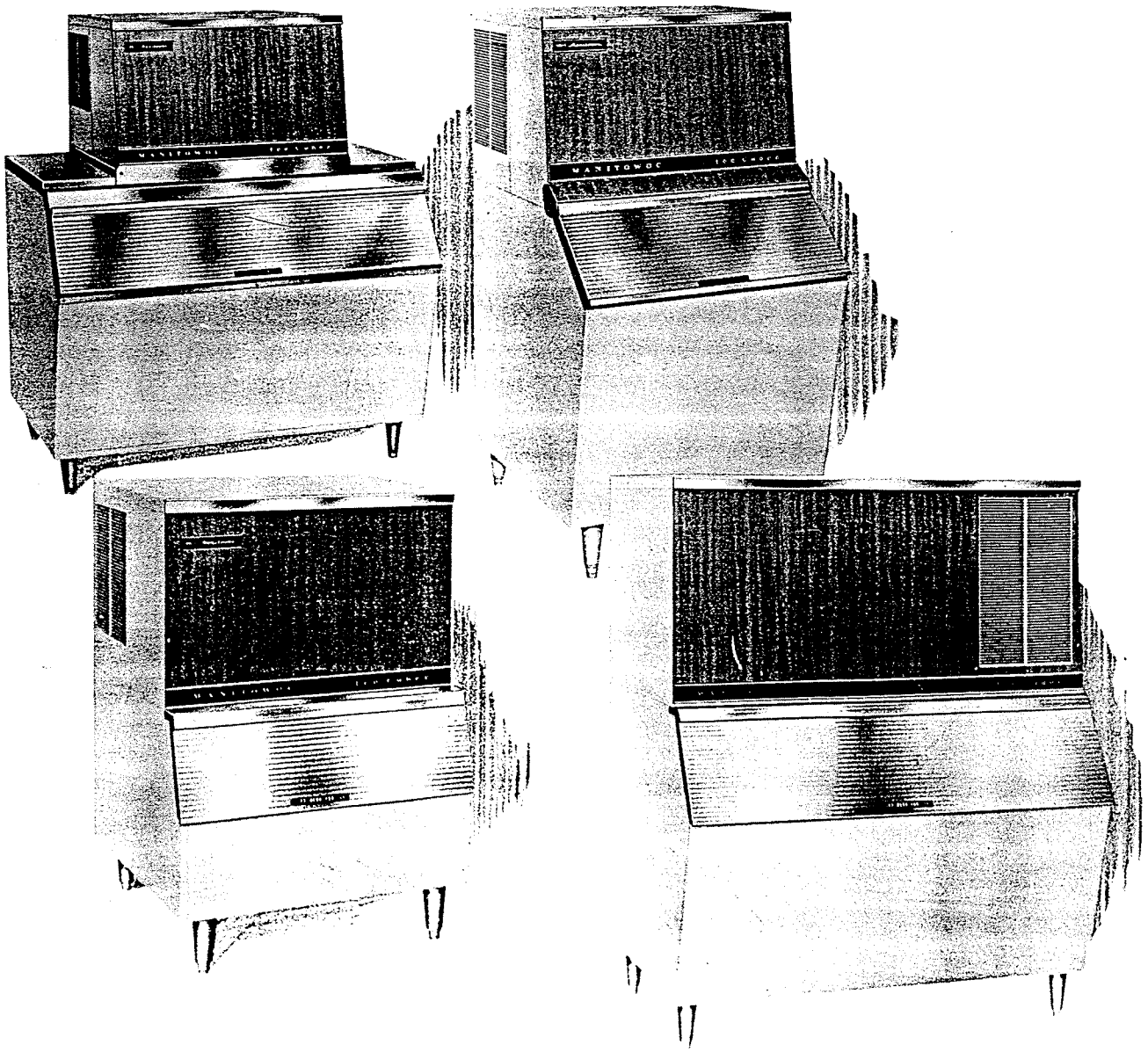
MEE-MED-M60+12

Manitowoc

300 SERIES
500 SERIES ICE CUBER
SERVICE MANUAL



Manitowoc equipment works
Division of The Manitowoc Company, Inc.,
MANITOWOC
WISCONSIN

80-0018-1

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FORWARD

Manitowoc Equipment Works, Division of the Manitowoc Company, Inc., Manitowoc, Wisconsin, presents this Service Manual to assist the service man with information concerning CONSTRUCTION, INSTALLATION, and MAINTENANCE of the MANITOWOC ICE MAKER.

The problems of the user and the service man have been given special emphasis in the development of the latest MANITOWOC Ice Machines.

If you encounter a problem which is not answered by this manual, please feel free to write or call the Service Department of the Manitowoc Equipment Works, Division of The Manitowoc Company, Inc., Manitowoc, Wisconsin, describing the problem you have encountered. The Service Department will be happy to give you particularized advice and assistance. Whenever calling or writing, please state the complete model and serial number of the ice making equipment.

MANITOWOC EQUIPMENT WORKS
Div. of THE MANITOWOC CO., INC.
Manitowoc, Wisconsin 54220

This Manual covers the following:

1. MER models with cubes sized approximately 1-1/8 x 1-1/8 x 7/8 inches in both the 300 and 500 Series.
2. MED models with cubes sized approximately 7/8 x 7/8 x 7/8 inch in both the 300 and 500 Series. Both of these models have a vertical evaporator.
3. MGD and MGR Series.
4. MCD and MCR Series.

