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### SF-5 H MANUAL

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## SPECIFICATIONS

SCOTSMAN Super 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.

Approximately 2000 pounds of SCOTSMAN crushed ice is delivered each 24 hours to the storage bin for immediate use.

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

ATTRACTIVE COMPACT CABINET. Grey hammerloid finish with chrome trim, rounded corners, and removable panels for easy access to mechanical parts. Adjustable and removable legs are under cabinet.

SEALED REFRIGERATION SYSTEM. Provides quiet, efficient operation of the machine. Compressor motor is spring mounted and the worm motor is rubber 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. Crushed ice from the refrigerated walls of this cylinder is extruded past the ice breaker at the top of the cylinder by means of a stainless steel auger driven by a motor directly coupled to a double gear reduction drive.

All SCOTSMAN Models SF5H are completely automatic. A manual switch on the front starts the machine, and from then on, produces flakes automatically. When the storage bin fills, the machine automatically shuts off and starts up again when ice is taken from the storage compartment.

Since the SF-5H does not have its own attached bin, it is necessary to use an auxillary bin such as the Model SB-5-1500 SCOTSMAN Super Bin for ice storage. A bin thermostat is mounted in each SF-5H continuous flow type machine for the purpose of mounting control bulb from machine to bin.

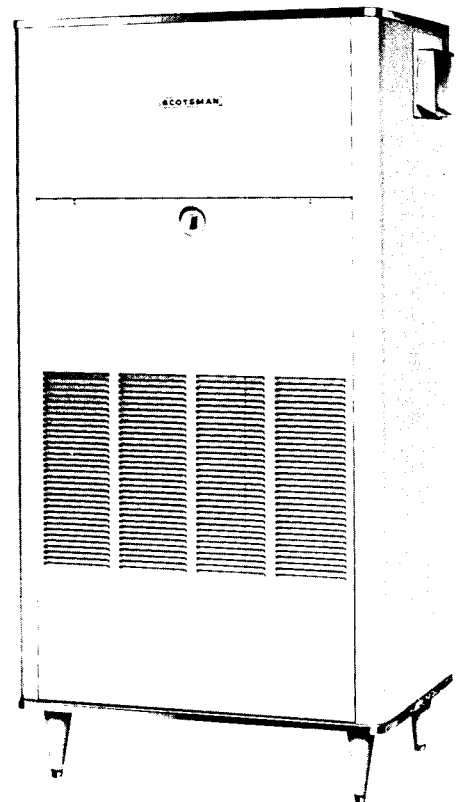


# SUPER FLAKER

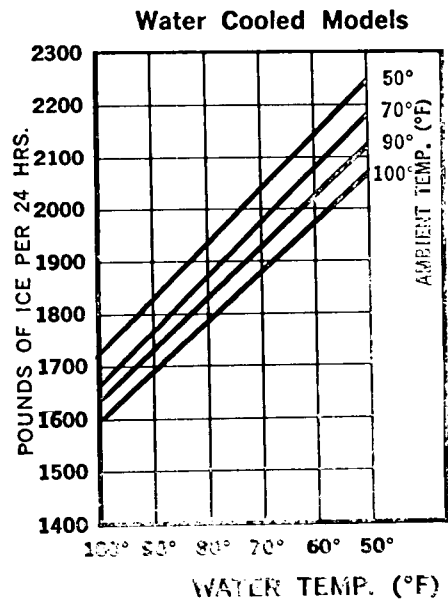
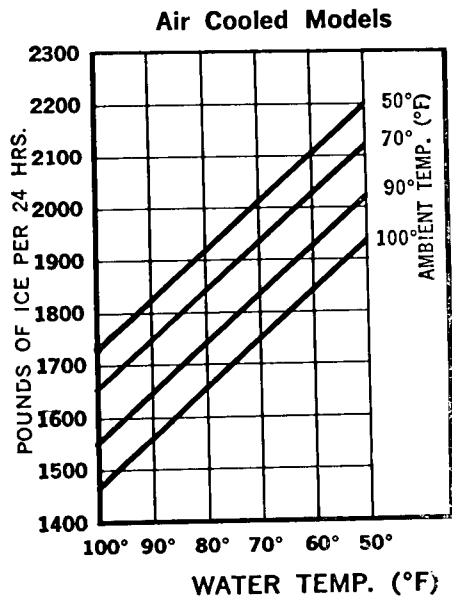
## SF-5

### SERIES

## Continuous Flow



ice making capacity

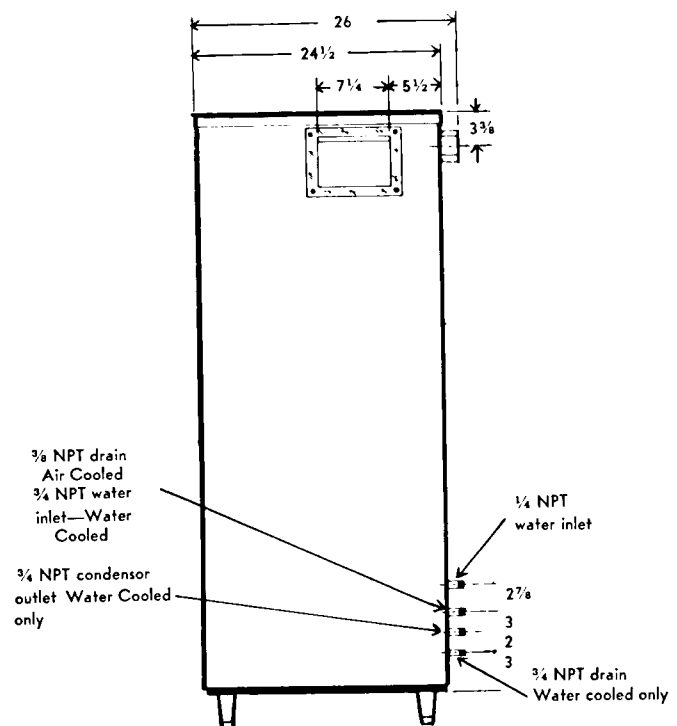
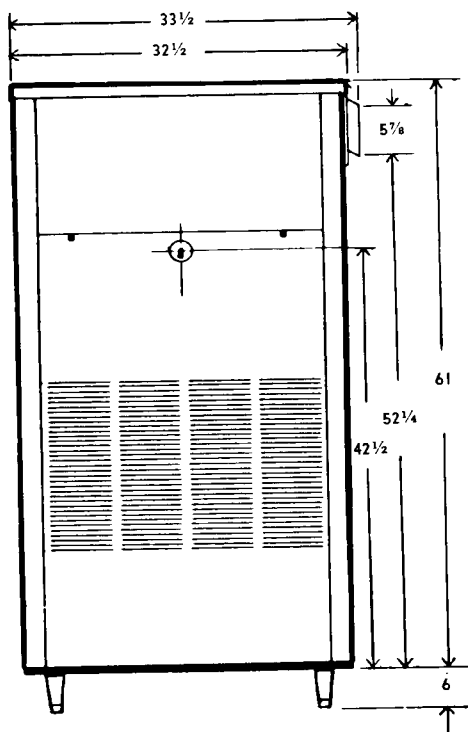
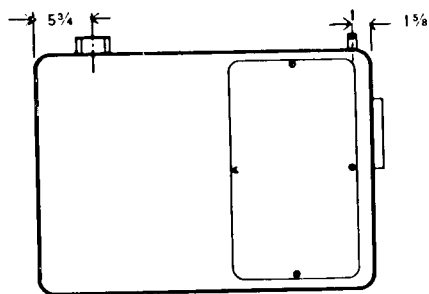


# SPECIFICATIONS

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## SUPER FLAKER SF-5 SERIES (Cont. Flow)

	MODEL SF-5H	MODEL SF-5H-SS	MODEL SF-5WH	MODEL SF-5WH-SS
Daily capacity up to 2,000 lbs.	X	X	X	X
Air cooled condenser	X	X		
Water cooled condenser			X	X
Heavy duty 2 HP. Compressor	X	X	X	X
Standard 208-220 V, 60 cy, 3 ph	X	X	X	X
1/4" water inlet	X	X	X	X
3/4" condenser water inlet NPT			X	X
3/4" condenser drain NPT			X	X
3/4" water outlet OD	X	X		
3/8" water outlet NPT	X		X	
Hammerloid grey exterior		X		X
Stainless steel exterior			X	X
67" height (with legs)	X	X	X	X
61" height (without legs)	X	X	X	X
32 1/2" width	X	X	X	X
24 1/2" depth	X	X	X	X
Approximate shipping weight	742	742	742	742



### SPECIFICATIONS

	SF-5WH	SF-5-H
Compressor	2 HP	2 HP
Condensor	Water Cooled	Air Cooled
Refrigerant	R-12, 91 oz.	R-12, 91 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	
Ice Capacity	See Chart	See Chart
Storage Capacity	Use Remote Bin SB5-1500	Use Remote Bin SB5-1500
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            2.0	
	3              4.6	
	4.5           10.0	
	6	

\* 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, others available on request, contact Sales Department for Further Information.

# INSTALLATION

Section F-5-5  
Page 7

## UNCRATING OF MACHINE

1. The complete machine comes in one crate. After the crate is removed, inspect for concealed damage. Remove the bottom skid by removing all bolts. Then cut all wires holding support packing from refrigerant line. Then loosen shipping bolts on the compressor. Be sure the compressor is floating free on spring mounts. Then check all refrigerant lines for rubbing or touching other surfaces. Also check for possible transportation damage.
2. Remove all service doors and panels.
3. Remove water reservoir cover and take out paper packing around float ball. Make sure plastic overflow standpipe is securely in place.
4. Remove leg packages in compartment base and install 4 legs in unit base sockets. Level unit with adjustable legs.
5. Loosen motor compressor hold down nuts until motor compressor rides freely on mounting springs.
6. Remove water strainer from storage package for installation in water supply line feeding unit.
7. Open electrical control box and prepare for hook up, use knock outs, cord connectors etc. Then check unit nameplate voltage against building source voltage and make sure they correspond. Caution-- Improper voltage supplied to units will void your warranty protection.
8. Select unit location prior to hook up of water drain and electricals in accordance with local and national codes. Minimum room temperatures is 50<sup>o</sup> Fahrenheit.
9. Remove warranty card and service manual from storage bin. Fill out warranty card completely including model and serial numbers as taken from aluminum plate found behind front service panel and forward to Scotsman Factory, using self-mailing card.

## LOCATION OF THE SUPER FLAKER

Select the location before delivering Super Flaker to the job. The following points should be considered when making selection.

1. Convenience. Place the unit as close as possible to the place of ice consumption.
2. Servicing. Install the machine, so it can be serviced from all three sides except the side containing the ice chute opening. Important to leave 24" access to front (containing on-off switch) and left side.
3. Room Temperature. Minimum-50 degrees. Maximum-100 degrees.
4. 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.



## INSTALLATION

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Make sure that 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. Suggest SCOTSMAN SB5-1500 bin be used.

5. Stands. A SCOTSMAN machine stand should be used if the machine is located beside the bin. Care was 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. 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. Suggest SCOTSMAN MS15H-5 Stand.
6. Erection. For elevations in excess of four feet, or in close quarters, chain falls should be used. Three men will usually be necessary, unless an easy installation is encountered. For locations under four feet the use of skid boards and rollers are practical.
7. 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 capillary line away from shovels.
8. 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 this 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

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### WATER SUPPLY

The recommended water supply line to ice freezer is 3/8" OD Copper tubing. Connect to cold water supply casting 1/4" N P T with regular plumbing fittings, with a shut-off valve installed with accessible place between supply line and machine. A water strainer should 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 water supply line.

