3. Remove leg packages in compartment base and install 4 legs in unit base sockets. Level unit with adjustable legs.
4. Loosen motor compressor hold down nuts until motor compressor rides freely on mounting springs.
5. Remove water strainer from storage package for installation in water supply line feeding unit.
6. Open electrical control box and prepare for hook up, use knock outs, cord connectors etc. Then check unit name plate voltage against building source voltage and make sure they correspond. Caution--Improper voltage supplied to units will void your warranty protection.
7. Make sure all service valves on the condensing unit are open and turned as far as possible to the left. Replace the valve caps after checking the valves. All Models are shipped with valves back seated.
8. Make sure that the flow of air is not impeded in any way over condenser on air-cooled models. Keep condenser clean. (Check and clean the condenser monthly.)
9. Operating room temperatures are minimum 50° F. and maximum 100° F.
10. Have the installation and warranty cards been filled out and sent to factory to insure warranty protection?

LOCATION OF THE ICE CUBE MACHINE

UNDER BAR INSTALLATIONS--Locate, if possible, so left end panel is accessible. Locate unit so proper circulation can be attained around the unit and behind it at least four inches. Provide plumbing and electrical connections so the unit can be moved out where the entire top hood can be removed and the unit can still be operated.

KITCHEN INSTALLATIONS--As a rule, the kitchen is not the most practical place to install an air-cooled condensing unit, as grease is almost always present and makes cleaning of the condensing unit difficult. Do not locate near range or steam table or other heating devices that may be used in the kitchen.

STOREROOM INSTALLATIONS--Be sure storeroom is of adequate size and properly ventilated. A small, poorly ventilated room will greatly impair the efficiency of the unit. The storeroom must be kept above 50 degrees in the winter months.

INSTALLATION

BASEMENT INSTALLATIONS--Locate machine in the coolest place. Locate the machine in a dry place. Keep away from furnace and boiler room. Keep away from service chutes and runways, also coal or other dust of any kind. If the machine is set over a floor drain, block the machine up enough to eliminate any possible damage to the machine.

LOCATE THE MACHINE SO IT CAN BE SERVICED WHEN NECESSARY. ALLOW AT LEAST FOUR INCHES OF SPACE AROUND THE MACHINE FOR CIRCULATING AIR.

IMPORTANT: ADJUST LEVELER LEGS. MACHINE MUST BE LEVEL.

Remove water reservoir cover and take out paper packing around float ball, make sure overflow standpipe is securely in place.

Remove water strainer from storage bin for installation on unit or in water supply line feeding unit.

Remove 3/4" flat shipping slug between 3 way water valve stem and body. Replace rear service panel.

Remove all masking tape and packing members from curtains and inner cube making compartments. Re-align components such as sump pump that may have shifted in transit.

INSTALLATION

WATER SUPPLY AND DRAIN CONNECTIONS

Pages 11 & 12 show recommended water piping connections and drain facilities for Model SM-210 and SM-210W.

WATER SUPPLY

The recommended water supply line is 1/4" 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, as per Page 12.

The water supply line connects to the 1/4" OD soft copper tubing (See Figures Page 12). Use care in connecting up water line to the machine. Water supply must be installed to conform with local code.

Water connections for the SM-210W water-cooled units is 1/2" OD copper tubing one connection on cabinet for both make-up water and condenser water.

DRAIN

The recommended drain is 5/8" OD copper tubing. Sweat to drain connection (See Page 12). Must be run to open or trapped drain. If drain is a long run, allow a 1/4" pitch per foot. Drain must be installed to conform with local code.

ELECTRICAL CONNECTIONS AND CHARACTERISTICS

SM-210	110-115 V, 60 Cycle	Single Phase, 17 Amps.
--------	---------------------	------------------------

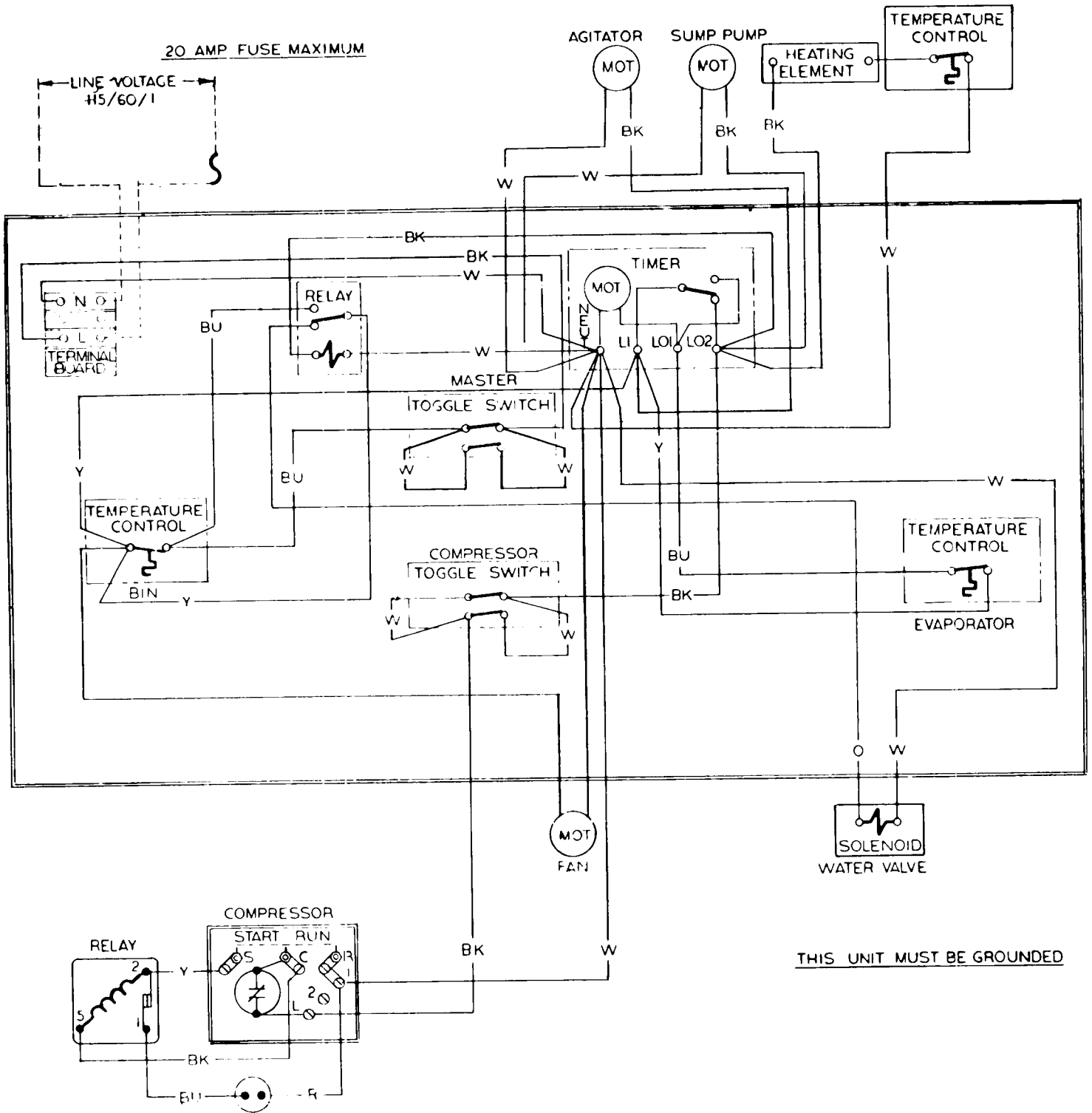
All external wiring should conform with National Underwriters' and local code requirements. Check the voltage on the line before connecting the machine. Model SM-210 requires 110-115 volts, 60 cycle, single phase.

The SM-210 should be wired to a 20 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 % 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.

