TABLE OF CONTENTS

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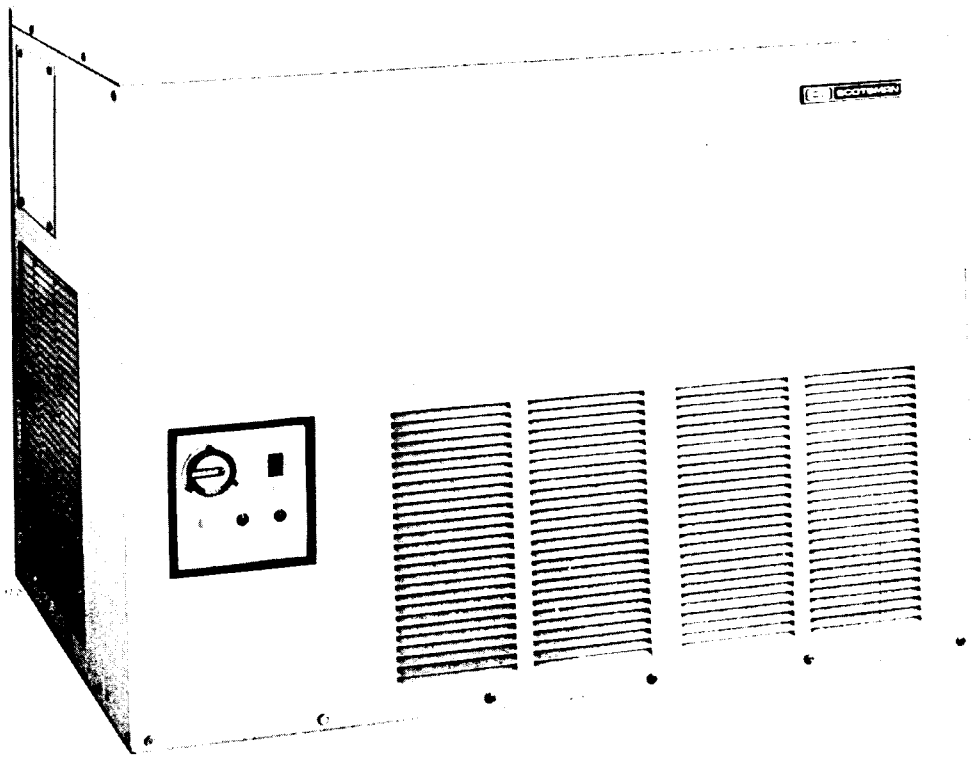
SCOTSMAN

MF6 modular flaker



ice making capacity

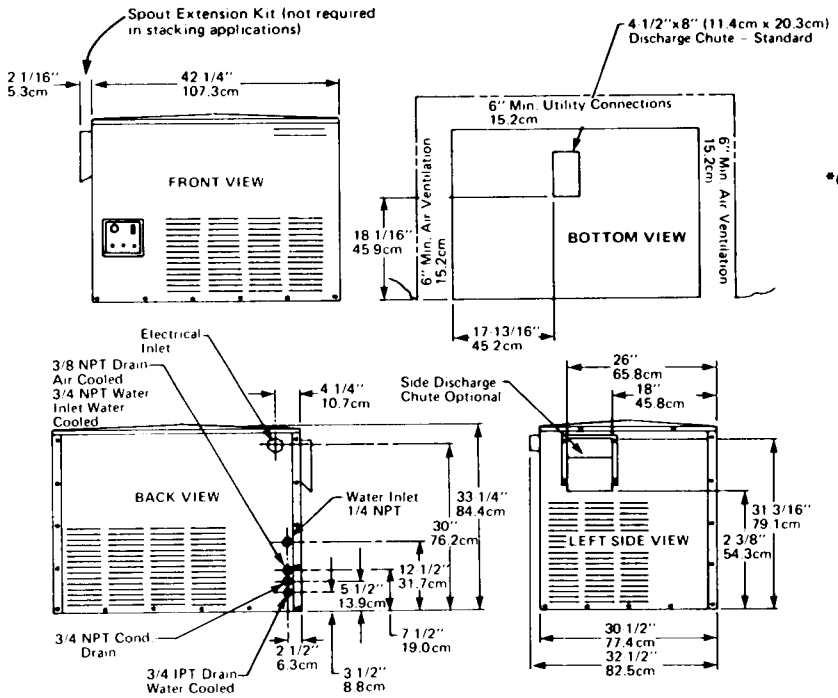
Daily Ice Capacity is directly related to condenser air inlet temperature, water temperature, and age of machine.

NOTE: To keep your SCOTSMAN MODULAR FLAKER performing at it's maximum capacity, it is necessary to perform periodic maintenance as outlined on page 40 of this manual.

MANUFACTURER:

QUEEN PRODUCTS DIVISION
KING-SEELEY THERMOS CO.
ALBERT LEA, MINNESOTA 56007

MF6 modular flaker



***Capacity:** Refer to Ice Making Capacity chart
Storage Bin: The MF6 will stack onto either the B80 or B90 Scotsman Bin. See your dealer for stacking bin and bin extension capacities.
Height: 33-1/4 (84.5cm) **Width:** 42-1/4 (107.3cm)
Depth: 32-1/2 (82.6cm)
Weight: Air Cooled 628 lbs. (286 kg.)
Water Cooled 557 lbs. (253 kg.)

KSE6 SPOUT EXTENSION KIT Adapts MF6 for ice discharge out of left end of cabinet.

IMPORTANT OPERATING REQUIREMENTS

Electrical Voltage: Machine requires voltage indicated on rating nameplate. Failures caused by improper voltage are not considered factory defects.

Ambient Temperature: Machine is not designed for outdoor installation. Machine will not operate when air temperature is below 50° F. or above 100° F.

Water Pressure & Temperature: Requires 20 lbs. flowing water pressure, without interruption. Machine will not operate when water supply temperature is below 40° F. or above 100° F.

MF6 MACHINE SPECIFICATIONS

Model	Condensing Unit	Compressor Horsepower	Finish *	Shipping Weight lbs.	kg.
MF6AE	Air	2	Enamel	628	286
MF6WE	Water	2	Enamel	557	253

*Stainless steel panel kit SPKMF6 converts unit to stainless steel cabinet. Painted models have Sandalwood enamel micomatte finish

Basic Electricals	Minimum Wire Sizes (W-wire, G-gauge)	Total Amperages
Air Cooled: 230/60/1	2W 12G	15.3
208-220/60/3	3W 12G	14.2
208/60/1	2W 12G	16.1
Water Cooled: 230/60/1	2W 12G	13.9
208-220/60/3	3W 14G	12.5
208/60/1	2W 12G	14.7

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

Scotsman Ice Systems include a full line of modular and self-storing cubers, flakers, drink dispensers, bins and accessories.

SCOTSMAN®
COMMERCIAL ICE SYSTEMS/HOME ICE MAKERS

QUEEN PRODUCTS DIVISION
KING-SEELEY THERMOS CO.
505 FRONT ST., ALBERT LEA, MN 56007

Printed in U.S.A.

SPECIFICATIONS

	MF6WE-2A	MF6AE-3A
Compressor	2 HP	2 HP
Condensor	Water Cooled	Air Cooled
Refrigerant	R-12, 42 oz.	R-12, 65 oz.
Refrigerant Control	Capillary Tube	Capillary Tube
Voltage Characteristics		
Compressor Motor *	230 V - 1 Phase - 60 Cycle	208 V - 3 Phase - 60 Cycle
Worm Drive Motor *	230 V - 1 Phase - 60 Cycle	208 V - 1 Phase - 60 Cycle
Amperage Rating		
Compressor Motor	11.4 amps. 230/60/1	7.4 amps. 208-220/60/3
Worm Drive Motor	2.8 amps.	3.2 amps.
Worm Drive Motor	1/3 HP	1/3 HP
Worm - RPM	4	4
Water Consumption		
to Produce Ice	10 Gallons 1 Hour	10 Gallons 1 Hour
Used by Condensor	Up to 5 Gal. per Minute	
Storage Capacity	Use Remote Bin	Use Remote Bin
Water Pressure Drop *		
Condensor	GPM — Psi-Pressure Drop	
	1.5 — 2.5	None
	3 — 8.5	None
	4.5 — 17.1	None
	6 — 28.0	
3/8" Water Regulating Valve	1.5	
	3 — 2.0	
	4.5 — 4.6	
	6 — 10.0	

* NOTE: Above Pressure Drops for Standard hook-up. Pressure Drop can be reduced by splitting water circuits through condensor and compressor.

* These are listed as standard voltages, other available on request, contact Sales Department for Further Information.

DESCRIPTION

SCOTSMAN Modular Flakers are designed for restaurants, super markets, soda fountains, hospitals, bakeries, fish markets, poultry stores, packing plants, etc. It is the finest Ice Maker on the market today. It will work 24 hours a day for you, or only as needed. It produces the highest quality ice available at any price.

SCOTSMAN Modular Flakers are easily installed requiring only standard water, drain and electrical connections.

ATTRACTIVE COMPACT CABINET. Sandlewood or stainless steel removable panels makes for easy access to mechanical parts.

SEALED REFRIGERATION SYSTEM. Provides quiet, efficient operation of the machine. Compressor motor is internally spring mounted for quiet operation. Compressor motor is covered by a full 5-Year parts only, warranty.

HOW IT WORKS. An exclusive patented ice-making system, wherein water in the constant level float reservoir is fed to the bottom end of the freezing cylinder and turns to ice on the inside of this cylinder. Ice from the refrigerated walls of this cylinder is extruded past the ice breaker at the top of the cylinder through a side opening by means of a stainless steel auger driven by a gearmotor drive.

Model No. MF6 is continuous flow type machine, and is manually started by an OFF and ON switch located on cabinet front. Since the MF6 does not have its own attached bin, it is necessary to use an auxillary bin for ice storage. A bin thermostat is mounted in each continuous flow type machine for the purpose of mounting control bulb from machine to bin.

Where large volume is required, the Scotsman MF6 Modular Flaker fills the need. The stacking system provides volume flaked ice production without requiring additional floor space. With Scotsman bin flexibility, bin extensions can be added for greater storage capacity. The MF6 Modular Flaker is designed also to discharge from the left end thru a spout extension kit feeding into an adjacent bin. Engineered to give maximum protection, a control panel immediately indicates a malfunction. Three lights on the control panel tell you when there is no water coming into the unit, when operating pressure is not normal and when the drive motor is overloaded. A circuit breaker stops all action when there is a motor overload. An elapsed operating time indicator tells the exact number of hours the unit has been operating so periodic checks can be made of the equipment to avoid costly breakdown and repair. Whatever your ice production needs, you can depend on Scotsman, world leader in ice making equipment.

SCOTSMAN MODULAR FLAKERS
PREPARATION FOR INSTALLATION

1. All models MF6 Flakers come equipped as standard with the bottom center discharge chute installed. This permits top mounting on Companion Scotsman Bins - Extenders, as is.

2. As an option, ice can be discharged out thru the left side panel by using a KSE6 spout extension kit. This option necessitates removal of the standard center drop chute and turning freezer ice spout 180%to exit out pre punched hole in left side panel. Extension spout is then added to freezer spout to complete installation. Also reroute bin thermostat capillary into bin for proper shut off.

3. After uncrating modular flaker, remove front, side and top panels and inspect for any concealed damage. Notify carrier of any concealed damage claims.

4. Select unit location prior to hook up of water drain and electrical in accordance with locat and national codes. Minimum room temperatures is 50%Fahrenheit, maximum room temperature 100%Fahrenheit. On air cooled models, select well ventilated location.

5. Install bin for use with modular flaker in its permanent location following instructions included with the storage bin.

6. Level bin with adjustable legs and wipe storage bin liner clean with damp cloth.

7. The flaker unit may now be placed on the bin. Insure that the holes in the base panel line up with the holes in the bin top.

8. Thru cabinet top, locate metal reservoir. Remove water reservoir cover and take out paper packing around float ball.

9. Loosen motor compressor hold down nuts to permit motor compressor to ride free on mounting pads.

10. Open electrical control box cover and check unit nameplate voltage against building source voltage and make sure they correspond. **Caution** - Improper voltage supplied to units will void your parts replacement program.

11. Locate registration card and fill out card completely including model and serial numbers as taken from aluminum plate found behind front service panel. Forward to Scotsman factory for your personal registration certificate.

INSTALLATION LIMITATIONS

ELECTRICAL

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

2. 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

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.

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.

INSTALLATION

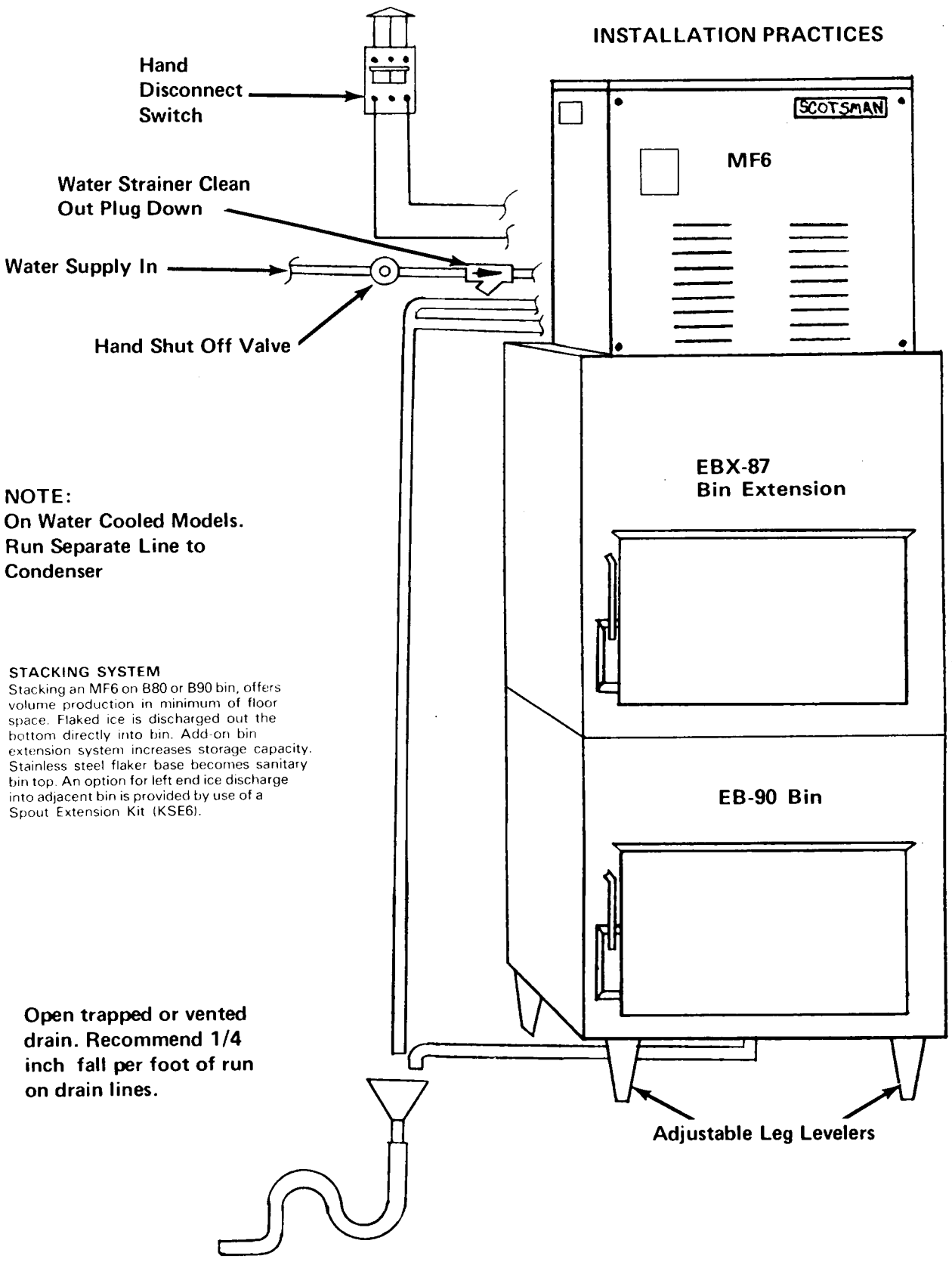
1. **Bins.** Care should be exercised in proper bin selection. Too small a bin will give unsatisfactory performance. A bin should have a minimum of 1/2 of machines capacity per day, when the machine shuts off on thermostat. Make sure users demands are met, by proper bin as well as by proper machine selection. Plan relative location of the machine, so as to enter the bin as close to the top as possible. An upper and a lower access door should be provided in all bins. Bins should also be higher than their width and length dimensions, so that the maximum ice can be stored in the minimum cubic feet of space. A bin designed in this fashion, will be the most convenient to the user. Too large a bin can also cause trouble. Excessive melting of ice will occur if the bin is larger than required. Proper bin selection is important to the success of the ice machine installation.