UNCRATING AND INSPECTION

300 Series Models with head unit attached to bin are shipped in an open slat crate – machine is wrapped in a clear plastic sheet. Inspect for concealed damage before accepting cabinet.

Uncrate cabinet by removing staples securing crate sides to skid, then lifting off crate. Lay cabinet on its back to remove skid.

Models with separate head unit and bin are shipped in separate cartons. Remove the wood strips stapled around the lower edge of the head unit carton. Lift the carton upwards and off, and inspect for concealed damage. The machine is held to skid by two bolts. Remove these skid bolts and set the machine on the bin. The bin, complete with door, is shipped in a corrugated carton with fold-up inserts for added protection. Before opening the carton, inspect for punctures, dents, or evidence of mishandling. Notify the carrier requesting that their representative be present if you suspect concealed damage. Insist that freight bills be marked. If you find the bin damaged and no external evidence, save the carton and all packaging for the carrier's inspection. Once inspection has been made, advise the carrier of the cost of repairs, loss due to discounted price or replacement cost if bin cannot be salvaged.

The head unit and bin are shipped separately in the 500 Series, the machine section in an open slat crate bolted to a wooden skid wrapped in a clear plastic sheet, and the bin in a corrugated carton with fold-up inserts for added protection.

LOCATION

Some models are designed to slide under a 42-inch bar or any other convenient location. For maximum efficiency, pick a location away from sources of heat like radiators, ovens, other refrigeration condensing units, direct sunlight, etc. Provide space around the cabinet for air circulation. Air cooled models require a minimum of 3 inches at any louvered opening to the compressor compartment. Cabinets located in unheated areas must be protected from freezing or shut down and drained. When machine is in place, remove wooden wedges under compressor. These were placed there for shipping purposes.

SETTING UP CABINET

Once the cabinet is set in place, carefully level the cabinet front to back and side to side using the screw levelers built into each leg.

On models having head unit shipped separately from the bin, set the bin in place carefully and level before placing head unit on bin.

In the event that installation is such that legs can't be used, screw out the four legs and use shims to level the cabinet. The National Sanitation Foundation requires that a cabinet not on legs must be sealed to the floor using mastic around the entire perimeter of the bottom of the bin.

SERIAL AND ELECTRICAL PLATE

The combined serial and electrical plate is located on the **end** of the head unit. Be sure to send the complete serial number (14 numbers) and the model number when calling for service or parts.

REMOVING FRONT PANEL ON BOTH 300 AND 500 SERIES

The front panel is secured by a screw at each lower front corner. Loosen both screws, then pull the lower edge of the panel towards you and let it drop down to disengage.

ELECTRICAL CONNECTIONS

115V – 60 Cy. – 1 Ph. 20 Amp. outlet (all 300 Models)
115V/230V – 60 Cy. – 1 Ph. 20 Amp. outlet (all 500 Models)

GENERAL REQUIREMENT

All electrical and water supply and drain connections must conform to local codes.

CONNECTING POWER SUPPLY ON 500 SERIES

Remove screws and "L" shaped panel covering the side and rear of the compressor compartment. Separately fused wire (2), 230 volt, supply leads **with a neutral** should be run from the fuse box to the ice maker. Wiring will enter the cabinet through the rear wall. Wiring should be at least No. 14. Use No. 20 amp. fusetrons, ONLY the compressor circuit is 230 volt, the amperage load being carried by a magnetic contactor. All other circuits are 115 volt, necessitating a neutral in the supply line.

CONNECTING POWER SUPPLY ON 300 SERIES 115V – 60 Cy. – 1 Ph.

Remove top cover for access to the wiring supply box built into the compressor compartment. Separately fused No. 14 wires should be run from the fuse box to the cabinet. Use No. 20 ampere fusetrons.

WATER SUPPLY

Quality and ice making capacity are affected more by chemistry, temperature, and foreign matter in supply water than any other factor. A survey made of water departments of large cities all over the country made it obvious that external filters or strainers should be installed. Such equipment is very effective in improving ice quality and reducing the frequency of cleaning out the ice making sections.

CONNECTING WATER SUPPLY

A 1/2" female pipe fitting is provided on the right end of the head unit. Install the water filter screen provided with the cabinet. Use 3/8" O.D. copper tubing for the water supply.

DRAIN CONNECTIONS

It is essential that drain connections be made so waste water can't back up into the head unit or bin. On water cooled models, a separate connection is provided for discharging condenser water. All connections are labeled. **We recommend covering all incoming water and drain lines with a plumbing insulation material to prevent condensation.** If the head unit and bin drains are tied together through a "T" connection, we recommend using a **3/4" pipe and a stand pipe** vented to the atmosphere to prevent water traps. Drains must be at least 1/2" inside diameter and have 1½" drop per 5 feet of run. If drains are not close enough to allow drop for proper drainage, or water is to be drained in a stationary sink higher than ice machine drains, use an automatic condensate disposal pump. (Check and follow local plumbing codes.)