WIRING DIAGRAM

SM-210

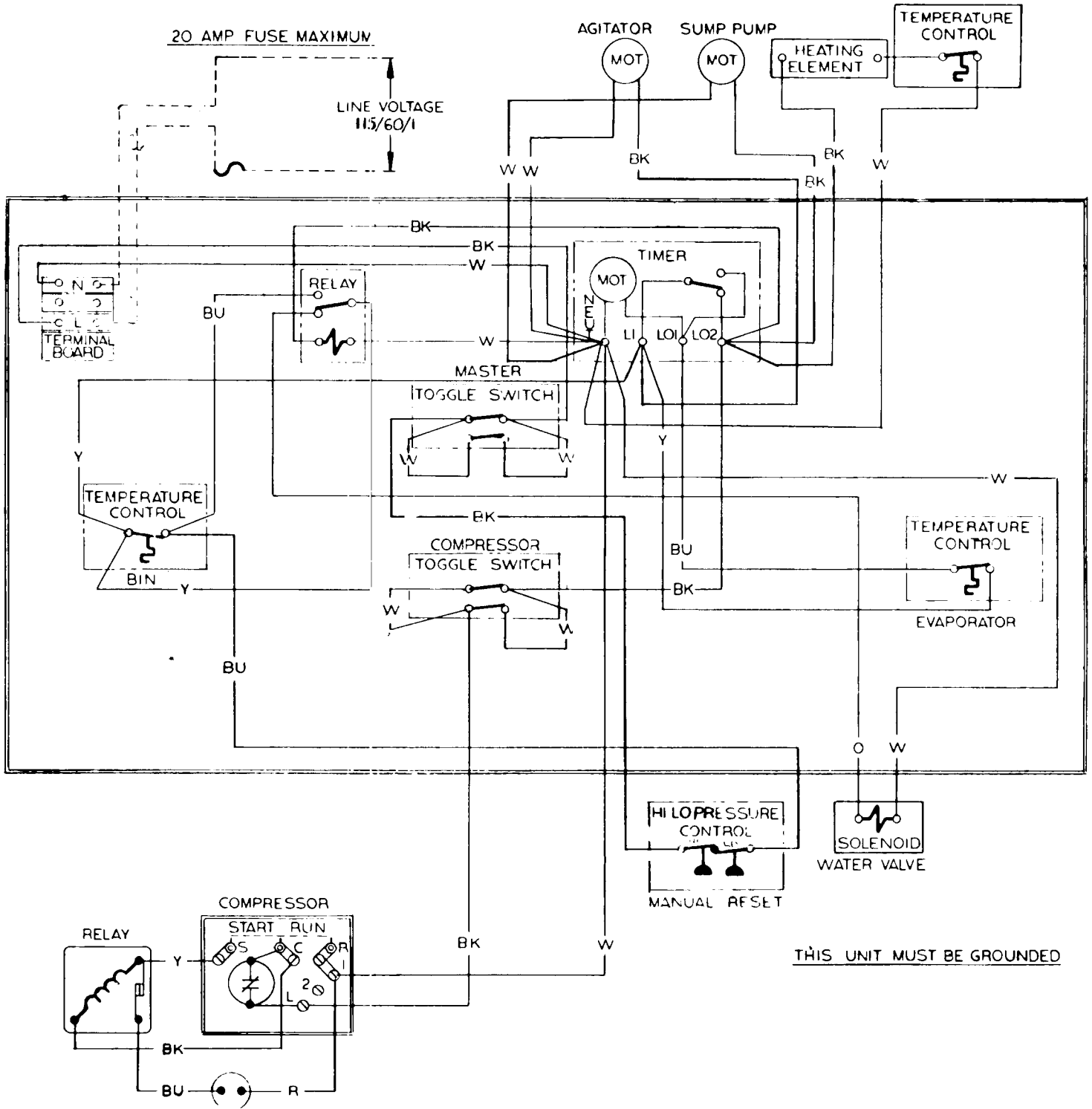
Air Cooled

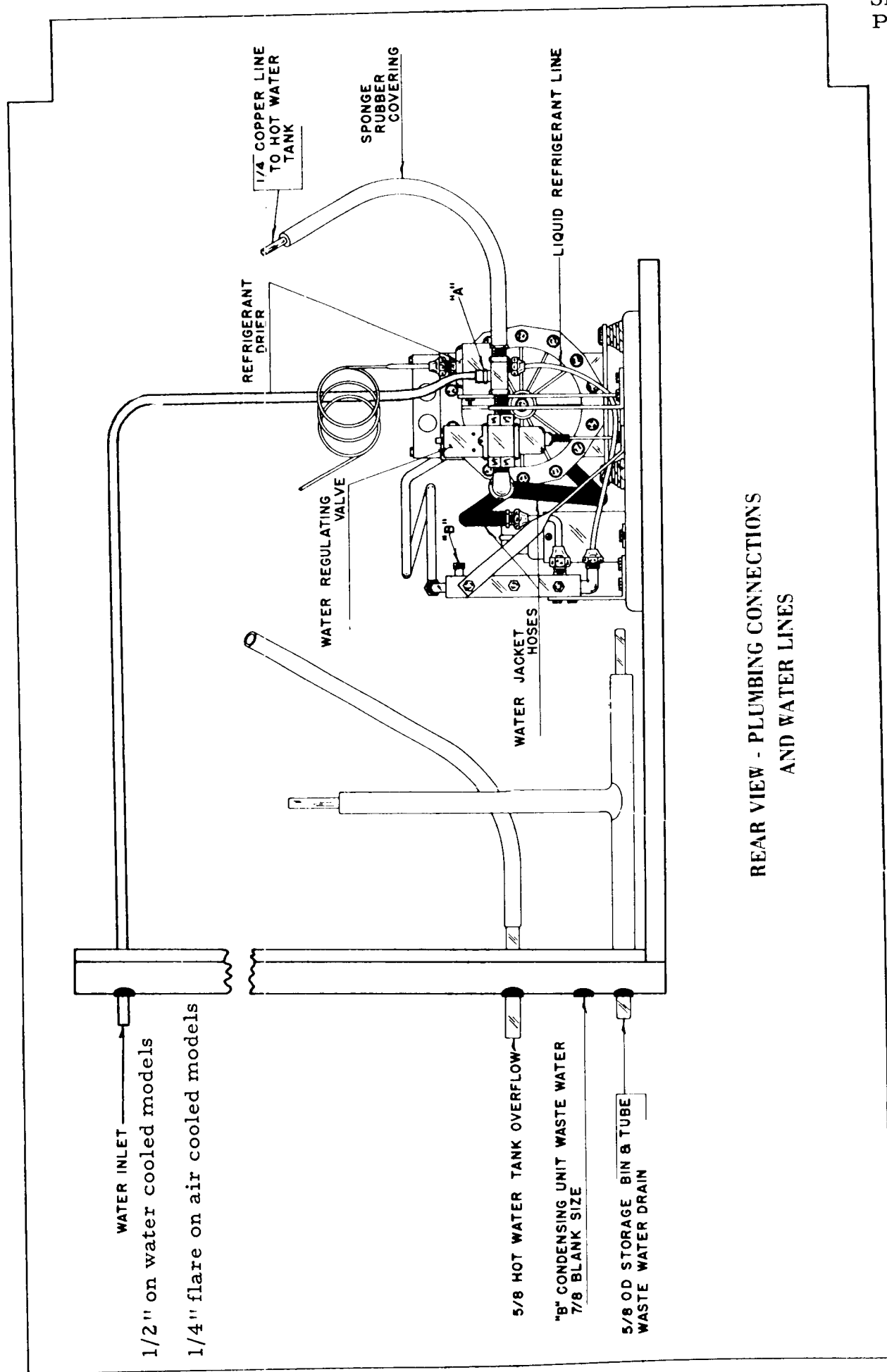


WIRING DIAGRAM

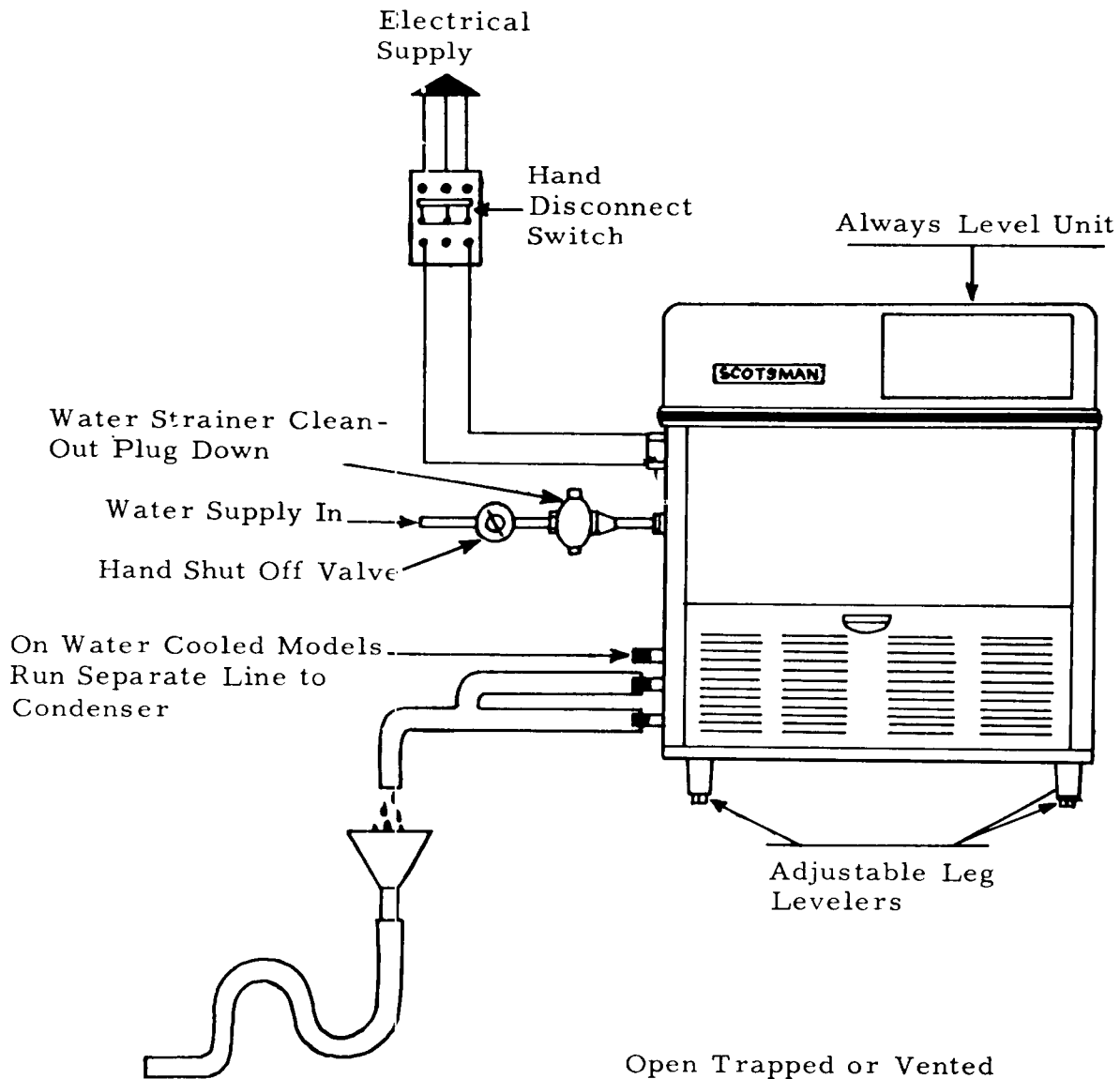
SM-210

Water Cooled





INSTALLATION PRACTICE



Open Trapped or Vented
Drain. Recommend 1/4 Fall
per foot of run on drain lines.

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 loosened so the compressor rides freely on its mounting springs.
5. Is the water supply valve open and the electric power on?
6. Is the water reservoir filled and shut off? Paper removed and float adjusted.
7. Is the unit clean?
8. Has the owner been given the operating manual, and has he been instructed on how to operate the machine?
9. Have the installation and warranty cards been filled out? This is the owner's protection as well as the sellers.
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?

INSTALLATION

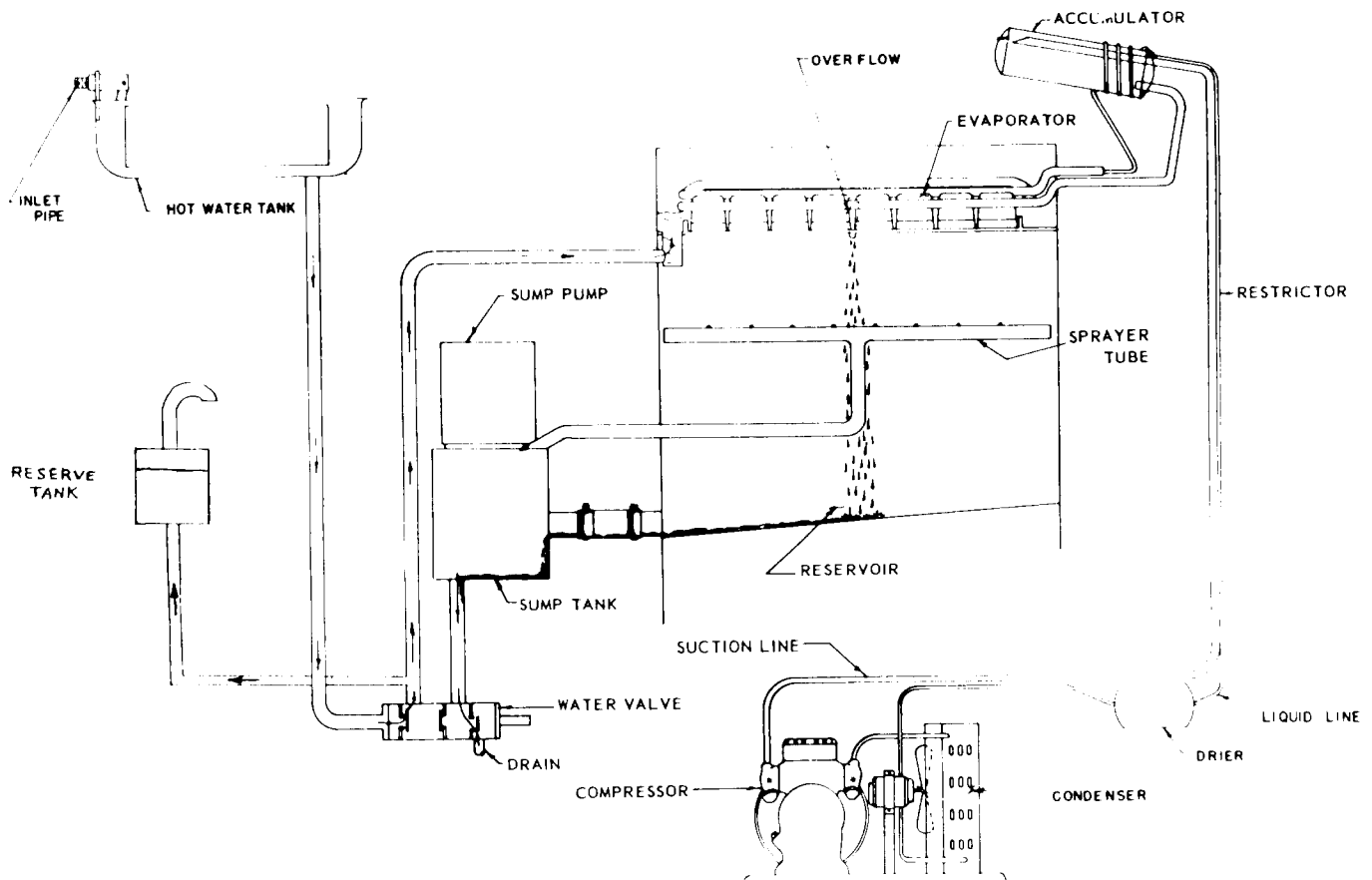
START UP

1. On all water cooled models, turn on water supply to water-cooled condenser and check for leaks in connections made.
2. Turn on cube supply at hand shut-off valve. Make sure hot water tank fills to overflow, if it does not, adjust timer lever to 3 1/2 minute setting. NOTE: Unit has built-in water flow control set to reduce flow rate to approximately .45 gallons per minute.
3. Check electrical circuit. 17 Amps. Do not connect with other appliances into one ordinary wall outlet: 115 volts required.
4. Inspect components in electrical control box, check for loose or frayed wire, then turn both manual switches to "on" position. NOTE: All "H" model cubers have two manual on-off switches. One is for motor compressor only during cleaning operation, one is master switch for complete unit.
5. Turn disc on time clock to the right just far enough for water solenoid valve to energize. Allow clock to take it through harvest cycle. This will be approximately two minutes. Dial pointer should be set on Number 3 1/2. After the compressor starts, turn the dial completely around and send it through another harvest cycle. Do this several times. This will completely flush out machine of any dust that may have accumulated in shipment.
6. After machine has been properly flushed, allow it to go into a freezing cycle - check for possible water leaks, check sump pump operation - should be running freely. Also note if jet tube travel is correct, and that none of the jets are plugged. Jet spray of water should hit the middle of the cups.
7. Time clock dial does not rotate at the end of the harvest cycle; it is started later by the cube size control located in the control box.
8. Freezing time will be approximately 25 minutes in a 70 degree ambient. (Longer if above, and shorter if below.) Average complete cycle time is 30 minutes.
9. Watch first cube harvest and check to make sure that plastic curtain has not been damaged in shipment.
10. 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.