2. **Stands.** A special stand should be built if the machine is located beside the bin. Care should be exercised in making the stand strong enough to support the weight. In designing the stand, plan for servicing of the machine from front, top and sides. It is also possible to locate the machine on top of the bin. Care should be used in selecting a bin that has been specially reinforced. Standard bins are usually not sufficiently reinforced for this purpose. An unsteady platform will cause excessive vibration. Specially built bins can provide proper support and allow for a servicing platform.

3. **Bin Thermostat.** Locate the thermostat bulb as high as possible in the bin and still allow the machine to cut off before ice builds up in the chute. If this occurs, ice can stick in the chute, keeping the machine off, after there is a need for ice production. The capillary can usually enter through the chute opening. Keep the bulb and the capillary line away from shovels.

4. **Ice Chutes.** If the outlet of the machine is remote from the bin, a chute will be required. Stainless steel is an excellent material for this purpose where its cost is not prohibitive. Angles or ledges of less than 45° should not be used. Ice will cling to the surface and either melt excessively or jam in the chute. The sharper the drop the better. If straight down, do not insulate, unless necessary.

INSTALLATION PRACTICES



NOTE:
On Water Cooled Models. Run Separate Line to Condenser

STACKING SYSTEM
Stacking an MF6 on B80 or B90 bin, offers volume production in minimum of floor space. Flaked ice is discharged out the bottom directly into bin. Add-on bin extension system increases storage capacity. Stainless steel flaker base becomes sanitary bin top. An option for left end ice discharge into adjacent bin is provided by use of a Spout Extension Kit (KSE6).

Open trapped or vented drain. Recommend 1/4 inch fall per foot of run on drain lines.

INSTALLATION
ELECTRICAL CONNECTIONS:
MF6AE-2A
230 Volts, 60 Cycle, 1 Phase
20 Amp. Circuit

10 Guage wire should be used for electrical hook-up. All Scotsman Modular Flakers require a solid earth ground wire.

Be certain that the Flaker is on its 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 switch and motor windings.

All external wiring should conform to the National, State and local Electrical Code requirements. Usually an electrical permit and the services of a licensed electrician will be required.

ELECTRICAL INSTALLATION:

		MF6-2	MF6-3
Compressor	H.P.	2	2
	Voltage	230	208-220
	Amp. Rating	11.4	7.4
	Watts Input	2020	1560
	Cycle	60	60
	Phase	Single	Three
Drive Motor	H.P.	1/3	1/3
	Voltage	230	208
	Amp. Rating	2.8	3.2
	Cycle	60	60
	Phase	Single	Three

ELECTRICAL CONNECTIONS:

MF6-2	MF6-3
230 Volts	208 Volts
60 Cycle, 1 Phase	60 Cycle, 3 Phase
30 Amp. Circuit	20 Amp. Circuit
3-wire	4-wire

INSTALLATION

WATER SUPPLY

Separate water supplies are recommended, on water cooled models.

A. Freezer or ice making supply water should be run through a hand shut off valve before entering unit. Freezer supply water connection is top connection in drain and hook up assembly. Has a 1/4" N.P.T. female pipe casting. This line also has factory installed water strainer internally mounted.

Connect to a good cold water supply with minimum 1/2" O.D. copper line for short run, 5/8" O.D. copper line for long runs. A check valve on this line will be required in some cities depending on local plumbing codes.

B. The condensor water supply line connects to the 3/4" female pipe casting on machine. Use care in connecting water line to the machine. Incoming water goes through the water regulating valve first and then to the water cooled condensor. Observe arrow on water regulating valve. Water supply must be installed to conform with local code. In some cases, a licensed plumber and/or a plumbing permit will be required.

If tower is used several precautions should be observed.

1. Leave water regulating valve in the system.

2. Separate the make-up water for the reservoir from the tower water. Only city water should be used for ice making.

3. Use 3/4" tower water lines or larger, depending on the length of run. Over 30 feet — use 1" OD lines.

4. Notice: A tower can freeze in the wintertime and the Scotsman flaker will be in operation 12 months per year. An indoor tower and pump can be used with outdoor air ducted in and out, if the fan cycles on water temperature to prevent freezing. An indoor sump can be used. An auxiliary tower and city water hook-up will prove satisfactory in some climates. City water in the winter and tower water during the summer. Consult your tower and pump manufacturers for proper sizing. In no event should less than a nominal 3 ton tower, or less than a 3/4 HP high pressure tower pump be used.

DRAIN (when not re-used)

The recommended condensor waste is 3/4" OD copper tubing. Must be run to an open, trapped vented drain. If drain is a long run, allow a 1/4" pitch per foot. Drain must be installed to conform with local code. Condensor drain is a low pressure drain.

STARTING THE MACHINE:

When the machine is placed and inspected as per instructions and all plumbing and electrical connections are completed and tested, turn on the water supply. Be sure the float cover is removed to check on the float operation and water level in the water reservoir. Be sure the water reservoir is filled before starting the machine. Water level should be 1/4 inch below the reservoir overflow.

When this is completed, turn on the manual switch located on front panel of the cabinet and the machine is in automatic operation. In two to three minutes ice will start dropping off the worm shaft and out the ice chute. Let the machine operate for at least 30 minutes and check for any excess noise other than the normal compressor noise. Test the ice storage control bulb by holding a handful of ice around the bulb until the machine shuts off. One minute should be normal for the control to function. Within minutes after the ice is removed, the bulb will warm up and the machine will automatically start up. The control is factory set and should not be reset until this test is made. Normal setting of this control should be approximately 35 degrees cut-out and 45 degrees cut-in.

Check pressure settings at the time of start-up. On the water-cooled models set the head pressure at 135 PSI. On the air-cooled models the head pressure will vary between 130 and 145 PSI head pressure. The frost line should extend out of the accumulator if properly charged with refrigerant and suction pressure will range between 12 and 14 PSI with 50^{o} F inlet water.

Check the hand reset low pressure control setting. This safety device should be set at approximately 5 PSI below normal operating suction pressure and should cut off in case of interruption in water supply, shortage of refrigerant, low ambient or any other cause of abnormally low suction pressure.

REFRIGERANT CHARGE:

The below refrigerant charge is approximate. When charging, set at 135 PSI head pressure and charge so that the frost line extends out of the evaporator and into the accumulator after fifteen minutes of operation.

Model	Refrigerant Charge
Air-Cooled	65 oz. R-12
Water Cooled	42 oz. R-12

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. Is the water supply valve open and the electric power on?
5. Is the water reservoir filled and shut off? All packing removed?
6. Have unit and bin been wiped clean?
7. Has owner been given this Operating Instruction Booklet, and has he been instructed on how to operate the machine?
8. Have the installation and registration cards been filled out and mailed to the factory?
9. Check all refrigerant and conduit lines to guard against vibration and possible failure.
10. Installed in a well ventilated room where ambient temperatures do not fall below 50^{o} Fahrenheit.
11. Is unit installed with a minimum 4" air space around sides and back?

WARNING: THIS MACHINE MUST NOT BE ALLOWED TO OPERATE WHEN THE WATER SUPPLY IS SHUT OFF, OR AT BELOW RECOMMENDED WATER PRESSURE. TURN MASTER SWITCH TO "OFF" POSITION WHEN WATER SUPPLY IS OFF, OR WHEN WATER PRESSURE IS BELOW RECOMMENDED OPERATING PRESSURE.

NO WATER LIGHT WILL BE LIT UNTIL PRESSURE IS RESTORED.

OPERATING FEATURES

CONTROL CONSOLE

With the introduction of the models MF6 Modular Flakers, Scotsman also introduces yet another customer convenience. Located on the front panel is a visual control console that monitors unit performance automatically. Any interruption or significant reduction in water or electrical supplies causes an instant stop to the operation of the modular flaker. At the same time a warning light is activated on the control console telling the user of the ice makers stoppage and also the reason why.

If the stoppage is caused by its refrigerant pressures or overloading in the drive train mechanism a red light glows. Both controls that activate the red lights are manual reset controls, therefore, the cause of the stoppage should be diagnosed and corrected before reoperating the icemaker.

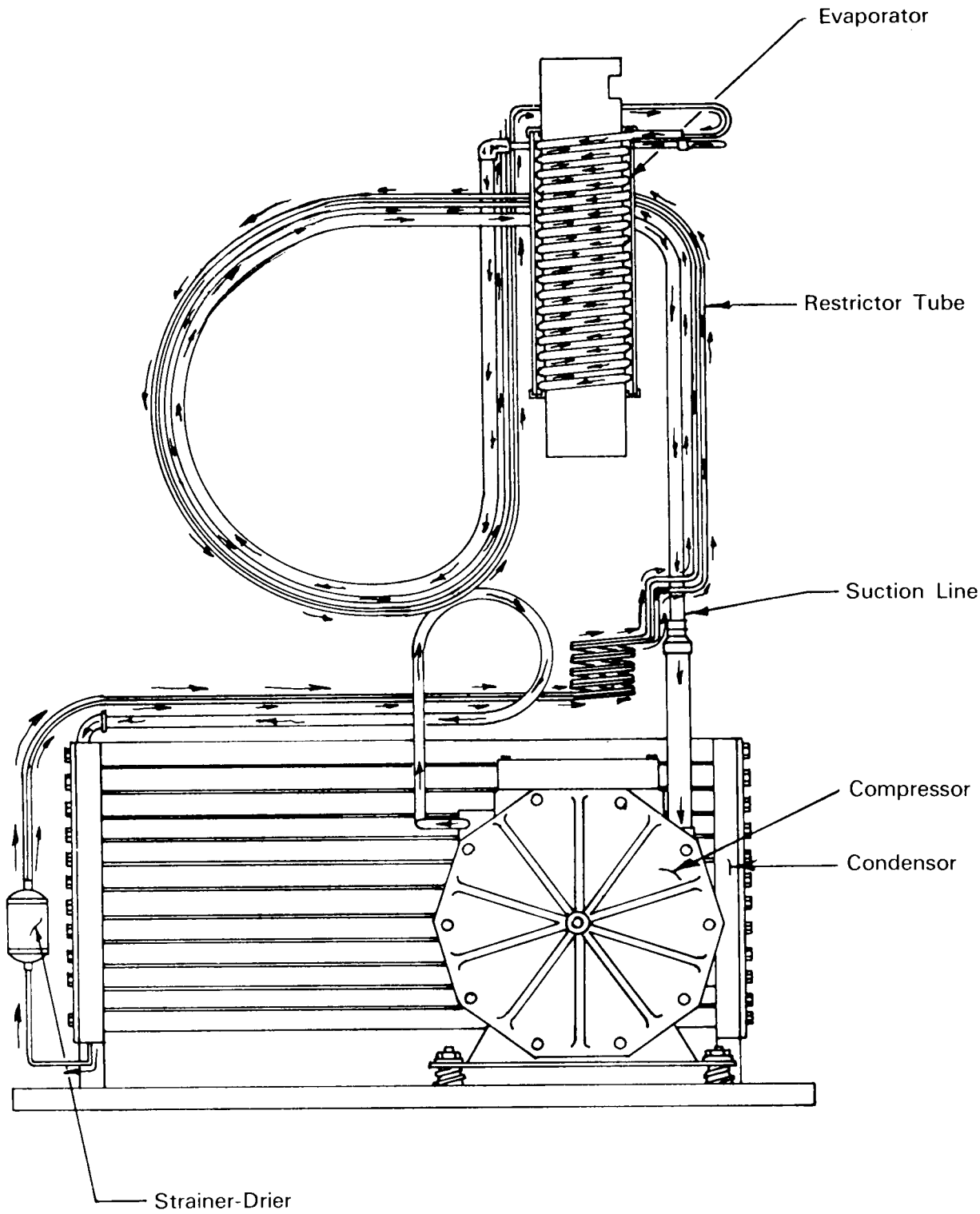
The amber light signals low or interuppted water supply. This light and it's internal control are on an automatic reset device whereby the icemaker will automatically start up and the amber light goes off when water pressure reaches 20 pounds or more.