CHECK LIST PRIOR TO STARTING UNIT

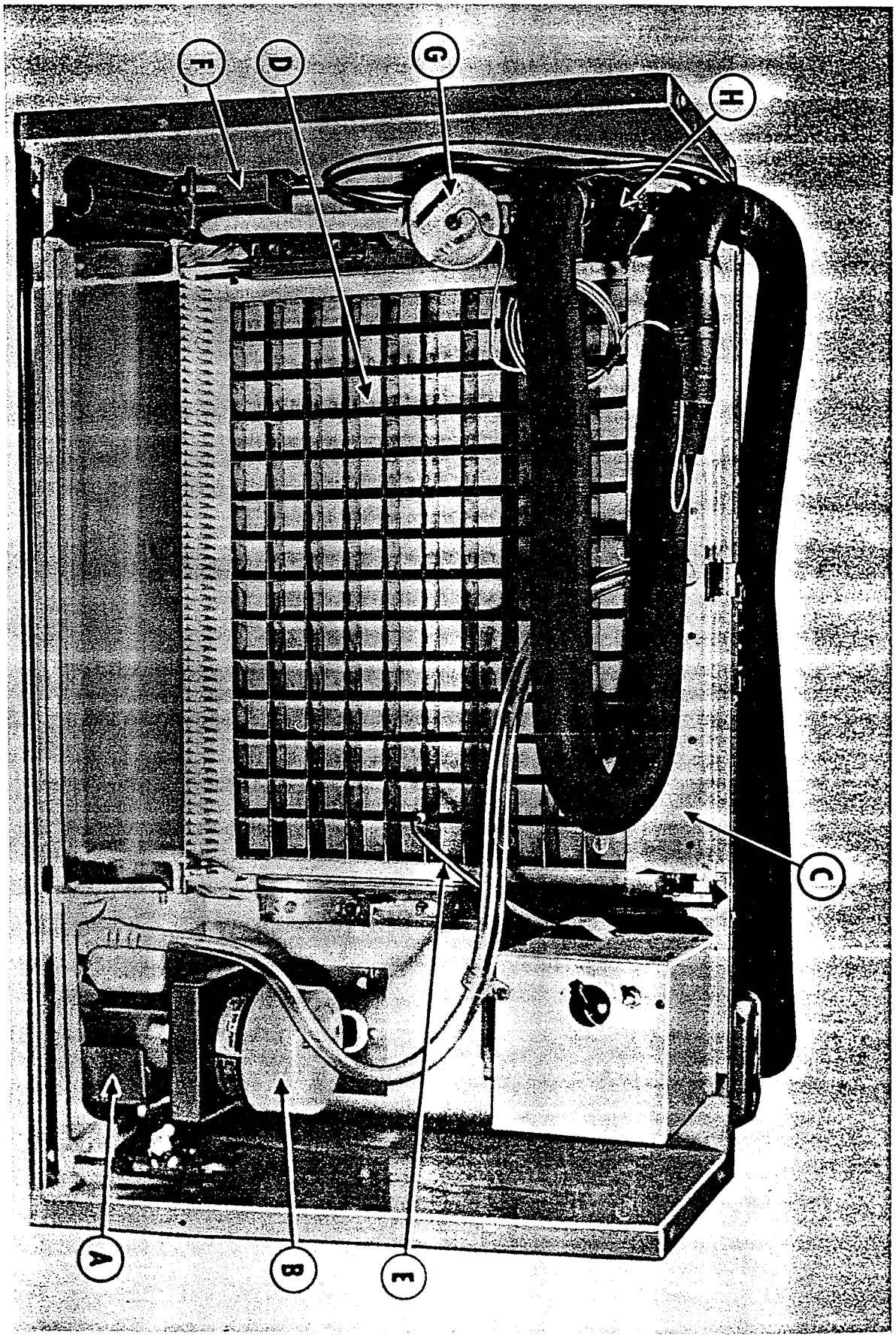
CAUTION: Use care to avoid bending the cube size control sensing arm while removing and replacing the plastic splash curtain. DO NOT ATTEMPT WHILE THE UNIT IS RUNNING.

Remove tape securing the damper door, splash curtain, harvest rack, water pump, and float valve assembly.