On water cooled models the water inlet supply line to water cooled condenser should be 1/2" OD Copper tube or equivalent. Connect 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 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.

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 5/8" tower water lines or larger, depending on the length of run. Over 30' - use 7/8" OD lines.
4. Notice: A tower can freeze in the winter 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 also be used. An auxiliary tower and city water hook-up will also prove satisfactory in some climates. City water in the winter and tower water in the summer. Consult your tower and pump manufacturers for proper sizing-see specifications, page 4. In no event should less than a nominal 2 ton tower, or less than 1/2 HP high pressure tower pump be used.
5. Split water circuit between compressor wrap-around and condenser.

### DRAIN

The recommended drain from the auxiliary bin is 1/2" OD Copper Tubing. Ice maker drain casting is female 3/4" N P T. All drains 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.

## INSTALLATION

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### ELECTRICAL INSTALLATION:

		SF-5	SF-5 - 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:

<u>SF-5</u>	<u>SF-5 - 3</u>
230 Volts	208 Volts
60 Cycle, 1 Phase	60 Cycle, 3 Phase
30 Amp. Circuit	20 Amp. Circuit

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

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

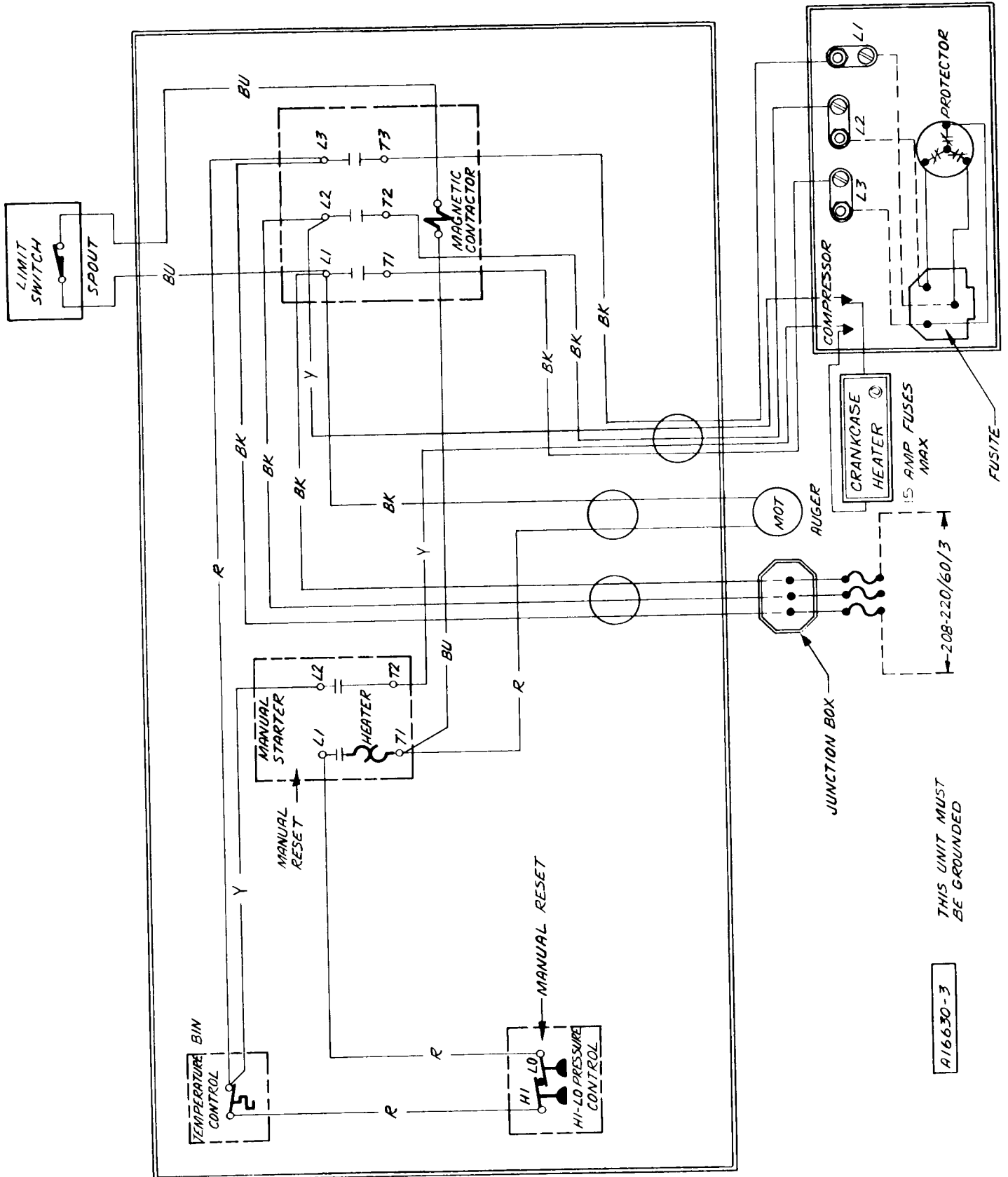
# WIRING DIAGRAM

WATER COOLED

208-220/60/3

Section F-5-5

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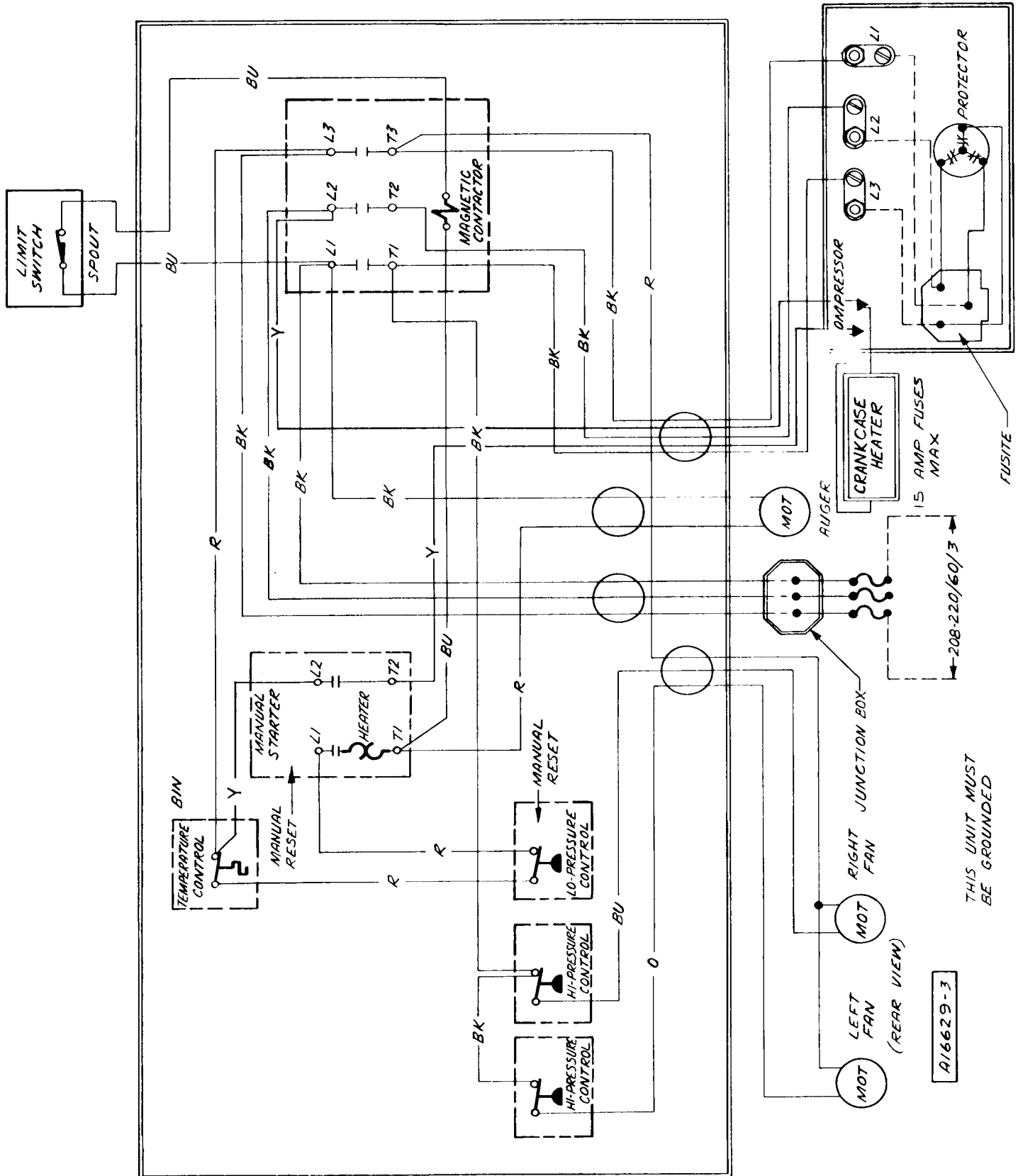
THIS UNIT MUST BE GROUNDED

