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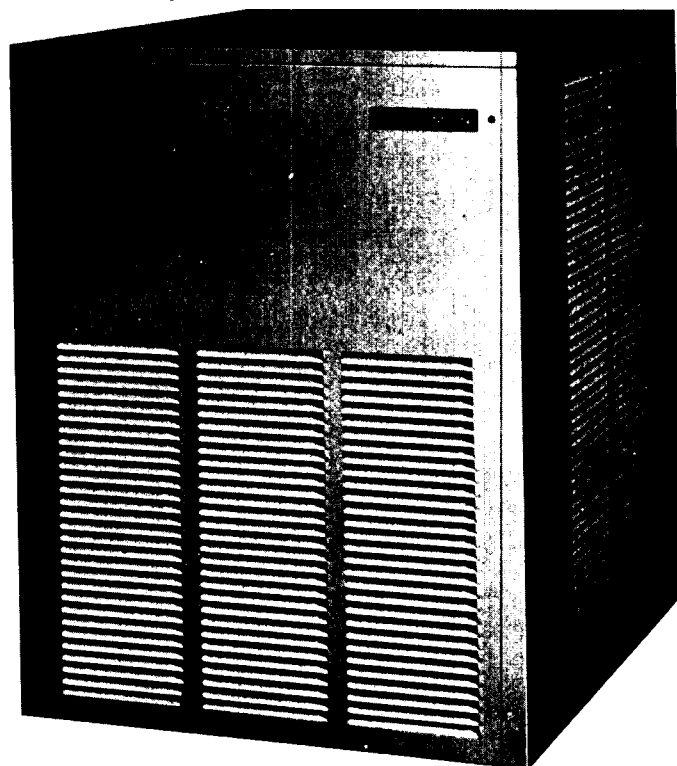


# MODULAR FLAKER

## MF5

## SERIES

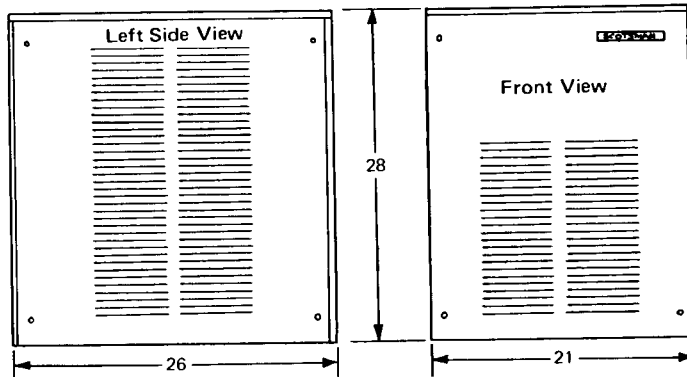
## Continuous Flow



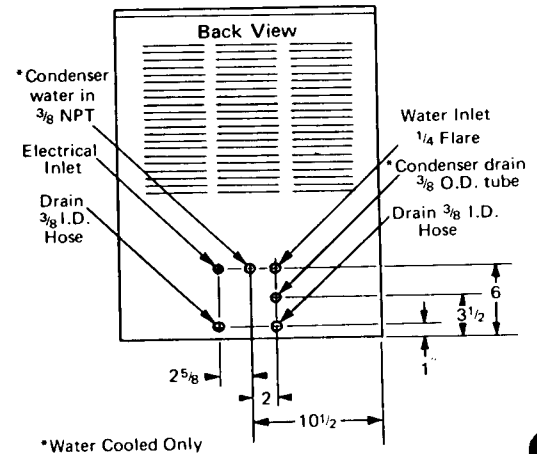
### ice making capacity

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

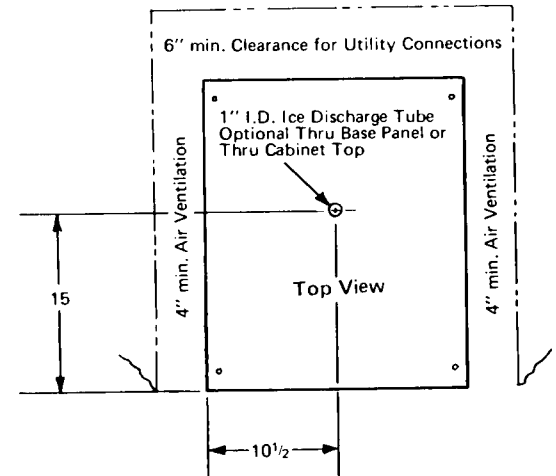
NOTE: To keep your SCOTSMAN MODULAR FLAKER performing at it's maximum capacity, it is necessary to perform periodic maintenance as outlined on page 20 of this manual.



# MF5 SERIES SPECIFICATIONS:



\*Water Cooled Only



Storage Bin: B500, B750, B1000, B1500, B200, B550  
Stainless Steel Lined

NOTE: Requires additional installation space for:  
air ventilation - 4" right & left side  
utility connections - 6" back side

### MECHANICAL

	MF5 AE	MF5 WE
Compressor (Copelaweld)	1 HP	1 HP
Gear Drive Motor	1/4 H.P.	1/4 H.P.
Gear Drive Motor Output	12.2 RPM	12.2 RPM
Condenser	Air	Water
Refrigerant Control	Capillary Tube	Capillary Tube
Refrigerant Charge R-12	36 oz.	31 oz.

### ELECTRICAL

Basic Electricals	230/60/1	230/60/1
Minimum Wire Size	2 w 14 g	2 w 14 g
Total Amperage	7.8	7.1
Compressor Amperage	5.7	5.6
Gear Drive Motor Amperage	1.4	1.5
Condenser Motor Amperage	.7	
Basic Electricals	208-220/60/3	208-220/60/3
Minimum Wire Size	3 w 14 g	3 w 14 g
Total Amperage	6.3	5.4
Compressor Amperage	4.2	4.0
Gear Drive Motor Amperage	1.4	1.4
Condenser Motor Amperage	.7	
Basic Electricals	208/60/1	208/60/1
Minimum Wire Size	2 w 14 g	2 w 14 g
Total Amperage	7.6	6.9
Compressor Amperage	5.5	5.4
Gear Drive Motor Amperage	1.4	1.5
Condenser Motor Amperage	.7	

### WATER

Inlet Water Line (Freezer)	1/4" Flare	1/4" Flare
Inlet Water Line (Condenser)	3/8" N.P.T.	3/8 N.P.T.
Drain Line	3/8" I.D.	3/8" I.D.
Drain Line-Water Cooled Condenser		3/8" O.D.

### CABINET

Width	21"	21"
Depth	26"	26"
Height	28"	28"
Weight	260 lbs.	245 lbs.
Finish (P-Painted, SS-Stainless steel)	P/SS	P/SS

## 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 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. MF5 is a continuous flow type machine, and is manually started by an OFF and ON switch located inside the cabinet. Since the MF5 does not have its own attached bin, it is necessary to use an auxillary bin such as the Model SB-500 SCOTSMAN Super 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.

The MF Series Flakers are also designed for remote type installations, whereby, ice can be transported from the flaker via plastic tubing to a bin located several feet away. Refer to section "Flaked Ice Transport System" for installation requirements.

### SCOTSMAN MODULAR FLAKERS PREPARATION FOR INSTALLATION

1. Select unit location prior to hook up of water drain and electrical in accordance with local and national codes. Minimum room temperatures is 50<sup>o</sup> Fahrenheit, maximum room temperature 100<sup>o</sup> Fahrenheit. On air cooled models, select well ventilated location.
2. Install bin for use with modular flaker in its permanent location following instructions included with the storage bin.
3. Level bin with adjustable legs and wipe storage bin liner clean with damp cloth.
4. After uncrating modular flaker, remove front, side and top panels and inspect for any concealed damage. Notify carrier of any concealed damage claims.
5. Before placing flaker unit on bin, holes in rubber gasket on bin top must be cut to allow passage of ice discharge tube and bin thermostat control tube into bin. This can be done by using holes in bin top as a template.
6. Remove rubber grommets from miscellaneous parts package and insert into place. A good seal must be made between grommet and base panel and between grommet and inner bin. See page 11 cutaway drawing.
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. Install ice discharge tube assembly, taped to freezer body, through large grommet in base & attach to spout using groove in spout casting as guide. See page 11.
9. Attach bulb holder to ice discharge tube grommet in direction shown on page 11. Route bin control tube through smaller grommet then insert tube into tube holder as shown.
10. Thru cabinet top, locate metal reservoir. Remove water reservoir cover and take out paper packing around float ball.
11. Check motor compressor hold down nuts to insure motor compressor rides snug on mounting pads.
12. Remove water strainer from envelope for installation in water supply line feeding unit.
13. 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.
14. Locate and tear out registration card from front of owners guide and fill out card completely including model and serial numbers as taken from aluminum plate found behind front service panel. Forward to Scotsman factory using self mailing card, for your personal registration certificate.
15. Call you local authorized Scotsman Service Agency for hook-up, start-up and check-out. He's listed under "Ice Making Machinery & Equipment" in your telephone book, yellow pages.

**INSTALLATION  
ELECTRICAL CONNECTIONS:  
MF5AE-4A  
230 Volts, 60 Cycle, 1 Phase  
20 Amp. Circuit**

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

Be certain that the Super 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  
MF5AE-4A**

Compressor	1 H.P.	Copelaweld: SSE4-0100-CAB-207
	Voltage	2 pole, 3500 RPM
	Amp. rating F.L.A.	230
	Cycle	8.0
	Phase	60
Gear Drive Motor	1/4 HP	Single
	Voltage	Queen Products
	Amp. Rating	208 - 230
	Cycle	2.4
	Phase	60
		Single
		Thermally Protected

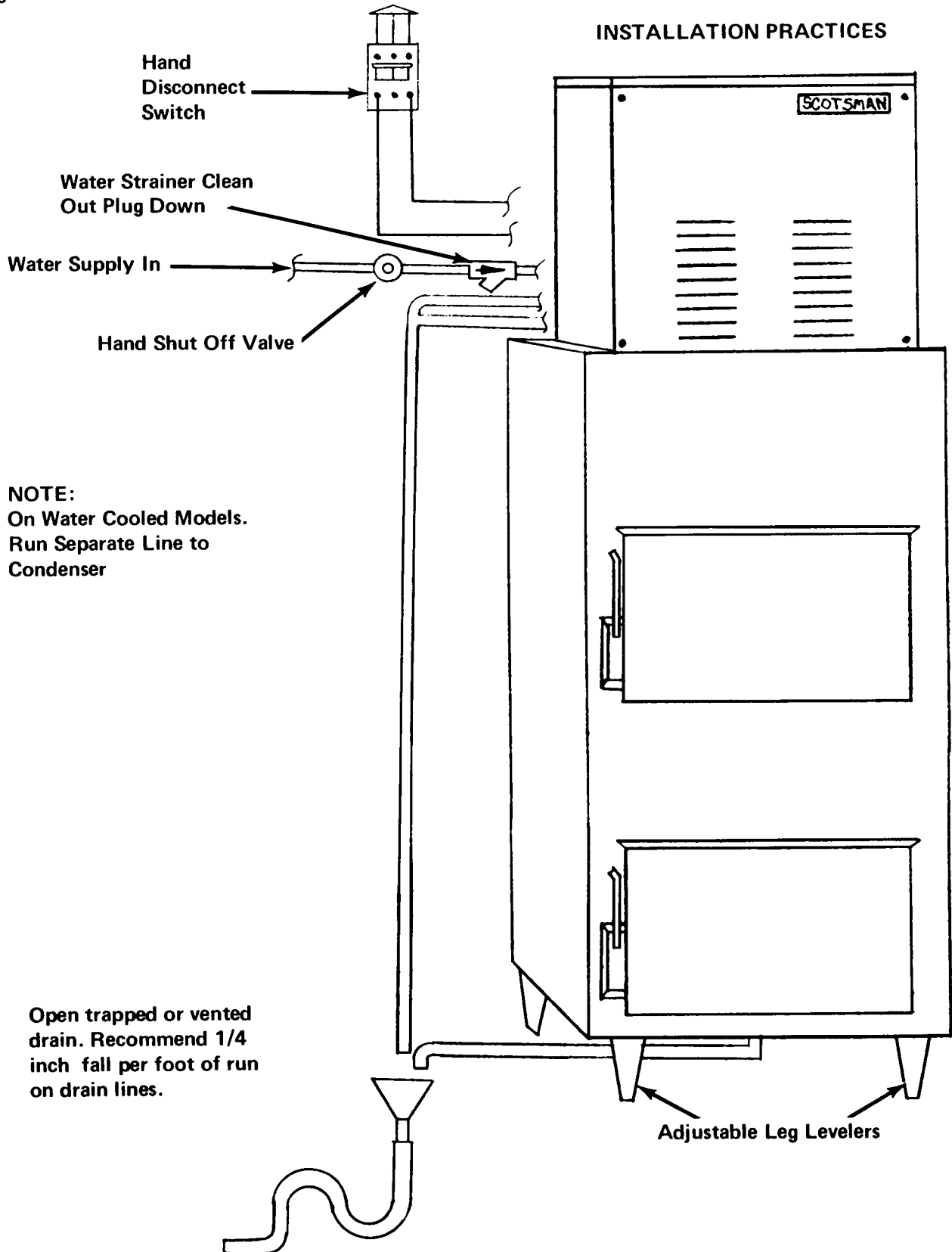
**WATER SUPPLY:** The recommended water supply line is 1/4 inch O.D. copper tubing for the MF-5. Connect to cold water supply line with regular plumbing fittings, with a shut-off valve installed in an accessible place between supply line and machine. A water strainer must be installed with the unit and mounted with clean-out plug down. Locate the strainer next to the machine with the arrow in the direction of the flow. Most plumbing codes also call for double check valves in the supply water line, particularly for water-cooled models.