INSTALLATION

11. 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, Div., Ice Machine Service Department, Albert Lea, Minnesota, for further details.
12. With unit on harvest cycle, take a handful of cubes made and hold on storage bin thermostat cover. Should cut unit off in one or two minutes - remove ice; unit should cut back on automatically. Thermostat is factory set at 35 degrees out, 39 degrees in.
13. Install gauges and check head and back pressure: air-cooled models, head pressure after twenty minutes of freezing cycle at 70° 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 125 pounds PSI: check reading and adjust if necessary. Back pressure will operate the same as on air-cooled models.
14. Remove gauges, replace control box cover and all service panels.
15. Instruct owner on how to operate and clean machine.

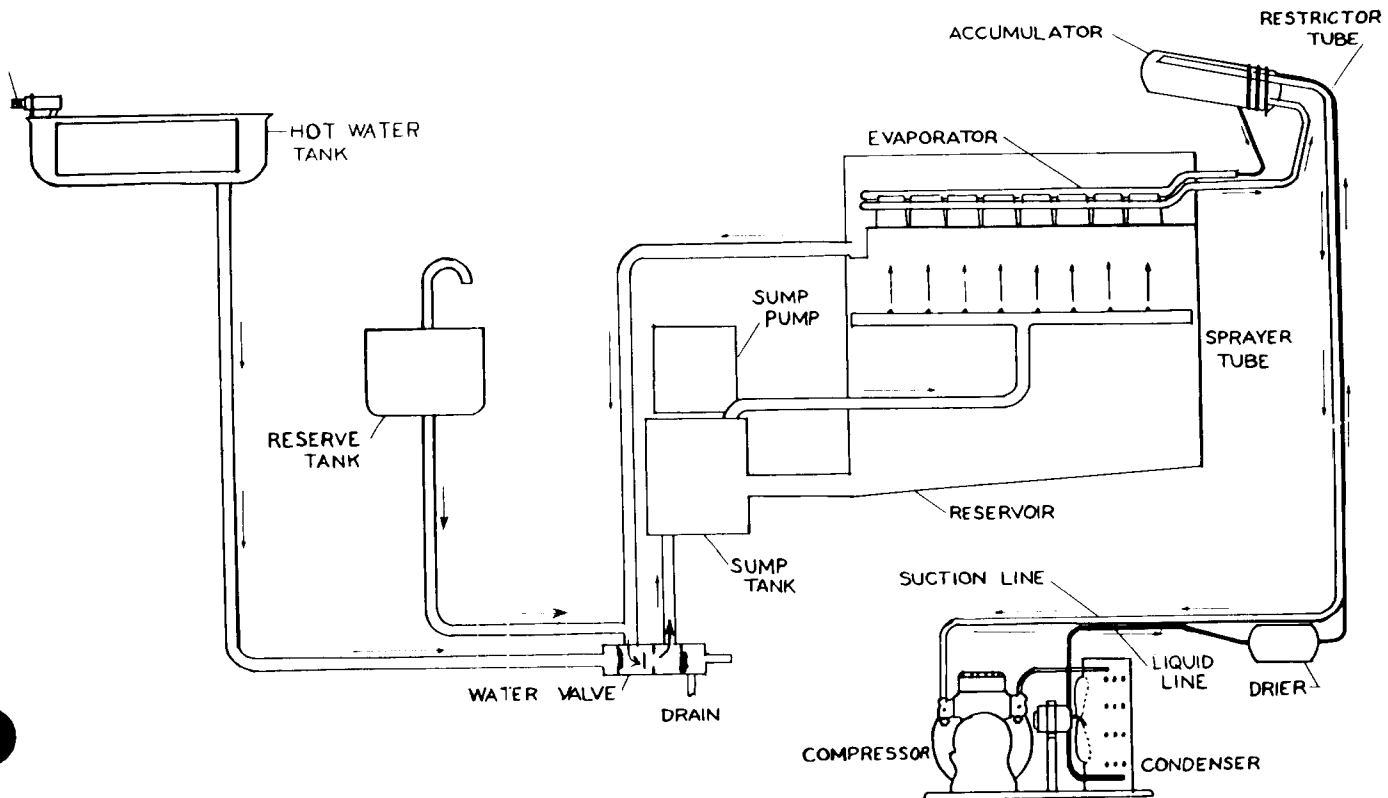
HARVEST CYCLE
SM-210



At the end of the freezing cycle the time clock operated switch opens compressor, sump pump and heater element circuit, and closes circuit to time clock motor, drive motor and solenoid operated water valve. At this time, the water valve allows heated water in hot water tank to flow by gravity through solenoid operated valve, and into the upper cavity of the freezing chamber, and, at the same time allows the surplus water from the preceding batch of ice cubes to go down the drain. The hot water from the water tank flows into the rubber platen holding the cups and by conduction on back of cups causes cubes to defrost. The platen cavity is completely filled up to the overflow point, and continues to overflow while in the defrost cycle; the amount of this water running over the overflow pipe is controlled by the size of the flow control orifice and the length of harvest time setting on the time clock; overflow water goes down the drain also. Meanwhile, cubes being released from the cups drop by gravity and are mechanically ejected through curtained opening into storage bin by jet tube which is actuated by drive motor. At completion of harvest cycle, the micro-switch on the timer now drops points holding defrost components in cycle and switches to freezing cycle set of contacts. Clock motor now stops and will not start until cube size control closes once more. The freezing cycle starts and the water valve allows the hot water tank to refill. The chilled water from the upper cavity flows by gravity through the water valve along with water from reserve tank, into the sump tank. Here it is picked up by the sump pump and this water is used to produce the next batch of cubes.

FREEZING CYCLE
SM-210

Water Circuit - Refrigerant



At the start of the freezing cycle, reservoir and sump tank contain enough water to make a complete batch of ice cubes, plus approximately an extra pint. When time clock closes load circuit, it starts the compressor, sump pump and heater element in hot water tank. At the same time, it opens the circuit to clock motor. (Clock motor does not run first part of freezing cycle---This is approximately 25 minutes.) This timer has a single pole double throw micro-switch for carrying and directing current. After a predetermined amount of ice is frozen, the cube size or reverse acting temperature control closes, actuating the time clock motor circuit which continues the freezing cycle approximately 9 more minutes. (After clock motor starts, freezing will be 12 minutes less defrost time setting.

Harvest water is used to produce the next batch of ice, therefore on the initial start up it is necessary to have the unit in a harvest cycle. This can be done by manually turning timer to harvest position.

SERVICE ANALYSIS

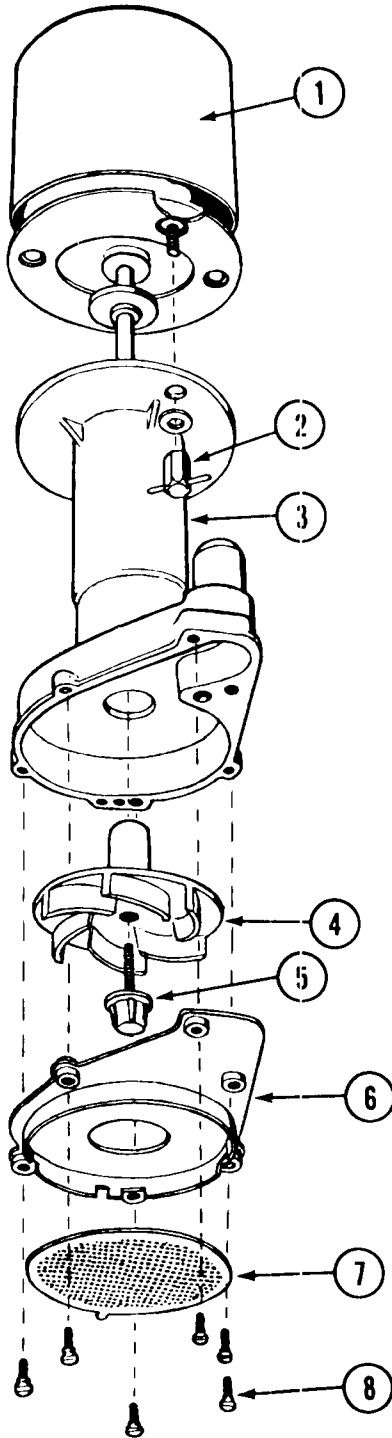
SYMPTOM	POSSIBLE CAUSE	SUGGESTED CORRECTION
Shortage of water	<p>Water spraying out through curtains</p> <p>Three-Way water valve leaking</p> <p>Water entering hot water tank too slowly</p>	<p>Replace broken curtains if any broken.</p> <p>Check the valve for foreign matter. Check valve seats and replace if necessary.</p> <p>Check pressure at source-20# required. Dirt in solenoid and flow control- blow out.</p> <p>Partial restrictions in water strainer.</p> <p>Clean Strainer.</p>
Irregular size cubes and some cloudy	<p>Some jets plugged</p> <p>Shortage of water</p> <p>Unit not level</p>	<p>Clean jets.</p> <p>See Shortage of Water</p> <p>Water overflowing air vent holes on low side burning cubes. Level as required.</p>
Cubes too large	Cube size control set low	Raise setting on cube size control.
Decreased ice capacity	<p>Inefficient compressor</p> <p>Leaky water valve</p> <p>High head pressure</p> <p>Partially restricted cap tube</p>	<p>Replace .</p> <p>Replace or repair.</p> <p>Dirty condenser. Clean.</p> <p>Bad fan motor. Replace.</p> <p>Non-condensable gas in the system: purge the system.</p> <p>Too hot a location with poor circulation: relocate the unit, or provide for ventilation by cutting openings;</p> <p>Overcharge of refrigerant. Correct the charge.</p> <p>Purge & replace charge and drier</p>
Hole washed inside cube	Water over the top of the cube cups during harvest	Level unit.

SERVICE ANALYSIS

SYMPTOM	POSSIBLE CAUSE	SUGGESTED CORRECTION
Unit will not run.	Blown fuse Bin thermostat set too high Switch in Off position Inoperative master switch Timer contacts open	Replace fuse & check for cause of blown fuse. Adjust thermostat. Set between 35° out to 39 degrees in. 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 Moisture in system Shortage of water Shortage of refrigerant	Lower the setting. Turn towards colder. Blow charge, add new gas & drier. Replace the dryer. See remedies for shortage of water. Check for leaks and recharge.
Cloudy cubes	Shortage of water Dirty water supply Restricted drain on pump Accumulated impurities	See remedies for shortage of water. Use water softener or water filter. Clean pump strainer. Use SCOTSMAN Ice Machine Cleaner.
Poor harvests	Too short defrost time Restriction in incoming water Insufficient quantity of hot water Solenoid valve not opening the water valve Air vent holes in upper cube cups plugged	Check and adjust harvest cycle. Timer should be set at 3 1/2. Check water feed line strainer and flow reducing valve. To give greater water flow increasing defrost time. Cold ambient - must be 50° minimum faulty fan control on aircooled models. Solenoid binding or burned out. Replace. Clean out holes.