A16630-3

# WIRING DIAGRAM

AIR COOLED

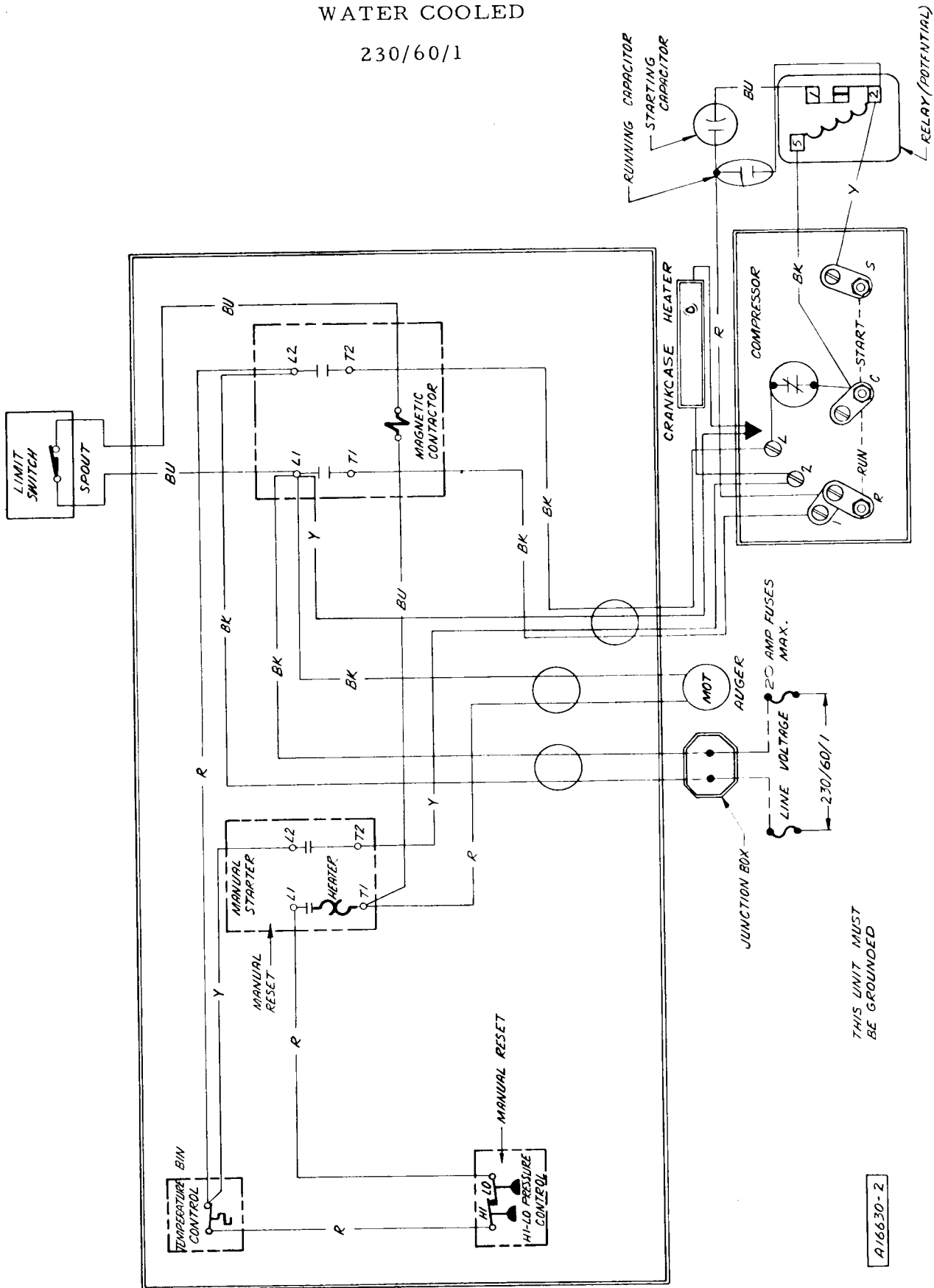
208-220/60/3



# WIRING DIAGRAM

WATER COOLED

230/60/1



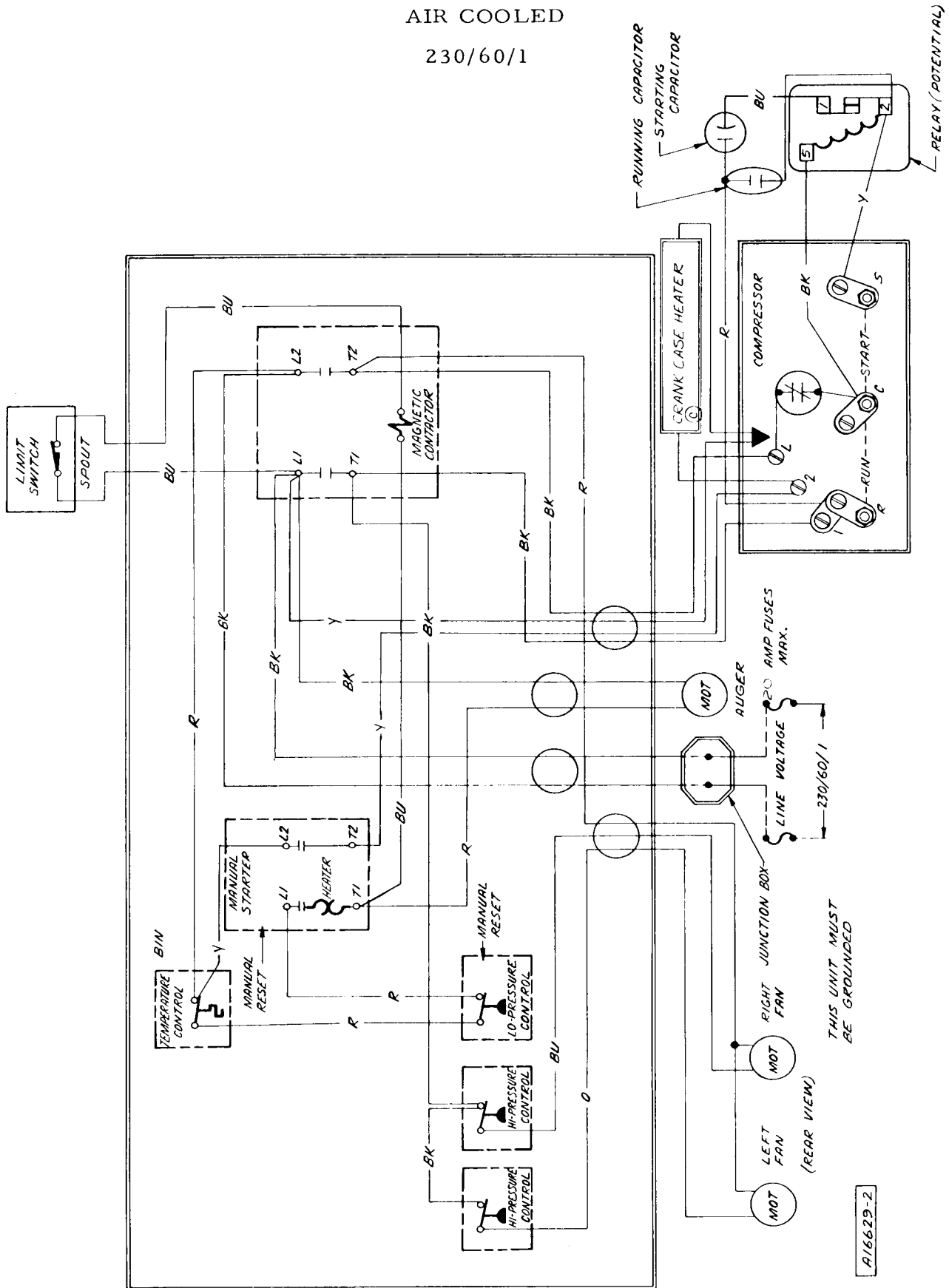
THIS UNIT MUST BE GROUNDED

A16630-2

# WIRING DIAGRAM

AIR COOLED

230/60/1



## INSTALLATION

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### FINAL CHECK LIST

1. Is the unit level? (IMPORTANT)
2. Have all electrical and piping connections been made?
3. Has the voltage been tested and checked against the nameplate rating?
4. Have the compressor hold-down bolts been loosened so the compressor rides freely on its mounting springs.
5. Is the water supply valve open and the electric power on?
6. Is the water reservoir filled and shut off?
7. Is the unit clean?
8. Has the owner been given the operating manual, and has he been instructed on how to operate the machine?
9. Have the installation and warranty cards been filled out? This is the owner's protection as well as the sellers.
10. Check all refrigerant and conduit lines to guard against vibration and possible failure.
11. Have you left your Business name and phone number in case of emergency calls?



## SERVICE

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### 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 pipe.

When this is completed, turn on the manual switch on the front of the cabinet and the machine is in automatic operation. In two or three minutes ice will start dropping off the worm shafts and out the ice chute. Let 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 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 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 time of start-up. Set head pressure at 135 psi. Frost line should extend approximately 18" out of evaporators if properly charged with refrigerant and suction pressure will be near 14 psi with 70° F. inlet water.

Explain the machine to the owner, showing him how the machine works, and go over the owner's instruction sheet with him. Answer all the owner's questions about the machine, and do not leave with any doubt in the owner's mind about the machine, how to operate it or where to reach you should he need service on the machine. Call back the next day to check the machine again, and answer any other questions the owner may have.

## SERVICE

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The Scotsman Super Flakers are well designed, ruggedly constructed, automatic Ice Machines. The Scotsman Super Flaker incorporates the simplest ice making principle ever developed and have proved to give years of trouble free service. However, like any refrigeration equipment, the better user and serviceman understand it, the better the machine will perform. This section of the manual is devoted to service.

### GENERAL INFORMATION

All models of the Super Flaker work on the same principle. The vertical freezing chambers are kept full of water by gravity feed lines from the water reservoir located in the machine compartment. A constant water level is maintained in the water reservoir by a float operated inlet valve. The freezing chambers are refrigerated around the outside by copper wound evaporator coil fed by a capillary tube refrigeration system. Inside the freezing chambers are stainless steel augers driven by a motor through a gear reducer. Connected by couplings, augers revolve at 4 RPM, carrying ice from the inner section of the freezing chambers, and extrudes the ice upward thru the top of the chamber for deposit in the storage compartment.

### REFRIGERATION SYSTEM

The Super Flaker model SF-5 H is equipped with a capillary tube system, and is designed to operate at approximately 14 pounds suction pressure, 135 psi head pressure.

The freezing chamber on all models consist of an inner tube wrapped with a copper coil and enclosed by an outer shell. Refrigerant is fed in the wound evaporator at the top, traveling down through the coil, and out the bottom. The suction line is attached to the other tube and is not connected to the evaporator coil. The refrigerant travels back up the tube on the outside of the coil to the suction port, creating a highly efficient evaporator.

## SERVICE

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Service gauge connections are available on both high and low-side compressor service valves.

To install gauges to any of these connections, replace 1/8 inch IP plug with 1/8 inch MPT x 1/4 inch flare half union. Purge free of any non-condensable gases before attaching gauges.

### REFRIGERANT CHARGE

The below refrigerant charge is approximate. When charging, set at 135 psi head pressure and charge so that frost line extends out of evaporator one half way to compressor after fifteen minutes of operation.

<u>Model</u>	<u>Refrigerant Charge</u>	<u>Oil Level</u>
SF-5 H	91 oz. R-12	Oil level should be kept at 1/3 way up sight glass. Do not fill over 1/2.

### WATER SYSTEM

The water system consists of a water reservoir installed in the top front side of the machine.

A water level is maintained in the water reservoir by a float operated valve. The water is piped from water reservoir to the freezing chamber by a gravity feed line maintaining an equal water level. A removable overflow pipe is installed in the water reservoir for cleaning the reservoir as well as preventing damage should the inlet water valve fail.

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 rod linkage adjustment. The water level should be set 1/4 inch below the overflow pipe.

A water strainer should be installed in supply line.

## SERVICE

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### ELECTRICAL SYSTEM

The electrical circuit consists of condensing unit, drive motor, hi-low pressure cut-out, storage bin thermostat, "on" and "off" switch, micro (safety) switches, and starter switches.

#### A. Condensing Unit.

The compressor terminal box houses the motor compressor terminal block, and the motor overload Klixon. To gain access to the terminal box, remove the two screws holding the bevelled metal cover. On the single phase models the starting capacitors, running capacitors and starting relays are housed and fastened to the unit base.

#### B. Drive Motors .

Model SF-5 H Flakers are equipped with standard 5/8 inch shaft, 1/3 HP, capacitor start, induction motors. These motors turn counter clockwise and may be replaced with any standard make motor corresponding to the nameplate rating. (Be sure motor runs counter clockwise viewed from the shaft end.)

#### C. High-Low Pressure Cut-Out. Hand Reset.

Ranco control is located on the frame assembly. Factory settings cut-out 2 lbs.--cut in-27 lbs. on low pressure and 180 psi on high pressure. This control prevents operation at low refrigerant pressures. Shuts off entire unit in case of water failure to condensor.

#### D. Storage Bin Thermostat.

Bin control is located on frame assembly. Factory settings 35° cut-out--45° cut-in. This control shuts off complete machine when ice in storage bin builds up to control bulb.

## SERVICE

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E. Micro Safety Switch.

The micro switch is located in the top of the ice chute. The switch is operated by a plate in top of the ice chute by the ice backing up in the chute should the storage bin thermostat fail. Switch will shut off the condensing unit only, when operated.

F. Magnetic Starters .

One Allen Bradley three phase starter and one contactor are used on both the SF-5 and the SF-5-3 phase models. The contactor serves the motor compressor and the starter is used for the drive motor. Using 3 phase starters on the single phase motors allows for an extra set of contacts and relays to facilitate field repairs and helps with the stocking problem when both 3 phase and single phase units are used.