On air-cooled models the water supply line connects to the 1/4 inch flare fitting on the machine. On water-cooled models connections are made to a 3/8 inch male pipe nipple inside of the machine compartment. Incoming water goes through the water regulating valve first and then to the water-cooled condenser. 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.

**NOTE:** If water supply to unit is to be interrupted for any period of time, the unit must be switched off to prevent damage to freezer mechanism.

**DRAIN:** The recommended drain from the bin is 3/8 inch OD copper tubing. Must be run to an open trapped and vented drain. If drain is a long run, allow 1/4 inch pitch per foot. Drain must be installed to conform with local code. Run separate line for condenser discharge water on water-cooled models.

### INSTALLATION PRACTICES



Maximum Ambient Air Temperature Recommended – 100° Fahrenheit  
Minimum Ambient Air Temperature Recommended – 50° Fahrenheit

NOTE: Air temperature ranges above or below those listed may cause serious damage to the product.



### **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 behind 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° 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:**

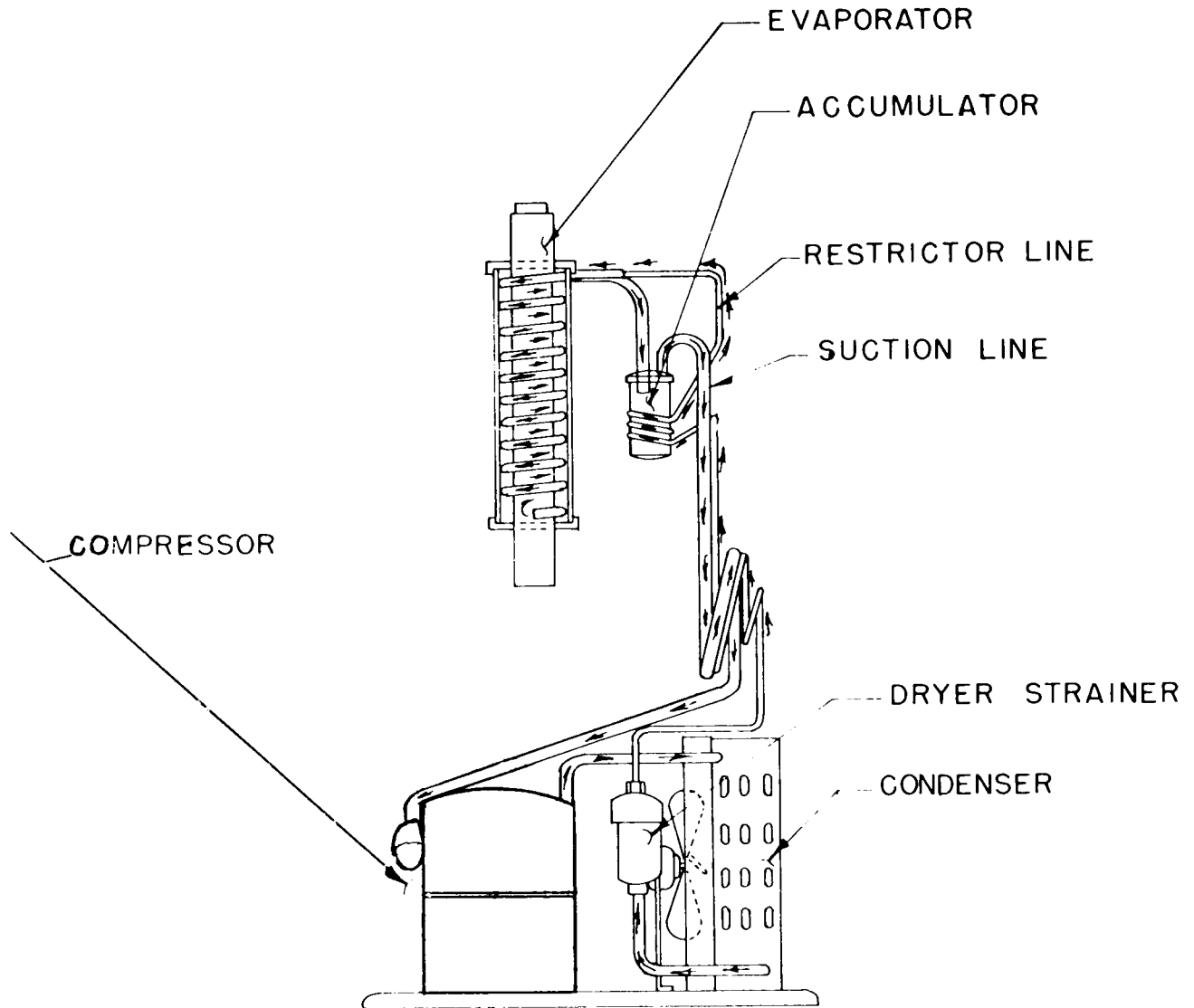
The below refrigerant charge is approximate. When charging, set at 135 PSI head pressure and charge so that the frost line extends out of the evaporator and into the accumulator after fifteen minutes of operation.

<u>Model</u>	<u>Refrigerant Charge</u>
Air-Cooled	36 oz. R-12
Water Cooled	31 oz. R-12

### **FINAL CHECK LIST**

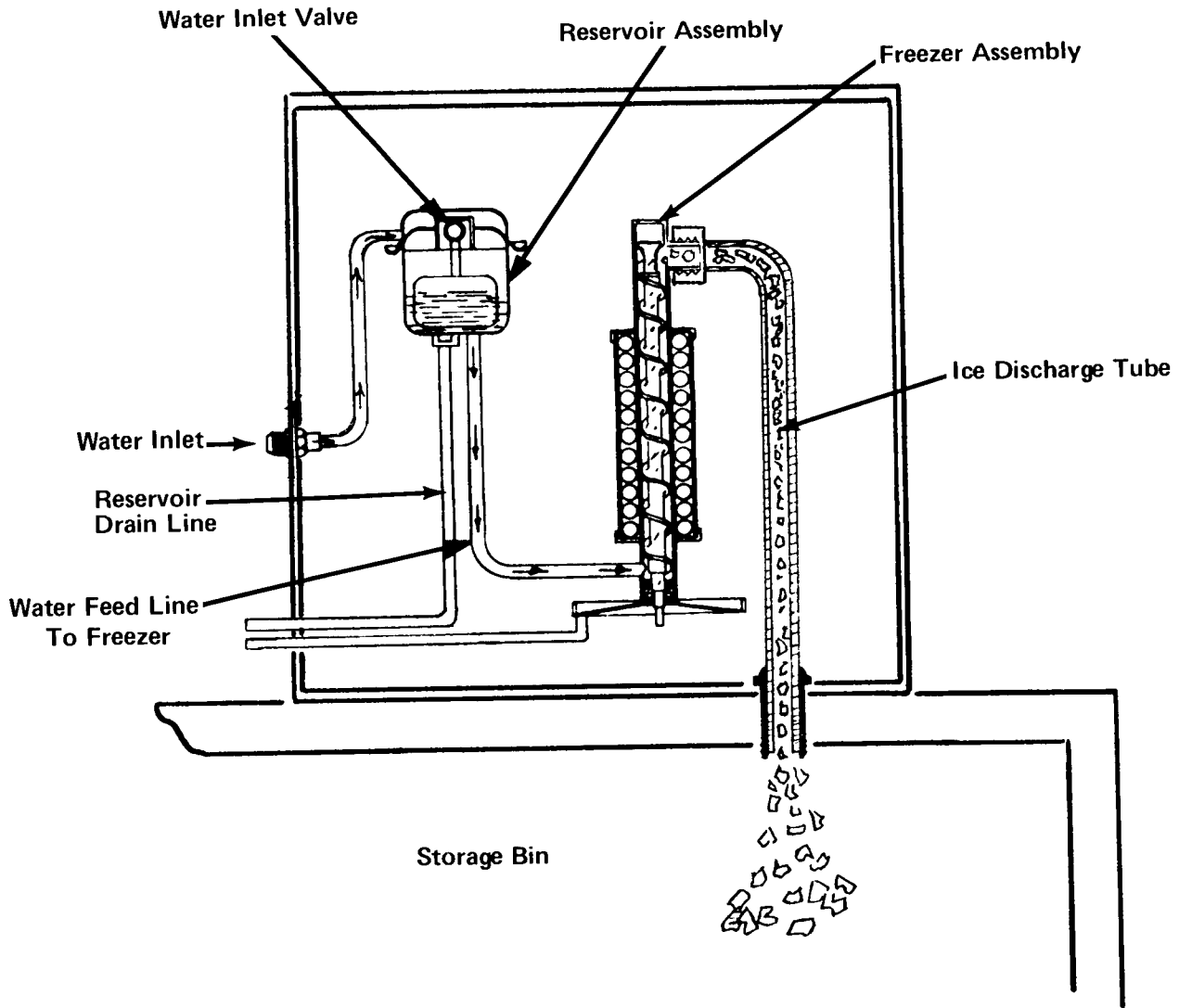
1. Is the unit level? (IMPORTANT)
2. Have all electrical and piping connections been made?
3. Has the voltage been tested and checked against the nameplate rating?
4. Is the water supply valve open and the electric power on?
5. Is the water reservoir filled and shut off? All packing removed?
6. Have 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° 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.