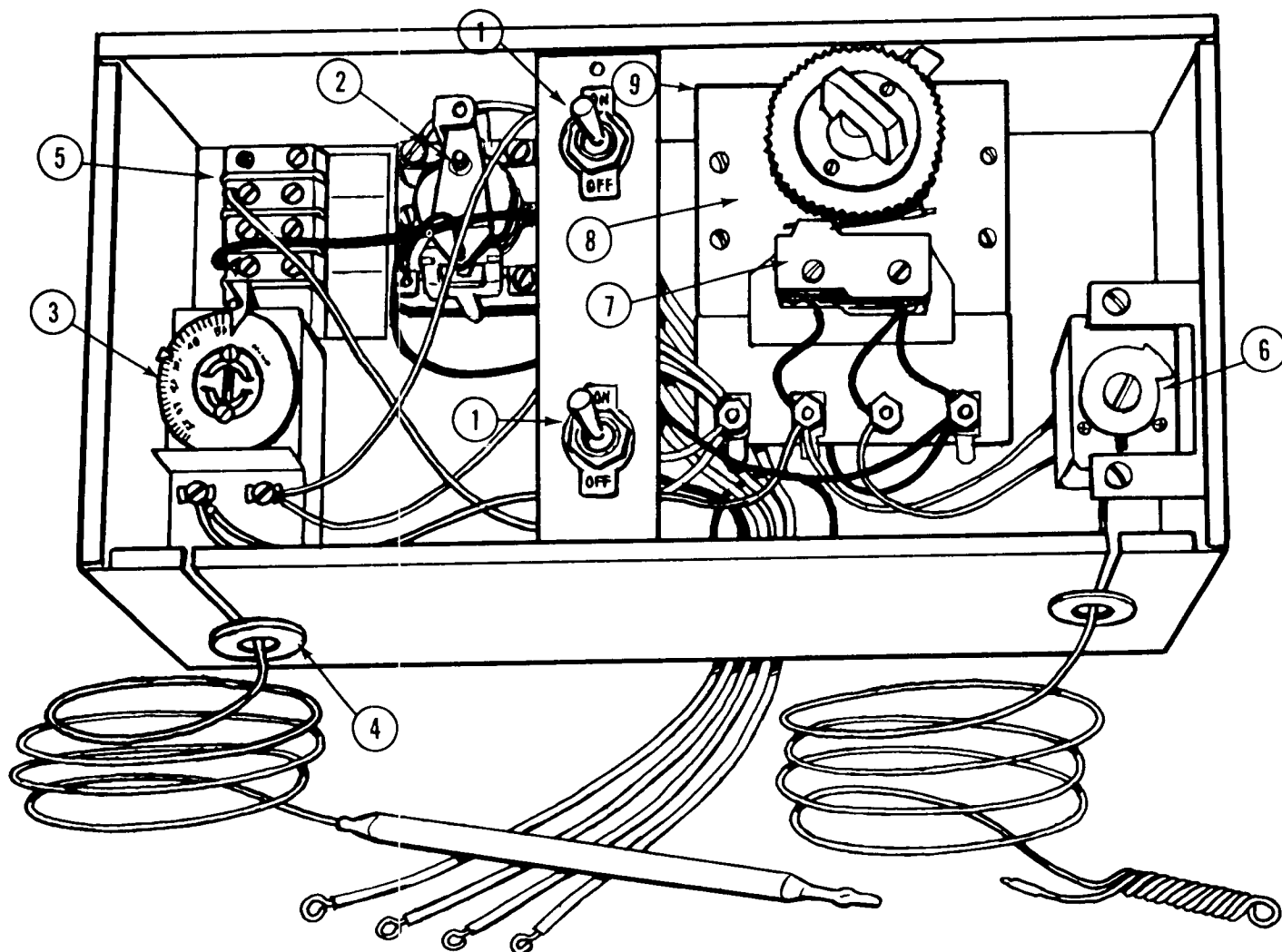
SM-210

SUMP PUMP

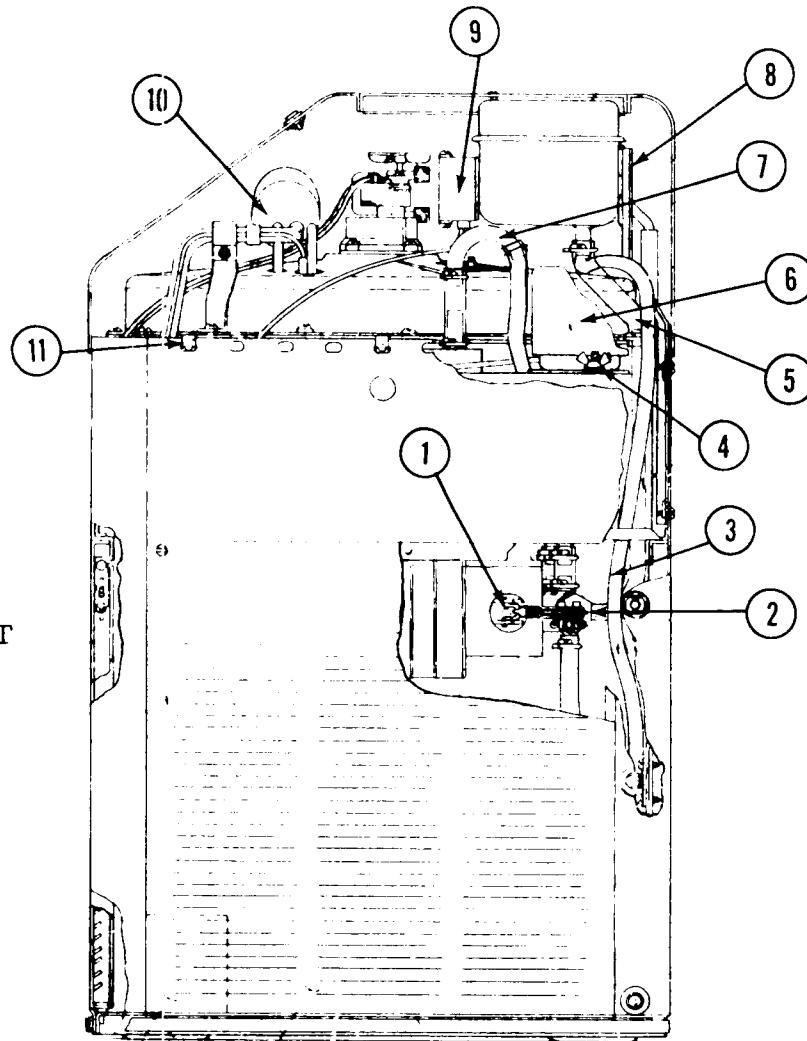


ITEM NO.	PART NO.	NAME
1.	12-1351-22	Motor Only
2.	12-1351-32	Wing Hex Nuts
3.	12-418-30	Pump Body
4.	12-1351-21	Impellar and Spring
5.	12-1351-31	Impellar Screw and Gasket
6.	12-1351-27	Bottom Inlet Plate
7.	12-1351-26	Inlet Screen
8.	12-1351-29	Wing Screws
	12-418-1	Complete Pump

SM-210 CONTROL BOX ASSY



ITEM NO.	PART NO.	NAME
1.	12-537	Switches
2.	12-419	Relay
3.	11-99-1	Bin Control
4.	13-124	Grommets
5.	12-313	Terminal Block
6.	11-345	Cube Size Control
7.	12-645-20	Timer Micro-Switch only
8.	12-645-1	Timer
9.	12-367	Timer Motor only

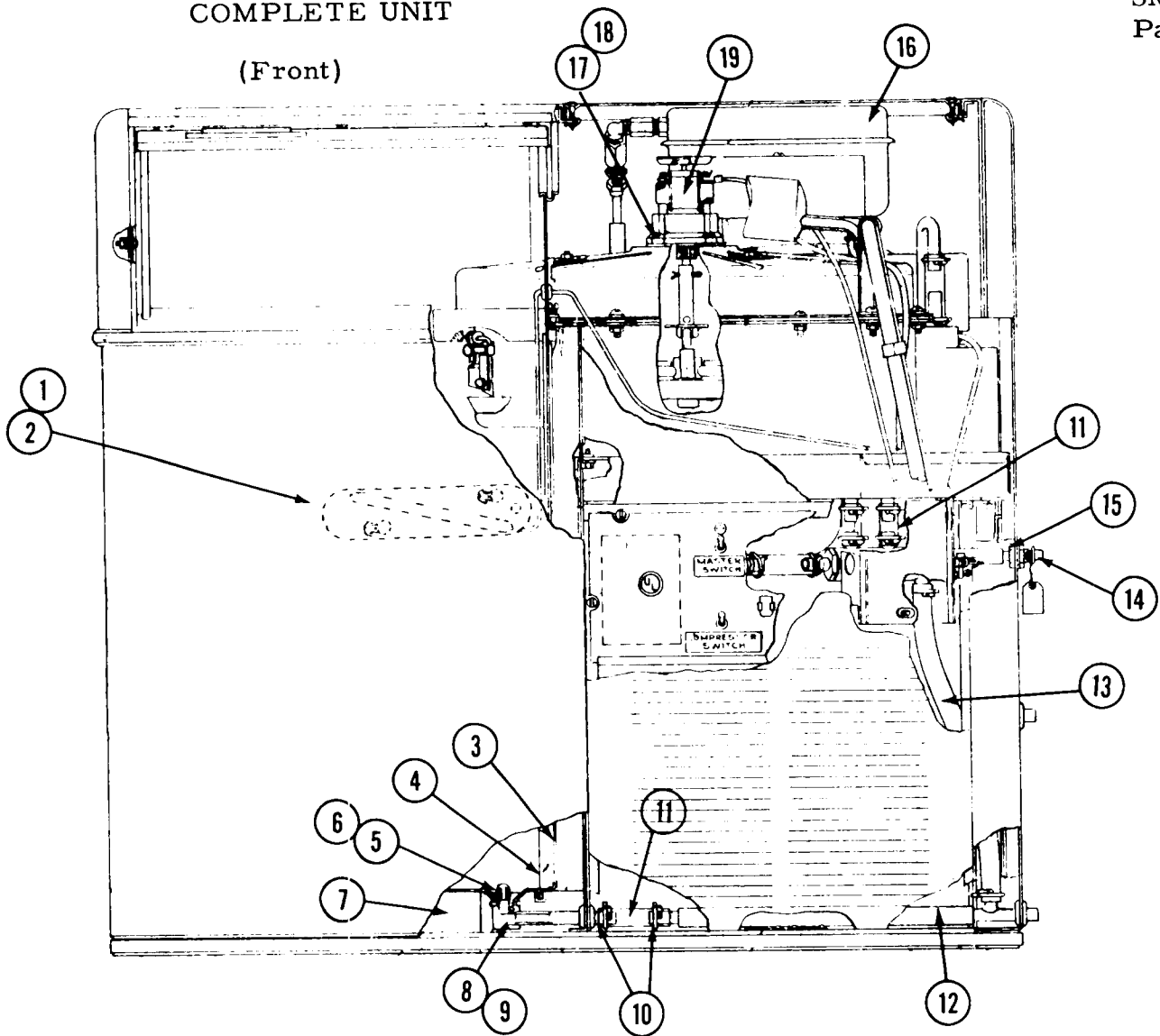


SM-210
COMPLETE UNIT
(Right Side)

ITEM NO.	PART NO.	NAME
1.	12-248-1	Solenoid
2.	A-13460	Complete Valve
3.	13-79	Rubber Drain Tube per ft.
4.	3-552	Wing Nut
5.	5-179	Tygon Tube per ft.
6.	12-418-1	Sump Pump
7.	A-17080	Elbow
8.	A-6742	Hot Water Tank Bracket
9.	A-6480	Thermo Box Cover
10.	S-9508	Suction & Acc. Assy
11.	3-449	Speednuts (18)