G. Couplings--Drive Motor to Gear Reducer.

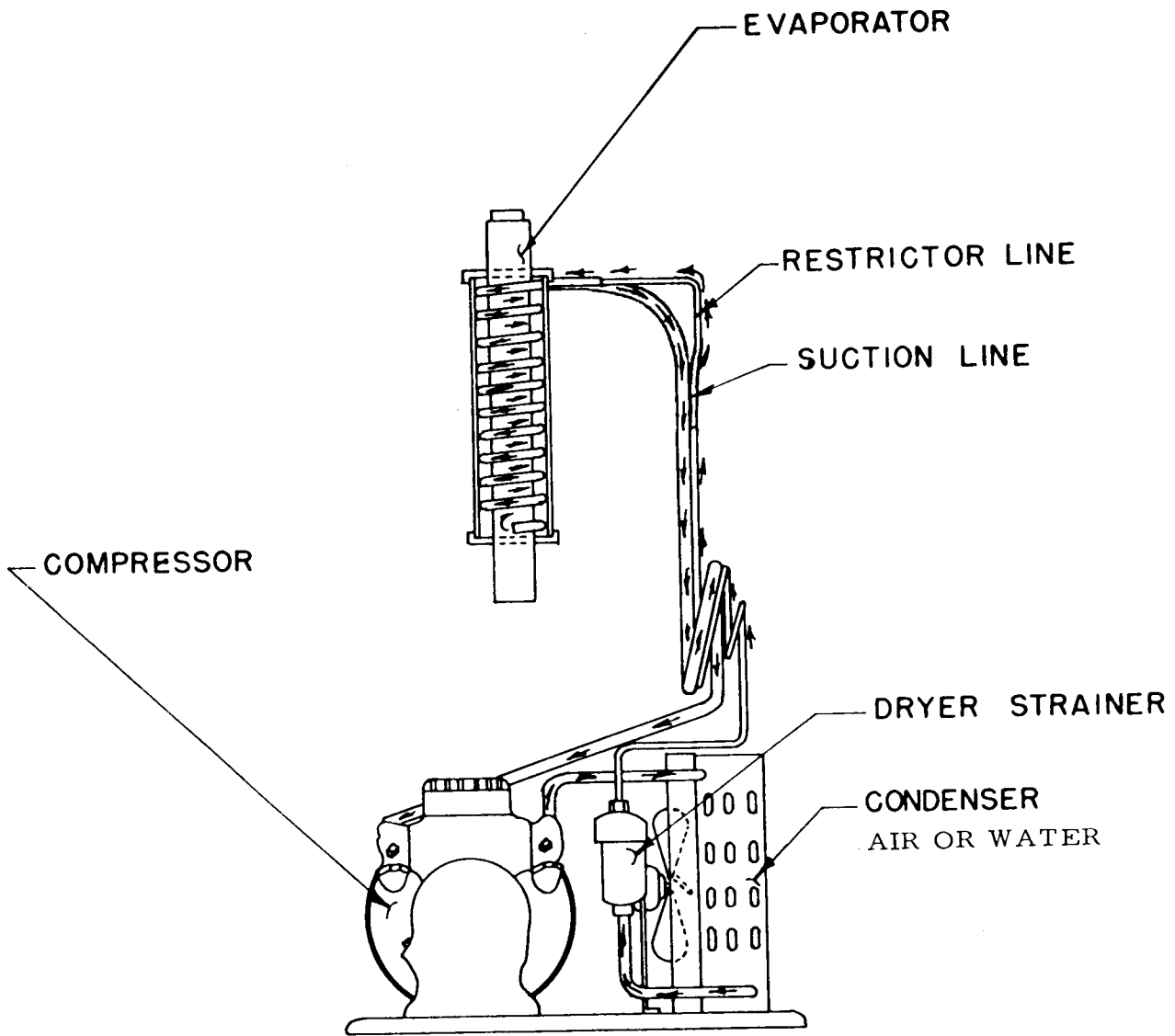
Plastic high-speed couplings.

H. Gear Reducers .

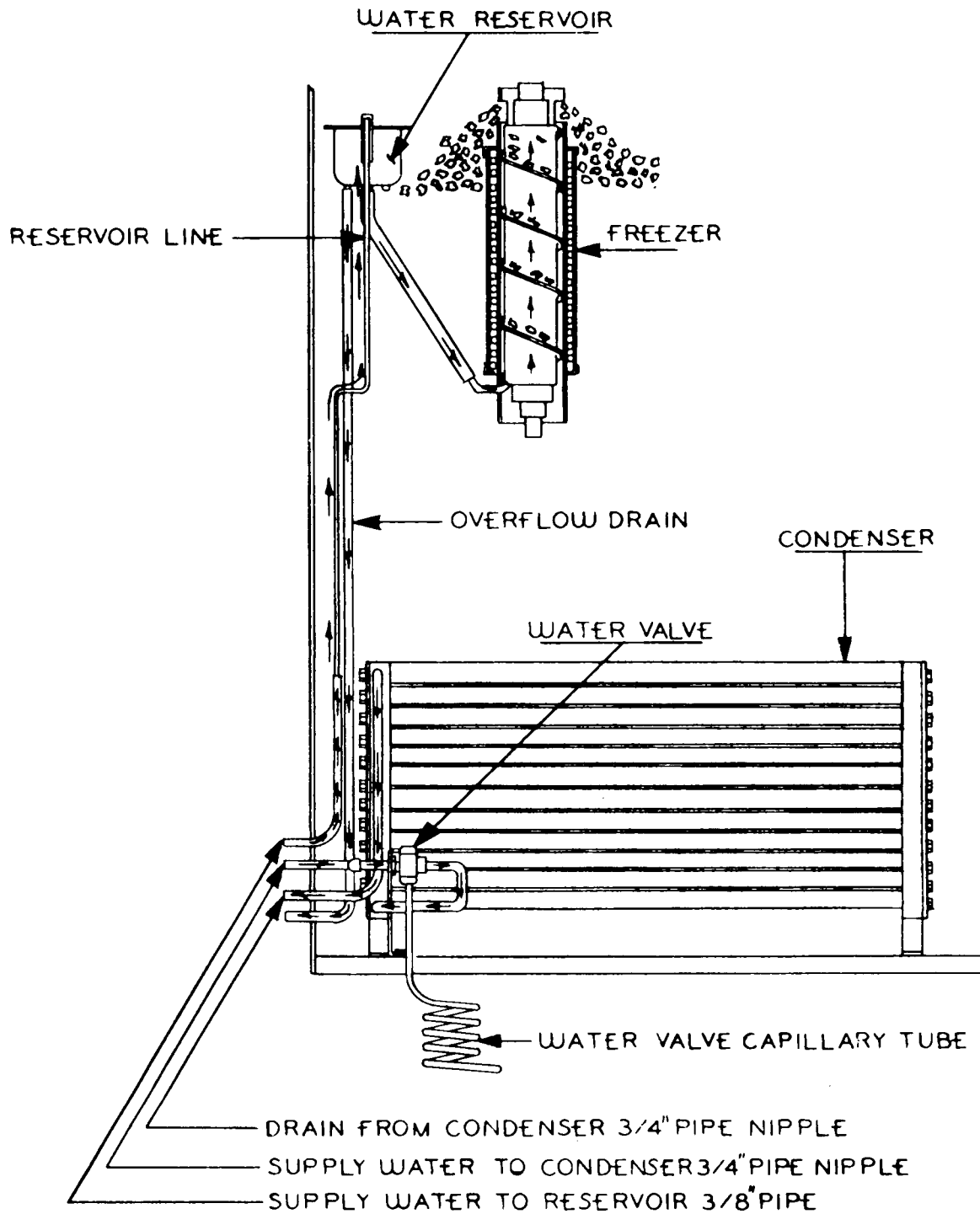
Winsmith Series (5) C.V.D. Double reduction-Overall reduction 44:1. Primary reduction 24.5 to 1--Secondary reduction 18 to 1/4 RPM on output shaft. Input (Hi speed) shaft size 5/8" with Keyway. Output (Slow speed) shaft size 1 1/4" with Keyway.