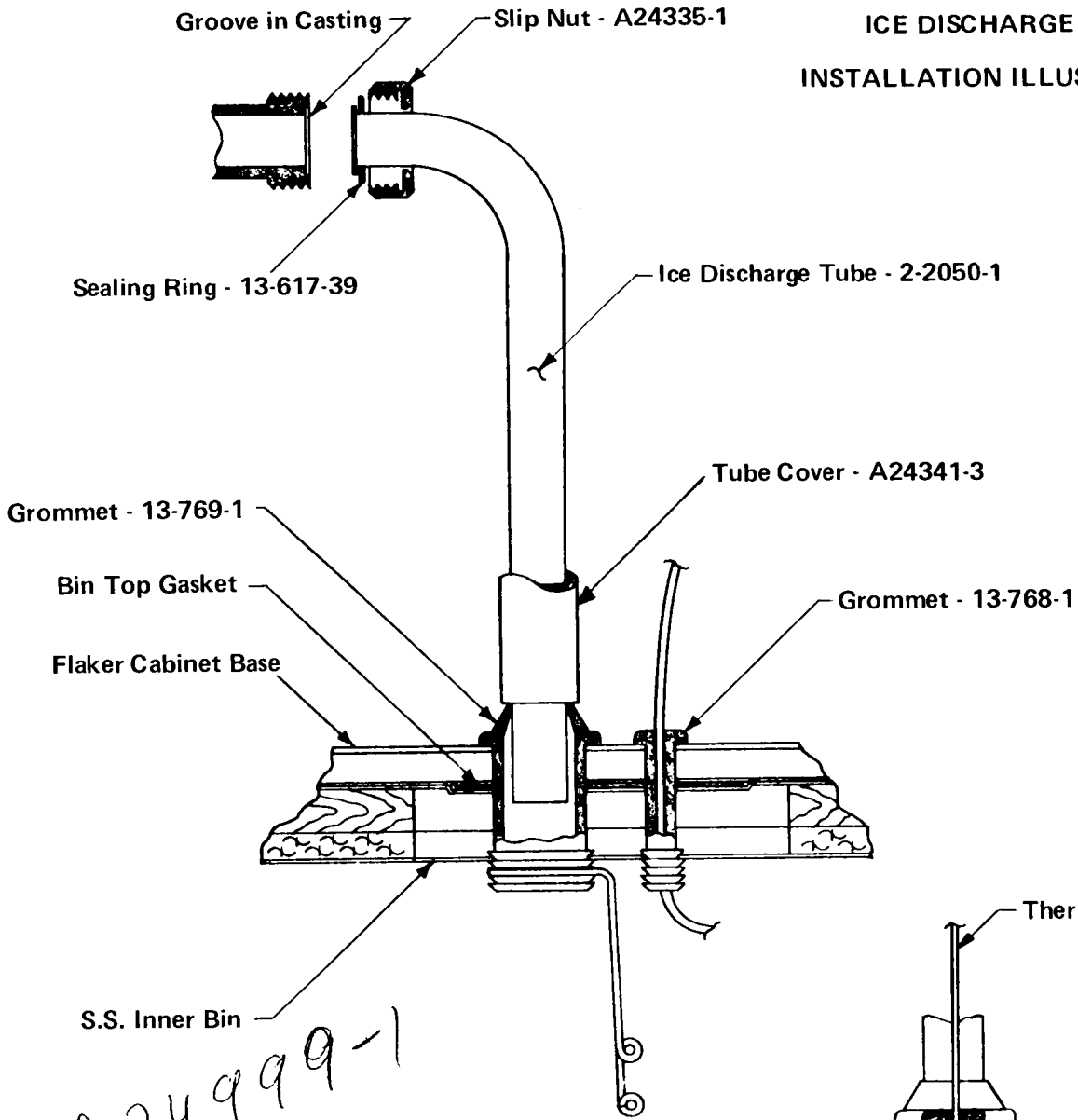


REFRIGERATION CYCLE

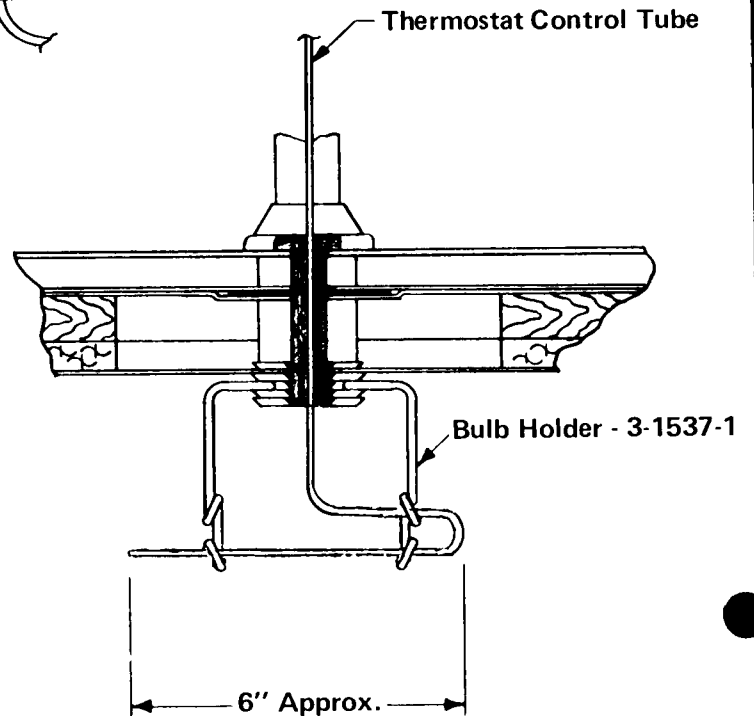
WATER SCHEMATIC



### ICE DISCHARGE TUBE INSTALLATION ILLUSTRATION



A24999-1



### BIN THERMOSTAT INSTALLATION ILLUSTRATION

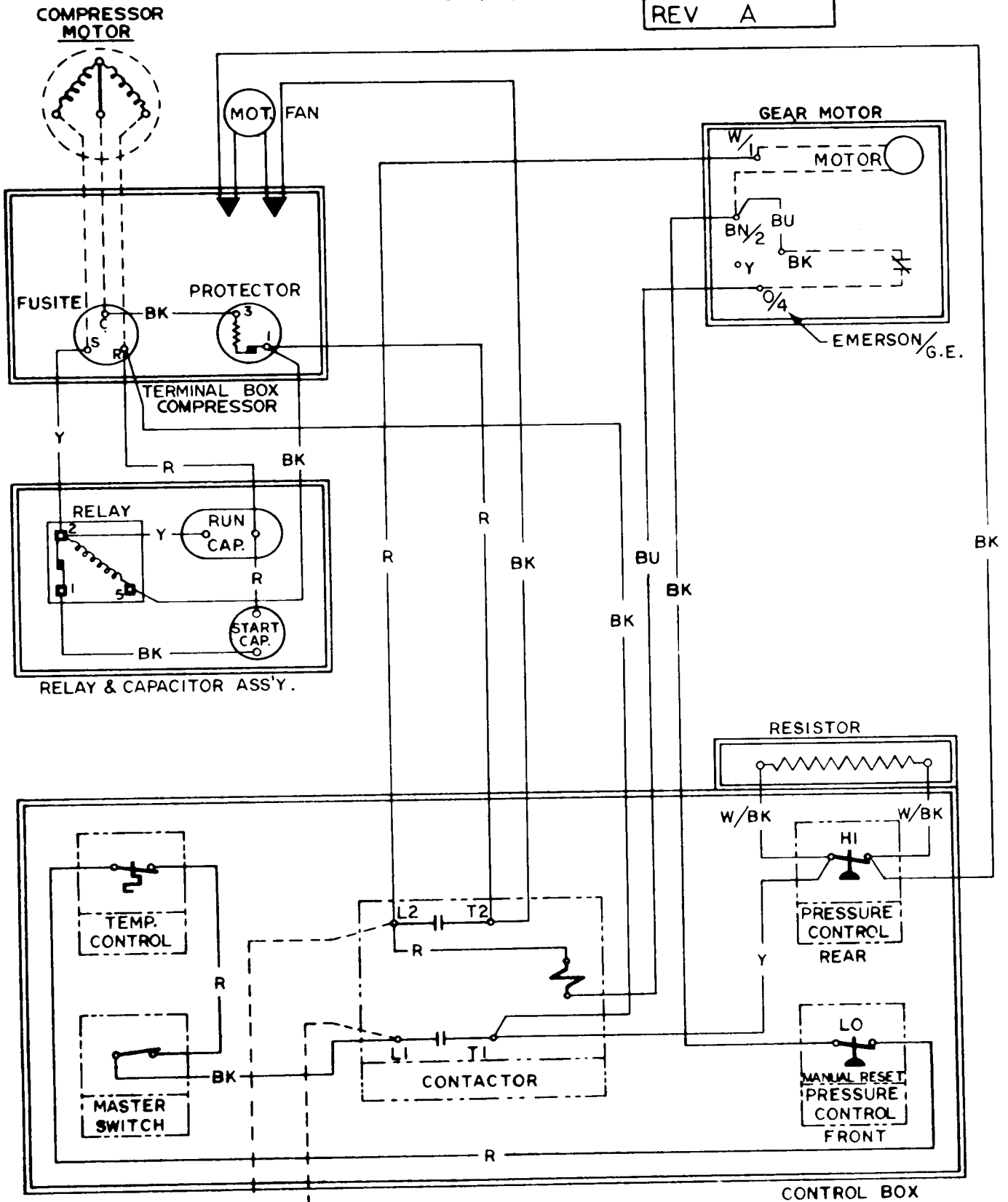
AIR COOLED

230/60/1

A23456-002

REV A

MF5  
Page 12



15  
AMP. FUSE  
MAX.

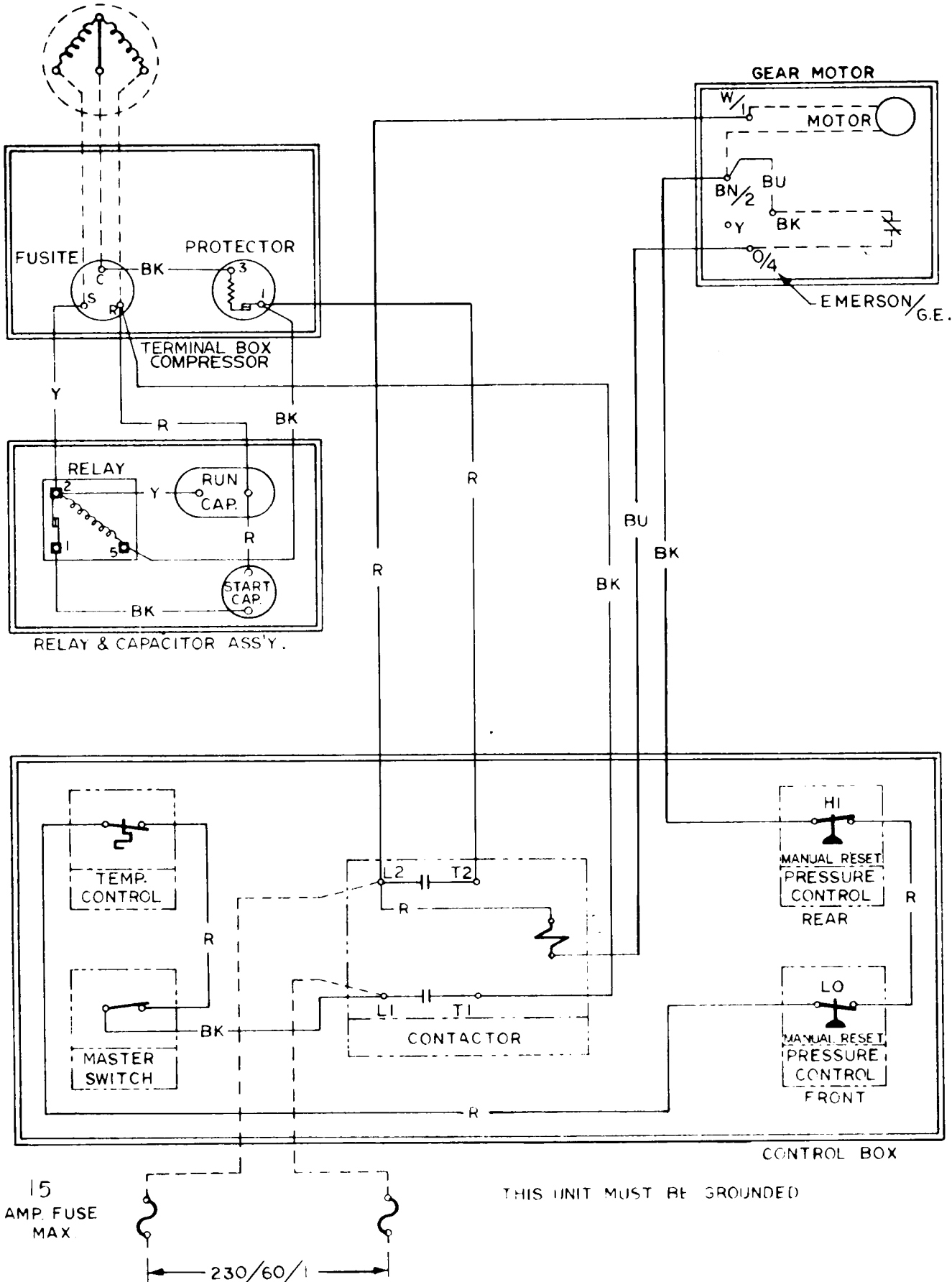
THIS UNIT MUST BE GROUNDED

230/60/1

COMPRESSOR  
MOTOR

WATER COOLED  
230/60/1

A23455-002  
REV A



AIR COOLED

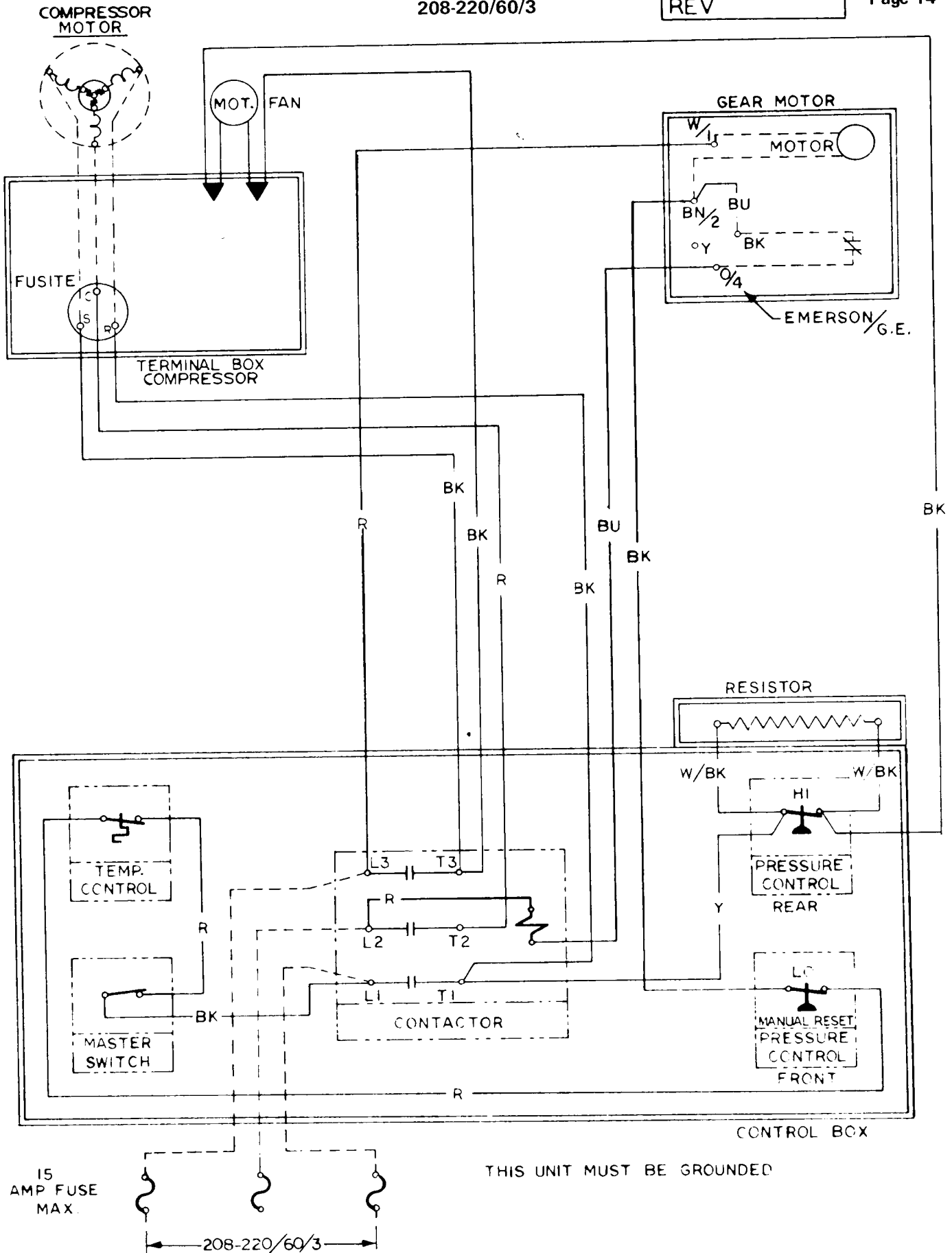
208-220/60/3

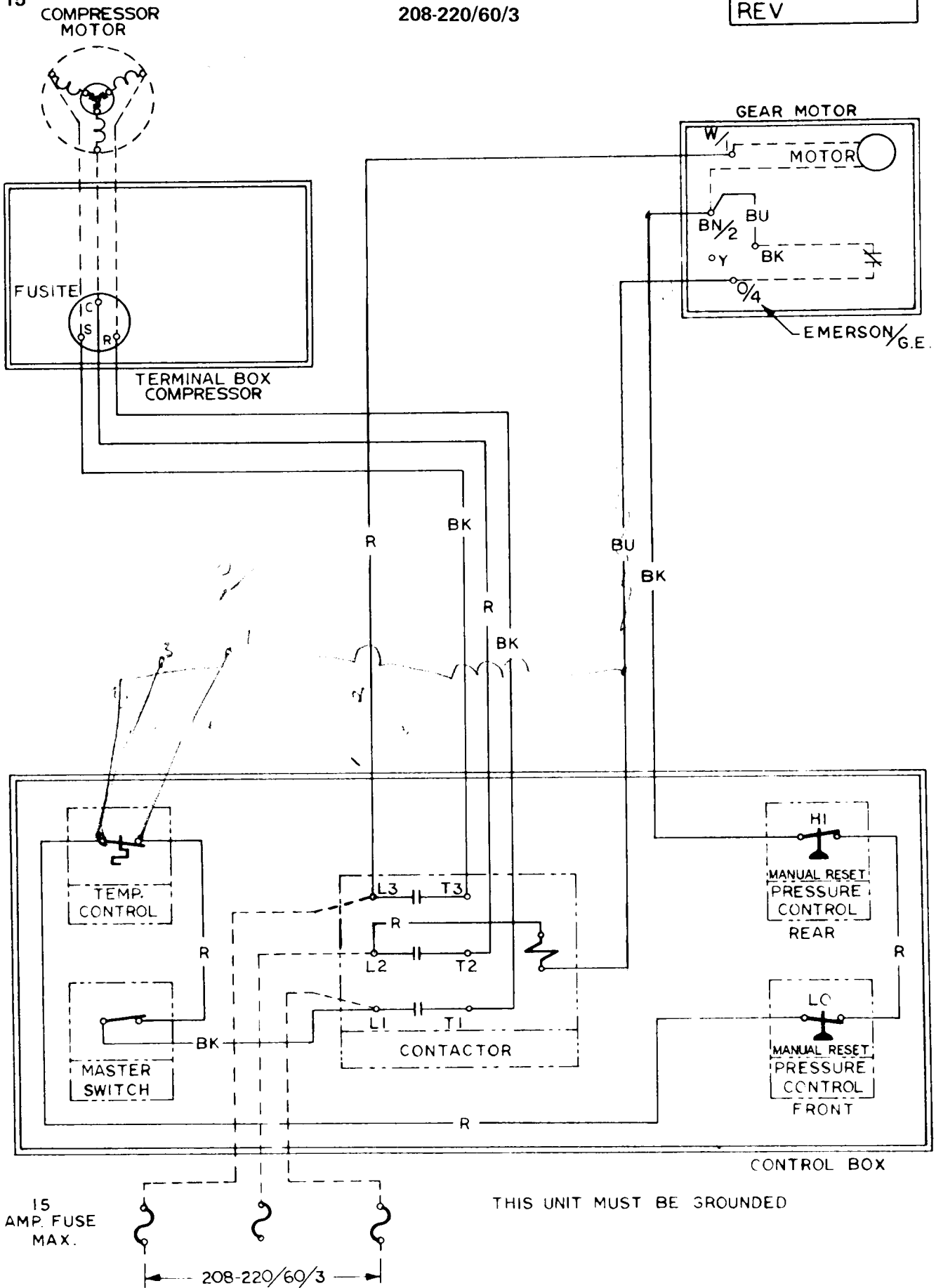
A23456-003

REV

MF5

Page 14







AIR COOLED

230/60/1

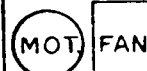
208

A23456-007

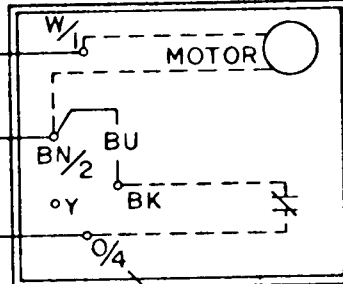
REV A

MF5  
Page 16

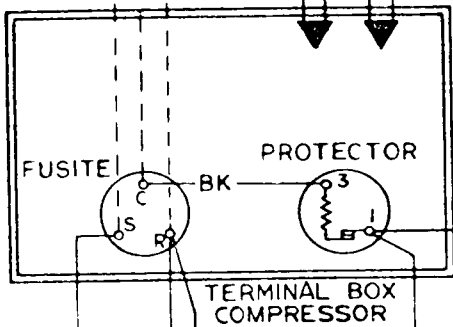
COMPRESSOR  
MOTOR



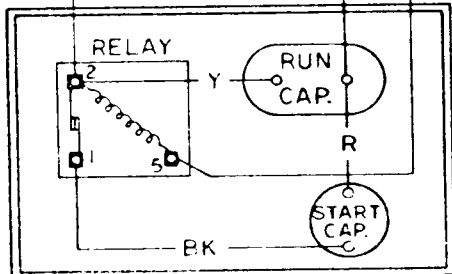
GEAR MOTOR



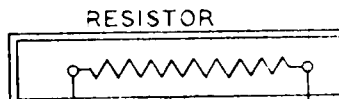
EMERSON/G.E.



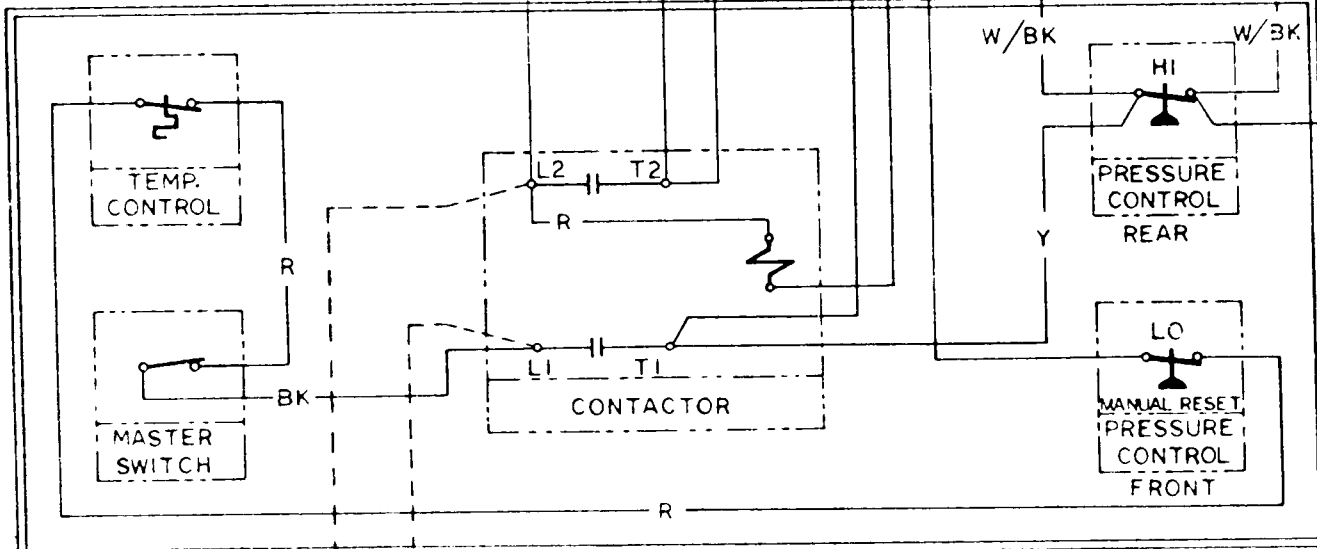
TERMINAL BOX  
COMPRESSOR



RELAY & CAPACITOR ASS'Y.

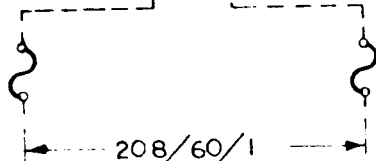


RESISTOR



CONTROL BOX

15  
AMP FUSE  
MAX.



208/60/1

THIS UNIT MUST BE GROUNDED

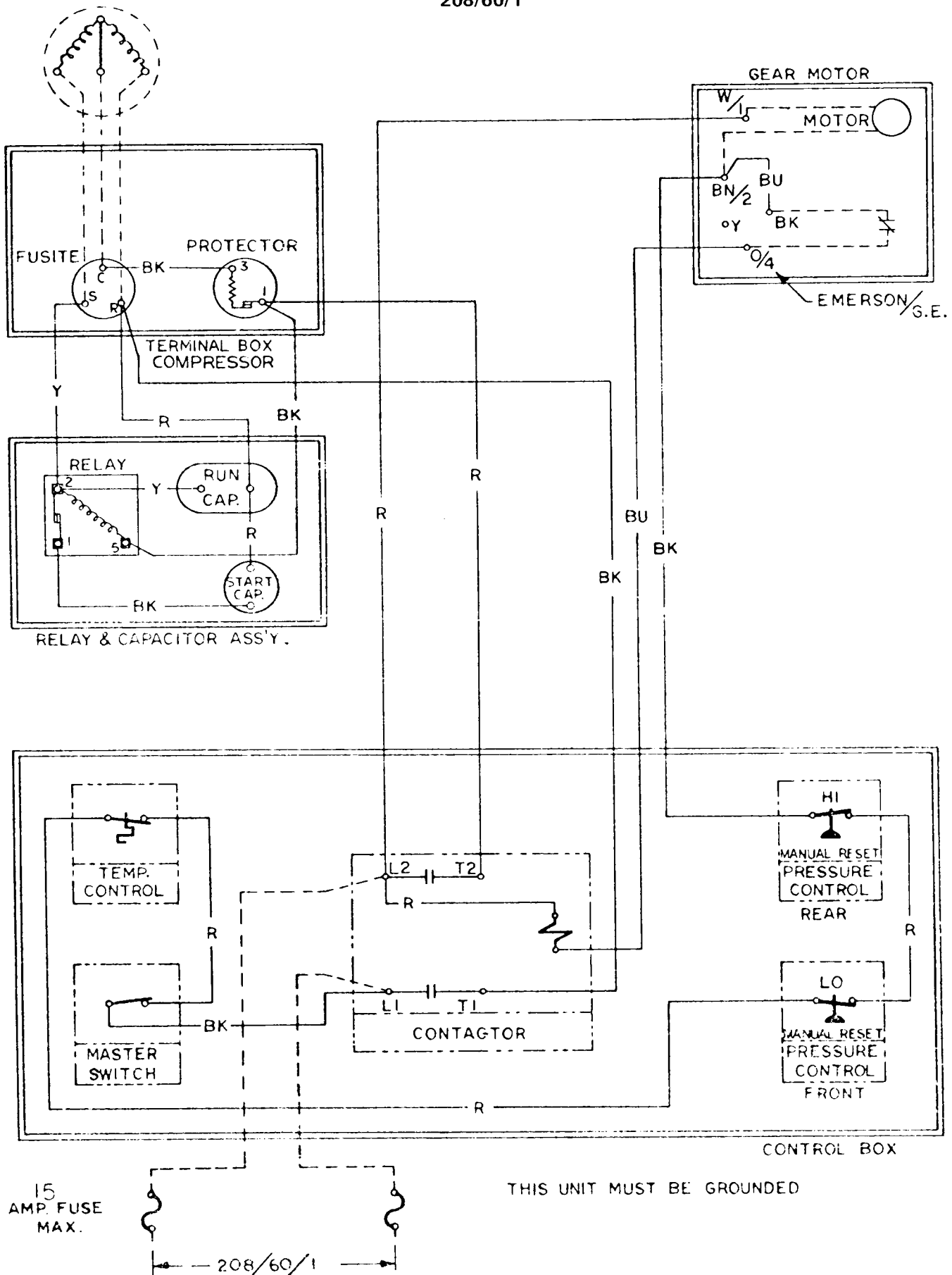
COMPRESSOR  
MOTOR

WATER COOLED

208/60/1

A23455-007

REV A



SERVICE ANALYSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Unit will not run	Blown Fuse  Thermostat set too high  Loose electrical connection Switch in OFF position Inoperative master switch	Replace fuse and check for cause of blown fuse. Adjust thermostat. 35° cut-out and 45° cut-in. Check wiring. Turn switch to ON. Replace switch.