FAN STAGING – AIR COOLED MODELS

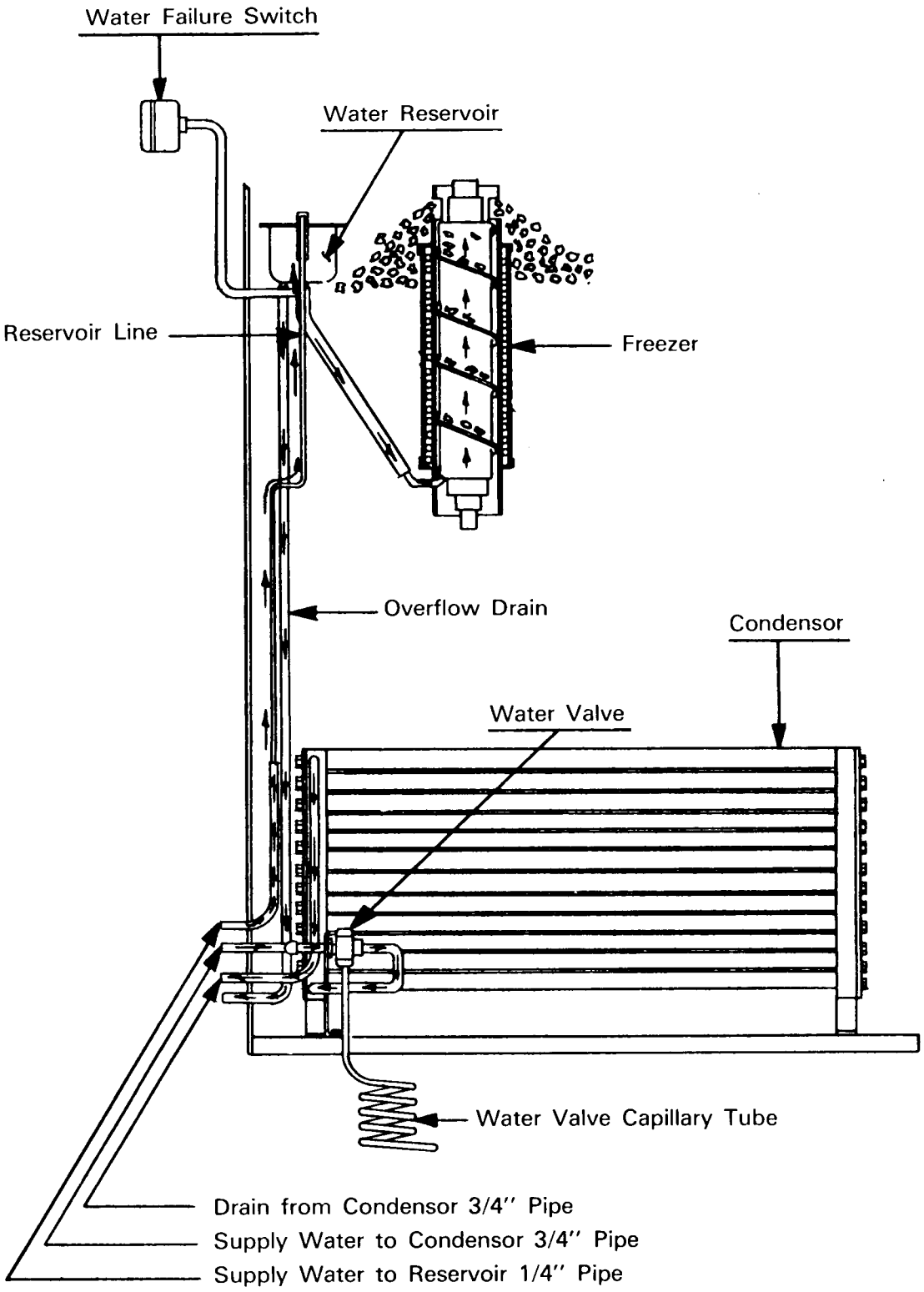
Air cooled models MF6 are equipped with both a left and right fan motor. Both motors are controlled by a high pressure that is connected to the systems high side. The left fan control will not operate until high side pressures reach 155 P.S.I. The right fan control will not operate until pressures reach 170 P.S.I. This way, in colder ambients, only the left fan motor operates. In higher ambients the right side fan will cycle on-off. In extremely high ambients, both fans operate.

ELAPSED TIME INDICATOR

Another unique first by Scotsman is the elapsed time indicator built into this system. Calibrated in hours, the timer operates whenever the ice maker compressor runs. This tells the user exactly how many hours of service this icemaker has performed. It is also a valuable aid in scheduling maintenance on a use basis rather then calender time.



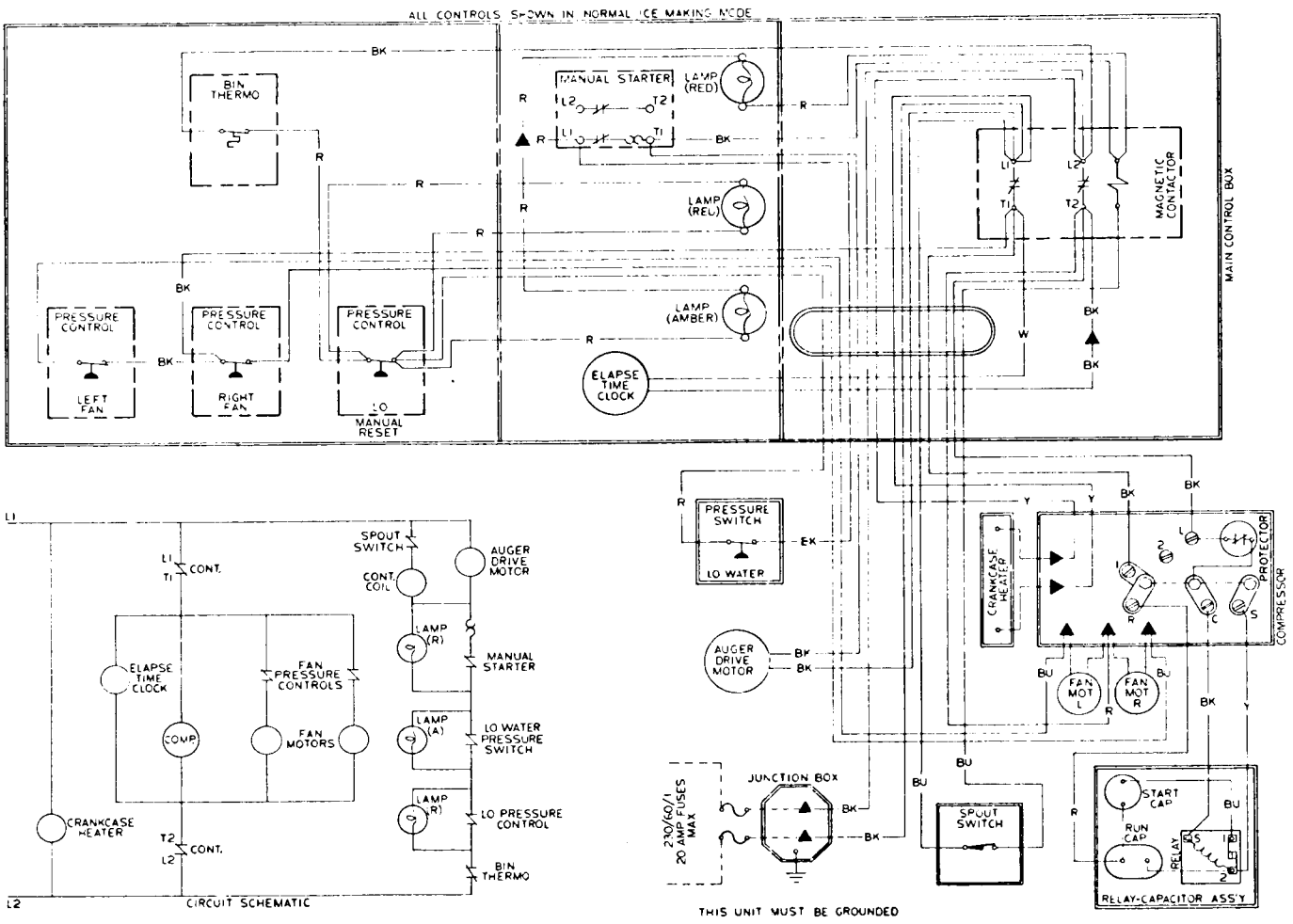
REFRIGERATION CYCLE


Water Failure Switch
Water Reservoir
Reservoir Line
Freezer
Overflow Drain
Condensor
Water Valve
Water Valve Capillary Tube
Drain from Condensor 3/4" Pipe
Supply Water to Condensor 3/4" Pipe
Supply Water to Reservoir 1/4" Pipe