I. Water Cooled Condensor.

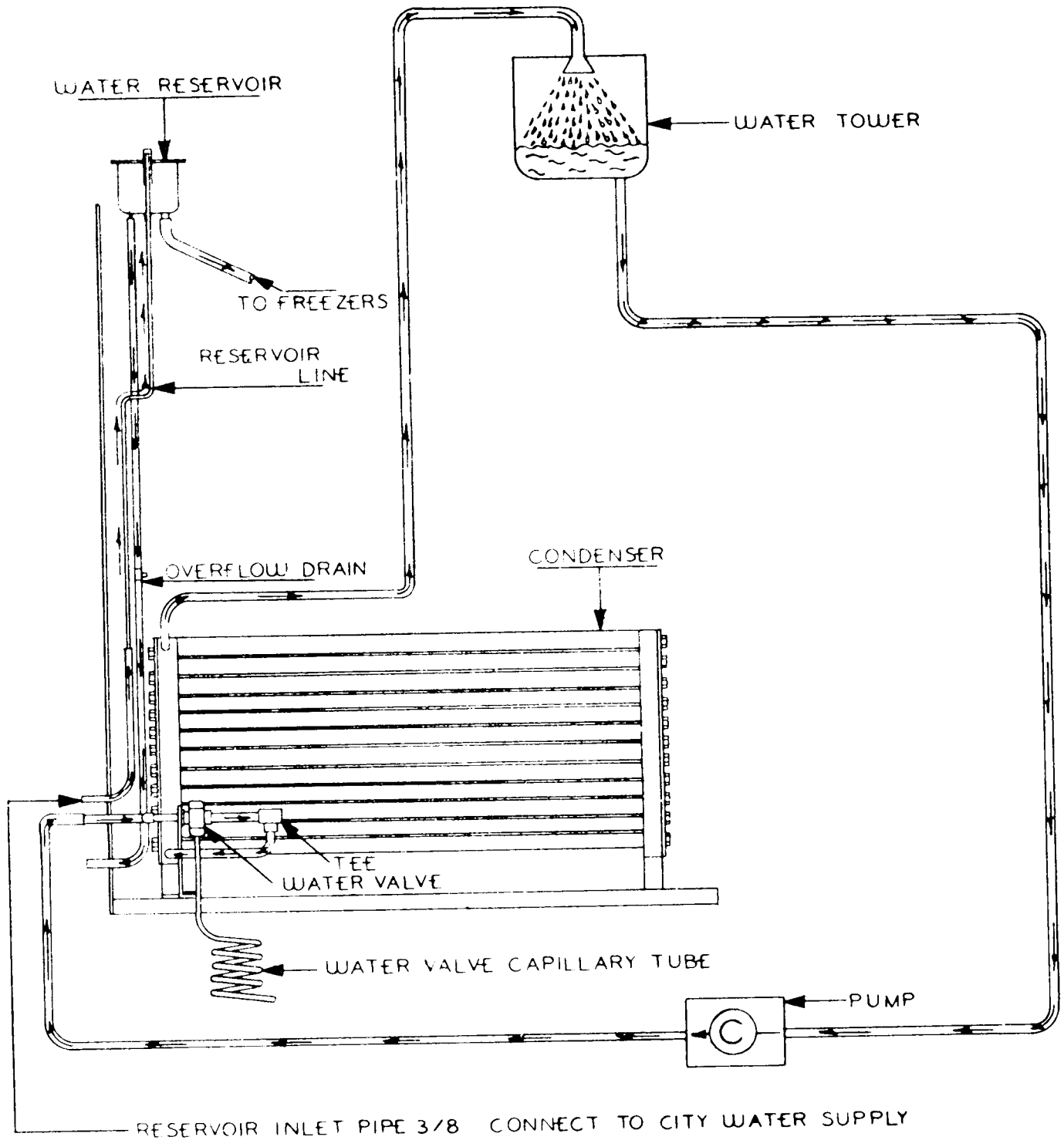
Heat-X Model CIC-200 2 HP



REFRIGERATION CYCLE



WATER CYCLE

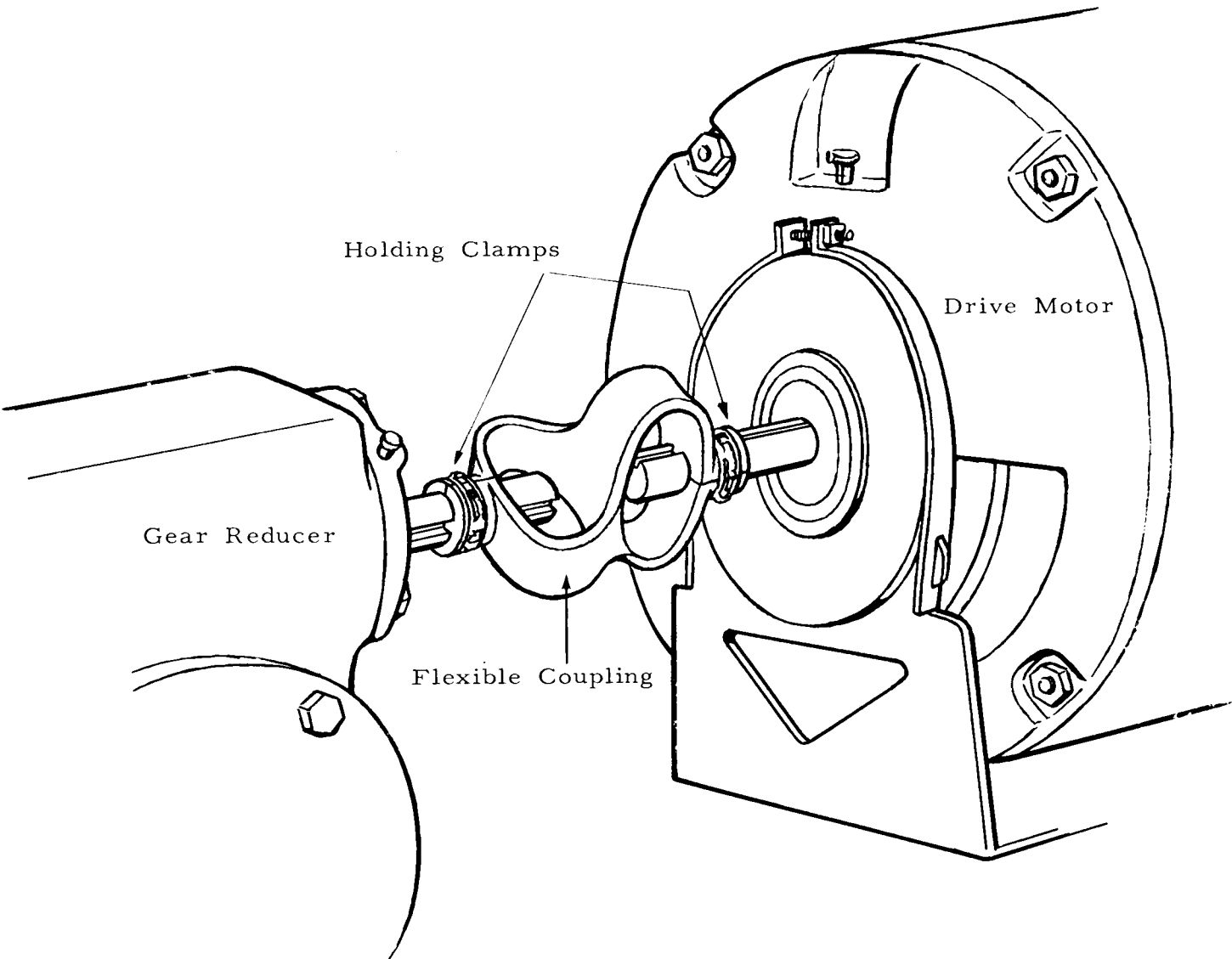


WATER CYCLE



## SF-5 — FLEXIBLE COUPLING ASSEMBLY

Part #A-18341



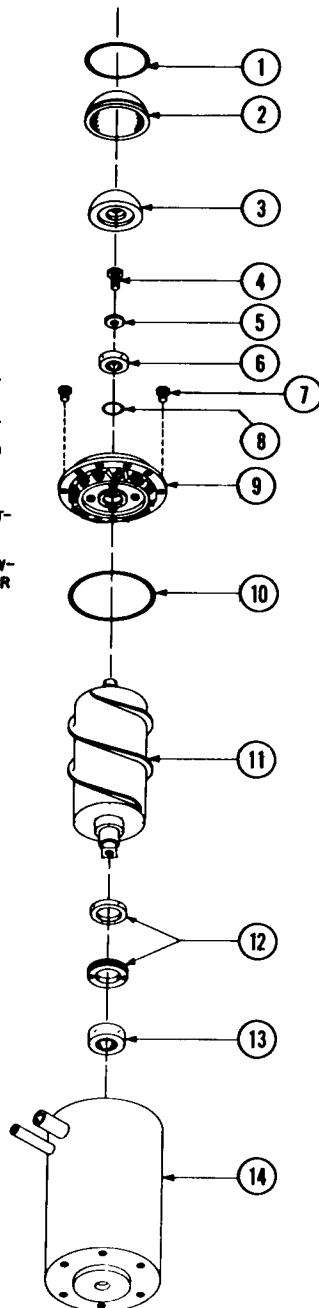
Flexible coupling allows larger tolerance of mis-alignment between drive motor and gear reducer shafts. Flexible coupling assembly is completely interchangeable with former metal coupling.

# FREEZER ASSEMBLY SF-5

Used on SF-5 "G" and "H" models

NOTE: ICE BREAKER HAS TEN HOLES AROUND CIRCUMFERENCE, 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.

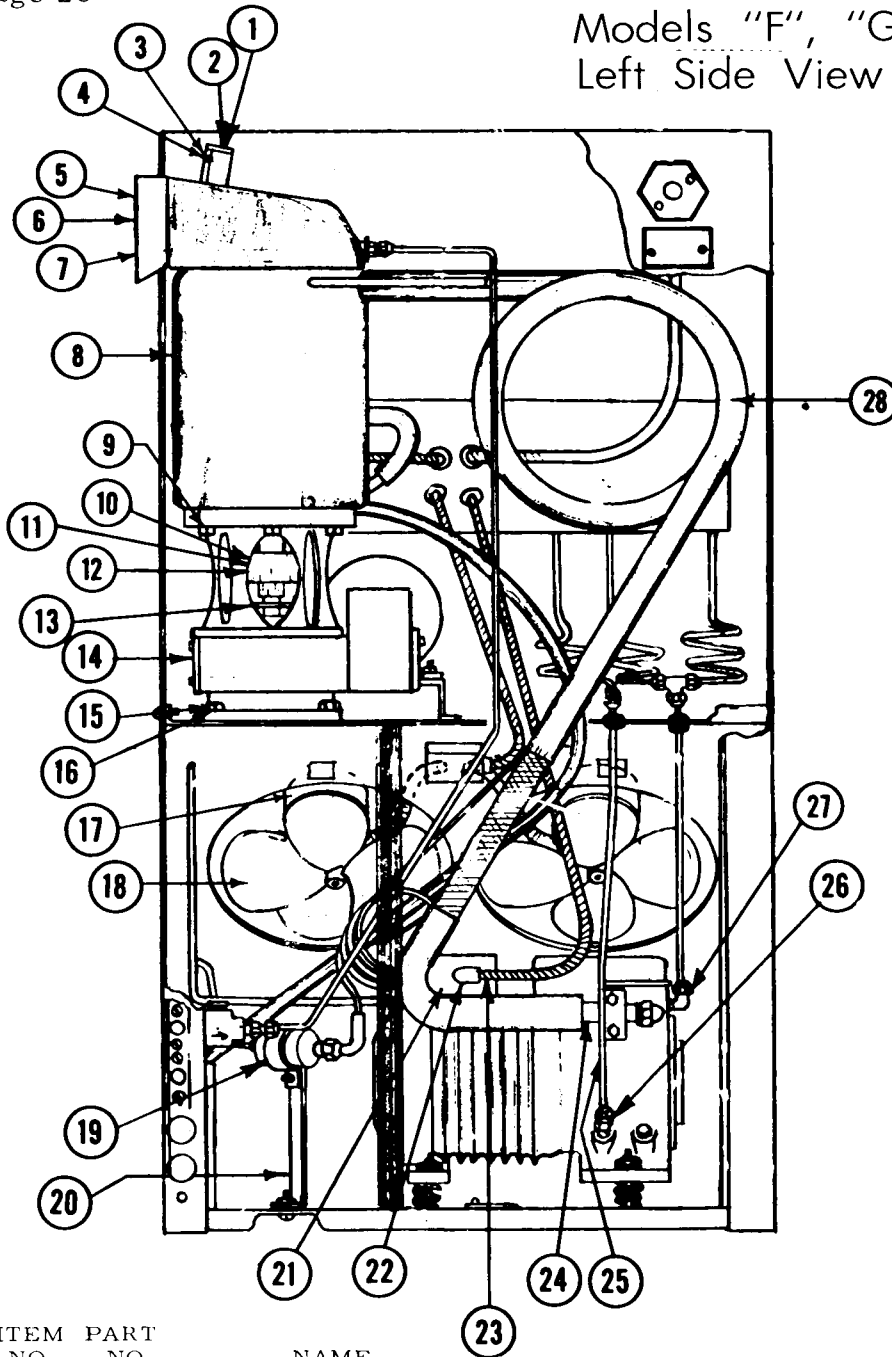
NOTE: LOWER BEARING OR WATER SEAL CANNOT BE CHANGED FROM BOTTOM MUST BE PULLED OUT FROM ON TOP.