Compressor cycles intermittently	Low voltage Dirty Condenser Air circulation blocked Inoperative condenser motor Non-condensable gases in system	Check for overloading. Clean. Move unit to correct Replace.  Purge off.
Making wet ice	Surrounding air temperature Under or over-charge of refrigerant High water level in water reservoir Faulty compressor	Correct or move unit to cooler location.  Recharge with the proper amount.  Lower to 1/4 inch below overflow pipe. Repair or replace.
Low ice production	Loss of refrigerant, under or over-charge of refrigerant. Dirty or plugged condenser Low water level in water reservoir  Partial restriction in capillary tube or drier  Inlet water strainer partially plugged. Corroded or stained worm shaft due to water condition.	Check and recharge with proper amount of refrigerant. Clean condenser Adjust to 1/4 inch below overflow pipe.  Moisture in system. Overcharge of oil in System. Remove charge and drier. Replace and recharge system.  Remove screen and clean.  Remove worm shaft and clean.
Machine runs but makes no ice	Loss or under-charge of refrigerant Drive gearmotor or drive coupling stripped. Water not entering freezing chamber  Moisture in system Water seal leaking Water supply to unit off	Check for leaks and recharge  Check. Repair and/or replace. Plugged strainer or supply line. Check and clean. Air lock in gravity feed line. Check and remove air lock. Check and remove charge and drier. Replace seal Restore water supply to icemaker.