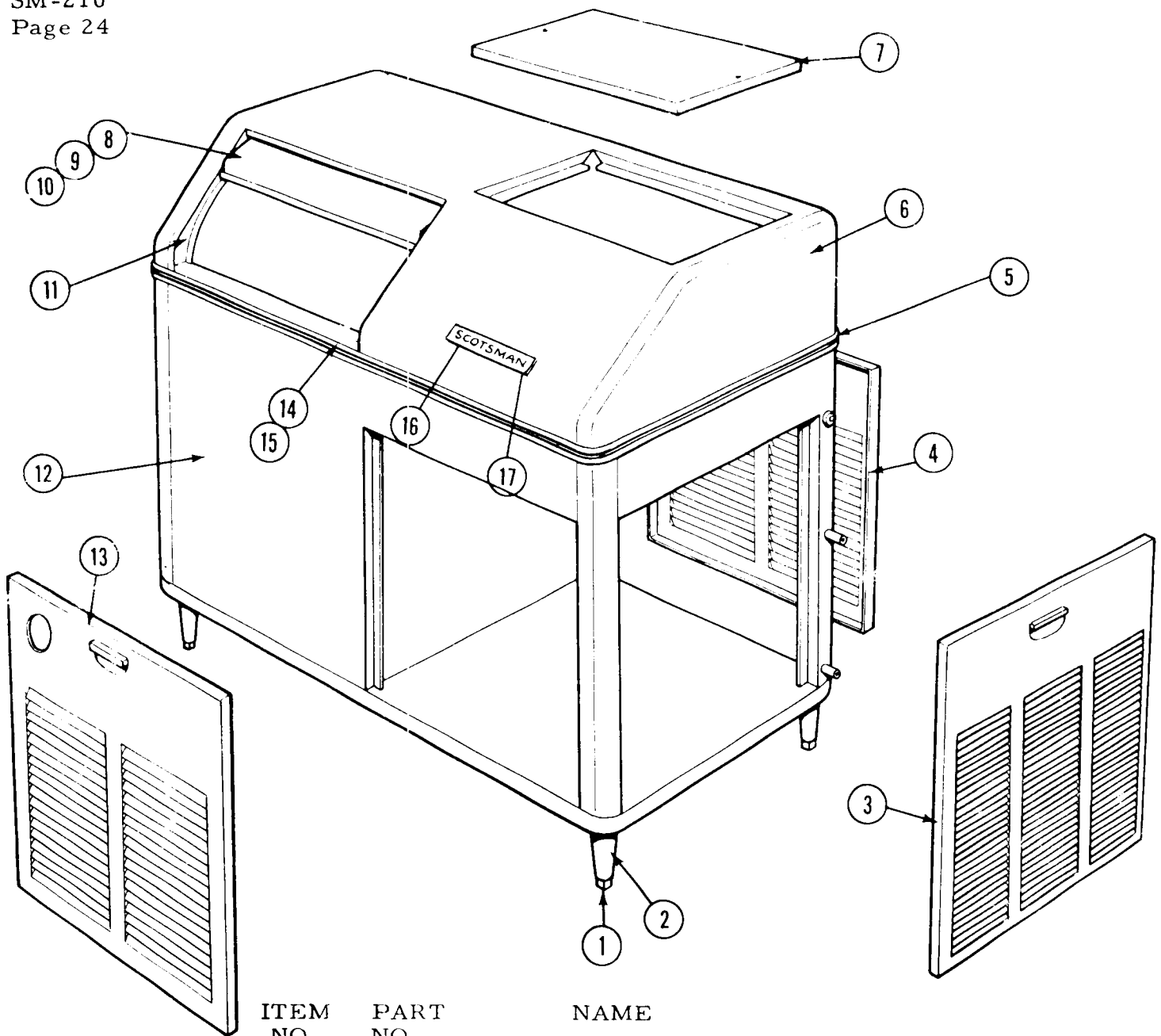
SM-210
COMPLETE UNIT

(Front)



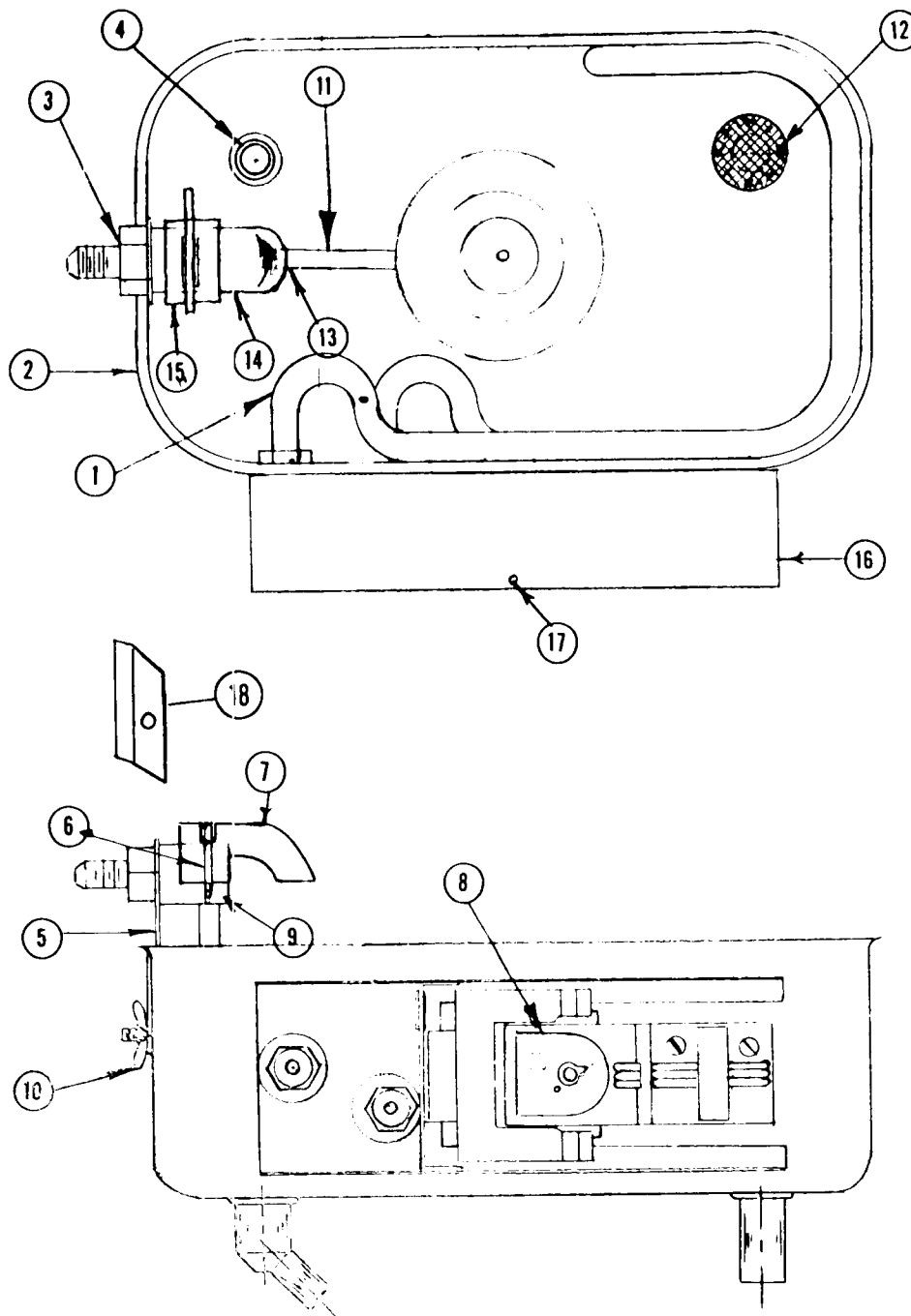
ITEM NO.	PART NO.	NAME
1.	A-15759	Bulb Cover
2.	13-590	Bulb Gasket
3.	A-15743	Insulation Layout
4.	A-15705	Storage Bin
5.	A-6448	Strainer
6.	A-18090	Drain Fitting (Male)
7.	A-15721-2	Bottom Insulation
8.	A-18103	Drain Ass'y
9.	2-530	"O" Ring
10.	2-1338	Hose Clamp
11.	5-179	Tygon Tube per ft.
12.	A-16174	Drain Assy
13.	13-567	Drain Tube per ft.
14.	A-9755	Inlet Water Tube
15.	S-7044	Nut
16.	A-12870	Tank Cover
17.	13-176	Drive Motor Gasket
18.	3-1211	Screw (4)
19.	12-675-1	Drive Motor

SM-210 CASE PARTS



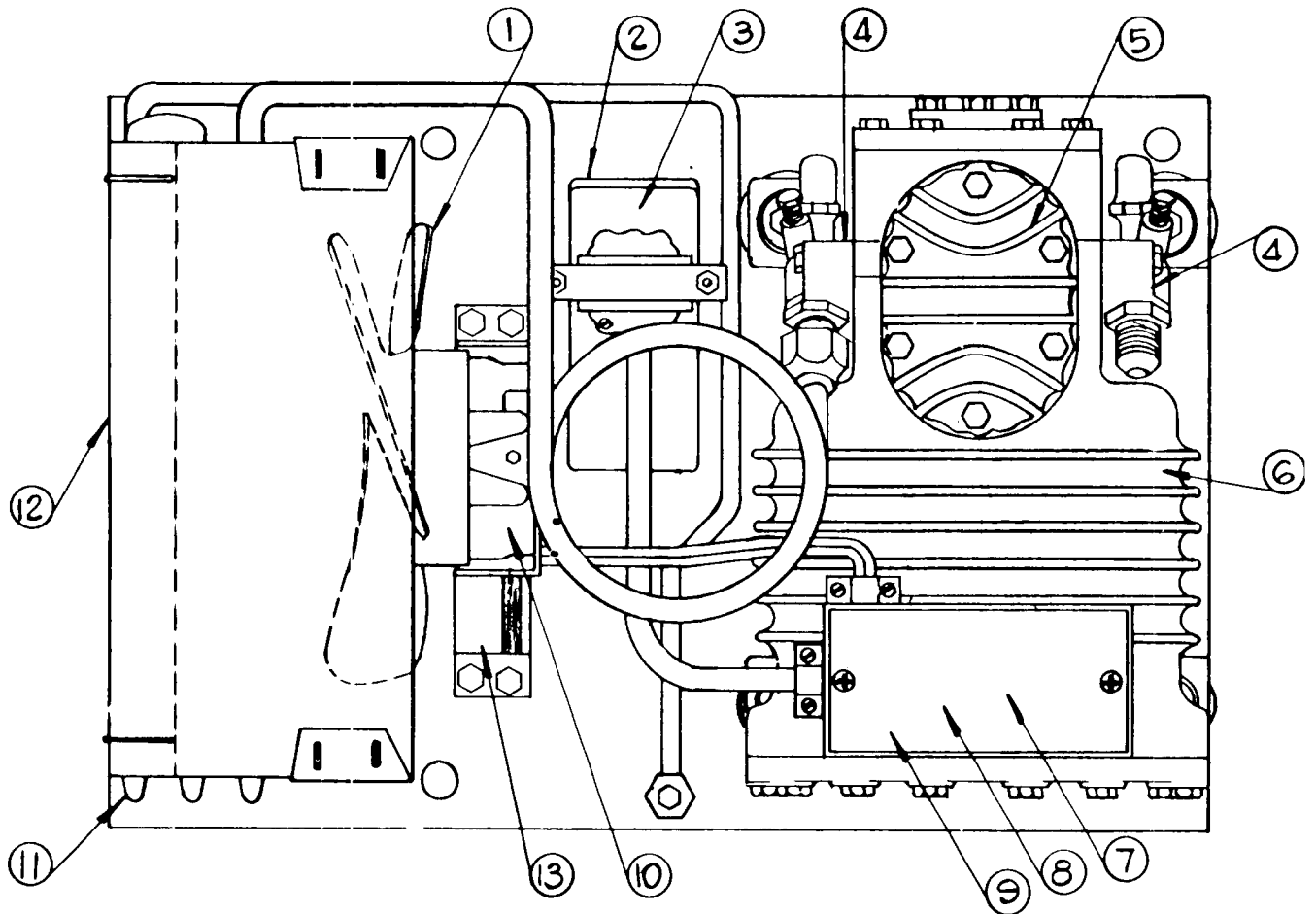
ITEM NO.	PART NO.	NAME
1.	8-522	Leg Levlers
2.	A-15803	Leg
3.	S-6840	Side Door
4.	A-8739	Back Door
5.	A-5862	Rear Moulding Strip
6.	A-15603	Hood (less doors)
7.	S-6849	Top Door
8.	A-15559	Sliding Door
9.	3-640	Door Glide
10.	2-1616	Door Catch
11.	A-16208	Door Track
12.	A-16177	Case Ass'y (less doors)
13.	A-15866	Front Door
14.	A-5863	Moulding Strip
15.	15-324	Plastic Insert
16.	15-156	Emblem
17.	3-271	Speed Nuts