ITEM NO.	PART NO.	NAME
1.	2-991	'O' Ring
2.	13-231	Rubber Cap
3.	A-9047	Styrofoam Cap
4.	3-715	Screw
5.	A-6273	Washer
6.	2-619	Top Bearing
7.	3-785	Screws ( 6 required )
8.	2-643	'O' Ring
9.	A-8818	Ice Breaker
	A-11351	Ice Breaker (with bearing)
10.	2-778	'O' Ring
11.	A-9006	Worm Shaft Assembly
12.	2-776	Water Seal
13.	2-775	Lower Bearing
14.	A-8858	Freezer Worm Tube
	A-8853	Complete Freezer Ass'y (all above parts assembled)

## SF-5 CHASSIS ASSEMBLY

Models "F", "G" and "H"  
Left Side View Air Cooled



NOTE: "F" and "G" Models

A-13683 Micro Box  
A-13684 Micro Box Cover  
12-984 Micro Switch  
A-13680 Pressure Plate  
A-13674 Spout Complete

ITEM NO.	PART NO.	NAME
1.	A-14975	Micro Box
2.	A-14241	Micro Box Cover
3.	12-1018	Micro Switch (*)
4.	3-173	Screw
5.	A-16670	Pressure Plate (*)
6.	2-1321	Spring
7.	A-16668	Spout, Only to
8.	A-8853	Freezer Complete (less suction line)
9.	3-785	5/16x24x1" Screw (6)
10.	A-8895	Coupling
11.	A-6166	Key
12.	3-385	5/16x16 Set Screw
13.	13-152	Rubber Shield
14.	2-768	Gear Reducer
15.	3-372	1/2" Spring Washer (2)
16.	3-333	1/2x13x1-1/4" Bolt (4)

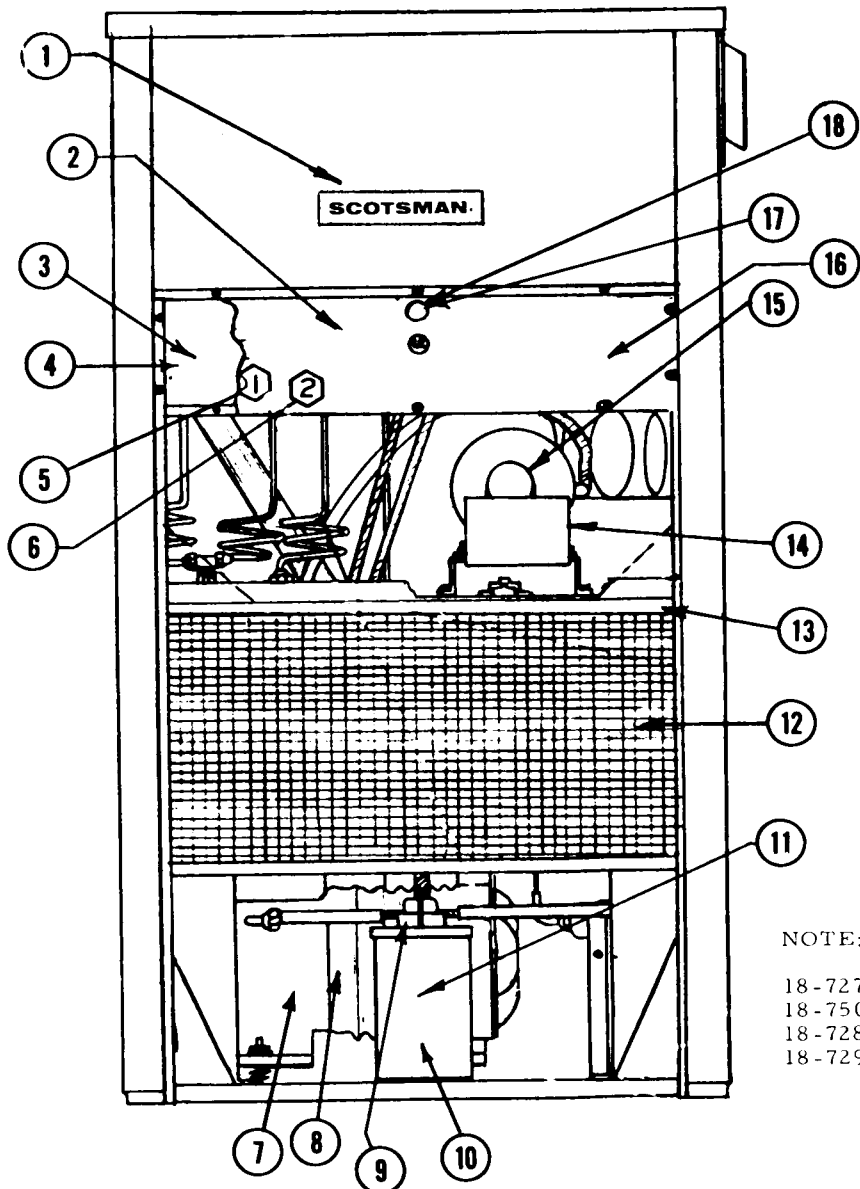
ITEM NO.	PART NO.	NAME
17.	18-752-2	Fan Motor (2) 230/60/1
	18-752-7	Fan Motor (2) 208/60/1
18.	18-751	Fan Blades (2)
19.	2-822	Drier
20.	A-6355	Drier Bracket
21.	18-734	Klixon (*)
22.	18-735	Terminal Assembly (*)
23.	18-749	Terminal Board (*)
24.	18-732	Suction Service Valve
25.	18-736	Suction Service Valve Gasket (*)
26.	16-165	Union
27.	16-190	Ell
28.	A-11805	Suction Line-Cap Tube Ass'y Assembly

# SF-5 CHASSIS ASSEMBLY

Models "F", "G", "H"

Right Side View Air Cooled

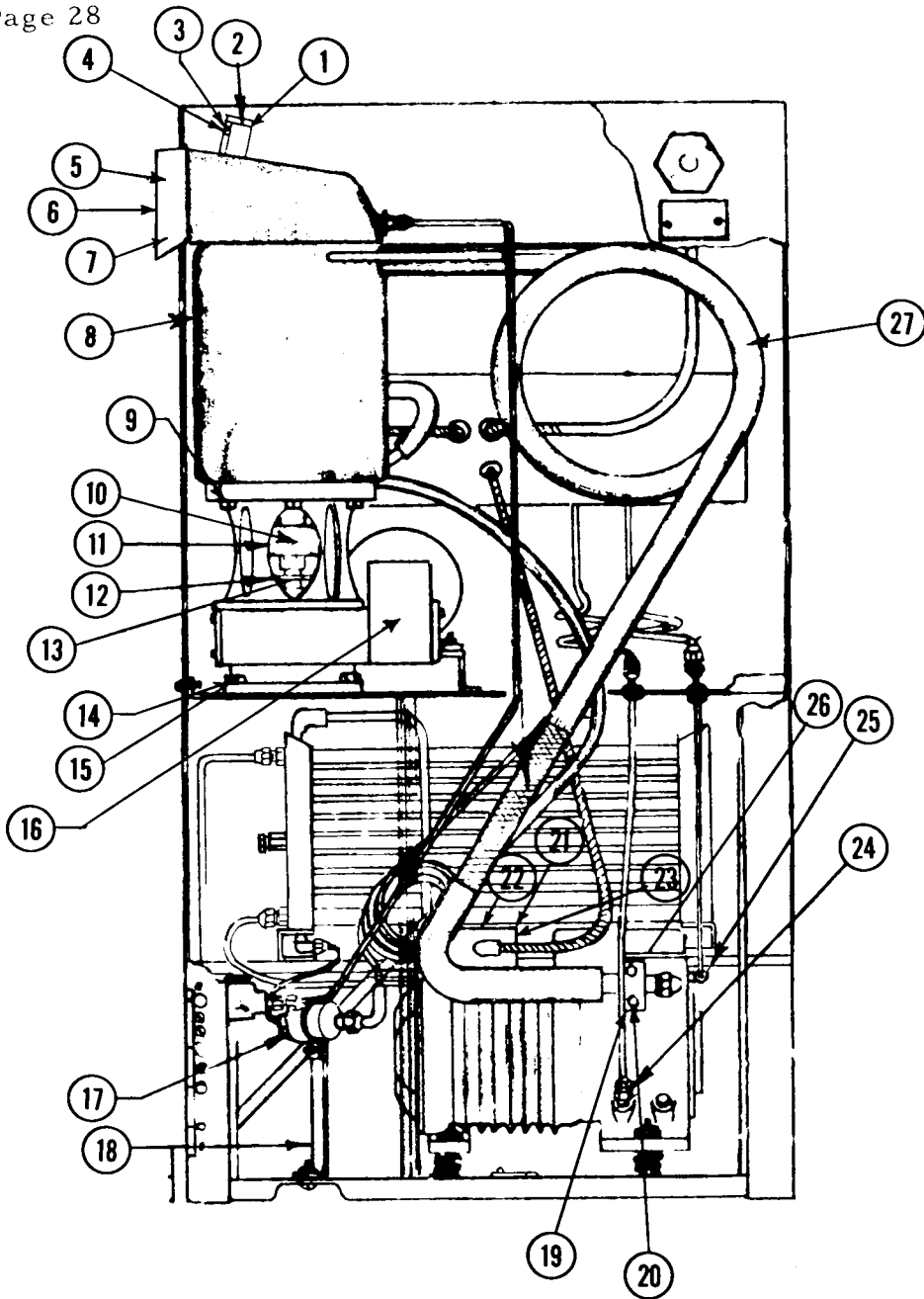
Section F-5-5  
Page 27



NOTE: Old Style

- 18-727 Relay
- 18-750 Starting Capacitor
- 18-728 Starting Capacitor (double)
- 18-729 Starting Capacitor (double)

ITEM NO.	PART NO.	NAME	ITEM NO.	PART NO.	NAME
1.	15-156	Emblem	11.	18-1902-23	Running Capacitor (*)
2.	A-11886	Control Box Cover	12.	18-753	Condenser
3.	11-99-1	Bin Control (*)	13.	A-11832	Evaporator Vase
4.	11-273-1	Low Pressure Control (*)	14.	A-11823	Motor Mount Ass'y
5.	11-343	High-Pressure Control (155# in and 135# out)	15.	12-649-2	Drive Motor 230/60/1
6.	11-342	High-Pressure Control (170# in and 150# out)	15.	12-649-7	Drive Motor 208/60/1
7.	18-721	Compressor 230/60/1	16.	12-820-2	Contactora 230/60/1 (*)
	18-767	Compressor 208 60/3		12-739-2	Contactora 208 60/1
	18-756	Compressor 208/60/1			
8.	18-1909	Discharge Service Valve	17.	12-530A	Manual Switch (less case) *
9.	18-1903-21	Relay		12-530	Switch (with Case)
10.	18-1901-23	Starting Capacitor (single)*	18.	12-708	Overload (state motor man. and voltage when ordering)*
			19.	A-18341	Coupling Assy., Motor
					(*) Not Shown



## SF-5 CHASSIS ASSEMBLY

Models "F", "G"  
& "H"