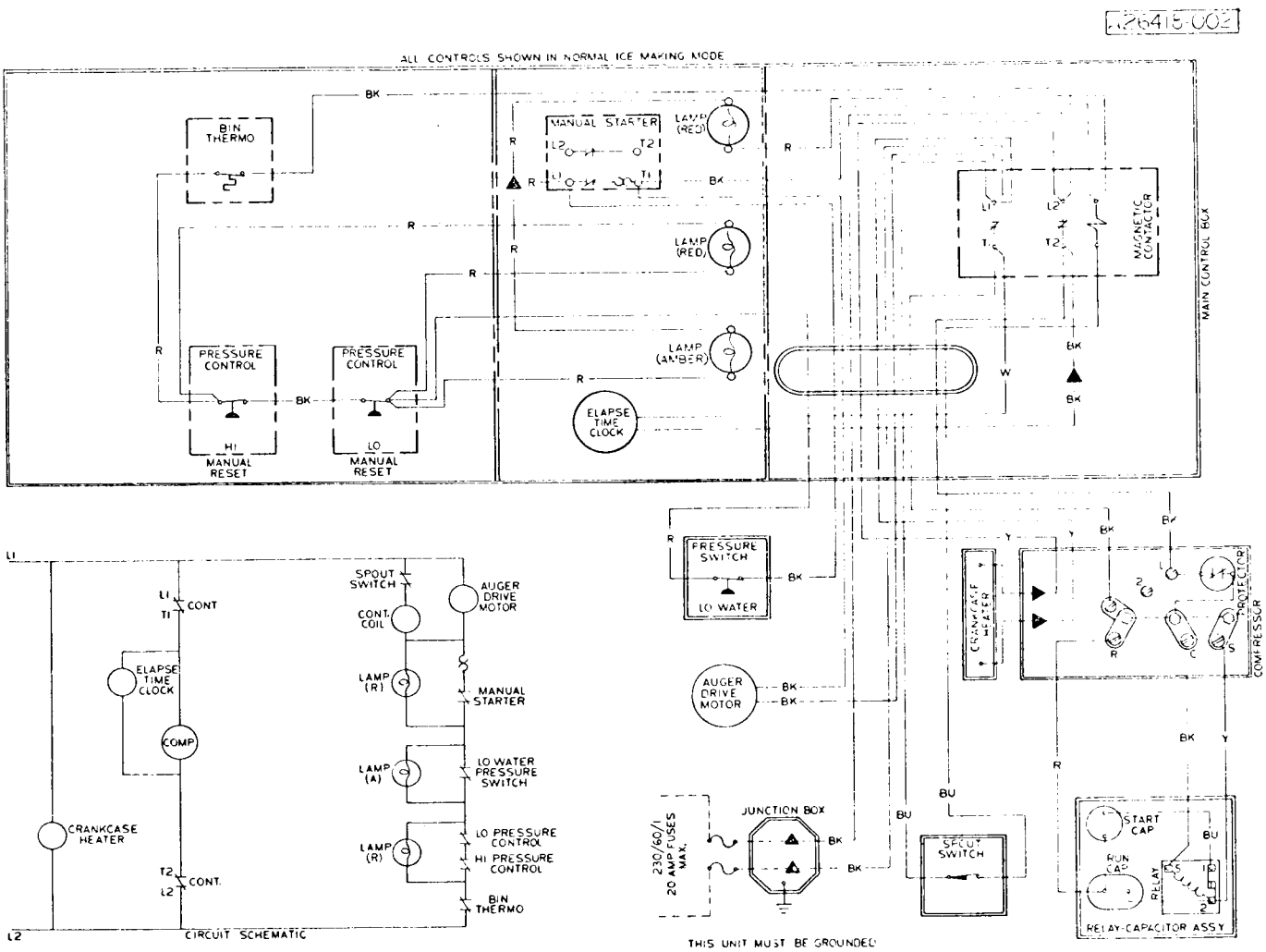
WATER CYCLE

WIRING DIAGRAM
230/60/1 Air Cooled

A26417-002

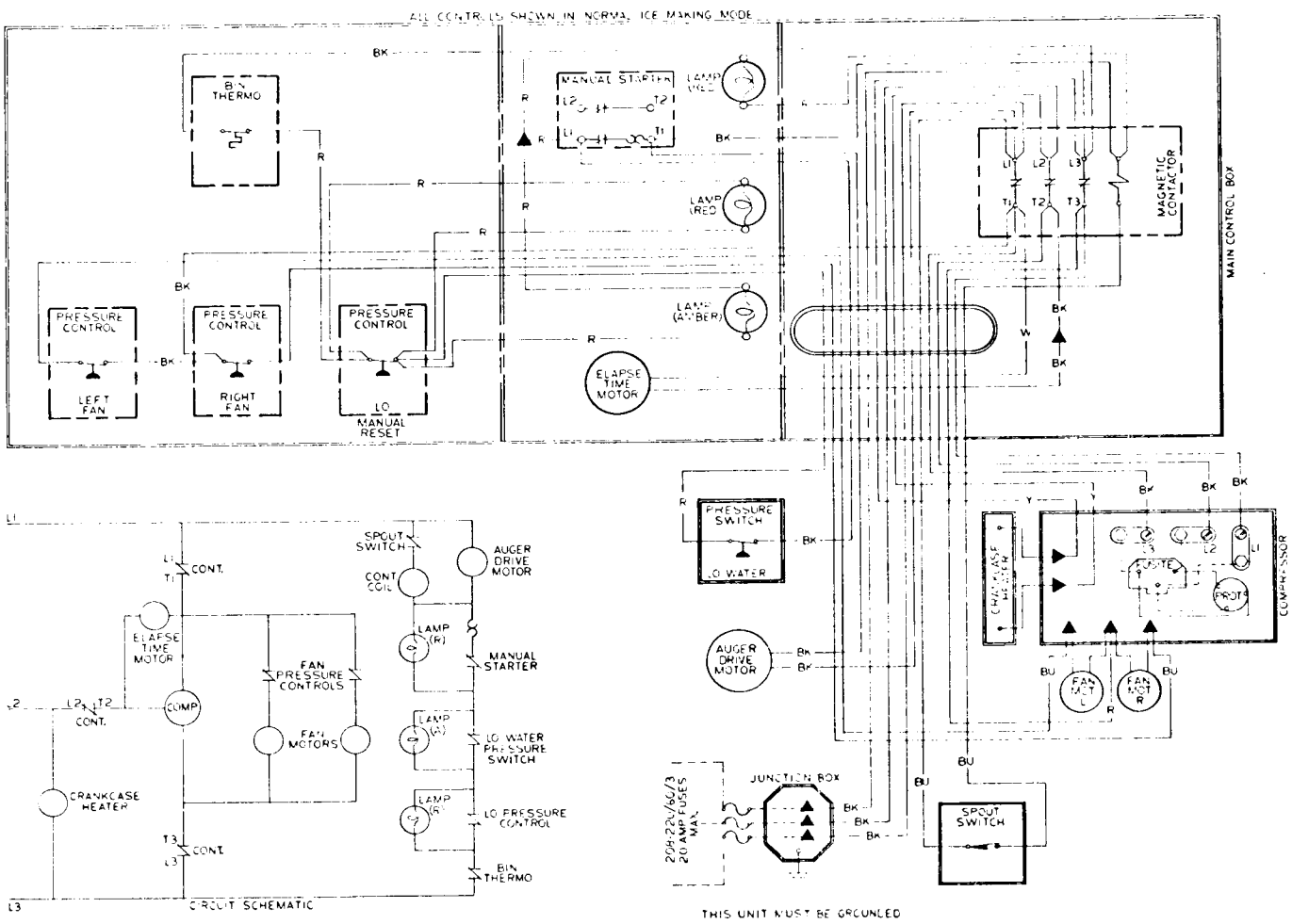


WIRING DIAGRAM
230/60/1 Water Cooled

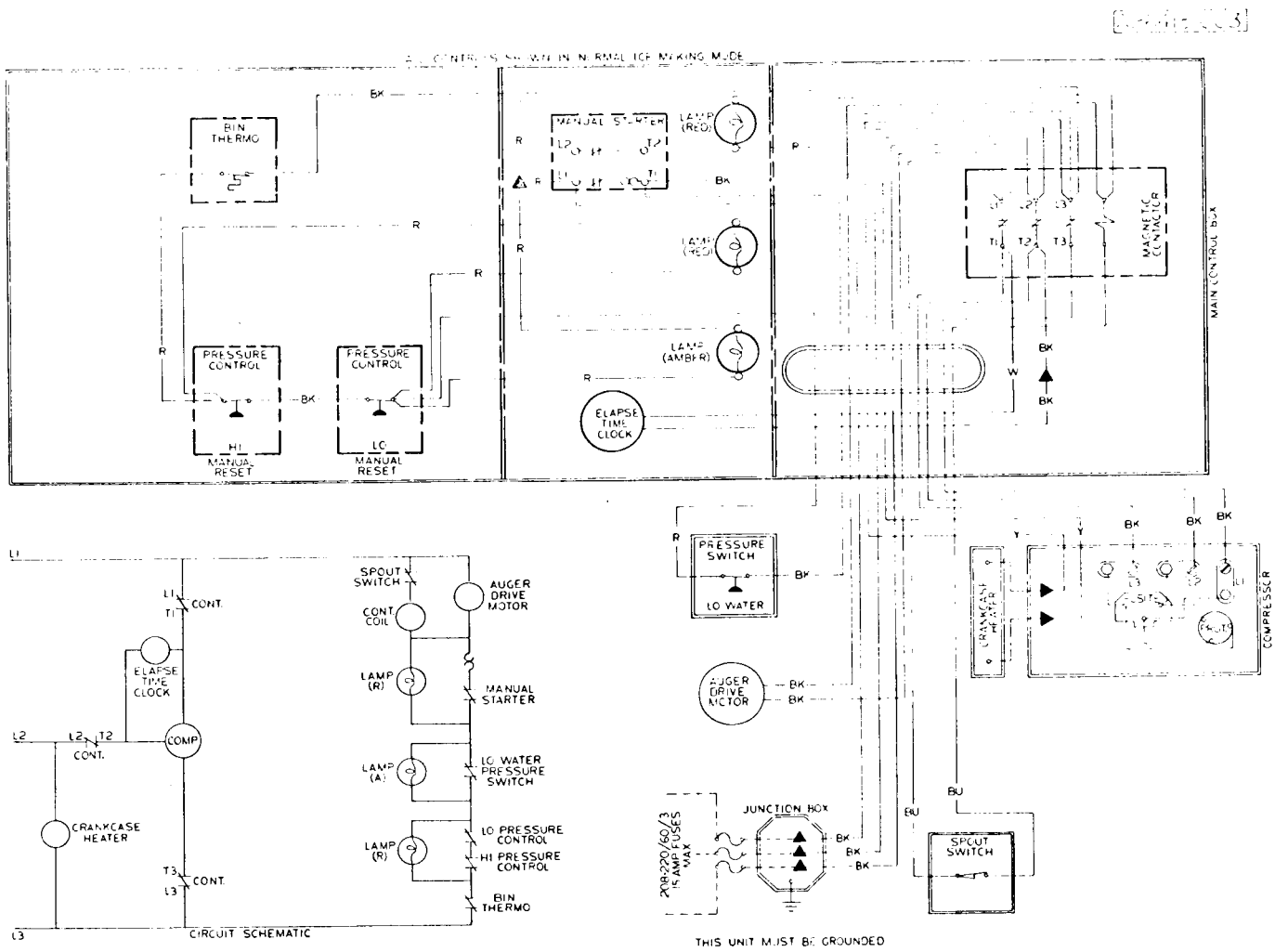


WIRING DIAGRAM
208-220/60/3 Air Cooled

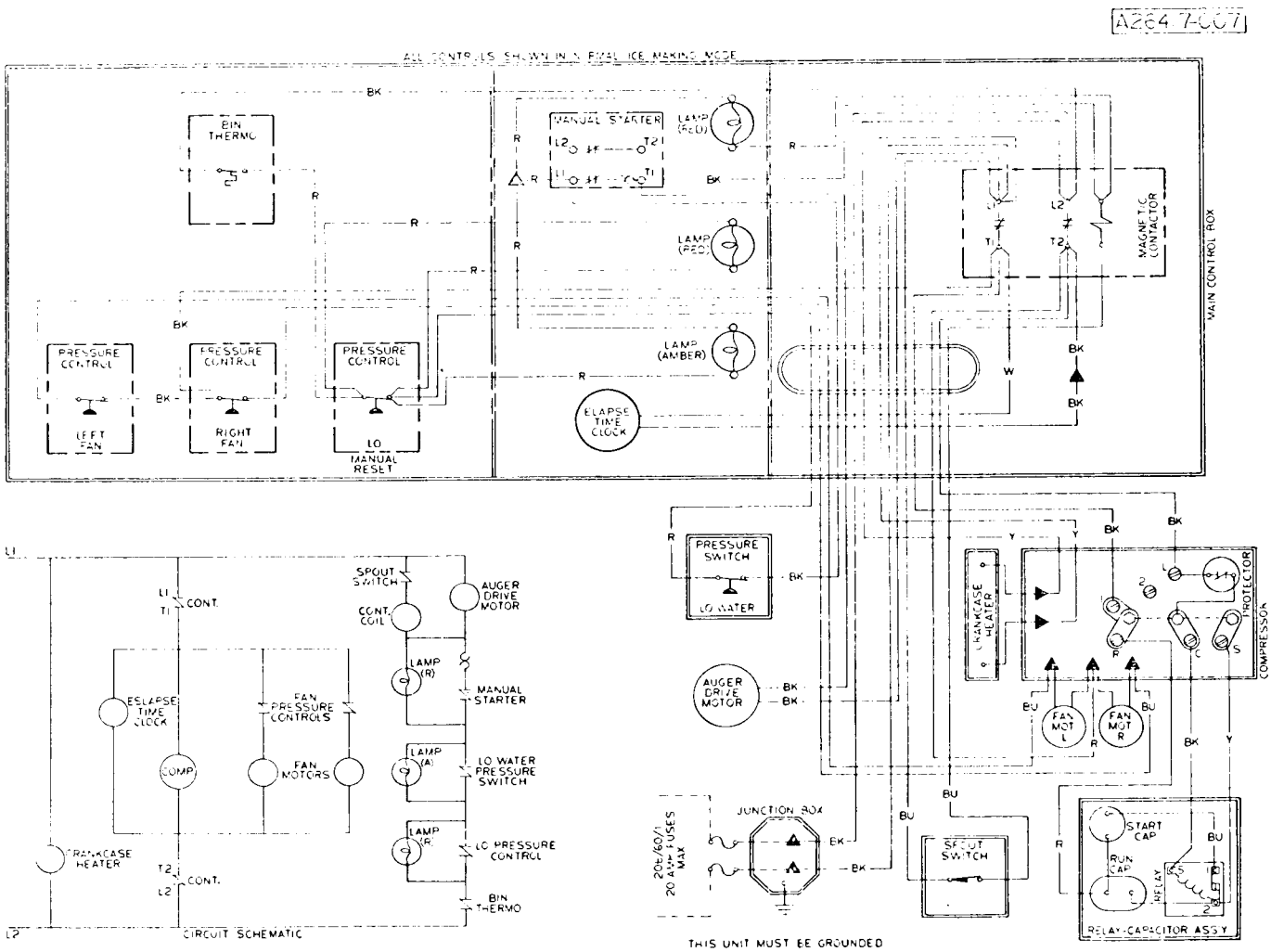
A26417-003



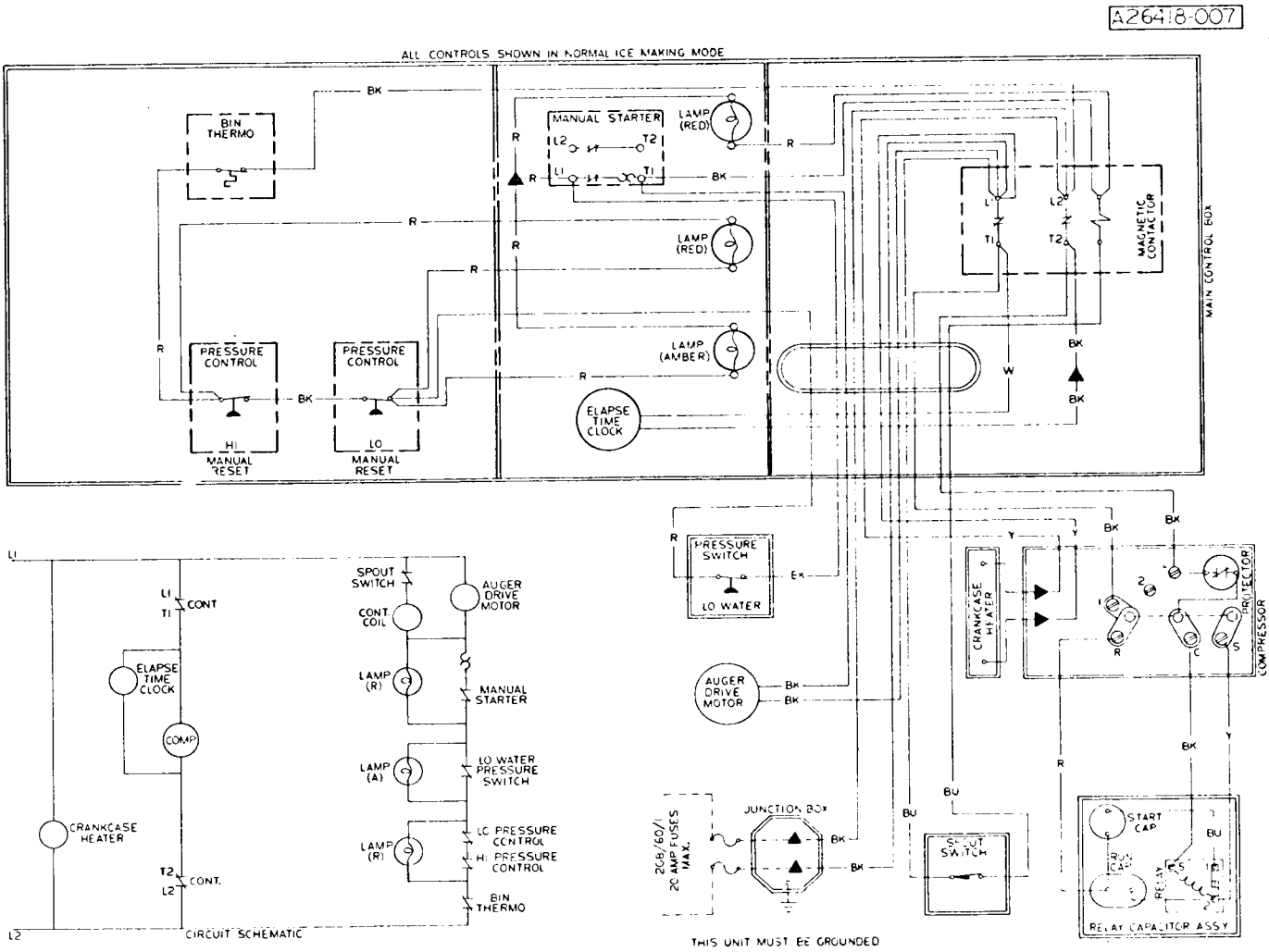
WIRING DIAGRAM
208-220/60/3 Water Cooled