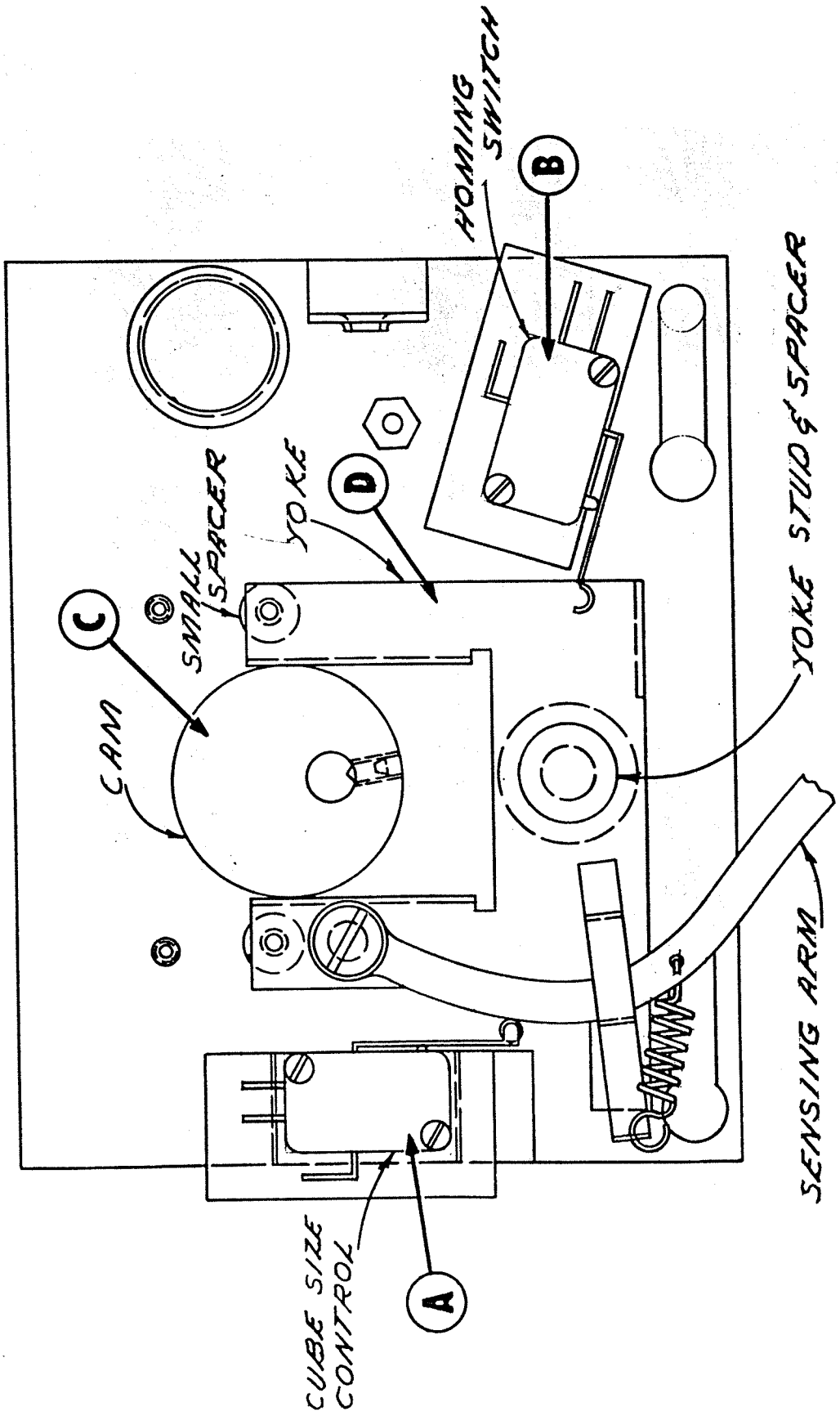
Remove and discard screws securing the water pump mounting bracket to the cabinet wall. Raise the pump enough to remove the corrugated packing under the pump.

Turn on the water and observe that the float shuts off the water when the level is about 2 inches deep. Loosen the wing nuts to adjust entire float valve up or down. Tighten the wing nuts securely.

Turn the toggle switch located on the cube size control to "water pump", left position. The water pump will start pumping water through the hose into the trough or tube located on top of the evaporator. The water flows down the evaporator and returns to the sump. NOTE: During the pull down, water is very erratic across the evaporator. After ice begins to form, you will note that the tracking of the water is very uniform.