Left Side View  
Water Cooled

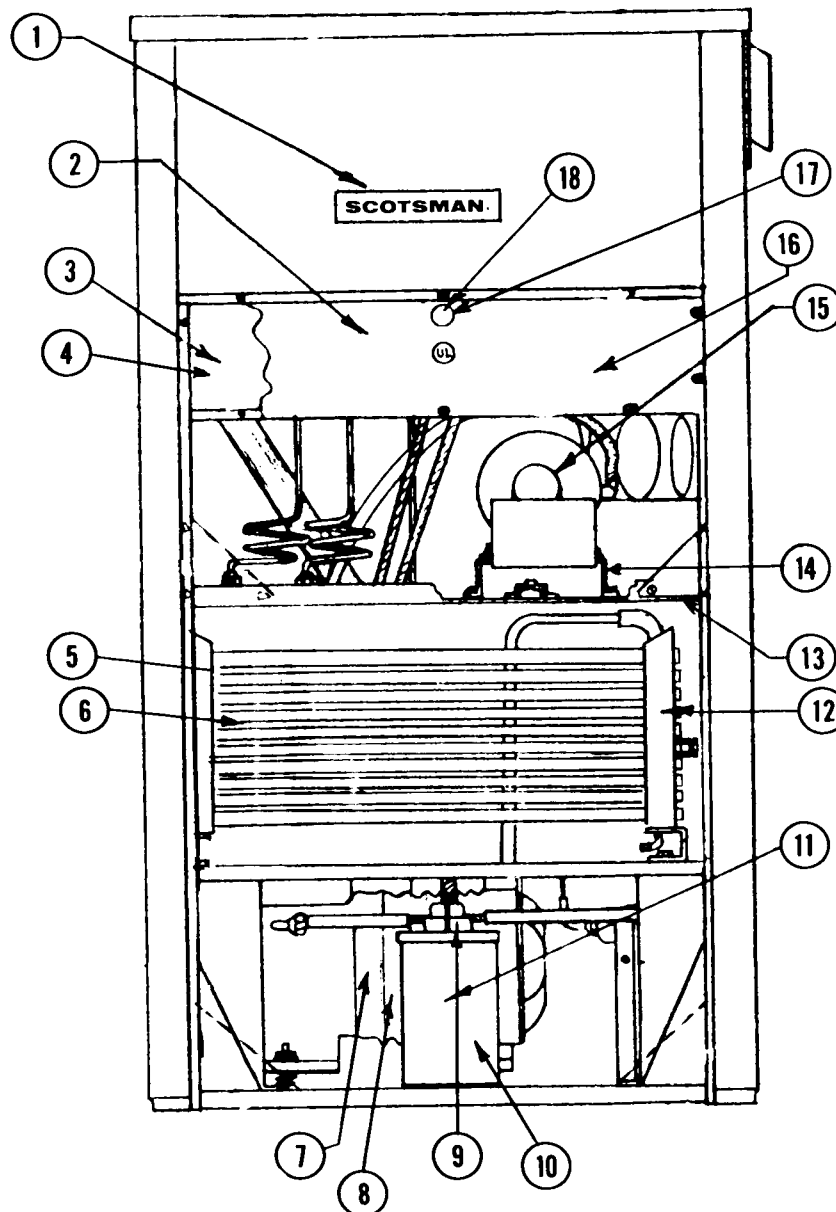
ITEM NO.	PART NO.	NAME	ITEM NO.	PART NO.	NAME
1.	A-14975	Micro Box	17.	2-822	Drier
2.	A-14241	Micro Cover Ass'y	18.	A-6355	Drier Bracket
3.	12-1018	Micro Switch (*)	19.	18-732	Suction Service Valve
4.	3-173	Screw	20.	18-736	Suction Valve Gasket
5.	A-16670	Pressure Plate (*)	21.	18-734	Klixon (*)
6.	2-1321	Spring	22.	18-735	Terminal Assembly (*)
7.	A-16668	Spout only	23.	18-749	Terminal Board (*)
8.	A-8853	Freezer Complete (less suction line)	24.	16-165	Union
9.	3-785	5/16x24x1" Screw (6)	25.	16-182	Tee
10.	A-8895	Coupling	26.	18-722	Valve Plate and Gasket Kit (*)
11.	A-6166	Key	27.	A-11805	Suction Line-Cap Tube Assembly
12.	3-385	5/16x16 Set Screw			
13.	13-152	Rubber Shield			
14.	3-333	1/2x13x1-1/4 Bolt (4)			
15.	3-372	1/2" Spring Washer (4)			
16.	2-768	Gear Reducer			

(\*) Not Shown

**SF-5 CHASSIS ASSEMBLY**

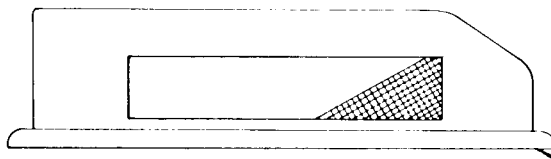
Models "F", "G" &amp; "H"

Right Side View Water Cooled



ITEM NO.	PART NO.	NAME	ITEM NO.	PART NO.	NAME
1.	15-156	Emblem	11.	18-1901-23	Running Capacitor (*)
2.	A-11886	Control Box Cover	12.	18-741	Condenser, manifold gasket *
3.	11-99-1	Bin Control (*)	13.	A-11832	Evaporator Base
4.	11-286	Dual Pressure Control (*)	14.	A-11823	Motor Mount Ass'y
5.	18-754	Condenser	15.	12-649-2	Drive Motor 230/60/1
6.	18-740	Condenser, plain gasket (*)		12-649-7	Drive Motor 208/60/1
7.	18-738	Compressor 230/60/1 WC	16.	12-820-2	Contacteur 230/60/1 (*)
	18-772	Compressor $\frac{208}{220}$ 60/3 WC		12-739-2	Contacteur $\frac{208}{220}$ 60/3 (*)
	18-743	Compressor 208/60/1 WC	17.	12-530A	Manual Switch (less case)
8.	18-1909	Discharge Service Valve		12-530	Switch (with case)
9.	18-1903-21	Relay (single phase)	18.	12-708	Overload (state motor mfg. and voltage when ordering)
10.	18-1901-23	Starting Capacitor (single)	19.	A-18341	Coupling Ass'y., Motor

(\*) Not Shown

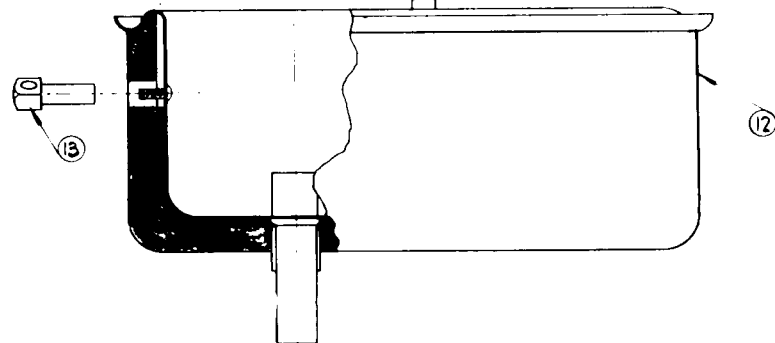
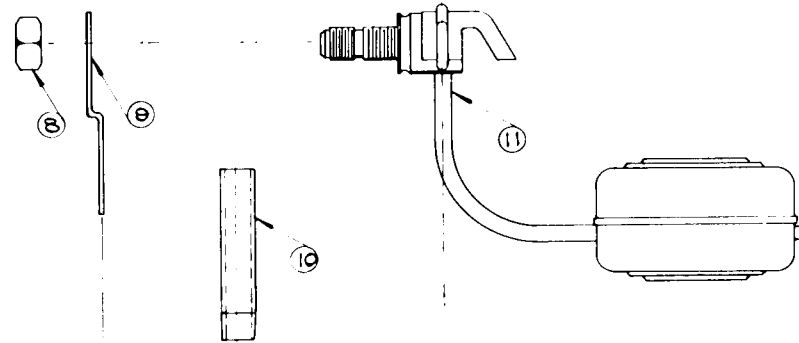
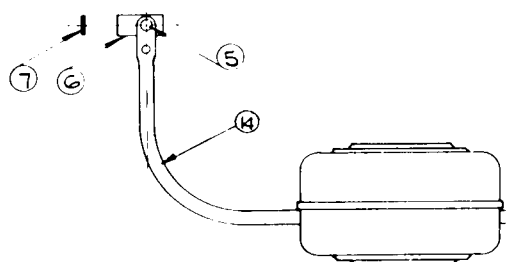
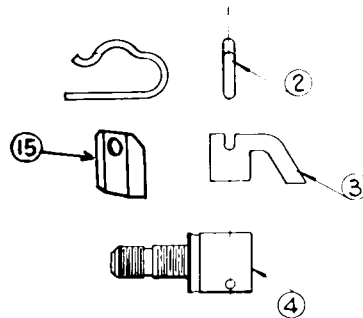


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## RESERVOIR ASSEMBLY SF-5

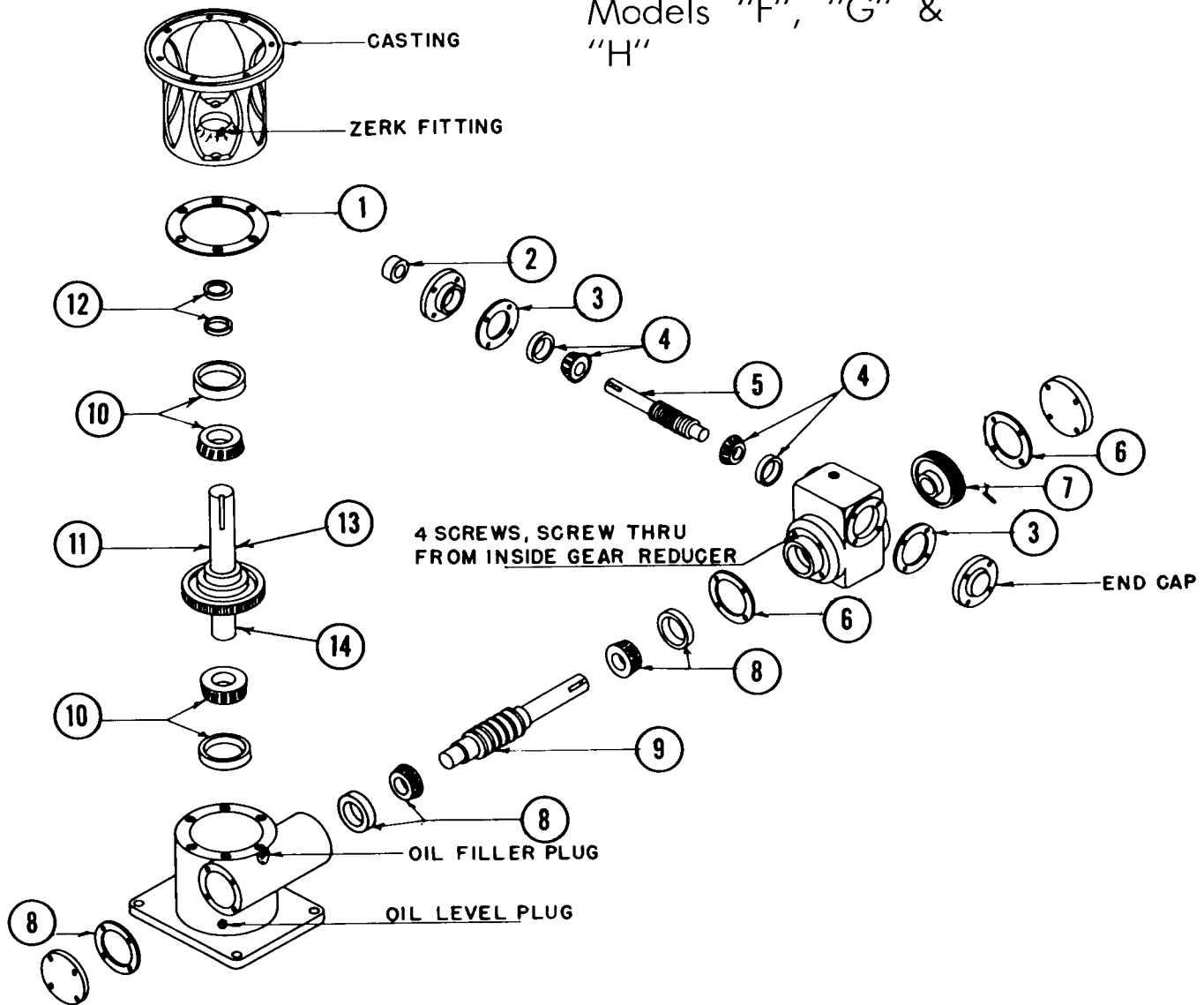
Models "F", "G" & "H"

ITEM NO.	PART NO.	NAME
1.	A-12870	Reservoir Cover
2.	2-1259	Valve Pin
3.	2-1320	Deflector
4.	A-8217	Inlet Valve
5.	3-1001	Rivet
6.	A-8054	Valve Seat Holder
7.	S-6947	Valve Seat
8.	S-7044	Nut
9.	A-12869	Bracket
10.	S-6715	Stand Pipe
11.	A-9101	Inlet Valve Assembly
12.	A-13413	Reservoir Body
13.	A-8055 A-8868	Bracket Nut Reservoir Complete (Less Cover)
14.	A-12073	Float Assy.
15.	A-18418	Water Deflector