SM-210
HOT WATER TANK



ITEM NO.	PART NO.	NAME	ITEM NO.	PART NO.	NAME
1.	12-356	Heating Element	10.	3-255	Wing Nut
2.	A-6467	Hot Water Tank Only	11.	A-12068	Float Ass'y (includes arm)
3.	S-7044	Nut	12.	A-5998	Screen
4.	A-6477	Stand Pipe	13.	A-5777	Valve Seat Holder (*)
5.	A-12869	Inlet Water Bracket	14.	S-6947	Valve Seat (*)
6.	2-1259	Valve Pin	15.	3-1001	Rivet, Stainless Steel (*)
7.	2-1320	Water Deflector, Plastic	16.	A-6480	Thermostat Box Cover
8.	12-246	Thermo Disc	17.	3-129	Screw
9.	A-6771	Water Inlet Valve Ass'y. (complete with float)	18.	A-18418	Water Deflector
			19.	A-9754	Hot Water Tank Complete (less cover)

SM-210
CONDENSING UNIT
1/2 HP Air Cooled, Copeland



ITEM NO.	PART NO.	NAME
1.	18-363	Fan Blade
2.	18-1901-7	Starting Capacitor
3.	18-1903-4	Relay
4.	18-337	Suction, Service Valve (18-237 Discharge Valve)
5.	18-326	Valve Plate & Gasket Kit Assembly (*)
6.	18-325	Motor Compressor 115/60/1
7.	18-347	Overload Klixon (*)
8.	18-241	Terminal Assembly (*)

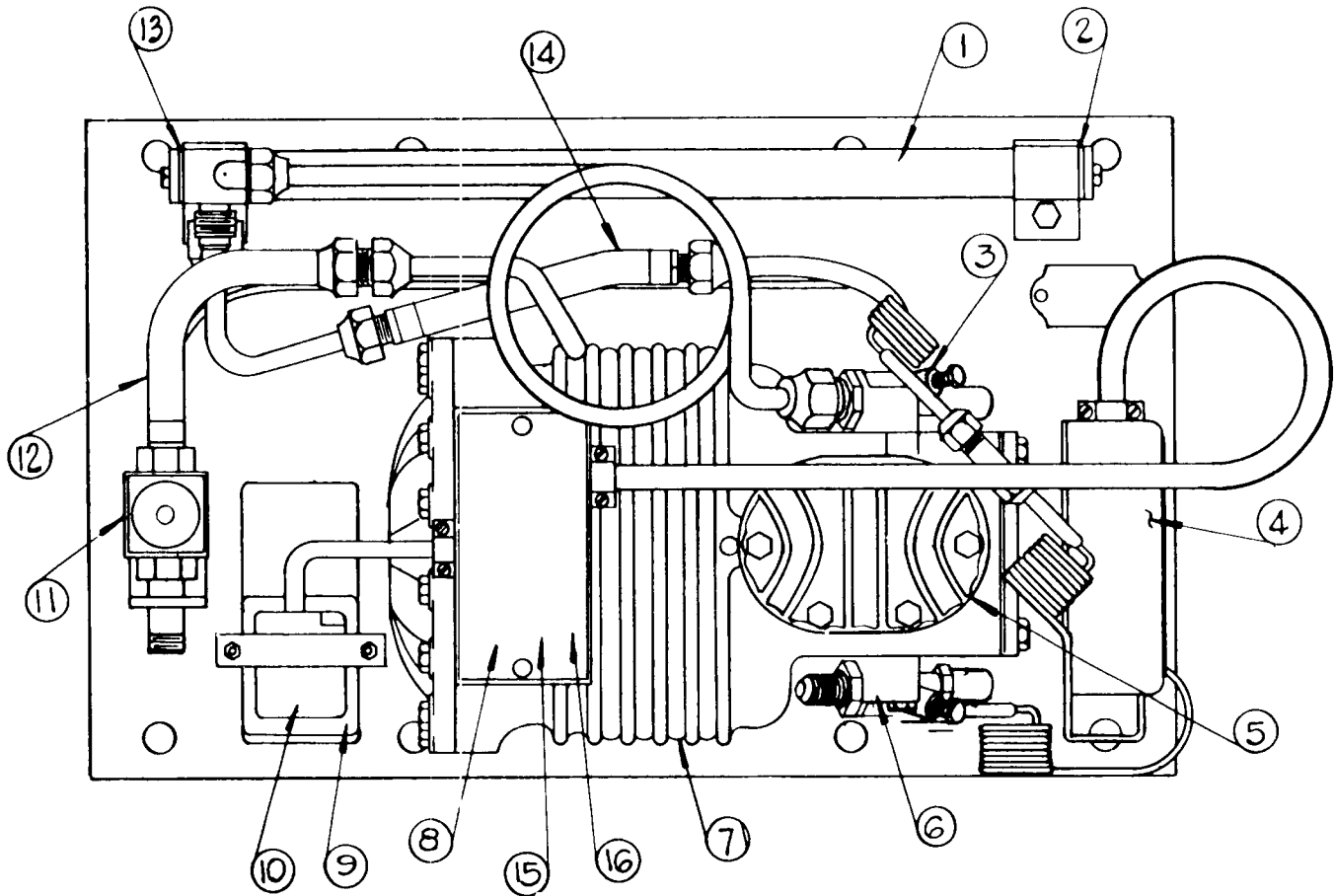
ITEM NO.	PART NO.	NAME
9.	18-270	Terminal Board (*)
10.	18-333-1	Fan Motor
11.	18-334	Condenser
12.	A-12111	Shroud
13.	18-388	Fan Motor Bracket

NOTE: Overload Not Used On Units That Are Inherent Protected. If Possible Use Copeland Part No. When Ordering Capacitors & Relays

Note:
Not available as a complete mounted
ass'y

CONDENSING UNIT

½ HP Water Cooled, Copeland

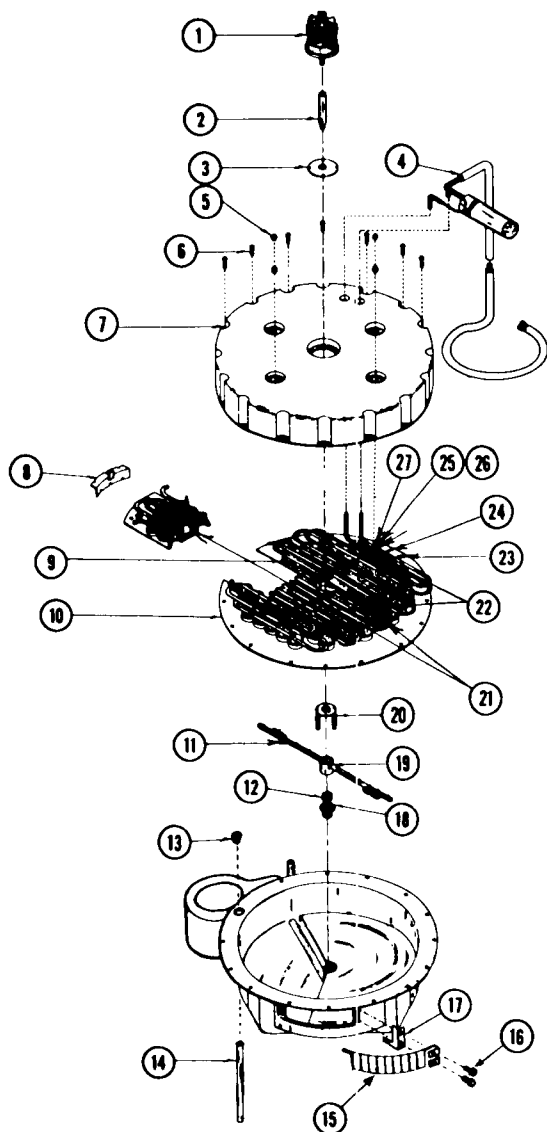


ITEM NO.	PART NO.	NAME	ITEM NO.	PART NO.	NAME
1.	18-368	Condenser	11.	11 ⁴ 198	Water Valve
2.	18-262	Plain Gasket	12.	18-260	Compressor to Valve Water Hose
3.	18-237	Discharge Service Valve	13.	18-263	Manifold Gasket
4.	11-286	High Pressure Control	14.	18-261	Compressor to Condenser Water Hose
5.	18-326	Valve Plate & Gasket Kit Assembly (*)	15.	18-270	Terminal Board (*)
6.	18-337	Suction Service Valve	16.	18-241	Terminal Assembly (*)
7.	18-355	Motor Compressor 115/60/1	If Possible Use Copeland Part No When Ordering Capacitors & Relays.		
8.	18-347	Klixon Overload (*)	(*) Not Shown		
9.	18-1901-7	Starting Capacitor			
10.	18-1903-4	Relay			

Note:

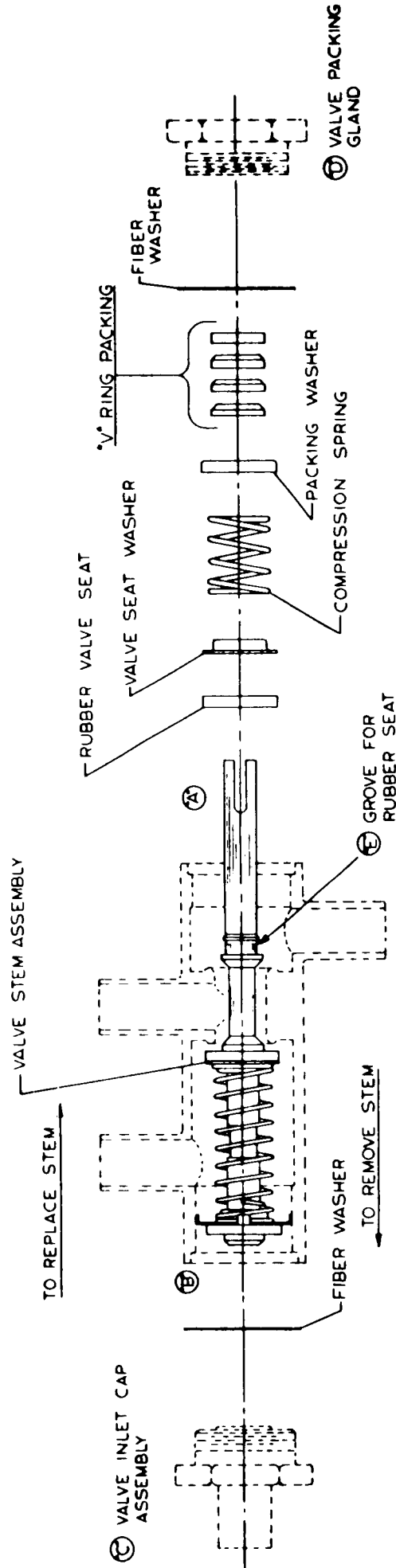
Not available as a complete mounted assembly.