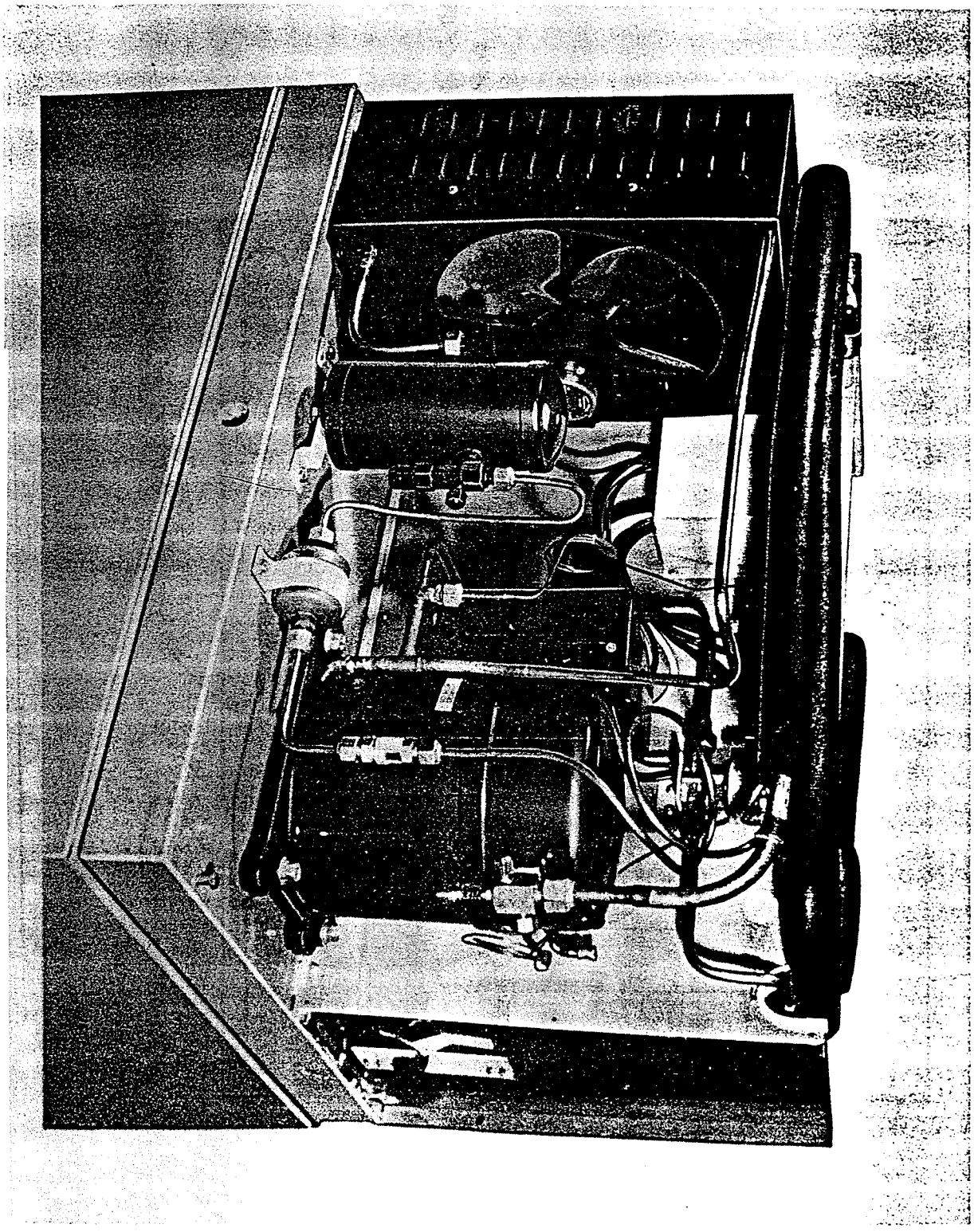


300 SERIES ICE MAKING SECTION
FIG. 1

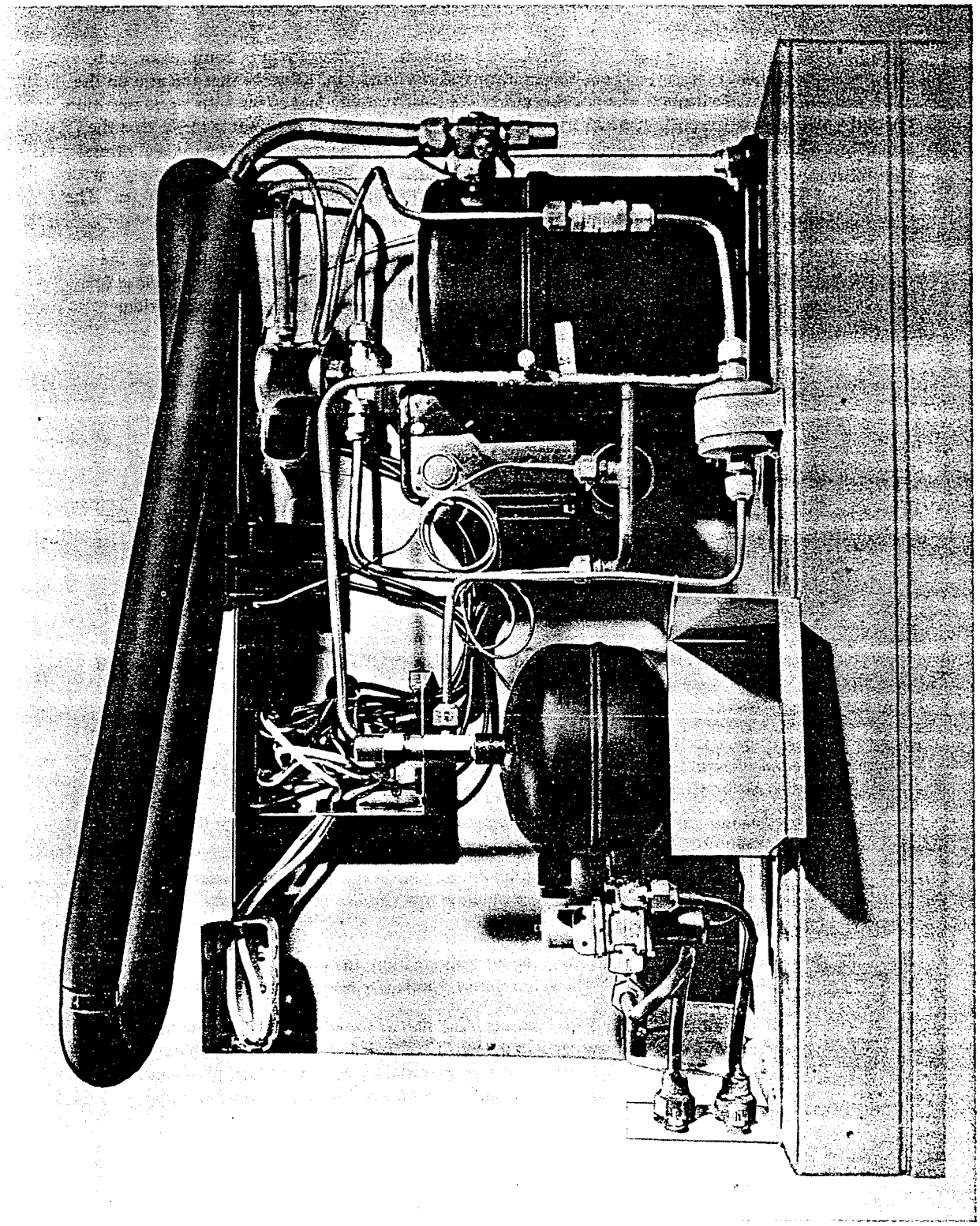


SENSOR ASSEMBLY SKETCH

FIG. 2



MED and MER 300 SERIES AIR-COOLED REFRIGERATION SECTION



MED and MER 300 SERIES WATER-COOLED REFRIGERATION SECTION

CHECK THESE IMPORTANT ITEMS:

See that sump overflow tube is straight up and down and no water leaks over the edge. (500 Series only)

Turn the toggle switch to the right "ICE MAKING" position. The water pump, compressor, condenser fan (air cooled models), and cube size motor will start and run. Observe that the arm on the cube size control passes through the opening cut in the splash curtain and aligns with a grid partition. Carefully swing open the curtain while arm is at farthest point from the evaporator to see that the arm aligns with the hole in the curtain in this position also. Turn the machine ON and OFF several times to flush clean water through the system and to **observe that waste water drains properly**. With the toggle switch in the "ICE MAKING" position, reach down and push the damper door open. The entire machine should stop and remain off until the damper is released.