## GEAR REDUCER SF-5

Models "F", "G" & "H"

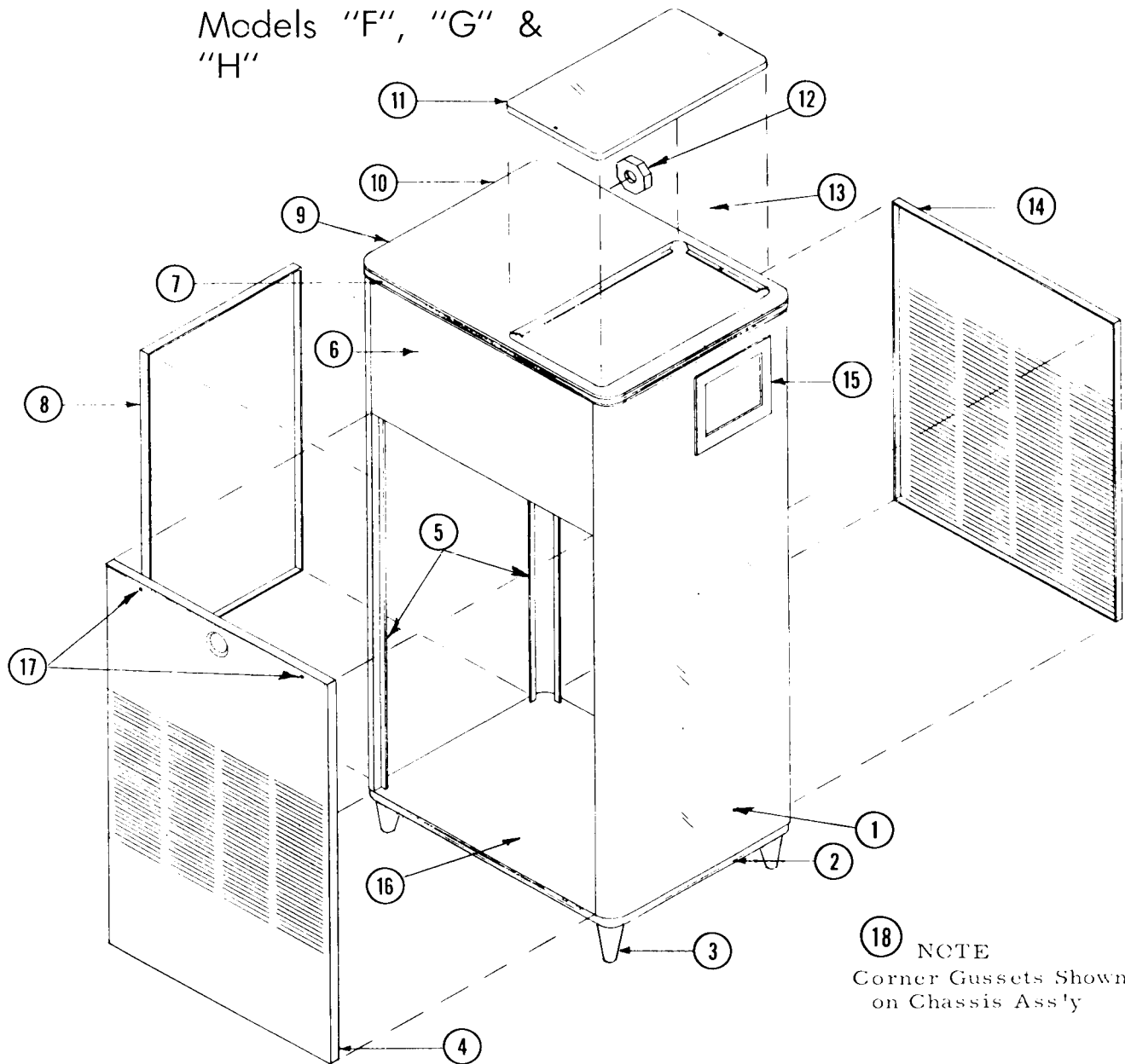


ITEM NO.	PART NO.	NAME
1.	2-768-28	Slow-Speed Cover Gasket
2.	2-768-20	High-Speed Oil Seal
3.	2-768-25	High-Speed Gasket
4.	2-768-24	High-Speed Bearing
5.	2-768-32	High-Speed Worm & Shaft, Integral
6.	2-768-27	Intermediate Gasket
7.	2-768-33	High-Speed Gear
8.	2-768-23	Intermediate Roller Bearing
9.	2-768-31	Intermediate Worm & Shaft, Integral
10.	2-768-22	Slow-Speed Bearing
11.	2-768-36	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



# SF-5 CASE ASSEMBLY

Models "F", "G" & "H"



NOTE  
Corner Gussets Shown  
on Chassis Ass'y

ITEM NO.	PART NO.	NAME
1.	A-11861	Right Cabinet Side
2.	A-8902-5	Bottom Moulding (2 required)
3.	A-15803	Leg (4 required)
4.	A-11872	Front Door
5.	A-11867	Leg Ass'y, (2 reqd.)
6.	A-11864	Front Panel
7.	A-8902-13	Top Moulding ( 2 required)
8.	A-11877	Left Door Ass'y
9.	A-17067	Left Panel (*)
10.	A-11868	Cabinet Top
11.	S-6713	Top Door
12.	S-8417	Junction Box & Cover
13.	A-17068	Back Panel (*)
14.	A-11875	Back Door Ass'y

ITEM NO.	PART NO.	NAME
15.	13-591	Spout Frame
16.	A-11832	Evaporator Base Assembly
17.	3-775	Screw ( 10 per unit all doors)
18.	A-12685	3 per unit right ass'y
	A-12687	3 per unit left ass'y
	A-12689	1 per unit right front
	A-12691	1 per unit left front
	A-12695	2 per unit right base
	A-12693	1 per unit left base

CORNER GUSSETS  
NEEDED FOR  
COMPLETE CASE

\* Not Shown

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 supplies 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

	-30 to 15	'16 to 50	51 to 110	111 to 165
Ambient Temperature °F				
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.	#3Lubriplate	#8Lubriplate	#8Lubriplate	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	Mobil Cylinder Oil #600W	Mobil Cylinder Oil #600W
The Texas Company	Meropa Lub. #1	Meropa Lub. #3	Meropa Lub. #6	Meropa Lub. #6

## SERVICE ANALYSIS

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

## SERVICE ANALYSIS

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

## MAINTENANCE INSTRUCTIONS — FLAKERS

THE FOLLOWING MAINTENANCE SHOULD BE ACCOMPLISHED TWO TIMES PER YEAR.

1. Check and clean water strainer and float valve. Depress float valve to insure full stream of water.
2. Check water 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 may come out of spout with ice at 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 5 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 motors. 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 couplings.
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. Micro switch cuts off only compressor. Bin thermostat should be set at 10° differential and should keep entire machine off at least twenty minutes in high ambients (longer in low) during normal operation.

**PARTS LIST****SF-5 H****CABINET PARTS**

Cabinet Top Assembly	A-11868
Large Hood Top Door	S-6713
Right Side Panel	A-11861
Left Side Door	A-11877
Front Door	A-11872
Moulding Strip Top	A-8902-13
Moulding Strip Bottom	A-8902-5
SCOTSMAN Emblem	15-156
Legs	A-15803
Levelers--Bottom of Leg	8-522
Plywood Crate	1-651

**WATER CIRCUIT**

Water Reservoir Assembly, less cover	A-8868
Water Inlet Valve	A-9101
Rubber Valve Seat	S-6947
Float Arm and Float Assy.	A-12073
Valve Pin	2-1259
Plastic Water Deflector	2-1320
Standpipe	S-6715
Reservoir Cover Assembly	A-12870
Water Strainer, Supply Line	16-162-1

**DRIVE CIRCUIT**

Gear Reducer	2-768
Gear Reducer Coupling to Drive Motor	A-18341
Gear Reducer Coupling (one piece) to freezer	A-8895
Coupling Key	A-6166
Allen Set Screw	3-385
Rubber Drip Shield--Gear Reducer Shaft	13-152
1/3 HP Drive Motor 230/60/1	12-649-2
208/60/1	12-649-7

**PARTS LIST**  
**SF-5 H**

<b>FREEZER ASSEMBLY</b>	A-8853
Screws--Ice Breaker--St. Steel	3-785
Ice Breaker	A-8818
Ice Breaker Cap--Rubber	13-231
'O' Ring--Cap	2-991
'O' Ring--Breaker	2-778
Top Bearing	2-619
'O' Ring Below Top Bearing	2-643
Styrofoam Cap	A-9047
Locking Cap Screw 1/2-20-1 Stainless	3-715
Washer--Brass	A-6273
Worm Shaft	A-9006
Water Seal	2-776
Lower Bearing	2-775
Suction Line Assembly	A-11805
Suction Line Vibration Eliminator	16-365
Refrigerant Drier	2-822
Freezer, Worm Tube Only	A-8858
<b>SPOUT ASSEMBLY</b>	
Spout Assembly Less Switch and Press Plate	A-16668
Spout Pressure Plate	A-16670
Screws Stainless Steel Spout Hold Down	3-794
Spring for Spout Pressure Plate	2-1321

# PARTS LIST

Section F-5-5

Page 39

## SF-5 H

### ELECTRICAL COMPONENTS

Contactator, compressor 230/60/1		12-820-2
Bin Thermostat		11-99-1
Manual Switch		12-530A
Manual Switch w/case		12-530
Hi-Pressure Control		11-343
Overload Heater Drive Motor, state motor . and voltage.		12-708
Micro Switch, for spout		12-1018
Hi-Pressure Control		11-342

### CONDENSING UNITS W.C. SF-5H SF-5-3

Motor Compressor Only 3HP	18-738	18-772
Valve Plate & Gasket Kit	18-722	18-722
Cylinder Head	18-725	18-725
Relay	18-1903-21	
Starting Capacitor ( 2 per unit)	18-1901-23	
Running Capacitor ( per unit-2)	18-1902-23	
Condensor--Water Cooled	18-754	18-754
Terminal Assembly	18-735	18-735
Service Valve Gasket (Suction)	18-736	18-736
Service Valve Gasket (Discharge)	18-736	18-736
Plain Gasket--Water Cooled condenser	18-740	18-740
Manifold Gasket-W.C. condenser	18-741	18-741
Water Regulating Valve, Penn 3/4"NPT	11-198	11-198
Dual Pressure Control-Hand Reset	11-286	11-286

### MISCELLANEOUS

Ice Scoop		2-540
Ice Machine Cleaner--8 oz. bottle		19-343
Grey Spray-on Touch-up Paint		10-153
Upper Bearing Grease-Freezer Assy.-Pt. cans only		19-309
600 W Gear Reducer Transmission Oil-Pt. cans only		19-359
Tygon Tubing (1/2" ID x 3/4" OD) Per Ft.		5-186
Rubber Tubing (3/8" ID) Per Ft. Black		13-79

### CONDENSING UNIT A.C. SF-5 SF-5-3

Motor Compressor Only	18-721	18-767
Valve Plate & Gasket Kit	18-722	18-722
Cylinder Head	18-725	18-725
Relay	18-1903-21	
Starting Capacitor	18-1901-23	
Running Capacitor	18-1902-23	
Condenser	18-753	18-753
Terminal Assy.	18-735	18-735
Service Valve Gasket	18-736	18-736
Fan Motor	18-752-2	
Fan Blade	18-751	