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Water Leaks	Defective water seal Gravity feed line leaking "O" ring in spout casting leaking. Storage bin drain & connecting fittings leaking. Water level in reservoir too high	Replace Check hose clamps Remove spout casting and install new "O" ring.  Check and repair.  Adjust to 1/4 inch below overflow pipe
Excessive noise or chattering	Mineral or scale deposit on auger and inner freezing chamber walls.  Low suction Intermittent water supply  Water level in reservoir too low. Gearmotor loose on frame Gearmotor end-play or worn bearings.	Remove and manually polish auger, polish inner chamber walls of freezer barrel. For lighter concentrations use Scotsman Ice Machine Cleaner periodically. Add gas to raise suction pressure. Check & clean water strainer. Check gravity feed line for air lock. Remove air lock.  Adjust to 1/4 inch below overflow pipe. Tighten.  Repair or replace.
Machine continues to run with full storage bin	Storage bin thermostat not properly set.	Reset or replace. 35° cut-out, 45° cut-in Check operation with handful of ice.
Gearmotor noise	Low on oil	Remove case cover to check for proper oil level. Top of gears should be covered. Use Sun Oil Co. Prestige 50 EP.

## MAINTENANCE INSTRUCTIONS – FLAKERS

THE FOLLOWING MAINTENANCE SHOULD BE SCHEDULED THREE TIMES PER YEAR ON ALL SCOTSMAN MODULAR FLAKERS. CALL YOUR AUTHORIZED SCOTSMAN SERVICE DEPARTMENT.

1. Check and clean water strainers and float valve. Depress float valve to insure full stream of water.
2. Check water level and machine level, keep water level below overflow, but as high as possible and still not run out of spout opening with machine off. Water droplets come out of spout with ice at all times. Adjust as required.
3. Clean reservoir and interior of freezer using SCOTSMAN Ice Machine Cleaner.  
If machine has been cleaned regularly and no problems such as dry ice or chatter are noticed, clean as per the following instructions:
  - a. Set main switch to OFF.
  - b. Remove all ice from storage bin.
  - c. Turn off water supply or block float. Drain reservoir by disconnecting tube between reservoir and freezer. After draining, reconnect tubing.
  - d. Set main switch to ON and pour cleaning solution into reservoir. Do not fill above overflow tube.  
Use 6 oz. of Scotsman cleaner and 1-1/2 qts. hot water.
  - e. Continue to make ice on solution until the solution is used up and reservoir is empty.
  - f. Set main switch to OFF Remove overflow tube, wash and rinse reservoir, replace overflow tube, turn water on or remove float block.
  - g. 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.
  - h. Turn MAIN SWITCH to OFF. Add hot water to ice bin, using the melt water, thoroughly wash and rinse all surfaces within the storage bin.
  - i. Turn MAIN SWITCH to ON. Replace Service Door. Unit is ready for normal operation.

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 air-cooled models head pressures range between 130 and 145 PSI. Suction pressure should be above 12 PSI and will range up to 15 PSI depending upon water and ambient temperatures.
5. Check gear motor operation. Normal running temperatures are in the area of 160° Fahrenheit, which is hot to the touch.
6. Check top bearing of freezing tube. Remove retainer ring around edge of stamped brass cap. If moisture is around bearing, wipe up and remove grease. Add new grease. Use Beacon No. 325. Replace cap and retainer ring.
7. Clean air-cooled condenser. Inform customer to clean frequently. Always shut off machine when cleaning.
8. Oil condenser fan motor when possible.
9. 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.
10. Check for water leaks. Tighten drain line connections. Run water down bin drain line to make sure it is open.
11. Check quality of ice. Ice should be wet when formed, but will cure rapidly to normal hardness in bin.
12. Check thermostat and \*pressure plate cut off in spout. Micro switch cuts off only compressor. Bin thermostat should be set at 10° differential 35° cut out, 45° cut in.

\* Safety pressure switch not incorporated on all models.

### FREEZER GEARMOTOR

Model MF5 is equipped with a 1/4 horsepower direct drive gearmotor. A speed sensing switch mounted within the motor of the gear unit will open and stop the compressor when the RPM of the gearmotor is less than 900. At 1200 RPM it will close, starting the compressor.

In an actual operation any condition that may cause excessively hard ice and overloads within the freezer assembly such as water interruptions, cold ambients, etc. is transmitted to the gearmotor reducing it's speed. When gearmotor slows down to approximately 900 RPM the speed sensing switch opens the electrical circuit to the compressor. The compressor stops and no more ice is produced. Meanwhile the gearmotor continues to run, clearing the overload condition and gradually resumes full speed. At 1200 RPM gearmotor speed sensing switch closes compressor circuit causing the normal icemaking process to begin once more.

Any freeze up possibility is thereby automatically cleared out by the gearmotor.

#### TO REPLACE:

1. Remove top, front and side panels.
2. Shut off water supply and electrical power to unit.
3. Remove the electrical leads from the motor to the control box.
4. Remove slip nut attaching ice discharge tube to freezer spout casting.
5. Next remove 3 bolts securing base adapter to gearmotor cover and the 4 bolts holding the gearmotor bracket to the cabinet base.
6. Lift freezer and adapter assembly off gearmotor and pull gearmotor and mounting bracket out of cabinet.

### FREEZER ASSEMBLY

#### TO REPLACE:

1. To remove freezer first remove cabinet top, front and side panels.
2. Shut off water supply and disconnect electrical power to unit.
3. Drain reservoir and freezer of water by removing tygon tubing entering base of freezer.
4. Remove slip nut attaching ice discharge tube to freezer spout casting.
5. Purge off refrigerant and disconnect suction line from compressor. Disconnect capillary line at drier. Cap off all lines so no moisture can enter system.
6. Remove the 3 bolts securing freezer base adapter to top of gear motor cover.
7. Freezer assembly now can be lifted off gear motor and out of cabinet.
8. To re-install reverse procedure. Refer to section "Specifications" for proper refrigerant charge and to page 8 for Head and Back pressure settings.

### FREEZER WORM SHAFT (AUGER)

#### TO REPLACE:

1. Disconnect electrical supply and shut off water to unit.
2. Remove top and front panel of cabinet.
3. Drain reservoir and freezer of water by removing tygon tubing entering base of freezer.
4. Next remove slip nut attaching ice discharge tube to freezer spout casting and insulation covering top of freezer chamber.
5. Remove the 2 bolts attaching the freezer spout casting to the spout bracket and remove spout casting. Also remove bracket by removing the stainless steel screw which secures the bracket to the freezer chamber.
6. By lifting up on the freezer cap pull ring, the complete worm shaft and bearing retainer can be removed from freezer chamber. NOTE: Top half of water seal is attached to the lower end of the worm shaft.

## FREEZER ASSEMBLY TOP BEARING

### TO REPLACE:

1. Follow steps 1 thru 6, freezer worm shaft removal.
2. To remove bearing and retainer from worm shaft, first remove retaining ring in top of bearing retainer.
3. Remove freezer cap and pull ring from bearing retainer.
4. Unscrew cap screw holding shaft to inner race of bearing and pull worm shaft free from bearing and retainer.
5. When replacing with a new bearing add new grease (Beacon No. 325) to top of bearing.

## FREEZER ASSEMBLY BOTTOM BEARING AND WATER SEAL

### TO REPLACE:

1. To replace, follow steps 1 through 6 under Worm Shaft Removal.
2. Remove 3 bolts holding freezer to mounting adapter.
3. Lift freezer off adapter just high enough to allow bottom bearing and bottom half of water seal to be removed from bottom of freezer tube.
4. Lightly grease bottom half of new water seal and insert face up approximately 1/2" in bottom of freezer tube.
5. Insert bottom bearing in bottom of freezer tube, force approximately 1/8" past bottom tube end. This will allow the positioning ring on adaptor to properly position freezer tube when tightening up the three mounting bolts.
6. After securing mounting bolts, put new top half of water seal on worm shaft the same way as the old seal was removed. When reassembling, put a small amount of Vaseline on shaft end. This will allow shaft to slide smoothly through rubber bottom half of water seal without tearing it.
7. Carefully insert worm shaft assembly in freezer tube and into spline coupling on bottom.
8. Replace spout casting, screws, insulation pieces and unit is ready to resume operation.

## BIN THERMOSTAT:

Thermostat control body is located in electrical control box. The thermostat sensing tube is threaded into the ice storage bin where it automatically stops the icemaker when ice bin fills to sensing tube level and restarts icemaker when ice is removed. Factory settings are 35° cut out, 45° cut in.

Altitude correction begins at 2,000 feet, cut in and cut out screws should be adjusted equally, not more than 1/4 turn at a time.

**IMPORTANT** – Refer to page 11 for proper location of bin control capillary.

### TO REPLACE:

1. Disconnect electrical supply.
2. Remove bin thermostat capillary tube from bin location.
3. Remove front panel and control box cover.
4. Disconnect two spade type electrical leads.
5. Loosen two screws in control mounting bracket.
6. Replace with new control and reassemble in reverse of above.
7. **CAUTION:** Always check new control power element charge before installation to assure receiving an operative control. A handful of ice on bulb will register on audible 'click' at cut off.

## CONTACTOR

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

### HEAD PRESSURE CONTROL (WATER COOLED MODELS)

The head pressure safety control is factory preset at 250 lb. PSIG. This is a manual reset control with an adjustment screw for raising or lowering the cut out pressure. The control is placed in the system as a safety precaution, to terminate power to the unit should loss of water occur to the water cooled condenser.

### HEAD PRESSURE CONTROL (AIR COOLED MODELS)

A reverse acting high pressure control is used and connected electrically to the fan motor. As the head pressure drops below the cut-out setting, the control opens allowing the current to pass entirely through a resistor in the line feeding the fan motor. This slows the shaded pole motor down to approximately 1/4 speed thus increasing the head pressure. When the control cuts in the full voltage again flows directly to the fan motor allowing it to operate at full speed. This feature protects unit against low ambient conditions. Cut out and cut in pressures are normally set at 95 lb. cutout and 130 lb. cut in.

### LOW PRESSURE CONTROL

Control is located in the control box. Factory settings cut-out at 5 PSI. Safety device to cutoff machine and keep it off in case of water supply failure, loss of refrigerant, low ambient temperature or other causes of low pressure. This is a manual reset control.

### WATER REGULATING VALVE (Water Cooled Models Only)

The Water Regulating Valve is designed to maintain a constant head pressure by regulating the amount of incoming water flow through the water cooled condenser. This valve is operated by high side pressure and may be adjusted by the adjusting screw on top of the valve to raise or lower the operating head pressure.

#### TO REPLACE:

1. Shut off water supply to machine and disconnect electrical power.
2. Disconnect old valve from water supply line and install new valve.  
NOTE: Be sure arrow on side of valve points in direction of water flow.
3. Purge off refrigerant and disconnect valve capillary line from high side fitting and immediately attach capillary from new valve.
4. Recharge system. Refer to page 8 for proper refrigerant charge and head and back pressure settings.

### WATER RESERVOIR

A water level is maintained in the water reservoir by a float operated valve. Water is piped from the water reservoir to the freezing chamber by a gravity feed line maintaining an equal water level.

The water reservoir is equipped with a 2 inch air gap to prevent back siphoning and meet all health codes.

The water level in the water reservoir is adjusted by bending float arm. The water level should be set 1/4 inch below the overflow standpipe.