SM-210 H FREEZER ASSY

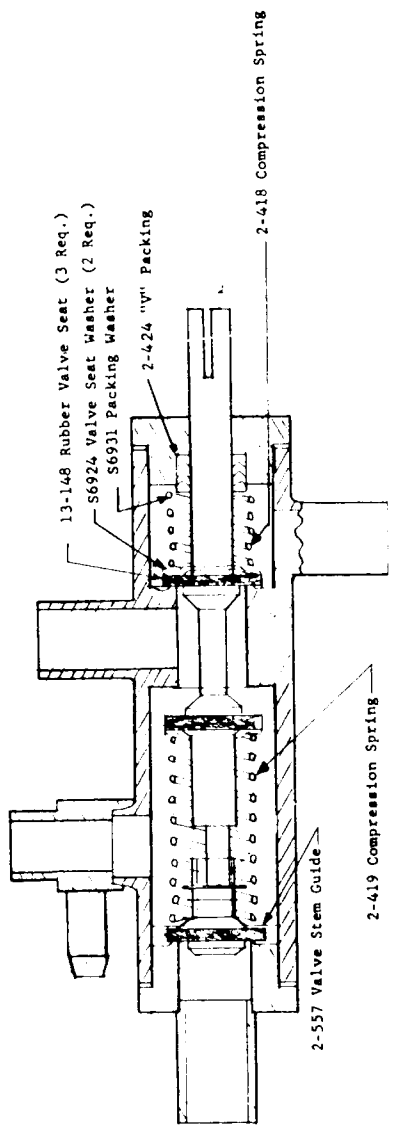
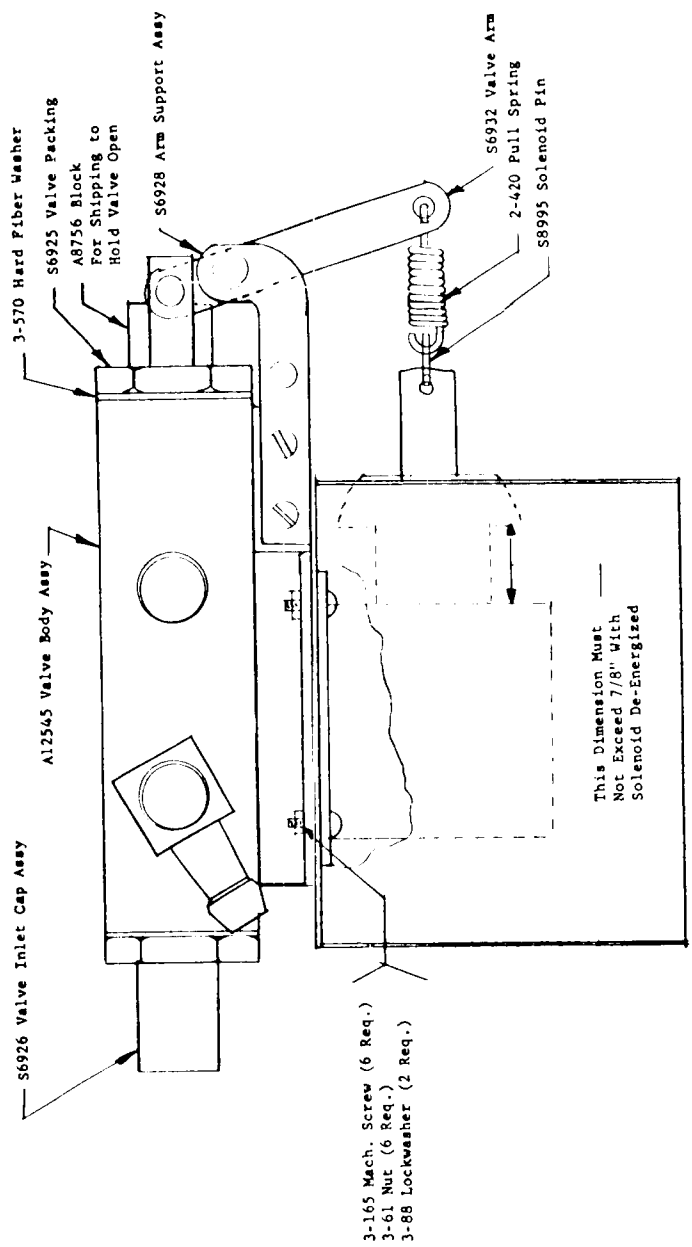


ITEM NO.	PART NO.	NAME
1.	12-675-1	Drive Motor
2.	A-6084	Drive Shaft
3.	13-176	Drive Motor Gasket
4.	S-9506	Suction Line, Cap Tube Assy
5.	3-357	Nut (4 required)
6.	3-10	Screws (16 required)
7.	A-15711	Freezing Chamber Top
8.	A-12472	Water Baffle
9.	A-16120	Platen Ass'y
10.	13-288	Rubber Cup Holder
11.	S-6907	Jets (8 required)
12.	S-6909	Jet Bearing Shaft
13.	S-7434	Adapter
14.	A-16238	Hot Water Tube
15.	A-15807	Curtain Ass'y
16.	S-7234	Cap Nut
17.	S-7730	Cube Stopper
18.	2-433	"O" Ring
19.	S-6903	Spray Bar
20.	S-6900	Drive Arm
21.	A-12435	Spacer (2 required)
22.	A-9011	Spacer (2 required)
23.	A-12437	"I" Bolt (4 required)
24.	A-12436	Coil Clamp (4 required)
25.	S 6866	Rubber Insul. (4 reqd.)
26.	3-547	Screw (4 required)
27.	3-73	Nut (4 required)

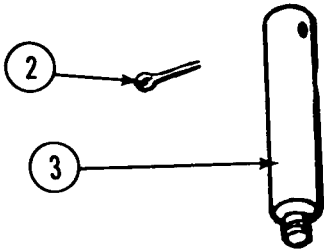
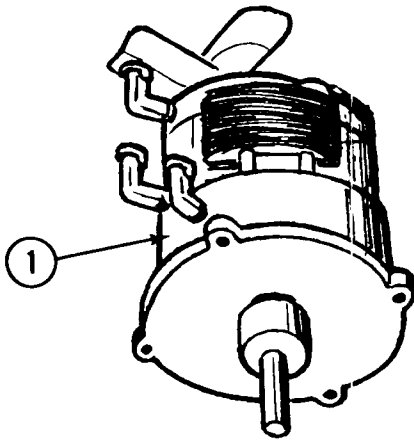
INSTRUCTIONS FOR INSTALLING
A8139-20 VALVE REPAIR KIT



1. REMOVE COTTER KEY AND STAINLESS STEEL PIN (NOT SHOWN) FROM VALVE STEM END "A".
2. REMOVE "C" VALVE INLET CAP ASSEMBLY AND "D" VALVE PACKING GLAND FROM VALVE BODY.
3. REMOVE VALVE STEM ASSEMBLY AS SHOWN.
4. CLEAN THE INSIDE OF THE VALVE BODY.
5. INSERT ASSEMBLED PORTION OF VALVE KIT (VALVE STEM ASSEMBLY), AS SHOWN, THRU END "B".
6. SCREW "C" VALVE INLET CAP, TO VALVE BODY (BE SURE TO INSERT NEW FIBER WASHER) TO POSITION OR SECURE VALVE STEM ASSEMBLY IN VALVE BODY.
7. ASSEMBLE IN SEQUENCE PARTS SHOWN IN DIAGRAM AND PACKED LOOSE IN THE KIT.
NOTE: USE $\frac{1}{2}$ " COPPER TUBE OR EQUIVALENT OVER STEM END "A" TO PUSH RUBBER VALVE SEAT INTO GROOVE "E".
8. SCREW "D" VALVE PACKING GLAND, TO BODY. (BE SURE TO INSTALL NEW FIBER WASHER).
9. ASSEMBLE STAINLESS STEEL PIN AND COTTER KEY TO END "A"



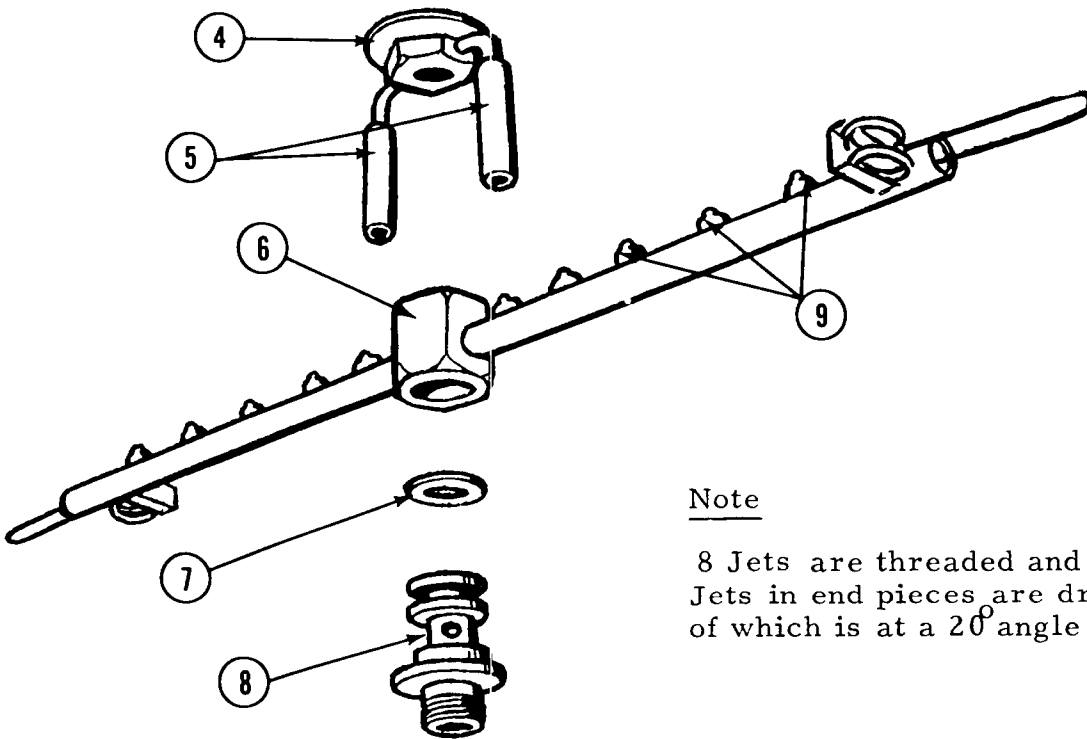
WATER VALVE ASSEMBLED



DRIVE LINKAGE AND SPRAY BAR
SM - 210

Item no.	Part no.	Name
1.	12-675-1	Drive Motor
2.	3-290	Cotter Ket
3.	A-6084	Drive Shaft
4.	S-6900	Drive Arm
5.	S-7315	Rubber Covers
6.	S-6903	Spray Bar
7.	2-433	"O" Ring
8.	S-6909	Inlet & Bearing Assy
9.	S-6907	Jets

Note: Left Hand Thread



Note

8 Jets are threaded and removeable.
Jets in end pieces are drilled holes, one of which is at a 20° angle.

FUNCTIONAL PARTS AND MAINTENANCE

PART NAME: Relay
NUMBER: 12-419
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 and blow points free of lint or dirt.

PART NAME: Temperature Control White Rodgers Type 1604-31
Storage Bin
NUMBER: 11-99-1
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: Most of these controls have adjustable differential. Setting on range dial should be 35° cut out, 39° cut in.
REPAIRABLE: No. Replace when inoperative. If out of warranty it can be sent in through your local refrigeration supply dealer and repaired or replaced for a small percentage of original cost.
MAINTENANCE: Remove cover, check points for corrosion or arcing every 6 months. Blow control free of bugs dirt, etc. Check capillary for cracks or worn spots due to vibration.
Hold a small handful of ice on thermostat bulb to check operation of control. Tighten electrical connections.

PART NAME: Water valve with solenoid
NUMBER: A-13460-Water valve only
A-8140-Solenoid & Mounting Hardware
12-248-1 Solenoid only
FUNCTION: This water valve is electrically operated by a solenoid. Valve proper has three valve seats and four water ports. This valve is the heart of the water control system. During freezing cycle it uses two upper openings to circulate water between sump tank and sump pump plus excess overflow water caught in reserve tank. Closes off openings to hot water and drain tube. During defrost period, electrically operated solenoid pulls seats back from hot water supply and drain but closes center port to direct hot water to top of platen. Hot water goes up into freezer through first top opening to defrost cubes while water used in freezing cycle and left in sump tank drains through second top opening and out through drain opening.
SETTING: None. Factory set.
REPAIRABLE: Yes, All components are replaceable including valve seats, gaskets, V-packing, solenoids, etc.
MAINTENANCE: Valve and entire unit should be cleaned with ice machine cleaner every six months. In many localities heavy scale accumulation will lodge in valve and hold rubber seats open. This will either let warm water seep into sump freezer supply and cause long freezing cycle or else it will let sump freezer supply seep down drain and cause shortage of cube supply water. This results in short cycles, partial cubes and cloudy cubes. Manually flushing valve will also help in many cases.

FUNCTIONAL PARTS AND MAINTENANCE

- PART NAME: Agitator Drive Motor Merkle Korff
- NUMBER: 12-675-1
- FUNCTION: This motor is used to drive the linkage mechanism which in turn drives the oscillating 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.
- 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 out of warranty motors.
- MAINTENANCE: Oil every six months or less as use indicates. Use SAE 20 oil. There are three oil cups on the motor and gear case to add oil. Drive linkage should be inspected to insure free movement with no binding or drag on drive motor.
-
- PART NAME: Timer
- NUMBER: 12-645-1
- FUNCTION: Heart of the cyclematic control system is the temperature control Part No. 11-351 and the time clock it actuates. All electrical components are connected to the time clock terminal board and are shunted by means of a single pole, double throw micro-switch to either the freezing cycle or harvest cycle. Micro-switch is actuated by two metal cams that are directly connected to the electric timer clock motor. Timer has a 12 minute cycle, 9 1/2 minutes on defrost cycle. Time clock face has numerals to 7 on half the face. Each numeral represents a one minute period. Face also has a lever beneath it which can be moved to lengthen or shorten defrost period.
- SETTING: Normal setting for defrost is 2 1/2 minutes.
- REPAIRABLE: Yes. Micro-Switch only, Part No. 12-645-20 is replacable as well as timer clock motor only, Part No. 12-367.
- MAINTENANCE: Check all electrical connections, blow contact points free of dust, dirt, etc.