The Installer should replace the top on the head unit, put the front panel in place, and check the first harvest of cubes to see that the machine functions properly. If cubes are reasonably close to the 1/8" bridge thickness, allow 3 harvests for temperatures to stabilize before adjusting bridge size control if needed.

ICE MAKING PRINCIPLE

Your Manitowoc Ice Cuber is designed to produce ample quantities of crystal clear ice with as few moving parts as possible.

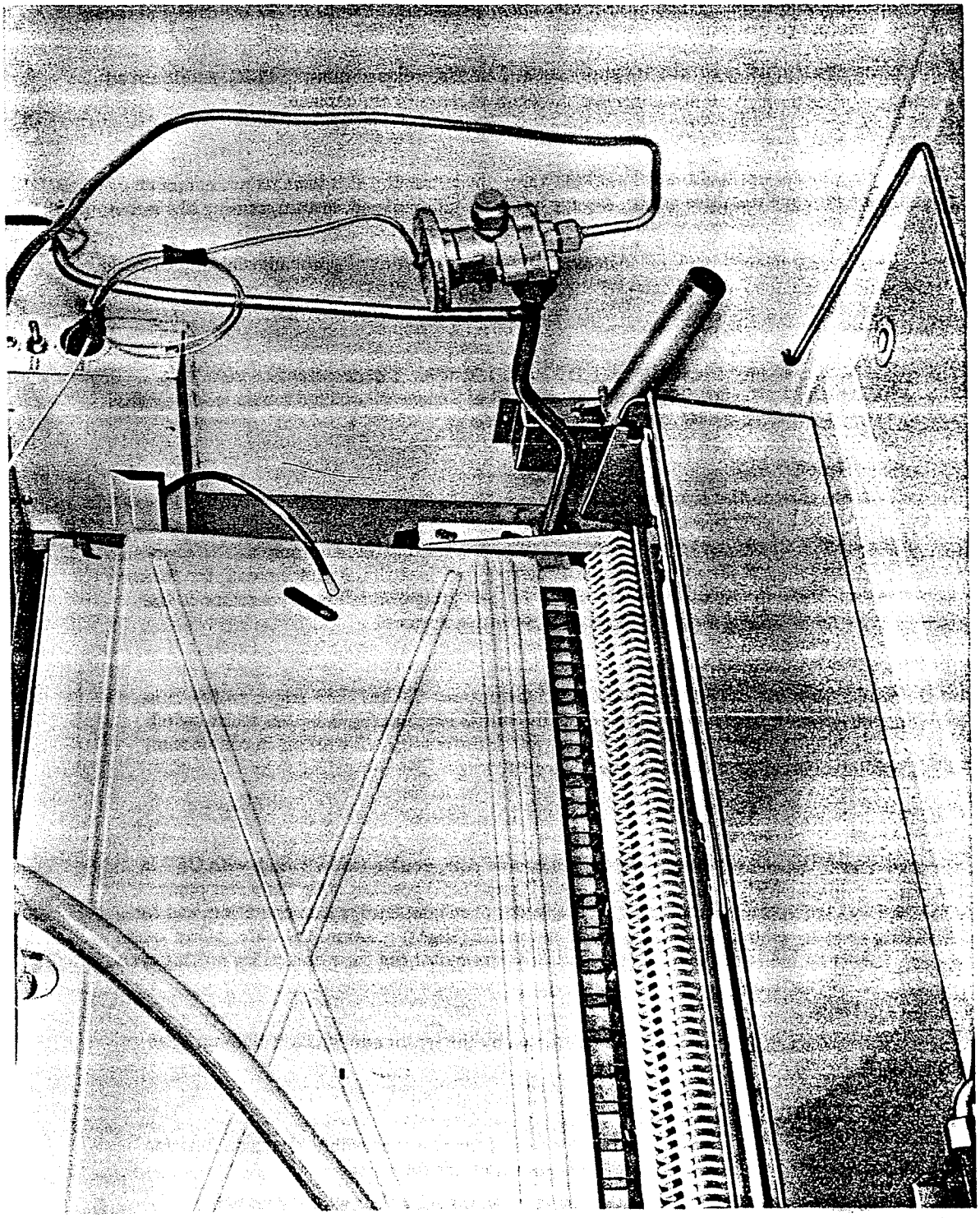
This is accomplished by water being metered into the water sump by means of a float valve (Fig. 1 "A").

The water pump (Fig. 1 "B") then pumps the water from the sump into the water trough or tube. (Later models have tube – Fig. 1 "C"). Water is then evenly distributed by gravity flow across and down the evaporator grid freezing surface (Fig. 1 "D"). The excess chilled water returns to the sump and is re-circulated.

As the ice in the evaporator fills the cube molds, the thickness of the bridge between the ice cubes is sensed by the sensing arm (Fig. 1 "E"). When this bridge reaches approximately 1/8", the sensing arm trips the cube size control (Fig. 2 "A") causing the following:

1. The hot gas solenoid opens allowing hot gas to be pumped through the evaporator cooling coils.
2. Simultaneously, a relay, mounted on the rear of the sensor plate assembly, is energized to hold the hot gas solenoid open and to set up the homing switch (Fig. 2 "B").
3. When the sensor arm returns to the rear position, the homing switch is actuated, shutting off the water pump, condenser fan, and sensor motor.