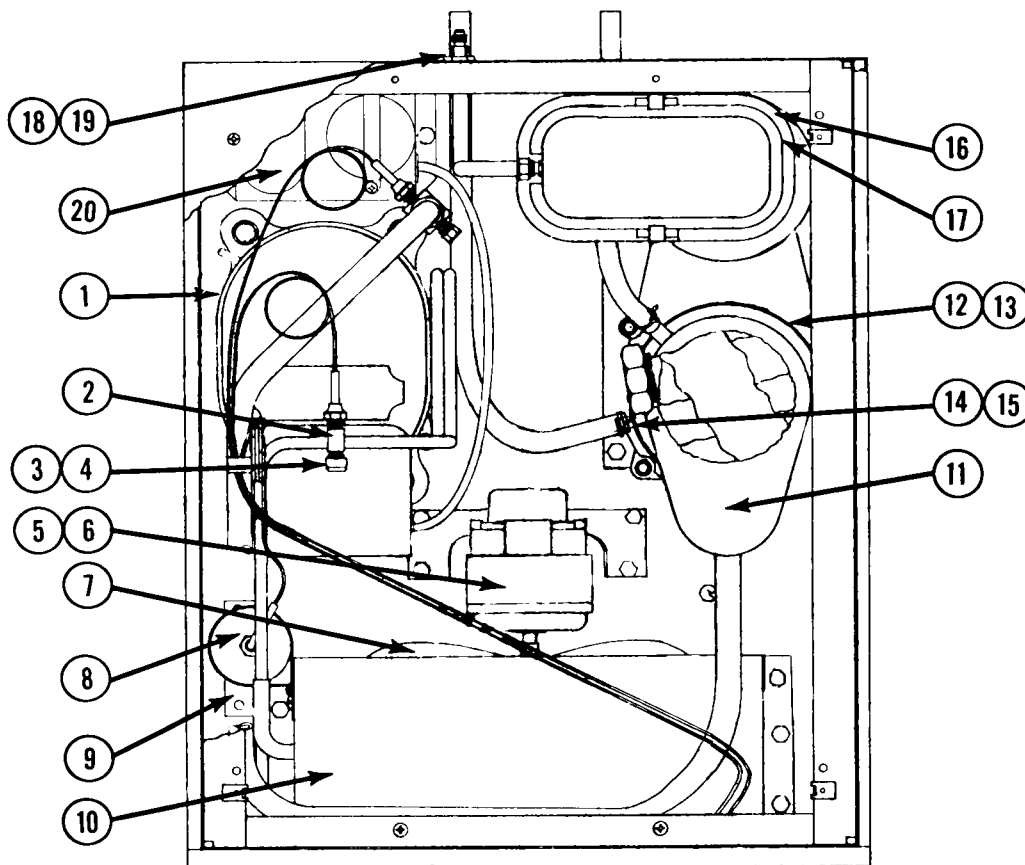
A water strainer must be installed in the supply line. Use strainer sent with machine.

#### TO REPLACE:

1. Remove cabinet top and side panel.
2. Turn off water supply and drain reservoir.
3. Remove 1/4 inch inlet water line.
4. Remove plastic feed line to freezer.
5. Remove two screws holding reservoir bracket to wall.
6. Lift out reservoir.
7. *To replace, reverse procedure.*



FINAL ASSEMBLY  
(Air Cooled)

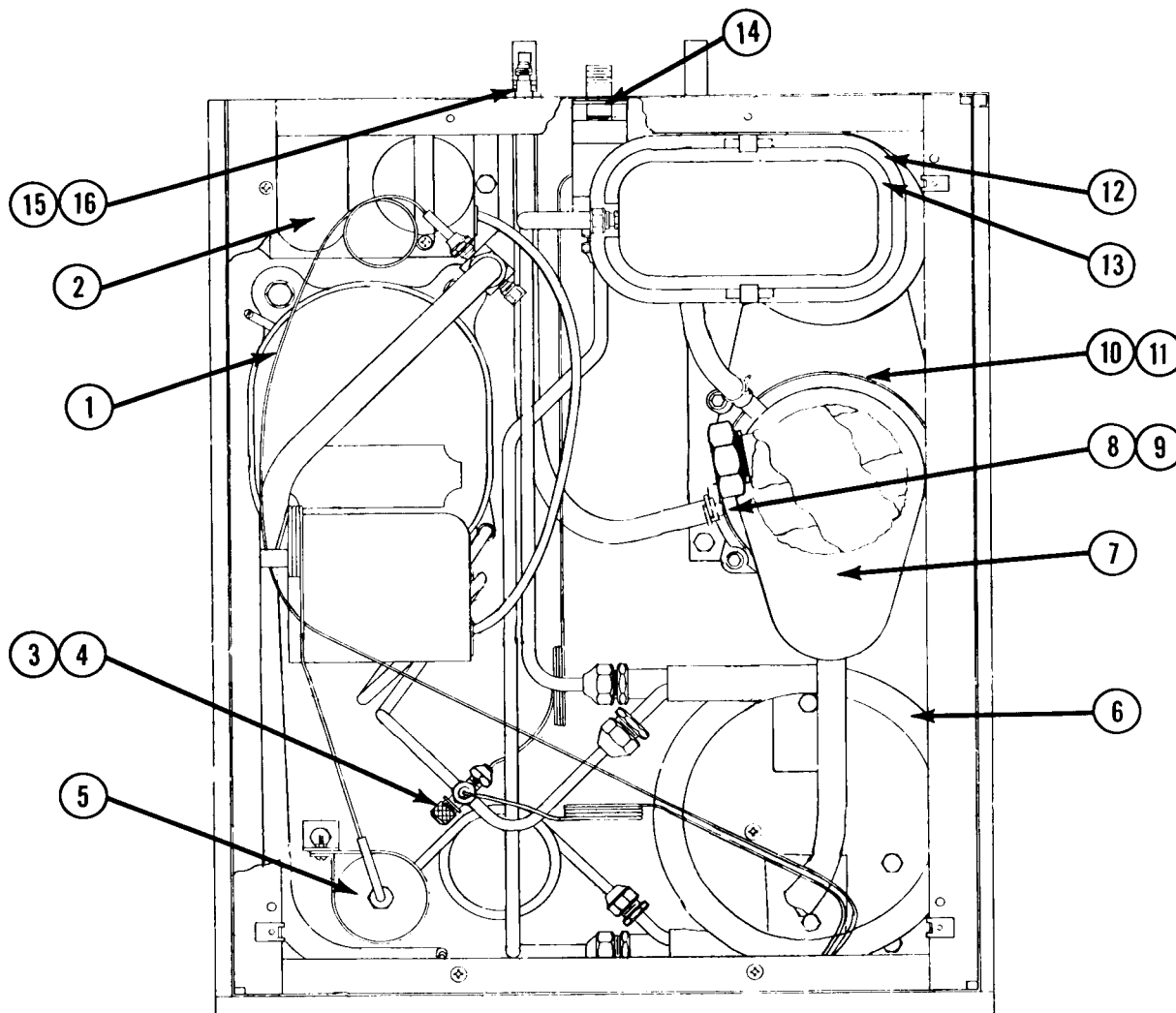


ITEM NO.	PART NO.	DESCRIPTION
1.	18-2300-2 18-2300-3 18-2300-7	Compressor 230/60/1 Compressor 208-220/60/3 Compressor 208/60/1
2.	A20578-1	Adapter
3.	16-0563-00	Brass Cup
4.	16-0560-00	Valve Core
5.	18-0597-00	Fan Motor & Mount
6.	A23864-1 A23864-3	Fan Motor 230/60/1 Fan Motor 208-220/60/3
7.	18-0787-00	Fan Blade
8.	02-0544-00	Drier
9.	18-0397-01	Condenser
10.	A17901-001	Shroud
11.	A23544-001	Freezer Ass'y
12.	A21290-000	Drip Pan Ass'y
13.	13-0704-00	Gasket
14.	A21002-21	Tubing
15.	02-534-00	Clamp
16.	A23410-009	Reservoir Ass'y (See Page 30 For Component Breakdown)
17.	A16012-00	Reservoir Cover
18.	03-1394-00	Nut
19.	03-1409-04	Washer
20.	18-1900-31 18-1900-34	Relay & Capacitor Assy. 230/60/1 Relay & Capacitor Assy. 208/60/1

(See Page 28  
For Component  
Breakdown)

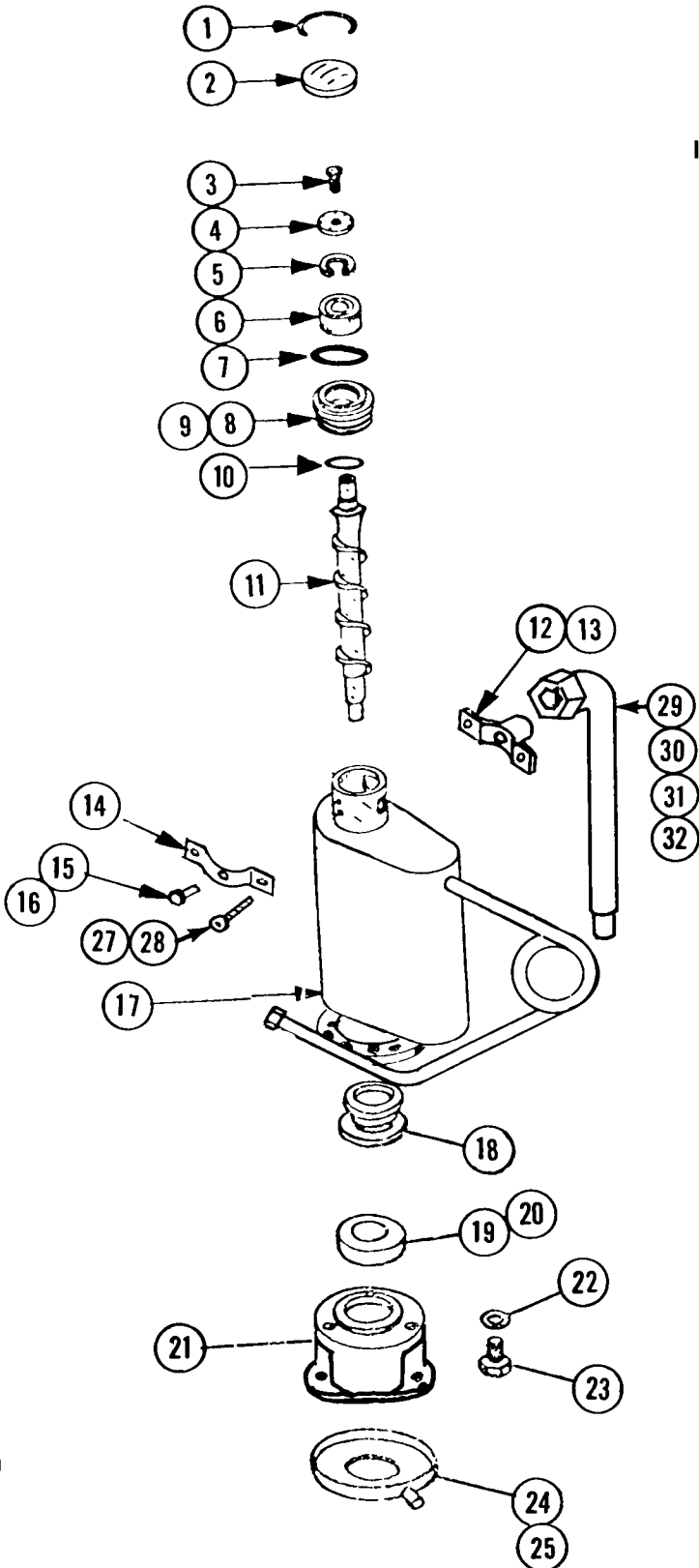
(See page 28 For  
Component Breakdown)

FINAL ASSEMBLY  
(Water Cooled)



ITEM NO.	PART NO.	DESCRIPTION
1.	18-2300-2	Compressor 230/60/1
	18-2300-3	Compressor 208-220/60/3
	18-2300-7	Compressor 208/60/1
2.	18-1900-31	Relay & Capacitor Assy 230/60/1
	18-1900-34	Relay & Capacitor Assy 208/60/1
3.	16-0563-00	Brass Cap
4.	16-0560-00	Valve Core
5.	02-0544-00	Drier
6.	18-3306-01	Condenser
7.	A-23544-001	Freezer Assy (See Page 26 For Component Breakdown)
8.	A-21002-021	Tubing
9.	02-0534-00	Clamp
10.	A21290-000	Drip Pan Assy.
11.	13-0704-00	Gasket
12.	A23410-009	Reservoir Assy. (See Page 30 For Component Breakdown)
13.	A16012-000	Reservoir Cover
14.	11-0198-00	Water Regulating Valve
15.	03-1394-00	Nut
16.	03-1409-04	Washer