FUNCTIONAL PARTS AND MAINTENANCE

PART NAME: Reverse Acting Temperature Control
NUMBER: 11-345
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 and also defrost period.
SETTING: Control is adjustable with screw driver on off-set cam.
REPAIRABLE: No, Replace when inoperative.
MAINTENANCE: Check electrical connections. Blow points free of dust, dirt, lint, etc.

PART NAME: Solenoid
NUMBER: 12-248-1
FUNCTION: Solenoid is mounted directly on water valve body. Adequate stops are present in the housing of the solenoid but may require bending or adjusting. An electrically operated solenoid which is used to open and close the water valve through mechanical linkage. Solenoid is a continuous duty type.
SETTING: Solenoid itself requires no adjustment, however, linkage should be adjusted so that solenoid can make positive contact when energized and core will leave field when de-energized.
REPAIRABLE: No. Replace when inoperative.
MAINTENANCE: Solenoid proper requires no maintenance, but care should be exercised to insure proper voltage to coil to avert burn-outs. Mechanical linkage can be oiled and adjusted to prevent drag on solenoid. Many solenoid burn-outs are caused indirectly such as a sticking time clock which will keep solenoid energized for long periods of time.

PART NAME: Sump pump
NUMBER: 12-418-1
FUNCTION: Recirculating pump used to pump supply water in sump tank to jet tubes during freezing cycle.
SETTING: Factory set
REPAIRABLE: Yes. Motors rewound, impeller blades replaced. Generally out of warranty pumps are replaced by motor only part no. 12-1351-22.
MAINTENANCE: None. Grease seal ball bearing permanently lubricated

SERVICE - COMPLETE UNIT

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

To remove cabinet top or hood.

1. Remove two back end screws in rear moulding strip.
2. Pull out black insert tape concealing screws.
3. Remove balance of screws in moulding strips.
4. Lift hood straight up.

To remove Sump Pump.

1. Remove hood top panel.
2. Disconnect hose clamp on goose neck.
3. Remove electrical lead to control box.
4. Loosen 2 wing nuts and washer. This disengages pump cover.

To remove Drive Motor

1. Remove hood top panel.
2. Disconnect electrical cord in control box
3. Reach in through curtained opening and remove drive fork from drive shaft attached to motor. Note drive fork has left hand thread.
4. Remove 4 screws holding drive motor to freezer dome and pull drive motor shaft out.

To remove the Jet Tube assembly

1. Reach in through storage bin sliding door and remove two brass thumb screws holding plastic curtain closed.
2. Open curtain on hinge and reach hand into opening, feeling for spray bar.
3. Follow spray bar to center hub, turn spray bar so one end points towards curtain opening. Now lift straight up on spray bar. then out after spray bar comes off center hub.

To remove Water Inlet Valve to hot water tank.

1. Remove hood top panel.
2. Remove hot water tank cover.
3. Loosen 1/4" SAE flare nut to water inlet valve.
4. Loosen hex sided brass nut holding valve to bracket.
5. Remove and replace water inlet valve.

To remove complete Hot Water Tank

1. Remove complete hood.
2. Remove the two hose clamps to drain lines.
3. Loosen 1/4" SAE flare nut to inlet valve.
4. Disconnect lead wire to control box, lift up from bracket clips and out.

To change hot water tank Heating Element

1. Remove top hood service panels.
2. Remove hot water tank cover.
3. Drain all water from hot water tank.
4. Remove stainless steel thermostat cover.
5. Remove lock nut from each element prong.
6. Install new element, fill tank and check operation. Should heat water to 140°F.

SERVICE - COMPLETE UNIT

To remove solenoid-Operated Three Way Water Valve

1. Remove lower front and right side service doors.
2. Remove all hose clamps to solenoid operated water valve.
3. Remove upper and lower hex head cap screws holding valve housing to frame.
4. Drop entire assembly down, unplug cord to solenoid at solenoid, loosen solenoid nut and bolt assemblies holding solenoid to brass valve proper.
5. Replace in reverse of above.

To replace Storage Bin Door

1. Lift door up and slide back as you normally would to remove ice from bin.
2. Pull door straight out.
3. Install repaired or new door in reverse of step number 2 above.

To replace Motor Compressor Valve Plate

1. Install compound gauge in suction service valve port and close suction service valve by turning valve stem all the way in. (Front seated)
2. Operate motor compressor until gauge reading reaches zero. Turn off unit.
3. Front seat discharge service valve.
4. Loosen all head bolts and tap head lightly with rubber-faced or plastic hammer to break loose.
5. Remove head, defective valve plate and any gasket material that may have stuck to head or compressor body.
6. Install new valve plate with all new gaskets as provided, tightening each head bolt a little at a time until all are snug.
7. Remove port gauge plug from discharge valve and crack open suction side letting gas purge off trapped air from head. Install hi side gauge in this port, back up both service valve stems and check around valve plate for refrigerant leaks.
8. Start unit, noting head & back pressures. If normal, let run until compressor gets warm. Tighten all head bolts once more, and again check for leaks.

To replace the Compressor

1. Front seat both suction service valve and discharge service valve on the compressor.
2. Disconnect the wiring from the compressor
3. Remove the bolts holding the service valve to the motor compressor body.
4. Remove the compressor hold-down nuts and lift the compressor out of the unit.
5. Reverse steps 1 through 4 in replacing the compressor.
6. Check the compressor for oil before connecting the oil lines. Should be 2 inches down from the top of the oil plug hole or not over 1/2 of sight class
7. Remove the gauge port plug from the discharge service valve. Crack the suction service valve slightly, allowing some gas to escape out the gauge port of the discharge valve. When you have thoroughly purged the compressor, replace the plug and open all valves. It may be necessary to charge the unit because some of the gas was lost when the defective compressor was removed. Check & charge if necessary.

MAINTENANCE INSTRUCTION FOR SCOTSMAN SUPER CUBERS

THE FOLLOWING MAINTENANCE MUST BE ACCOMPLISHED TWO (2) TIMES PER YEAR ON ALL SCOTSMAN SUPER 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 hot water tank and evaporator, sump tank and screen, using Scotsman Ice Machine Cleaner or equivalent.
3. Remove jet tube and manually clean jets by unscrewing 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 three(3) places. Use SAE 20 oil - 3 oil cups.
9. Grease plunger on water solenoid valve with high temp grease. -OPTIONAL
10. Oil Condenser fan motor. Punch sealed cap or remove screws where possible.
11. Check for refrigeration leaks with halide torch.
12. Check for water leaks. Tighten drain line connections.
13. Check size and condition of cubes. Adjust as required. See Service Analysis Section.
14. Check bin thermostat setting. Factory set at 35° out, 39° in.

PROCEDURE FOR USE OF SCOTSMAN ICE MACHINE CLEANER IN SCOTSMAN ICE MACHINES

1. Remove front access door
2. Locate control box with time clock knob protruding thru cover.
3. Put unit through a harvest cycle manually. This may be done by turning time clock knob clockwise until a loud snap is heard.
4. Let unit finish cube harvest cycle and start into freezing cycle. This will be approximately 5 minutes after the loud snap in Step #3 is heard. At this time turn the compressor switch off, the lower of the two switches in the control box.
5. Locate the hot water tank which is directly under the top access door. Remove door. Remove the hot water tank cover by pulling up around the edge until it snaps off. Pour 4 ounces (half bottle) of "Scotsman Ice Machine Cleaner" into the hot water tank.
6. Locate the sump reservoir which is in the storage bin area and directly behind the ice discharge chute. This discharge chute is covered by a series of white plastic curtains which are free to swing out into the storage bin. Pour 4 ounces (half bottle) of "Scotsman Ice Machine Cleaner" into the sump reservoir.
7. Let unit operate normally for 10-15 minutes into the freezing cycle. No ice will be made because the motor compressor is not in operation.
8. At the end of this time put the unit through 2 or 3 harvest cycles manually to allow fresh make up water to clean out remaining solution. Each time waiting approximately 5 minutes after the loud snap until the next harvest cycle is done manually.
9. Turn the compressor switch back on.
10. Check each new batch of cubes until they are clear and until acid taste has been removed from cubes.
11. Put hot water in storage bin to melt the cubes and thereby clean the drains with the same solution that has just cleaned the unit.
12. Use a damp cloth to wipe off curtains and inside of storage bin.
13. Replace all access doors.
14. Unit is now ready for continued automatic operation.

PARTS LIST SM-210

1. CABINET PARTS

A-15603 Case hood assembly, less doors
 S-6849 Hood top door
 A-16208 Door slide
 15-156 Emblem
 A-5862 Moulding strip - rear
 A-5863 Moulding strip - front
 A-15866 Cabinet right side front service
 S-6840 Cabinet right side service door
 A-8739 Cabinet rear service door
 A-15559 Sliding Door

2. CONTROL BOX - ELECTRICAL COMPONENTS

12-645-1 Timer Assembly
 12-645-20 Timer micro-switch
 11-345 Cube size control
 12-537 On-Off switch
 11-99-1 Bin thermostat
 12-419 Complete cube relay

3. CONDENSING UNITS AND REFRIGERANT CIRCUIT

	AIR - COOLED	WATER - COOLED
Freezer Cup and platen only	A-16120	
Freezer and H X assembly complete kit	A-15788-25	Same
Suction H X and accumulator line	S-9508	Same
Drier	2-544	Same
Motor compressor 115/60/1	18-325	18-355
Valve plate and gasket kit	18-326	Same
Relay	18-1903-4	Same
Starting capacitor	18-1901-7	18-1901-7
Fan motor	18-333-1	
Fan blade	18-363	
Condenser	18-334	18-354
Shroud for condenser	A-12111	
Klixon overload	18-347	Same
Replaceable terminal assembly	18-241	Same
Terminal board	18-270	Same
Compressor to water valve hose		18-260
Compressor to condenser hose		18-261
Plain gasket for 18-259		18-262
Manifold gasket for 18-259		18-263
Manual re-set dual pressure control		11-286
Water regulating valve		11-198

4. HOT WATER TANK

A-9754	Hot water tank complete - s.s., less cover
A-6467	Hot water tank only - - - s. s.
A-6477	Standpipe
A-6771	Water inlet valve
S-6947	Rubber seat for valve
A-5998	Drain Screen
A-12068	Float Assembly
12-246	Thermostat
12-356	Rod type heating element
A-12870	Hot water tank cover

5. WATER VALVE

A-13460	3-Way water valve less solenoid
A-8140	Solenoid & mounting hardware
13-148	Replacement rubber valve seats
2-424	V-packing
2-418	Compression spring 1 inch
2-419	Compression spring 2 1/2 inches
2-420	Solenoid pull spring 1 1/2 inches
S-8995	Solenoid pull key

6. WATER CIRCUIT

16-162	Inlet water strainer
A-13346-4	Inlet water flow control
12-418-1	Sump pump assembly
5-6903	Sprayer tube assembly
S-6907	Sprayer tube jet only
S-7730	Rubber, cube stopper
S-6909	Jet bearing hub
A-12489	Reserve Tank

7. DRIVE MOTOR AND LINKAGE

12-675-1	Drive motor
A-6084	Drive shaft
S-6900	Drive fork
13-176	Drive motor gasket

8. STORAGE BIN AND COMPONENTS

A-15705	Storage bin
A-18090	Storage bin drain assembly
A-6448	Drain, strainer
A-15759	Bin thermostat bulb cover
13-590	Bin thermostat bulb gasket
A-15807	Curtain assembly

9. MISCELLANEOUS

2-540	Ice Scoop
15-324	Plastic trim insert-per ft.
1-657	Packing crate
12-1351-22	Sump Pump motor only
19-343	Scotsman Ice Machine Cleaner