   After approximately 1 to 2 minutes, the slab of ice falls through the damper door actuating the damper switch (Fig. 1 "F"). This returns the machine to the freezing cycle. If the level of the ice in the bin is high enough to prevent the damper from closing, the machine will turn off until ice is used and the damper can close.



MED and MER 500 SERIES EVAPORATOR SECTION WITH SPLASH CURTAIN

CONTROLS

HIGH PRESSURE CUT-OUT

The high pressure cut-out in all models is a safety device to stop the entire unit. This protects the water cooled units if the water is shut off or the condenser becomes contaminated with impurities from the water, and the air cooled units if the condenser fan motor stops or the condenser becomes clogged with foreign material.

This control is a manual reset, and is factory set at 275 PSIG, plus or minus 5 PSIG, and is not adjustable in the field. If the control becomes inoperative, remove and replace.

LOW PRESSURE CUT-OUT

The low pressure cut-out is also in all models to stop the entire unit if it loses its refrigerant charge, or failure of the cube size drive motor, causing heavy ice build-up and, in turn, causing low suction pressures.

This control also is manual reset and is factory set at 8". This control is not adjustable in the field. If it becomes inoperative, remove and replace.

SENSOR MOTOR

The sensor motor operates the cam (Fig. 2 "C") at 3-1/3 RPM. The cam moves a yoke (Fig. 2 "D") back and forth. The attached sensing arm has a travel of 2 inches in and out from a point approximately 1/16" away from the ice making grid or evaporator.

SUCTION LINE THERMO DISC

The section line thermo disc is located on the suction line (behind evaporator on 500 Series, and in upper left hand front corner on 300 Series – See Fig. 1 "H"). This control is a Klixon switch that opens at 65^{o}F. $\pm$ 5^{o}, and closes at 35^{o}F. $\pm$ 5^{o}. The thermo disc acts only as a safety device to prevent overheating of machine. Should the damper door switch fail after harvest, the thermo disc will open. When the suction line reaches 65^{o}F. $\pm$ 5^{o}, this will return the machine to the freezing cycle by unlocking the transfer relay. (See wiring diagram)

BRIDGE THICKNESS

Cube Size Control Unit – This unit contains the main power ON and OFF toggle switch, cube size adjustment knob, drive motor with cam, cube control sensing arm, cube size micro switch (Fig. 2 "A"), homing micro switch (Fig. 2 "B"), and transfer relay, all working in conjunction with the damper switch (bin control). (See Fig. 1 "F")

TOGGLE SWITCH

The main power ON and OFF toggle switch is a double pole, double throw switch with OFF in the center position. With the toggle in the **Water Pump** (Left) position, only the water pump and condenser fan operate. This is for checking water inlet float level, pump operation, and for circulating cleaning solutions. With the toggle in the ICE (Right) position, the water pump, compressor, condenser fan (air cooled models), and cube size motor run for a normal ice making cycle.

CUBE SIZE CONTROL

This controls the ice bridge thickness and is actuated by the sensor arm which it rides on (See Fig. 2 "A")

TRANSFER CONTACT RELAY

The transfer contact relay is located at the back side of the sensor assembly. Its main function is to control 2 electrical circuits. This is accomplished by the following:

1. During the freeze or ice making cycle, the relay rests with the closed set of contacts supplying power to operate the water pump, condenser fan, and sensor motor.

2. When the bridge is approximately 1/8" thick, the cube size micro switch is actuated, energizing the transfer contact rely.
3. The relay then transfers contacts and does the following:
   a. Holds open the hot gas solenoid valve.
   b. Places homing switch in series with the fan motor, water pump, and sensor motor.
4. When the sensor yoke depresses the homing switch, it removes the fan motor, water pump, and sensor motor from line.
5. The ice falling through the damper door electrically unlocks the transfer contact relay by means of the bin micro switch, causing the entire machine to go back into its normal freezing cycle. In the event that the damper door is held in the open position by the bin being full of ice, this relaxes the entire machine electrically.

COMPRESSOR CONTACTOR (500 SERIES ONLY)

The 500 Series machines use a 230 volt Copelaweld compressor. A compressor starting contactor is used to control the compressor. The contactor has a 115V coil which, when energized, closes the 230V contacts; thereby starting the compressor. (See 500 Series Wiring Diagram.)

CLEANING INSTRUCTIONS

1. Unplug water pump supply cord located directly behind motor, disconnect hose, and remove assembly.
2. Little Giant water pumps disassemble as follows:
   a. take out bottom ring.
   b. hold impeller and remove thumb screw and impeller.
   c. remove screws and pump housing.
3. Hartell water pumps disassemble as follows:
   a. Remove pump supply cord located directly behind motor.
   b. Lift pump out and disconnect supply hose and remove assembly.
   c. Turn pump over and remove 6 brass thumb screws.
   d. Hold and depress impeller. Rotate plastic thumb nut counter-clockwise.
   e. Remove screws from pump housing. Pump is now ready for cleaning.

TO REASSEMBLE BOTH LITTLE GIANT AND HARTELL PUMPS, REVERSE DISASSEMBLY INSTRUCTIONS.