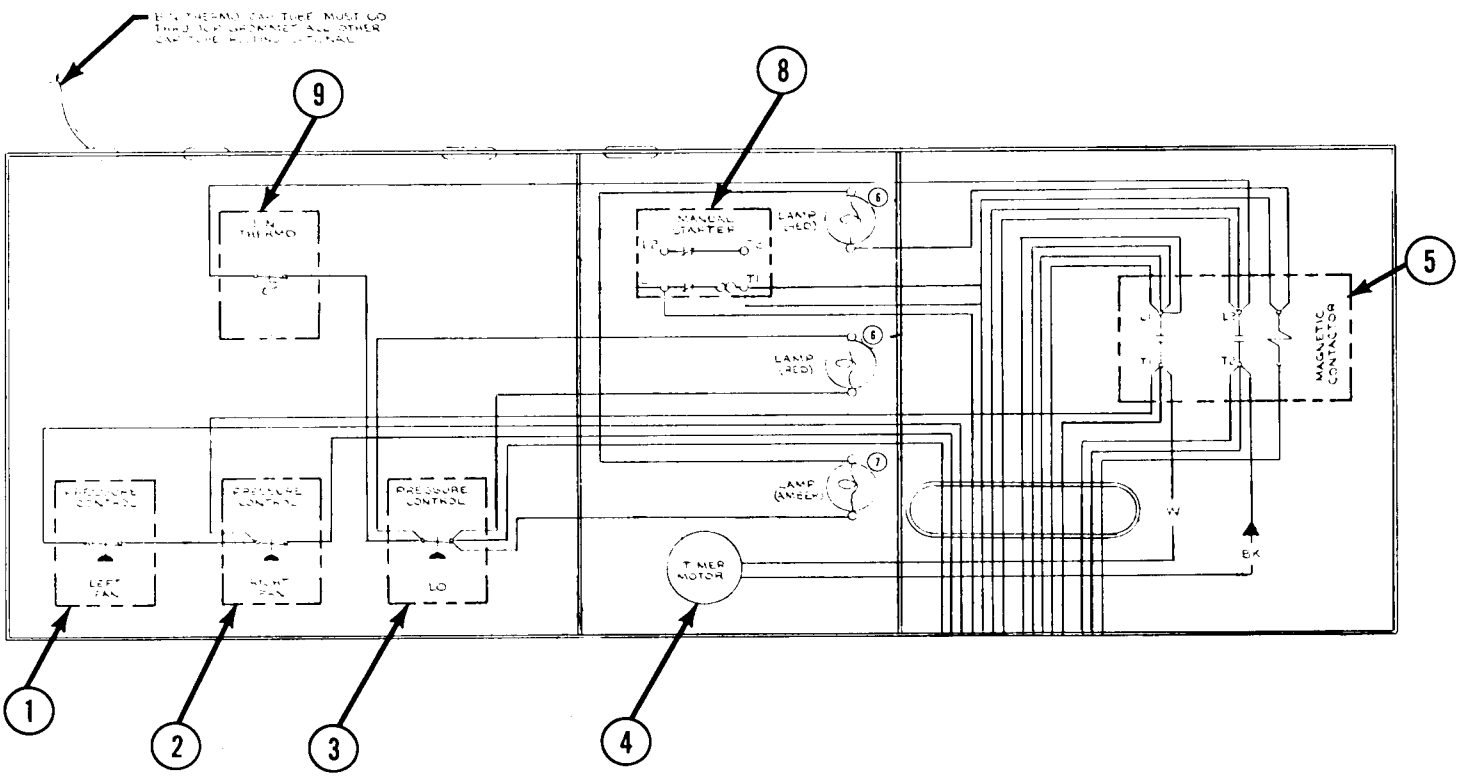
WIRING DIAGRAM
208/60/1 Air Cooled



WIRING DIAGRAM
208/60/1 Water Cooled

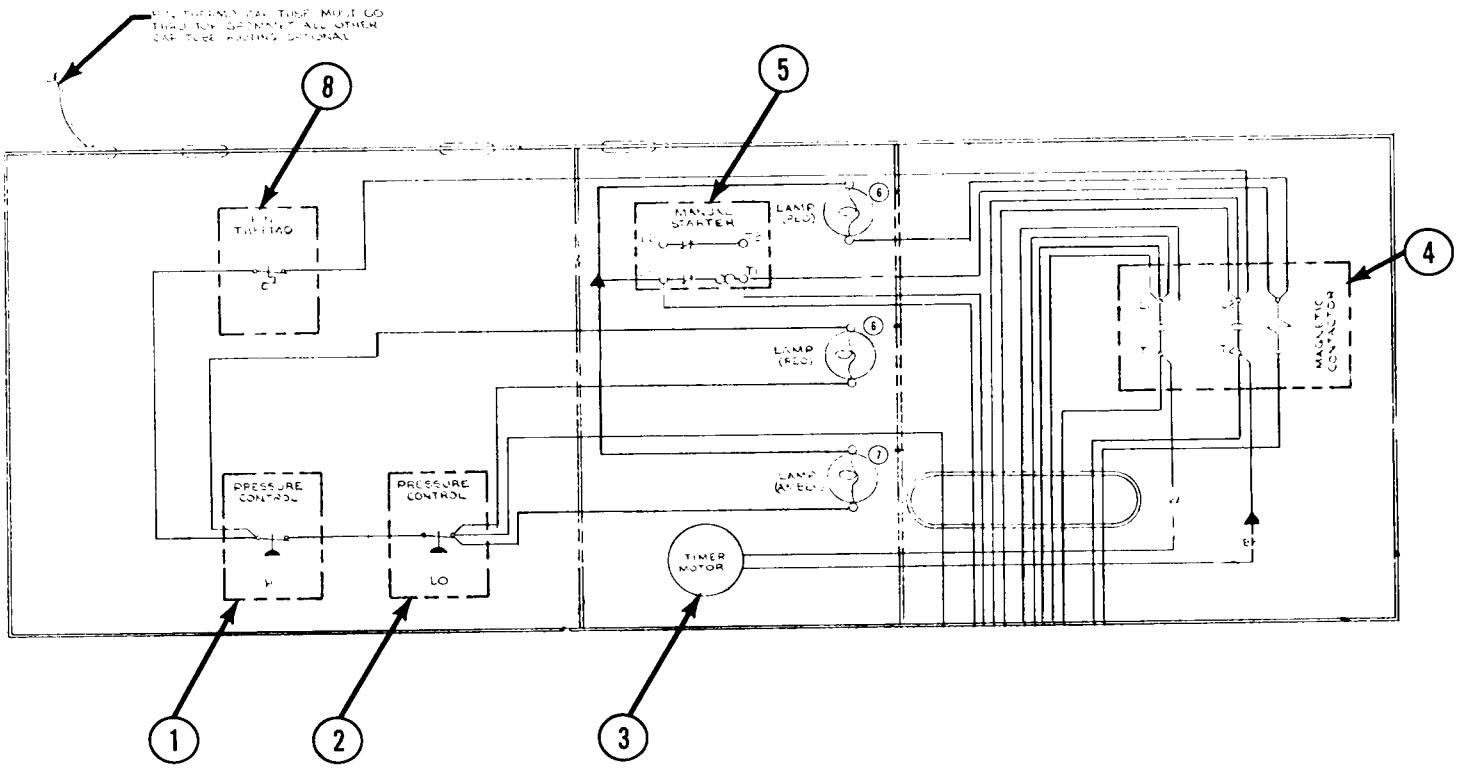


CONTROL BOX — AIR COOLED
208-230/60/1



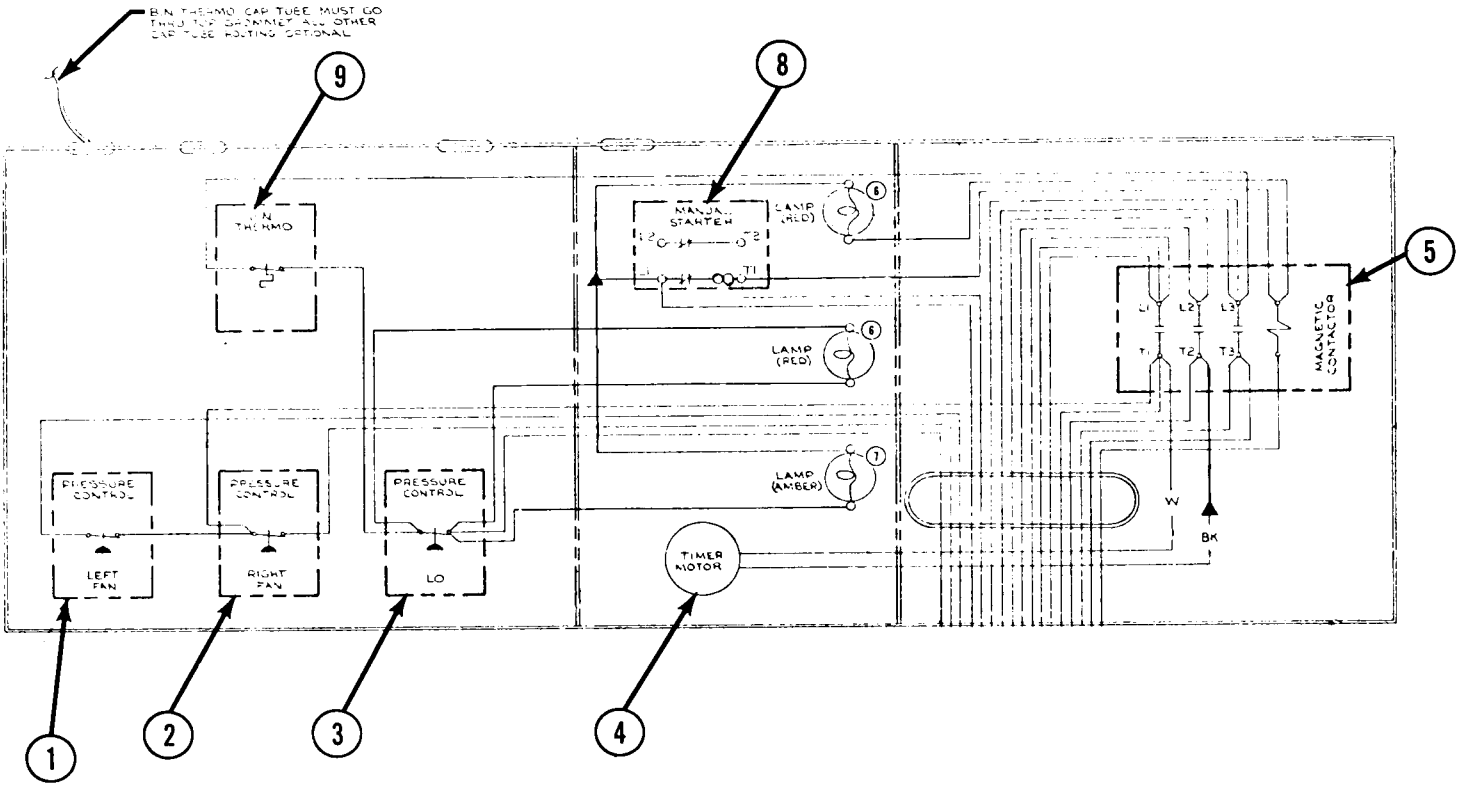
ITEM	PART NO.	DESCRIPTION
1.	11-0342-00	Fan Pressure Control - L
2.	11-0343-00	Fan Pressure Control - R
3.	11-0358-00	Lo Pressure Control
4.	12-2001-01	Elapsed Time Control
5.	12-820-02	Contractor
6.	12-1997-01	Light - Red
7.	12-1997-02	Light - Amber
8.	12-530A-00	Manual Starter/Overload
9.	11-0354-00	Bin Thermostat

CONTROL BOX — WATER COOLED
208-230/60/1



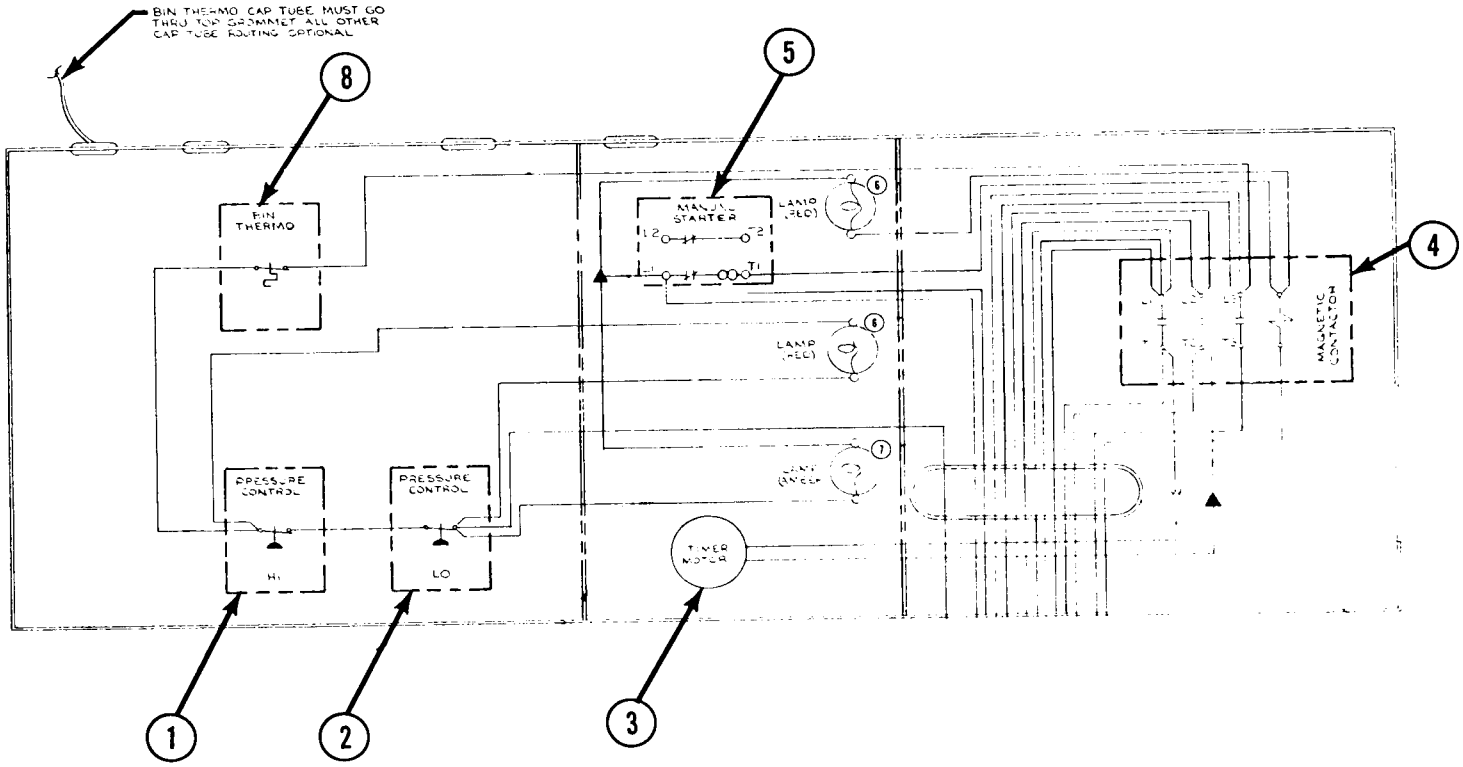
ITEM	PART NO.	DESCRIPTION
1.	11-0388-01	Hi Pressure Control
2.	11-0358-00	Lo Pressure Control
3.	12-2001-01	Elapsed Time Control
4.	12-0820-02	Contractor
5.	12-530A-00	Manual Starter/Overload
6.	12-1997-01	Light - Red
7.	12-1997-02	Light - Amber
8.	11-0354-00	Bin Thermostat

CONTROL BOX — AIR COOLED
208-220/60/3



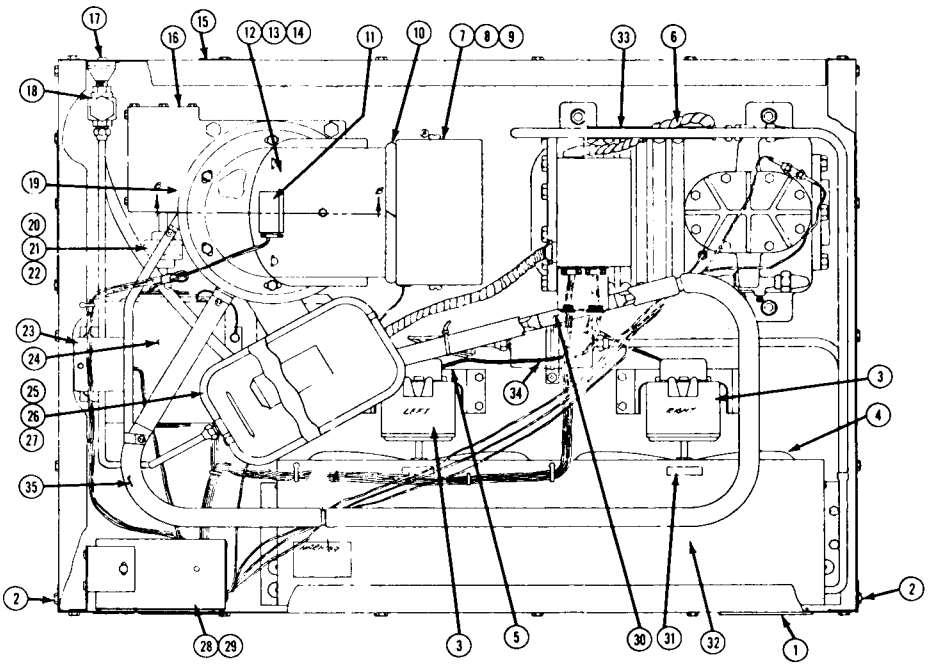
ITEM	PART NO.	DESCRIPTION
1.	11-0342-00	Fan Pressure Control - L
2.	11-0343	Fan Pressure Control - R
3.	11-0358-00	Lo Pressure Control
4.	12-2001-01	Elapsed Time Control
5.	12-739-02	Contractor
6.	12-1997-01	Light - Red
7.	12-1997-02	Light - Amber
8.	12-530A-00	Manual Starter/Overload
9.	11-0354-00	Bin Thermostat

CONTROL BOX — AIR COOLED
208-220/60/3



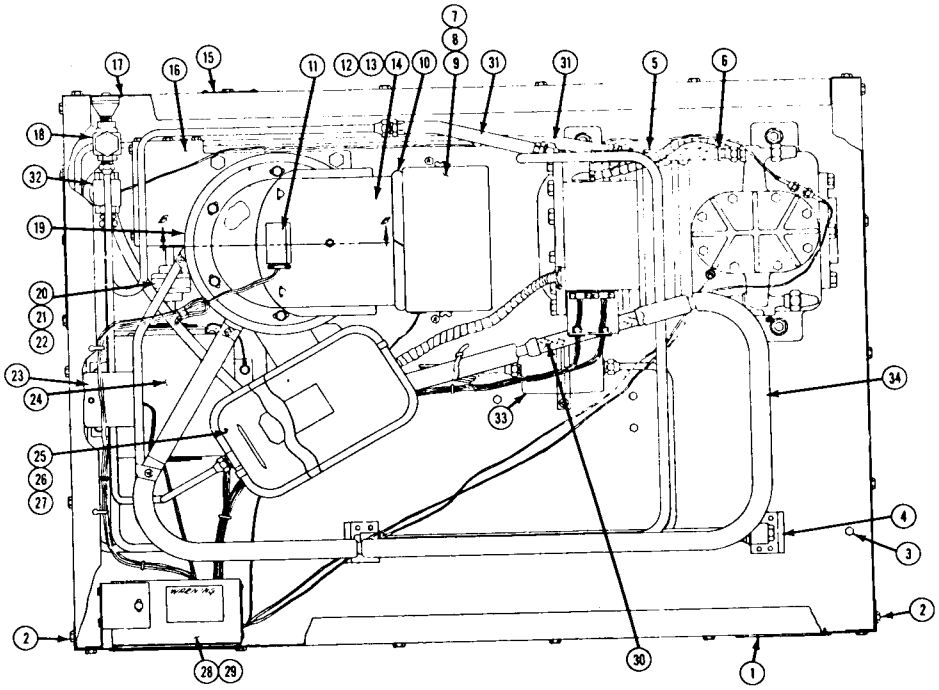
ITEM	PART NO.	DESCRIPTION
1.	11-0388-01	Hi Pressure Control
2.	11-0358-00	Lo Pressure Control
3.	12-2001-01	Elapsed Time Control
4.	12-0739-02	Contractor
5.	12-530A-00	Manual Starter/Overload
6.	12-1997-01	Light - Red
7.	12-1997-02	Light - Amber
8.	11-0354-00	Bin Thermostat
9.		