FREEZER ASSEMBLY - EXPLODED VIEW - MODEL -- MF5



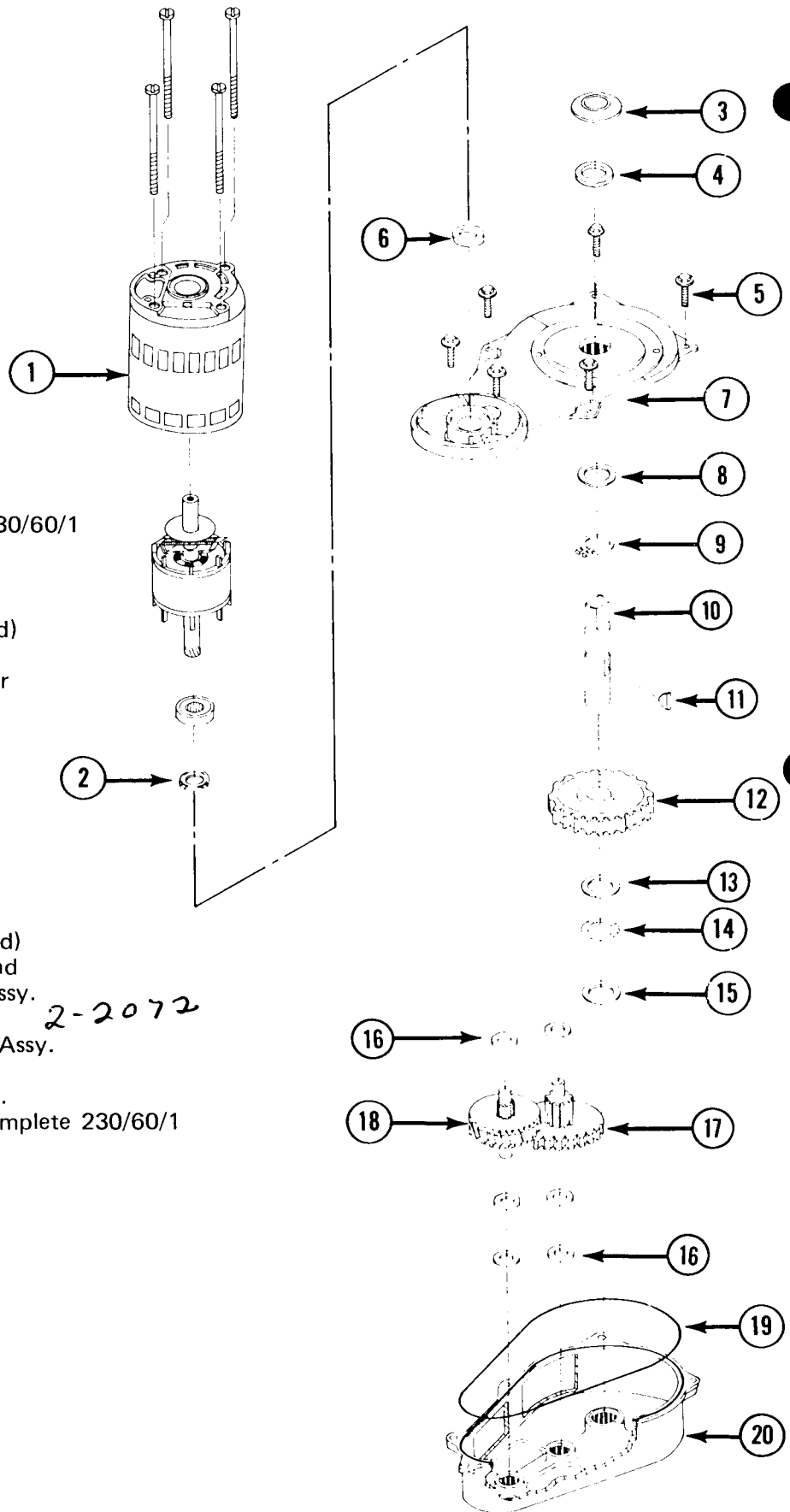
ITEM NO.	PART NO.	DESCRIPTION
1.	A-8582	Cap Hook
2.	A-8581	Cap
3.	3-1405-36	Screw
4.	A-6273	Washer
5.	<del>3-712</del> 3-1558-4	Retaining Ring
6.	2-646	Bearing
7.	13-617-20	"O" Ring (Retainer to Cap)
8.	A-23465-1	Bearing Retainer
9.	13-617-40	"O" Ring (Retainer to Freezer)
10.	13-617-15	"O" Ring (Retainer to Auger)
11.	2-2048-1	Auger
12.	A-23554-1	Spout/Breaker
13.	2-1437	Gasket
14.	A-23515-1	Spout Bracket
15.	3-1506-1	Screw
16.	3-1409-14	Washer
17.	A-23559-1	Freezer W/Heat Exch.
18.	2-929	Water Seal
19.	2-619	Lower Bearing
20.	A-10591	Bearing Retainer
21.	2-1629	Base Adapter
22.	3-1408-3	Washer (4)
23.	3-1405-41	Screw (4)
24.	A-21290	Drip Pan Assy.
25.	13-704	Gasket
26.	15-573-1	Coupling
27.	3-1403-69	Screw (2)
28.	3-1417-7	Washer (2)
29.	2-2050-1	Disch. Tube
30.	A-24335-1	Slip Nut
31.	13-617-39	"O" Ring
32.	A-24341-3	Tube Cover

\* A-23544-1 Freezer Assy. Complete (Less items 24, 25, 26, 29, 30, 31, & 32)

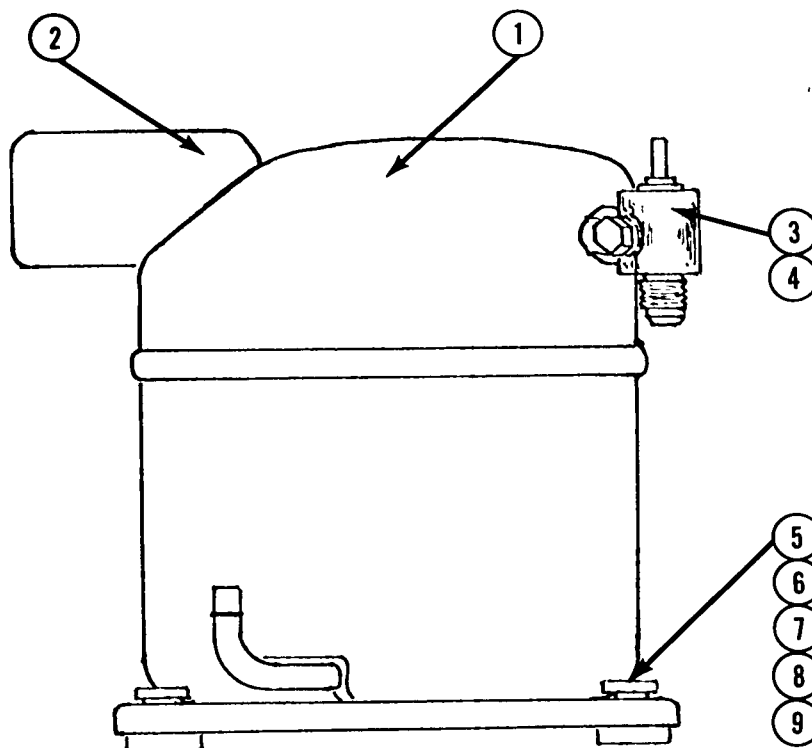


**GEAR MOTOR ASSEMBLY**  
**1/4 HP**  
**OUTPUT SHAFT TURNS**  
**AT 12 RPM**

ITEM	PART NO.	DESCRIPTION
1.	12-1741-02	Drive Motor 230/60/1
2.	03-1426-00	Spring Washer
3.	13-0709-02	Water Shed
4.	02-1607-00	Oil Seal
5.	03-1251-01	Screws (6 Req'd)
6.	02-1606-00	Oil Seal
7.	A22200-000	Gear Case Cover Assembly
8.	02-1681-00	Thrust Race
9.	03-1363-00	Retaining Ring
10.	02-1652-00	Output Shaft
11.	03-1364-00	Key
12.	02-1653-00	Output Gear
13.	02-1681-00	Thrust Race
14.	02-1680-00	Bearing
15.	02-1679-00	Thrust Race
16.	03-1408-24	Washer (6 Req'd)
17.	<del>02-1604-00</del>	Second Gear and Third Pinion Assy.
18.	<del>02-1603-00</del>	First Gear and Second Pinion Assy. <i>2-2072</i>
19.	13-0617-38	"O" Ring
20.	A22199-000 A24317-22	Gear Case Assy. Gear Motor Complete 230/60/1



MOTOR COMPRESSOR  
AIR AND WATER COOLED

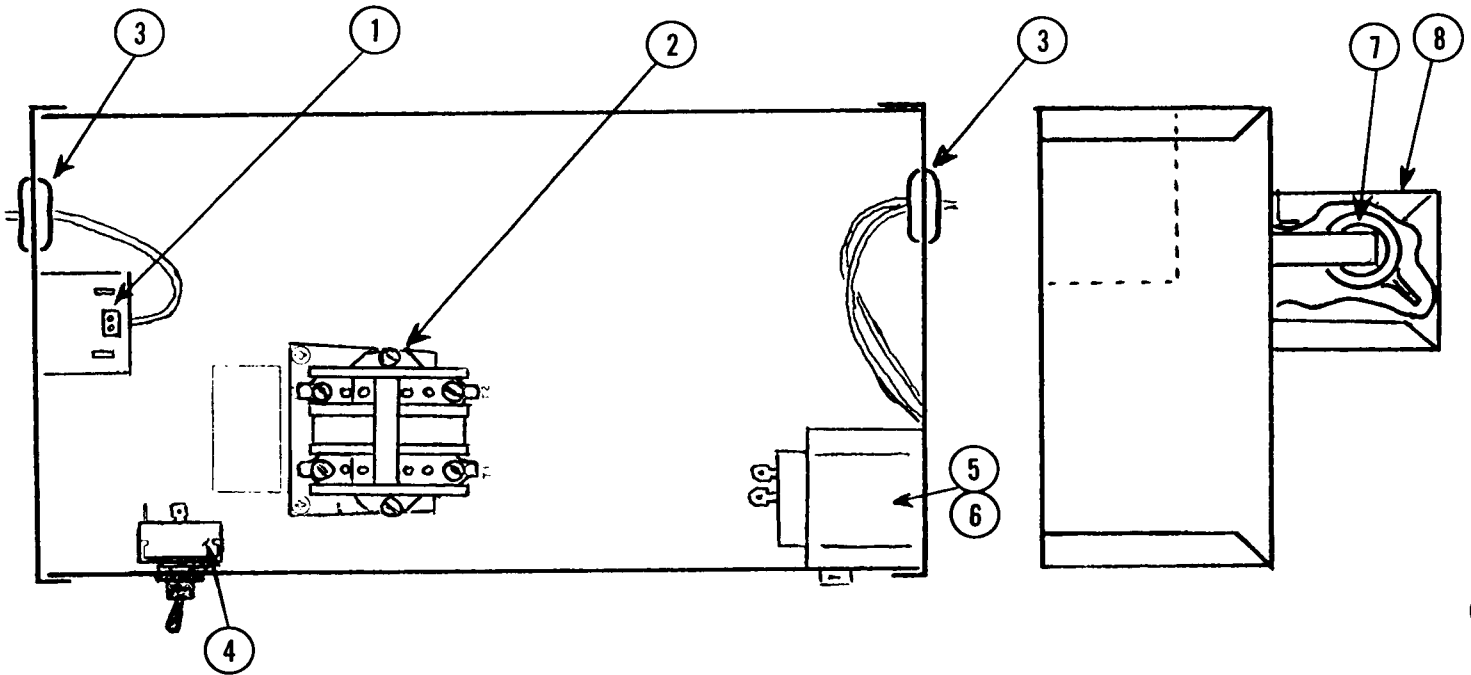


ITEM NO.	PART NO.	DESCRIPTION
1.	18-2300-2 18-2300-3 18-2300-7	Compressor 230/60/1 Compressor 208-240/60/3 Compressor 208/60/1
2.	18-2300-25 18-2300-32	Overload 230/60/1 Overload 208/60/1
3.	18-2300-28	Rotalock Valve
4.	18-2300-29	Valve Seal
5.	18-2300-27	Mounting Grommet (4)
6.	18-2300-26	Mounting Sleeve (4)
7.	3-1405-40	Screw (4)
8.	3-1417-12	Washer (4)
9.	3-1408-29	Washer (4)

BELOW LISTED ITEMS NOT SHOWN

18-1900-31	Relay & Capacitor Assy (230/60/1)	18-1900-34	Relay & Capacitor Assy (208/60/1)
18-1901-15	Start Capacitor	18-1901-34	Start Capacitor
18-1902-29	Run Capacitor	18-1902-34	Run Capacitor
18-1903-29	Relay	18-1903-34	Relay