MF6 TOP VIEW
AIR COOLED



ITEM	PART NO.	DESCRIPTION
1.	15-156-00	Scotsman Emblem
2.	3-1405-01	Screws - Hex Head
3.	18-0788-02	Fan Motor 230/60/1
	18-0788-07	Fan Motor 208/60/1 and 208-220/60/3
4.	18-0787-00	Fan Blade 2/Unit
5.	18-1421-00	Fan Motor Mount 2/Unit
6.	18-0789-02	Crankcase Heater
7.	A-25895-001	ST.ST. Ice Chute
8.	A-25925-001	ST.ST. Ice Chute Cover
9.	3-1276-00	Wing Screws
10.	13-0595-00	Gasket 27"
11.	12-1018-00	Micro Switch
12.	A-25965-001	Spout Only
13.	A-16670-00	Spout Pressure Plate
14.	A-26047-001	Spout Limit Box
15.		Serial Plate
16.	2-768	Gear Reducer
17.		Water In - Drain Connections
18.	16-0162-00	Water Strainer
19.	A-8858-20	Worm Tube Only
20.	A-18341-000	Coupling Rubber Insert
21.	A-18341-000	Coupling Half
22.	2-1951-00	Coupling Key
23.	11-296	Water Failure Control
24.	A-23610-002	Drive Motor 230/60/1
	A-23610-007	Drive Motor 208/60/1 and 208-220/60/3
25.	A-08868-00	Reservoir Body
26.	A-09101-00	Water Valve with Float
27.	A-12870-00	Reservoir Cover
28.	A-25898-001	Control Box Cover - Upper
29.	A-25898-002	Control Box Cover - Lower
30.	16-0365	Vibration Eliminator - Lo Side
31.	18-0399-01	Air Cooled Condenser
32.	A-13860-00	Shroud Condenser
33.	16-0246-00	Vibration Eliminator - Hi Side
34.	2-0822-00	Refrigerant Drier
35.	A-25889-001	Suction Line Assembly

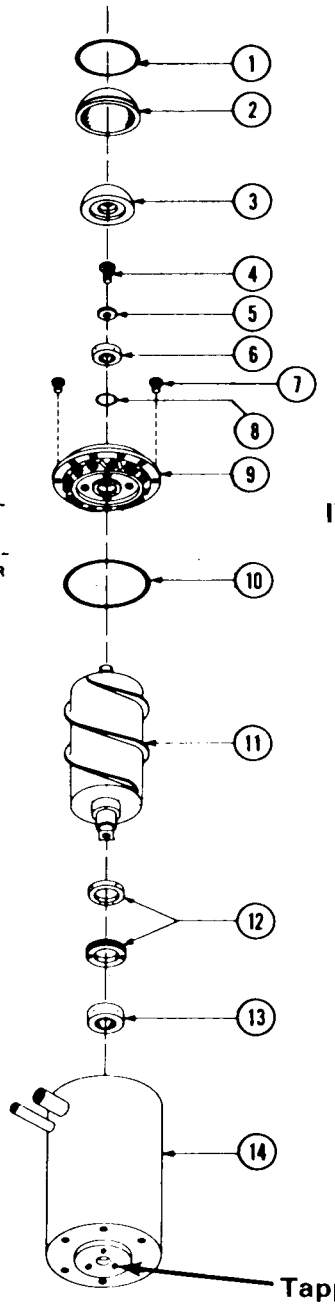
MF6 TOP VIEW
WATER COOLED



ITEM	PART NO.	DESCRIPTION
1.	15-156-00	Scotsman Emblem
2.	3-1405-01	Screws - Hex Head
3.	3-1405-03	Screw
4.	18-0754	Water Cooled Condenser
5.	16-0246-00	Hi Side Vibration Eliminator
6.	18-0789-02	Crankcase Heater
7.	A-25895-001	ST.ST. Ice Chute
8.	A-25925-001	ST.ST. Ice Chute Cover
9.	3-1276-00	Wing Screws
10.	13-0595-00	Gasket 27"
11.	12-1018-00	Micro Switch
12.	A-25965-001	Spout Only
13.	A-16670-00	Spout Pressure Plate
14.	A-26047-001	Spout Limit Box
15.		Serial Plate
16.	2-768	Gear Reducer
17.		Water In - Drain Connections
18.	16-0162-00	Water Strainer
19.	A-8858-20	Worm Tube Only
20.	A-18341	Coupling Rubber Insert
21.	A-18341	Coupling Half
22.	2-1951-00	Coupling Key
23.	11-296	Water Failure Control
24.	A-23610-002	Drive Motor 230/60/1
	A-23610-007	Drive Motor 208/60/1 and 208-220/60/3
25.	A-08868-00	Reservoir Body
26.	A-09101-00	Water Valve with Float
27.	A-12870-00	Reservoir Cover
28.	A-25898-001	Control Box Cover - Upper
29.	A-25898-002	Control Box Cover - Lower
30.	16-0365	Vibration Eliminator - Lo Side
31.	16-0271-00	Water Hose 2/Unit
32.	11-0198-00	Water Regulating Valve
33.	2-0822-00	Refrigerant Drier
34.	A-25889-001	Suction Line Assembly

MF6 FREEZER ASSEMBLY

NOTE: ICE BREAKER HAS TEN HOLES AROUND CIRCUMFRENCE, SIX OF THESE ARE USED TO SECURE BREAKER TO FREEZER BARREL. THE FOUR REMAINING HOLES ARE THREADED AND ARE USED TO LIFT BREAKER AND WORM SHAFT UP YOU REMOVE THE SIX HOLDING SCREWS, RE-INSERT (4) SCREWS INTO LIFTER OR THREADED HOLES, THESE HAVE NO BOTTOM ON BARREL AND BY EVENLY DRAWING THEM DOWN, ICE BREAKER AND WORM IS LIFTED UP.

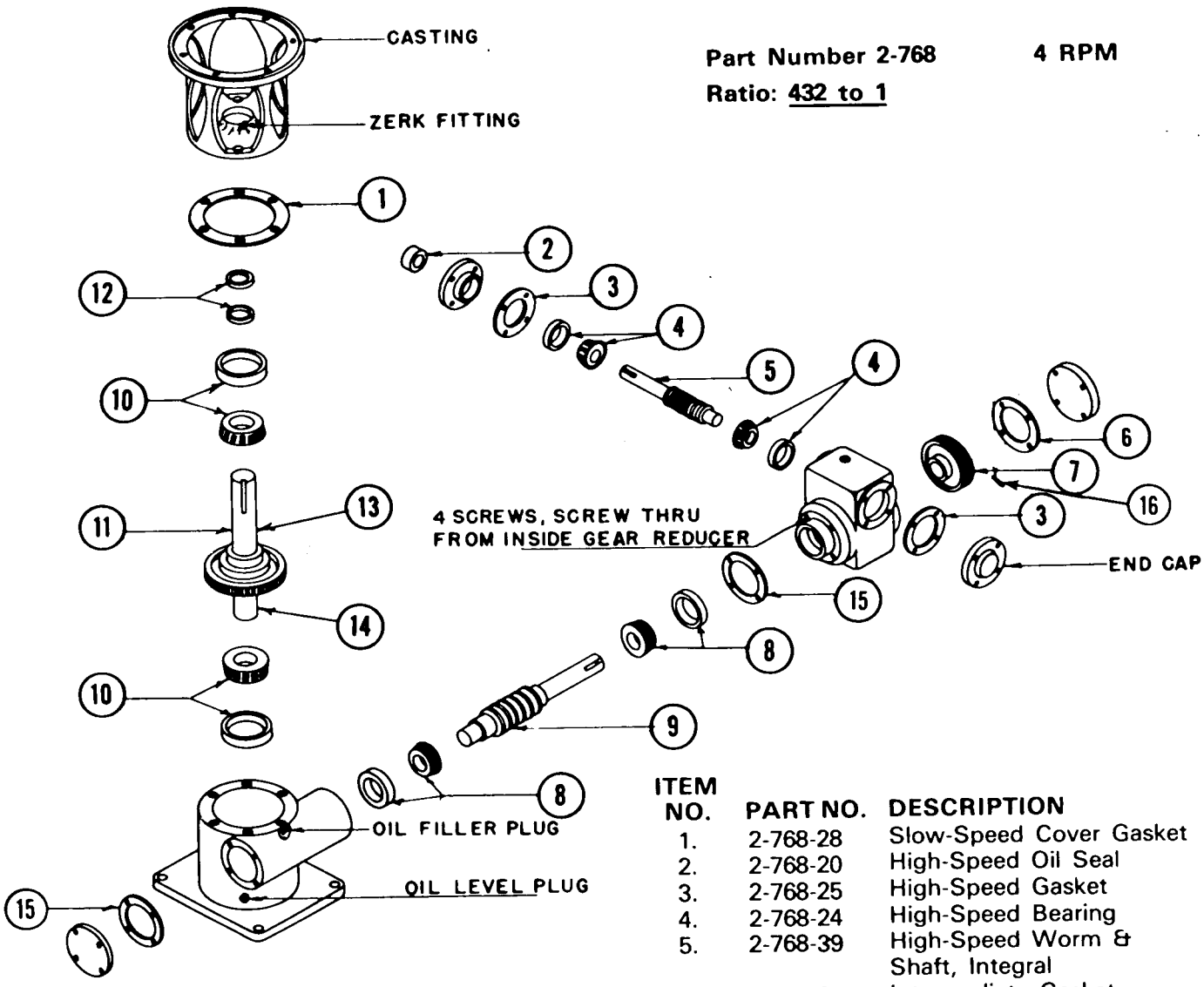


ITEM NO.	PART NO.	DESCRIPTION
1.	13-617-18	'O' Ring
2.	13-231	Rubber Cap
3.	A-9047	Styrofoam Cap
4.	3-1405-36	Screw
5.	A-6273	Washer
6.	2-619	Top Bearing
7.	3-1405-25	Screws (6 required)
8.	13-617-15	'O' Ring
9.	A8818	Ice Breaker
10.	13-617-17	'O' Ring
11.	A-26005-001	Worm Shaft Assembly
12.	2-776	Water Seal
13.	2-775	Lower Bearing
14.	A-8858-20	Freezer Worm Tube
15.	A-25889-001	Suction Line - Not Shown

NOTE:

Lower bearing or water seal should be removed by pulling from the top. If bearing is worn badly and cannot be removed with a bearing puller, it can be pushed out by using three(3) 1/4 x 20 screws three inches long inserted in the tapped holes provided in the lower bearing retainer.

GEAR REDUCER — 2-768



Part Number 2-768 **4 RPM**

Ratio: 432 to 1

ITEM NO.	PART NO.	DESCRIPTION
1.	2-768-28	Slow-Speed Cover Gasket
2.	2-768-20	High-Speed Oil Seal
3.	2-768-25	High-Speed Gasket
4.	2-768-24	High-Speed Bearing
5.	2-768-39	High-Speed Worm & Shaft, Integral
6.	2-768-27	Intermediate Gasket
7.	2-768-40	High-Speed Gear
8.	2-768-23	Intermediate Roller Bearing
9.	2-768-38	Slow-speed Worm & Shaft, Integral
10.	2-768-22	Slow-Speed Bearing
11.	2-768-42	Slow-Speed Gear & Shaft Assembly
12.	2-768-21	Slow-Speed Oil Seal
13.	2-768-29	Slow-Speed Spacer (short)
14.	2-768-30	Slow-Speed Spacer (long)
	2-768	Complete Reducer
15.	2-768-26	Gasket
16.	2-768-37	Key & Pin

In answer to many field requests, we are pleased to release the following chart showing the companies whose products are acceptable substitutes for the 600W oil supplied by Winsmith as factory recommended.

Note the third column which most accurately represents the normal temperature operating range. Also the Alemite or Zerk fitting to bearing is greased with Mobilgrease BRB No. 1, or any good grade ball bearing grease as obtained from local service stations.

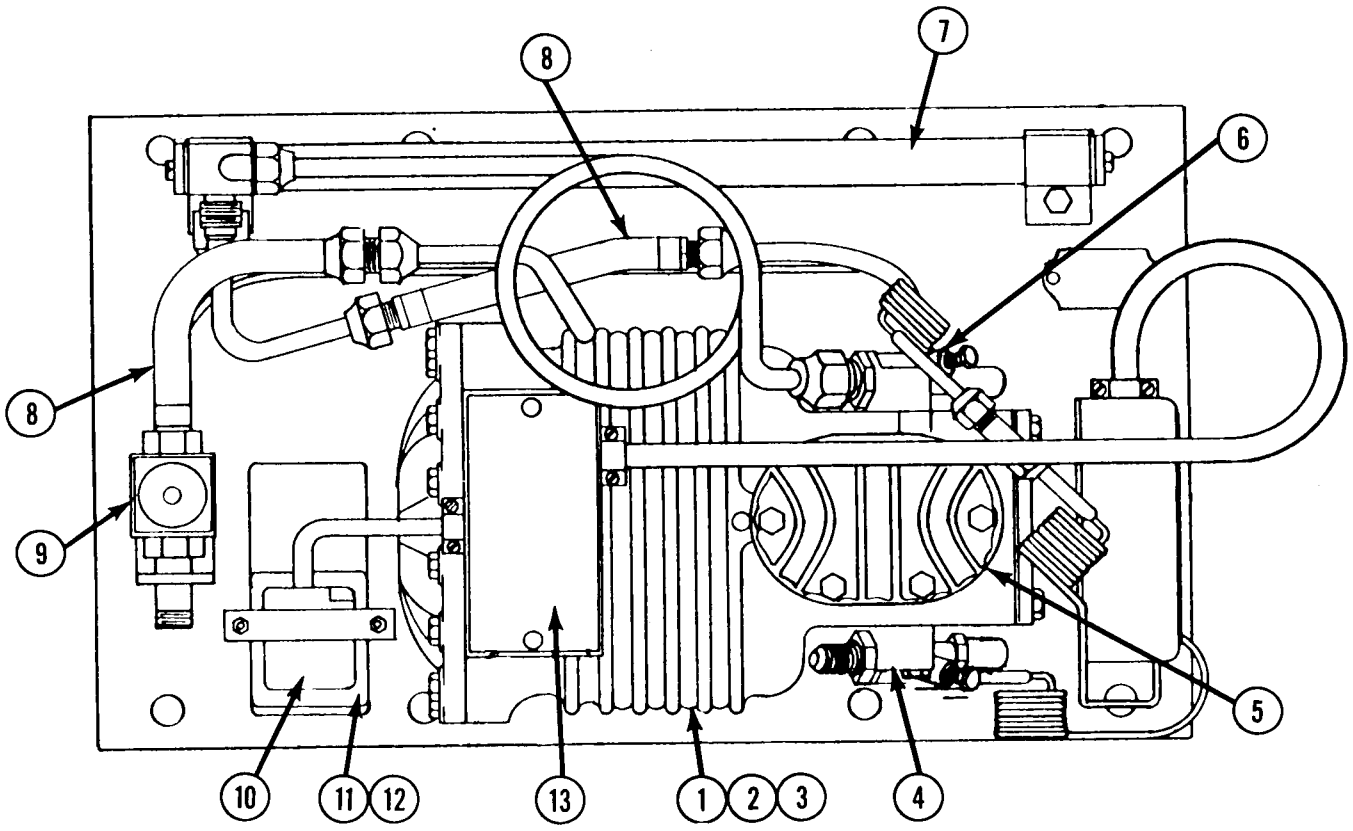
600W oils and equivalents are classified as industrial oils and most likely will be found in bulk plants rather than local service stations.

WORM GEAR REDUCERS
CB-CT-CV-CBD-CVD-CBX-CTX-CVX-DBI-TSR

Ambient Temperature%F	-30 to 15	16 to 50	51 to 110	111 to 165
Maximum Operating Temperature ° F	150	185	225	225
Viscosity @ 210° F, SUS	40 to 90	90 to 125	125 to 190	190 to 350
Compounded with	(Optional)	3 to 10% Acidless Tallow or E.P. Base	3 to 10% Acidless Tallow or E.P. Base	3 to 10% Acidless Tallow or E.P. Base
AGMA Lubricant		#7 Compound	#8 Compound	
Cities Service Oil Co.	Pacemaker Oil #5	Optimus Oil #10	Optimus Oil #6	Optimus Oil #12
Fiske Bros. Refining Co.	#3 Lubriplate	#8 Lubriplate	#8 Lubriplate	APG Lubriplate
Gulf Oil Corporation	Multipurpose Gear Lubricant	E.P. Lubricant #115	E.P. Lubricant #145	E.P. Lubricant #250
Shell Oil Company	Vitrea Oil 71	Valvata Oil #J 78	Valvata Oil #J 78	Valvata Oil #J 83
Sinclair Refining Co.	Duro Oil 160	#87 Heavy Duty Oil	#101 Super-Heat Valve Oil	#212 Super-Heat Valve Oil
Standard Oil Co.	Stanogear Compound #1	Stanogear Compound #4	Standard Worm Gear Oil	Calumet SH Cylinder Oil
Sun Oil Company	Sunep 70	Sunep #110	Sunep #150	HV Cyl. Oil
Socony Mobil Oil Co., Inc.	Vactra Oil #1	Mobil Compound DD	Mobile Cylinder Oil #600W	Mobil Cylinder Oil #600W
The Texas Company	Meropa Lub. #1	Meropa Lub. #3	Meropa Lub. #6	Meropa Lub. #6

MF6 WE SERIES

2 HP Water Cooled, Copeland

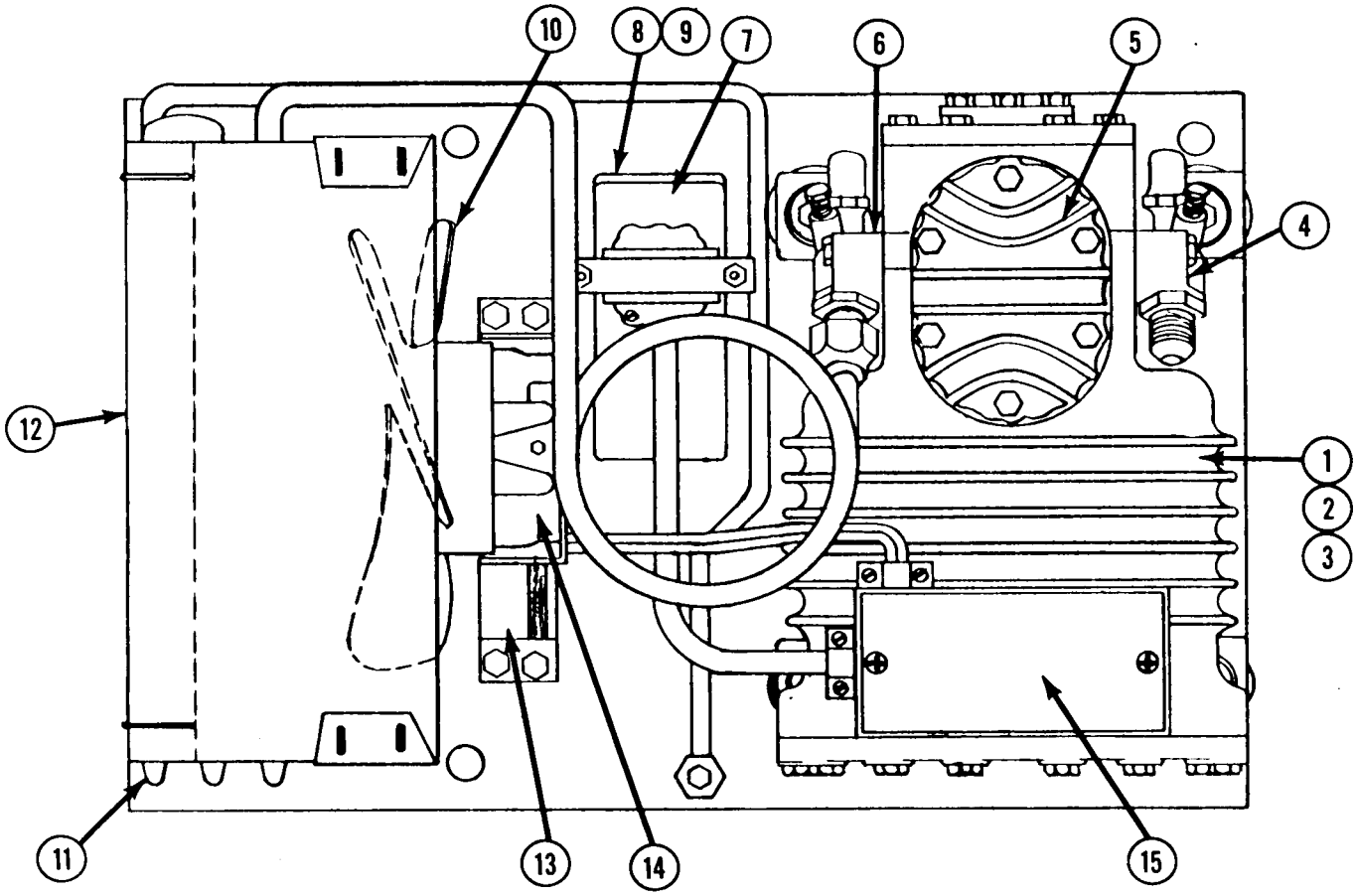


* NOTE: Simulated drawing only for parts identification. Component location differs in actual unit.

ITEM	DESCRIPTION	PART NO.		
		208/60/1	230/60/1	208-220/60/3
1.	Motor Compressor Copeland Model: EWL2-0200-CAH	18-0704-00		
2.	Motor Compressor Copeland Model: EWL2-0200-CAB		18-0702-00	
3.	Motor Compressor Copeland Model: 88-200W			18-0742-00 Same
4.	Suction Service Valve	18-0732-00	Same	Same
5.	Valve Plate Kit	18-0722-00	Same	Same
6.	Discharge Service Valve	18-1909-00	Same	Same
7.	Condenser(2 HP) Heatx C1CB-200	18-0754-00	Same	Same
8.	Water Hose 2/unit	16-0271-00	Same	Same
9.	Water Regulating Valve	11-0198-00	Same	Same
10.	Compressor Relay	18-1903-21	18-1903-21	None
11.	Start Capacitor (320 Volt — 135-155 MFD)	18-1901-23	18-1901-23	None
12.	Run Capacitor (440 Volt — 25 MFD)	18-1902-23	18-1902-23	None
13.	Klixon Overload	18-0734-00	18-0734-00	

MF6 AE SERIES

2 HP Air Cooled, Copeland

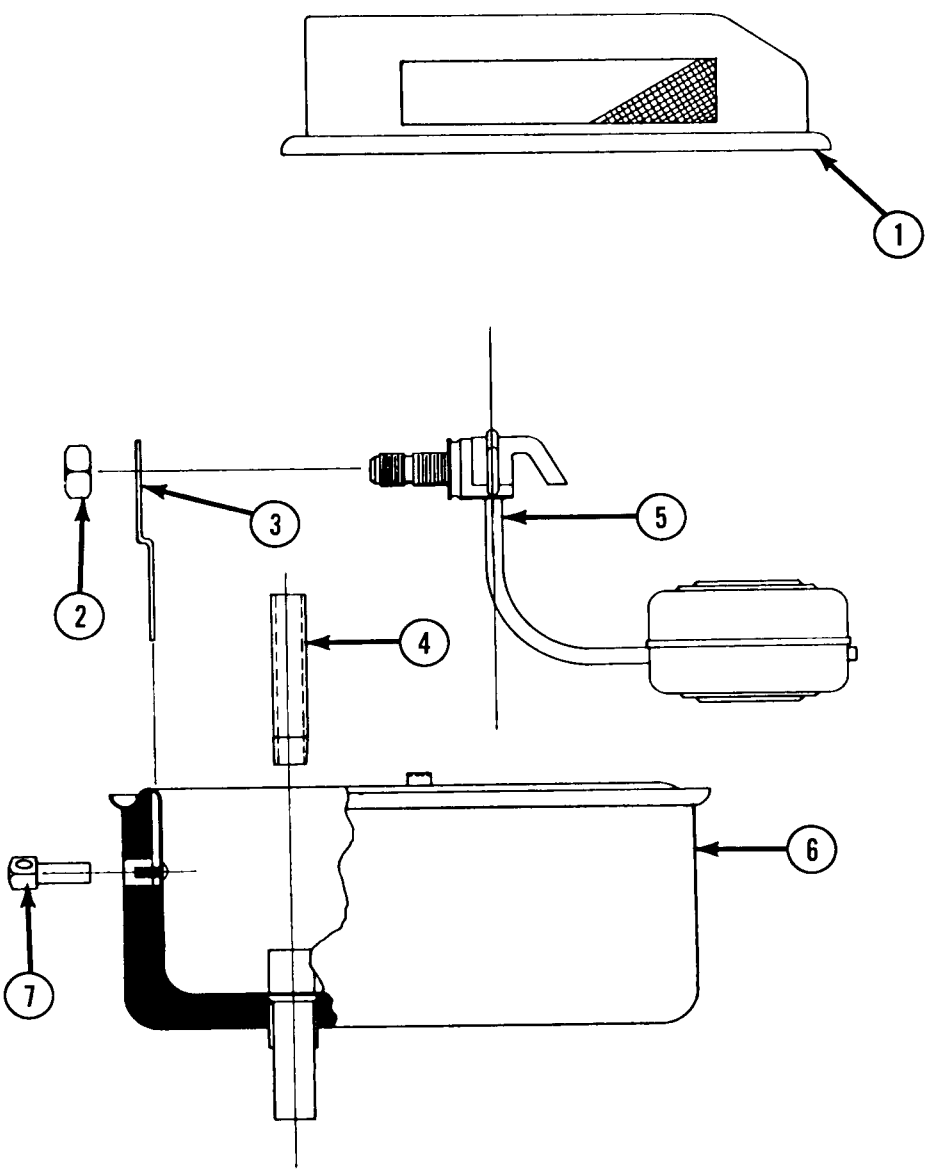


* NOTE: Simulated drawing only for part indentification. Component location differs in actual unit. Condenser has two fan motors, etc.

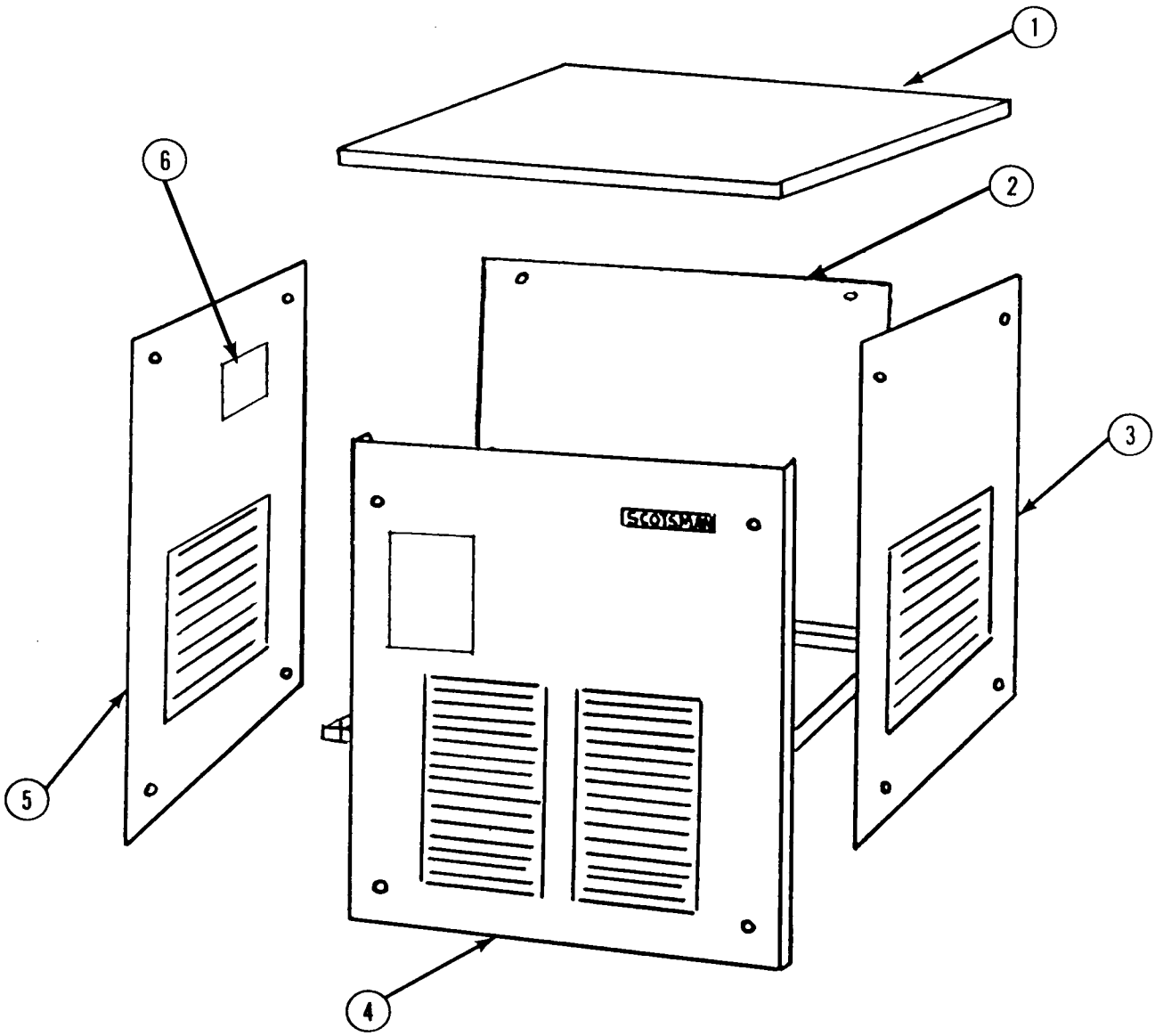
ITEM	DESCRIPTION	PART NO.		
		208/60/1	230/60/1	208-220/60/3
1.	Motor Compressor Copeland Model: EAL2-0200-CAH	18-0711-00		
2.	Motor Compressor Copeland Model: EAL2-0200-CAB		18-0700-00	
3.	Motor Compressor Copeland Model: 88-200			18-0763-00
4.	Suction Service Valve	18-0732-00	Same	Same
5.	Valve Plate Kit	18-0722-00	Same	Same
6.	Discharge Service Valve	18-1909-00	Same	Same
7.	Compressor Relay	18-1903-21	18-1903-21	None
8.	Start Capacitor (320 Volts — 135-155 MFD)	18-1901-23	18-1901-23	None
9.	Run Capacitor (440 Volts — 25 MFD)	18-1902-23	18-1902-23	None
10.	Fan Blade 2/unit	18-0787-00	Same	Same
11.	Condenser	18-0399-01	Same	Same
12.	Condenser Shroud	A-13860-00	Same	Same
13.	Fan Motor Mount 2/unit	18-1421-00	Same	Same
14.	Fan Motor 2/unit	18-0788-07	18-0788-02	18-0788-07
15.	Klixon Overload	18-0734-00	18-0734-00	