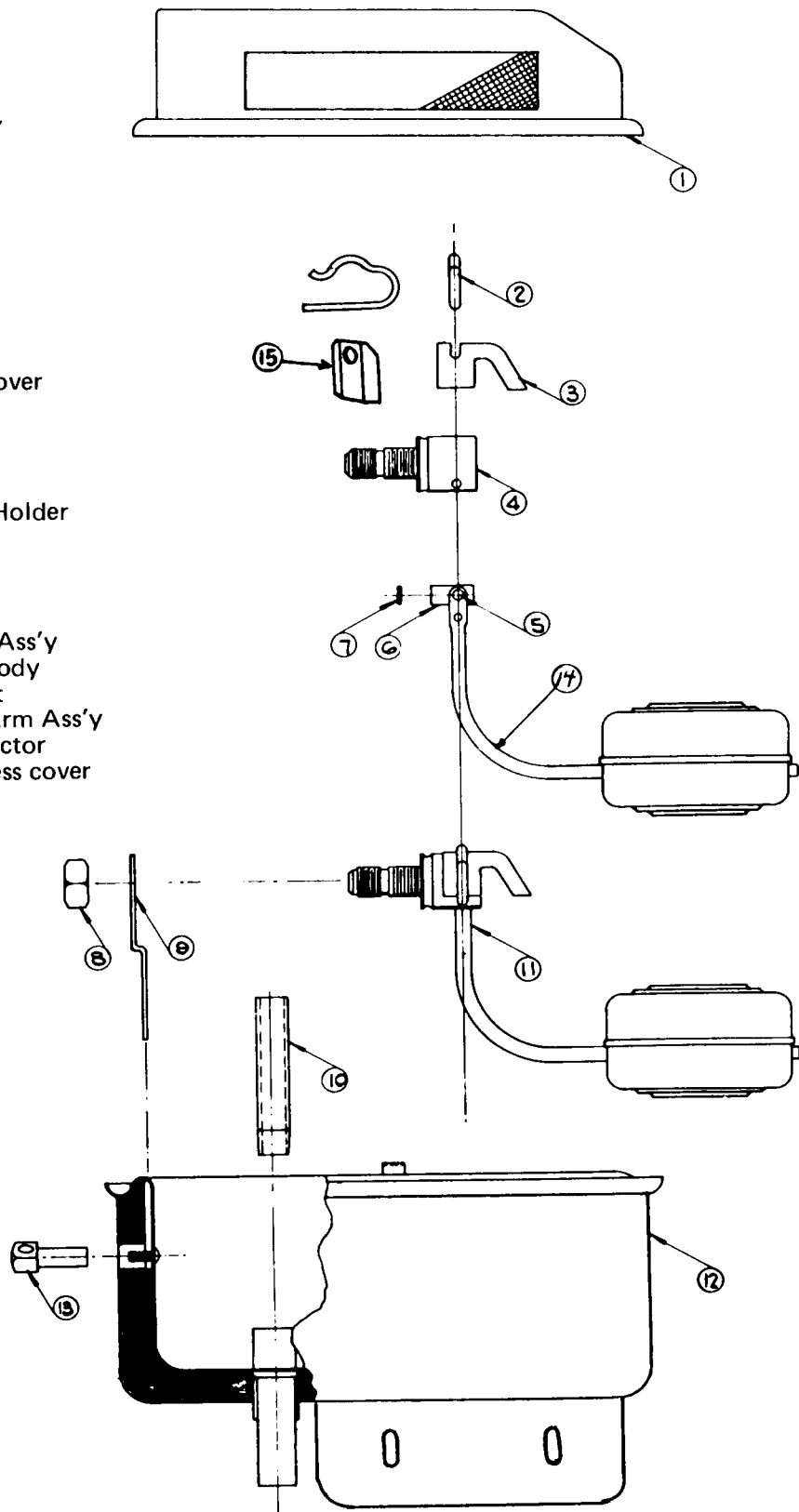
CONTROL BOX ASSEMBLY



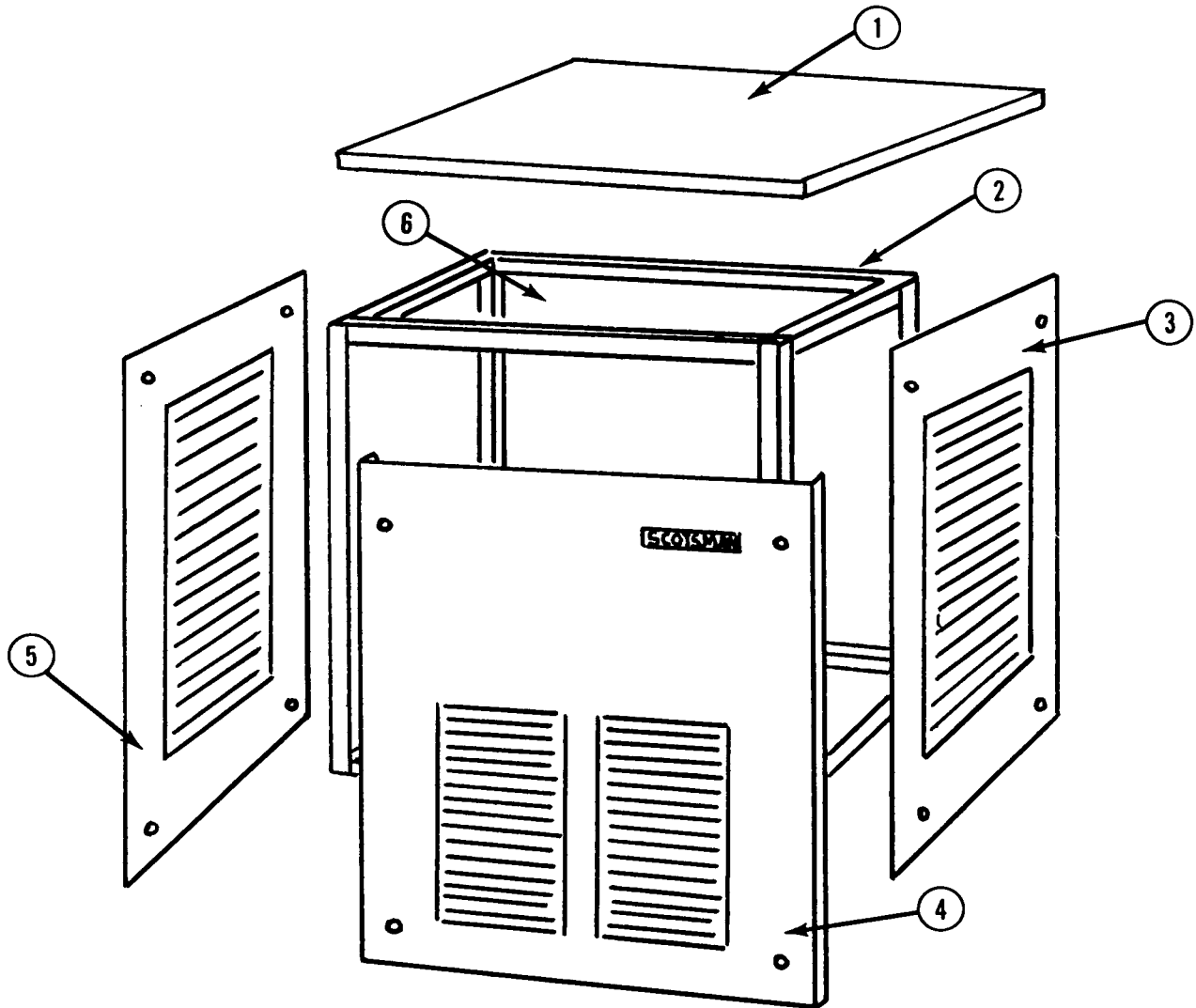
ITEM	PART NO.	DESCRIPTION
1.	11-354	Bin Control
2.	12-820-2	Contactator
3.	13-557	Grommet (3)
4.	12-426-1	Switch
5.	11-358	Lo Pressure Control
6.	11-387-1	Hi Pressure Control (Air Cooled Only)
	11-388-1	Hi Pressure Control (Water Cooled Only)
7.	12-481	Resistor (Air Cooled Only)
8.	A14369	Cover (Air Cooled)

# RESERVOIR ASSEMBLY

ITEM NO.	PART NO.	NAME
1.	A-16012	Reservoir Cover
2.	2-1259	Valve Pin
3.	2-1320	Deflector
4.	S-8770	Inlet Valve
5.	3-1001	Rivet
6.	A-5777	Valve Seat Holder
7.	S-6947	Valve Seat
8.	3-1394	Nut
9.	A-12869	Bracket
10.	S-6715	Stand Pipe
11.	S-8138	Inlet Valve Ass'y
12.	A-23533-1	Reservoir Body
13.	A-8055	Bracket Nut
14.	A-12067	Float and Arm Ass'y
15.	A-18418-1	Water Deflector
	A-23532-1	Complete-less cover



CABINET PARTS



ITEM NO.	DESCRIPTION	ENAMEL	STAINLESS STEEL
1.	Panel Top	A24026-001	A-24026-002
2.	Cabinet Frame	A24025-001	A24025-001
3.	Panel, Right Side	A24029-001	A24029-002
4.	Panel, Front	A24027-001	A24027-002
5.	Panel, Left Side	A24029-001	A24029-002
6.	Panel, Rear	A24018-001	A24018-002
*	Mounting Screws	03-1419-09	03-1419-09
*	Speed Nut	03-1507-00	03-1507-00
	* Aerosol Paint (micromatte)	10-314-01	

\* Items not Illustrated



## FLAKED ICE TRANSPORT SYSTEM INSTALLATION INSTRUCTIONS

Kit No. KTMF-1 – 115 V. Application  
Kit No. KTMF-2 – 230 V. Application

### DIAGRAM 'A'

1. Attach ice discharge tube from ice transport kit to freezer spout. Route thru knock out in top panel of the flaker unit.
2. Attach ice discharge tube supplied with the flaker unit to threaded end of ice discharge tube installed above. This tube can be rotated in any direction to suit the specific application.
3. Ice Tube Recommendations:
  - A. Ice Tube in 1" nominal size rigid P.V.C. Schedule 40 pipe. This may be purchased at any plumbing supply house.
  - B. To make 90° or 45° changes of direction in ice tube use 90° elbow, Queen Products Part No. 02-2102-01. For 45° elbow cut above 90° elbow in two pieces.
  - C. To make ice tube connections at ends of straight lengths or at ends of elbows use pipe union, Queen Products Part No. A24563-001. Use cement for P.V.C. pipe and fittings to glue union halves to ends of ice tube.
  - D. Caution!! Inside diameter of assembled connections must be clear of any obstructions or burrs. Otherwise ice will not flow through tube!
  - E. Maximum length of ice tube permitted is 10 ft. Maximum number of 90° elbows permitted is (3) three.
  - F. Insulation for ice tube may be purchased from Queen Products Part No. 13-0279-00. Insulation may also be purchased from plumbing or refrigeration supply houses. Sample material is from:

Rubatex Corporation  
Bedford, Virginia  
Sponge tubing 1-1/4" I.D. x 1/4" Wall  
Rubatex No. R-180-V
  - G. Connection of ice tube to ice discharge tube to be made by swaging end of ice tube using hot air gun or hot water and secured with worm drive clamp as shown. Swage must be at least 1 inch long!
  - H. For any deviation from these recommendations consult Queen Products Service Department before installation of KTMF Kit.

### DIAGRAM 'B'

1. Fasten transformer box to rear panel of flaker unit as shown.
2. Fasten remote bin thermostat control box near ice storage area.
3. The two leads between remote bin thermostat control & transformer box to be 16 AWG, stranded, 1/32 insulation. This is a 24 VAC low voltage circuit and may be routed along ice transport tube.
4. Route wires provided with transformer box thru rear panel & to the main control box on flaker unit.
5. Lead from gear motor to be disconnected from pressure control terminal & joined with blue wire from transformer box by use of a wire nut.
6. Attach black wire from transformer box to vacated terminal on pressure control.
7. Attach white wire from transformer box to neutral side of power supply or on line opposite side of master switch for 230 volt applications.

DIAGRAM "A"

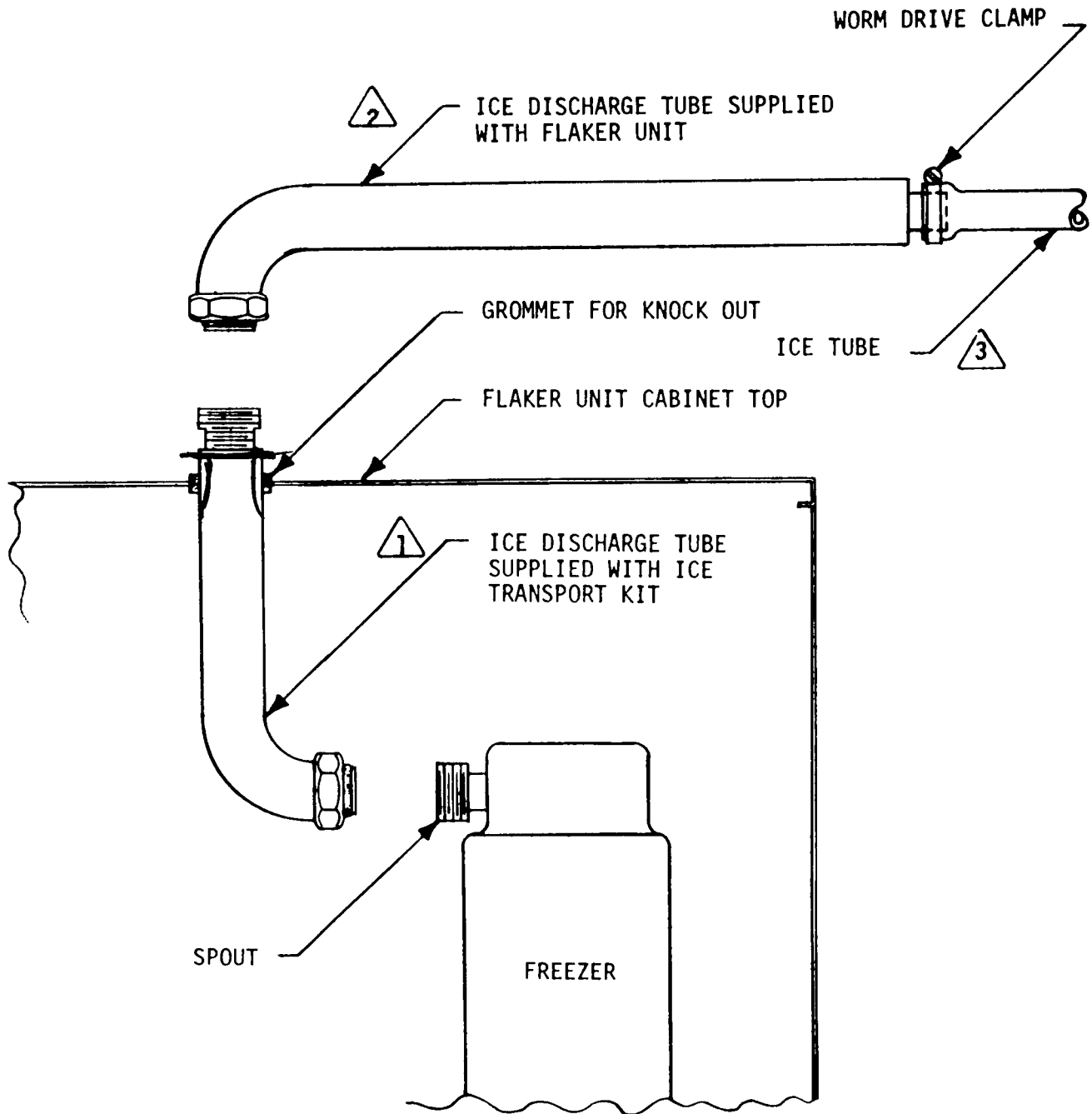


DIAGRAM "B"