RESERVOIR ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	A-12870	Reservoir Cover
2.	S-7044	Nut
3.	A-12869	Bracket
4.	S-6715	Stand Pipe
5.	A-9101	Inlet Valve Assembly
6.	A-8868	Reservoir Complete (Less Cover)
7.	A-8055	Bracket Nut



CABINET PARTS



ITEM NO.	DESCRIPTION	ENAMEL	STAINLESS STEEL
1.	Panel Top	A-25883-001	A-25883-002
2.	Panel, Rear	A-25885-001	A-25885-002
3.	Panel, Right Side	A-25881-001	A-25881-002
4.	Panel, Front	A-25882-001	A-25882-002
5.	Panel, Left Side	A-25879-001	A-25879-002
6.	Cover	A-25919-001	A-25919-002

FUNCTIONAL PARTS DESCRIPTION

PART NAME: Water failure switch.
PART NUMBER: 11-0296-00
FUNCTION: An automatic reset S.P.S.T. Control with bellows connection to water supply line. Operates "ON" at 20 pounds or more pressure. Trips OFF at 5 pounds pressure.

PART NAME: Fan cycling control - right
PART NUMBER: 11-0342-00
FUNCTION: Hi pressure control - S.P.S.T. Non adjustable - automatic reset mechanically connected to system Hi side, electrically to right fan motor cycles on at 170# P.S.I., OFF at 154# P.S.I.

PART NAME: Fan cycling control - left
PART NUMBER: 11-0343-00
FUNCTION: Hi pressure control - S.P.S.T. Non adjustable - automatic reset. Mechanically connected to system high side, electrically to left fan motor cycles on at 155# P.S.I., OFF at 139# p.s.i.

PART NAME: Lo pressure control
PART NUMBER: 11-0358-00
FUNCTION: Manual reset - S.P.S.T. Non adjustable pressure switch attached to system lo side. Cuts icemaker OFF when Lo side pressures reach 0# P.S.I.

PART NAME: Elapsed time indicator
PART NUMBER: 12-2001-01
FUNCTION: Timer motor is electrically connected in series with motor compressor. When compressor runs, timer runs. Calibrated in hours. Timer registers to 99,999.

PART NAME: Compressor crankcase heater
PART NUMBER: 18-0789-02
FUNCTION: A 65 watt heater that supplies enough heat to keep liquid refrigerant from settling out in compressor crankcase. Electrically connected across main power line, heater is ON at all times.

PART NAME: Hi pressure control
PART NUMBER: 11-0388-01
FUNCTION: Manual reset, Adjustable S.P.S.T. control that opens at 250# P.S.I. whenever system Hi side pressures reach that setting.

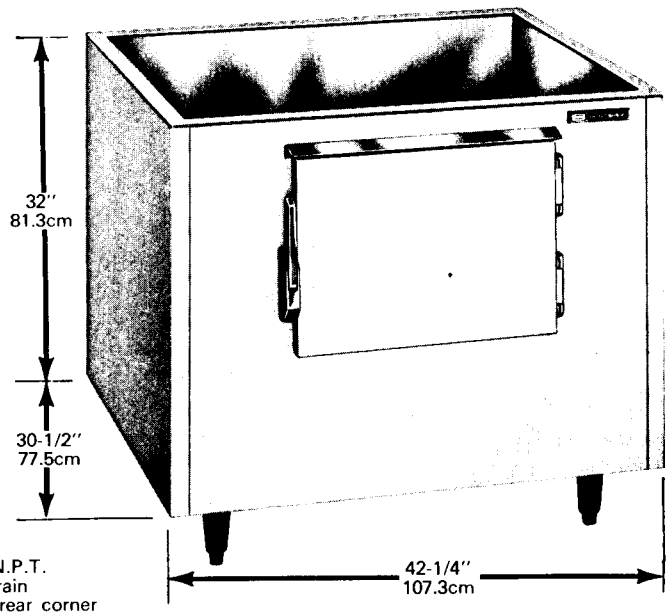
PART NAME: Bin thermostat - 6' capillary
PART NUMBER: 11-0354-00
FUNCTION: Automatic reset S.P.S.T. Has adjustment for cut in, cut out and altitude correction. Automatically cuts icemaker OFF when sensing capillary reaches 35° F. or less, cuts back on when temperature rise exceeds 45° .

SERVICE ANALYSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Unit will not run	Blown fuse	Replace fuse and check for cause of blown fuse
	Thermostat set too high	Adjust thermostat. Set between 35° - 45°
	Loose electrical connection	Check wiring
Red light on	Switch in OFF position	Turn switch to ON
Red light on	Inoperative master switch	Replace switch
Red light on	OFF on the hand reset low pressure control	Push hand reset.
Amber light on	OFF on water failure switch	Check water supply
Compressor cycles intermittently	Low voltage	Check for overloading
	Dirty condensor	Clean
	Air circulation blocked	Move unit to correct
	Non-condensable gases in system	Purge off
Making wet ice	Surrounding air temperature above 100° F	Correct or move unit to cooler location
	Under or over-charge of refrigerant	Recharge with proper amount
	High water level in water reservoir	Lower to 1/4 inch below overflow pipe
	Faulty compressor valve plate	Repair or replace
Low ice production	Loss of refrigerant, under or over-charge of refrigerant	Check and recharge with proper amount of refrigerant
	Dirty or plugged condensor	Clean condensor
	Low water level in water reservoir	Adjust to 1/4 inch below overflow
	Overcharge of oil in system	Check at oil sight glass. Lower to 1/2 sight glass
Red light resets	Partial restriction in capillary tube or drier	Moisture in system. Overcharge of oil in system. Remove charge and drier. Replace and recharge system
Amber light on-off	Inlet water strainer partically plugged	Remove screen and clean
	Corroded or stained worm shaft due to water condition	Remove worm shaft and clean

SERVICE ANALYSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Machine runs but makes no ice	Loss or under-charge of refrigerant	Check for leaks and recharge.
	Drive motor, gear reducer or drive coupling inoperative	Check. Repair or replace.
Amber light on-off	Water not entering freezing chamber	Plugged strainer or supply line. Check and clean. Air lock in gravity feed line. Check and remove air lock.
	Moisture in system	Check and remove charge and drier. Replace and recharge.
	Water Seal leaking	Replace seal.
Red light reset's	Defective manual overload switch	Replace switch
Water leaks	Defective water seal	Replace
	Gravity feed line leaking	Check hose clamps
	Water level in reservoir too high	Adjust to 1/4 inch below overflow pipe.
Excessive noise or chattering	Mineral or scale deposit on auger and inner freezing chamber walls	Remove and manually polish auger, sand inner chamber walls of freezer barrel with approx. 100 grit paper. Use vertical strokes. For lighter concentrations use Scotsman Ice Machine Cleaner periodically.
Red light resets	Low suction pressure	Add gas to raise suction pressure. Raise head pressure control setting.
Amber light on-off	Intermittent water supply	Check and clean water strainer Check gravity feed line for air lock. Remove air lock.
	Water level in reservoir too low	Adjust to 1/4 inch below overflow pipe.
	Misaligned drive coupling	Repair or replace
	Gear reducer low on oil charge	Check oil level and refill to oil level plug.
	Gear reducer loose on frame	Tighten
	Drive motor end-play or worn bearings	Repair or replace
	Motor compressor not floating on springs	Loosen hold-down bolts.
Machine continues to run with full storage bin	Storage bin thermostat not properly set	Reset or replace, 45° in, 35° out.



1/2" N.P.T.
Bin Drain
Right rear corner
of cabinet back.

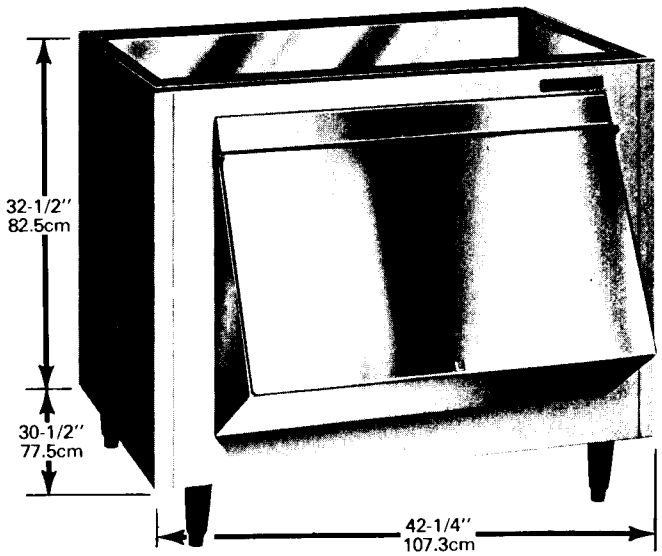
KLP3: Optional keg kit for B80 and B90. Cast aluminum 6" square leg package is recommended when stacked units exceed 96 inches.

EBX85 and EBX87 Extensions fit either the B80 or B90 Bin.

B90 Bin

No-spill access door features heavy duty latch and hinges. Accept the MC25 and MC35 Cubers or MF3, MF4, MF5 and MF6 Flakers. Ice makers can be mounted on top of bin or flake ice can be transported from a remote location. Stainless steel bin liner.

Capacity Rating: Max. bin capacity; 19.3 cu. ft. Holds 590 lbs. cube ice, 15% less for flake ice. Storage based on 90% of total volume x average denisty of ice.
EB90: Sandalwood enamel exterior, black enamel legs.
Shipping Wt: 193 lbs. (87.8 kg.)



1/2" N.P.T.
Bin Drain
Right rear corner
of cabinet back.

B80 Bin

King size bin provides 590 lbs. of ice storage. Lift-up access door and extension are shipped detached. Designed to accept the MC25 and MC35 Series cubers or MF3, MF4 and MF5 flakers. Ice makers can be mounted on top of bin or flake ice can be transported from a remote location. Stainless steel bin liner.

EB80: Sandalwood enamel exterior, black enamel legs.
SB80: Stainless steel exterior, chrome plated legs.

Shipping Wt: 196 lbs.

MAINTENANCE INSTRUCTIONS

THE FOLLOWING MAINTENANCE SHOULD
BE ACCOMPLISHED TWO TIMES PER YEAR.

1. Check and clean water strainer and reservoir float valve. Depress float valve to insure full stream of water.

2. Check water reservoir level and machine level. Keep water below overflow, but as high as possible and still not run out of spout opening with machine off. Water droplets chould come out of spout with ice at all times. Adjust as required.

3. Clean reservoir and interior of freezer assembly using SCOTSMAN Ice Machine Cleaner. One cleaning per year should be a manual cleaning: Stainless steel auger should be pulled and buffed to a mirror-like finish. Use buffing wheel and jewelers rouge. Inner freezer barrel should be sanded using vertical strokes. Use 100 grit paper.

NOTE: Cleaning requirements vary according to local water conditions. Visual inspection of the auger before and after cleaning will indicate best procedure to be followed in local areas.

4. Check high and low side pressures. On water cooled models, set pressure at 135 psi. Suction pressure should be above 12 psi and will range up to 16 psi depending upon water and ambient temperatures.

5. Set hand reset low pressure control to cut off in event of water supply interruption or low ambient temperature at approximately 0 psi.

6. Change oil in gear reducer. Use Mobiloil 600W or equivalent good grade of gear oil with a viscosity of 125 to 190. For unit with grease fittings use Mobilgrease BRB No. 1 or any good grade ball bearing grease. Particularly important when there is evidence that water has gotten into gear housing. Remove gear reducer to facilitate.

7. Oil drive motor. Use SAE #10 oil.

8. Check top bearing on freezer. Remove rubber 'O' Ring, rubber cap and styrofoam cap. If moisture is around bearing, wipe up and remove grease. Add new grease. Use beacon No. 325 or equivalent.

9. Check and adjust drive motor coupling.

10. Check for refrigerant leaks and proper frost line. Should frost out of accumulator at least one-half way to compressor, and in some areas back to service valve.

11. Check for water leaks. Tighten drain line connections.

12. Check quality of ice. Ice should be wet when formed, but will cure rapidly to normal hardness in the bin.

13. Check thermostat and pressure plate cut off. Mocro switch cuts off only compressor. Bin thermostat would be set at 10° differential and should keep entire machine off at least twenty minutes in high ambients (longer in low) during normal operation.

CLEANING INSTRUCTIONS

1. Set main switch to OFF.
2. Remove all ice from storage bin.
3. Remove ice discharge chute and cover from inside of unit.
4. Mix cleaning solution (4 oz. of Scotsman cleaner and one quart of hot water) in pan and thoroughly clean inside and outside of chute and cover with a nylon brush or sanitary disposable wipe.
5. Reassemble chute and cover back into unit.
6. Turn off water supply or block float in reservoir. Drain reservoir.
7. Set main switch to ON and pour cleaning solution slowly into reservoir. Do not fill above overflow tube.

   Model MF6 - Use 8 oz. of Scotsman cleaner and 2 qts. hot water.
   Model MF7 - Use 16 oz. of Scotsman cleaner and 4 qts. hot water.
8. Continue to make ice on solution until the solution is used up and reservoir is empty.
9. Set main switch to OFF. Wash and rinse reservoir. Turn water on or remove float block.
10. Turn MAIN SWITCH to ON. Let unit run for at least (15) minutes to flush out any cleaning fluid. Check ice for acid taste — run until ice tastes sweet.
11. Turn MAIN SWITCH TO OFF. Add hot water to ice in bin. Using this melt water, thoroughly wash and rinse all surfaces within the storage bin.
12. Turn MAIN SWITCH to ON. Replace cover and service door. Unit is ready for normal operation.

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.

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 hydrocholic 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, inturn, 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.