4. Remove water curtain. Unit should be stopped when sensing arm is at furthest point from the evaporator to avoid interference.
5. Shut off water supply and disconnect supply tube to float valve. Remove wing nuts (2) and the float valve assembly.
6. Remove harvest rack.
7. Lift out damper assembly and ice chute.
8. Damper can be disassembled by removing spring clips securing the damper to the rod.
9. Lift up on water trough and pull forward and out.

A. **On water trough models, proceed as follows:**
   1. Remove plastic hose to the inlet of the "T" header.
   2. Remove rubber plugs from each end of header.
   3. Remove right and left headers from "T".
   4. Use suitable bottle brush to clean internal surfaces of header tubes and connecting parts.

   TO REASSEMBLE, REVERSE DISASSEMBLY INSTRUCTIONS.

B. **On models using header distributor system, disassemble as follows:**
   1. Pull forward on header tube, holding header in one hand and inlet hose in the other. Remove hose.

2. Remove rubber plug from opposite end, and pull inner tube out through rubber rings (See Fig. 3).
3. Use suitable bottle brushes for cleaning disassembled parts.
4. During reassembly of the inner and outer tube, make certain that holes located in inner tube are 180^{o} rotated from holes in outer tube (See Fig. 3)

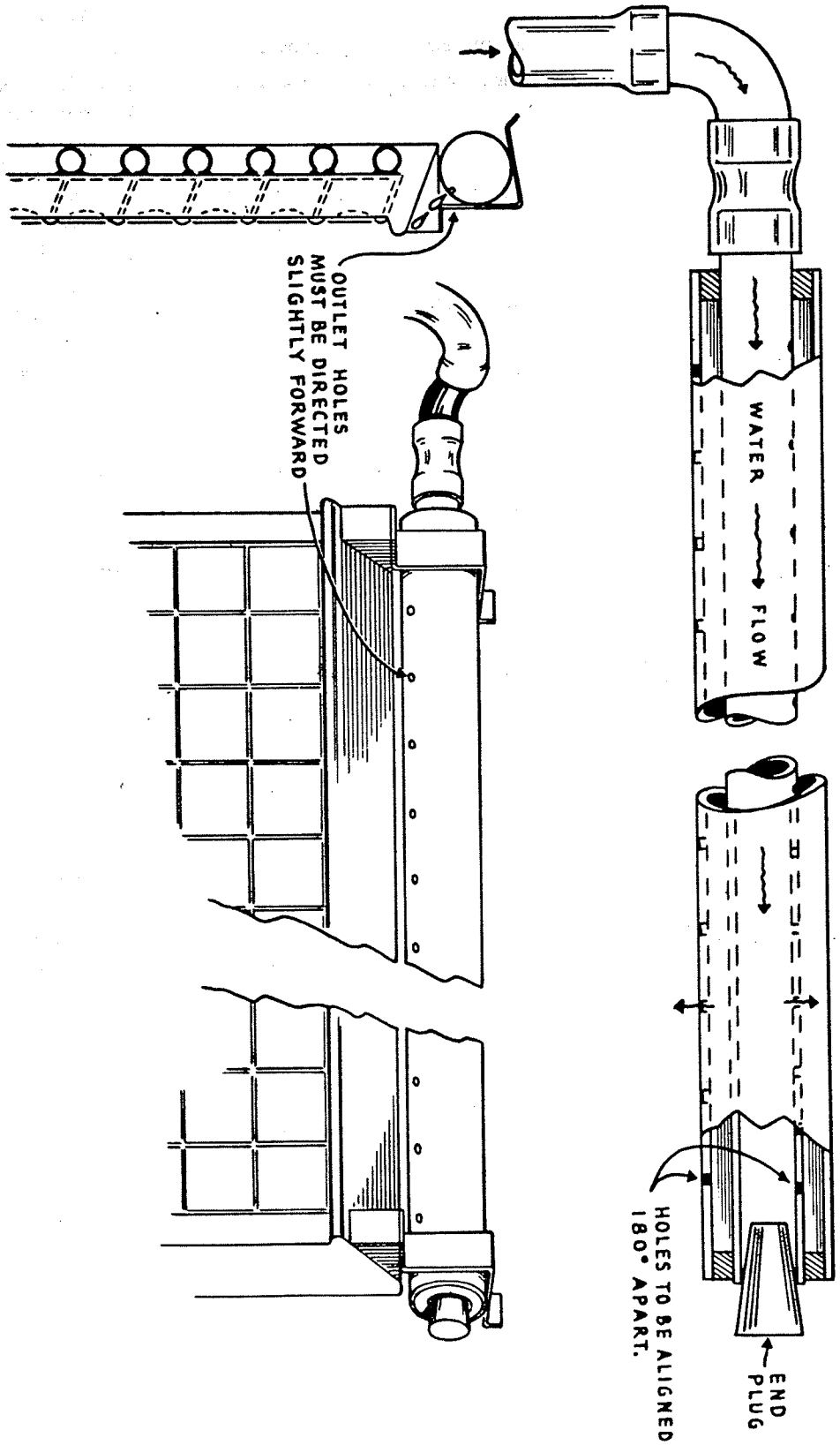
10. On all 500 Series models, lift out sump assembly and remove overflow tube.
11. Scrub all parts removed using a nylon scouring pad, brushes, and a cleaning solution such as LIME-A-WAY from Economics Laboratory, Inc., Calgon Ice Machine Cleaner, or Boss Brand Milk Stone Cleaner from Northern Laboratories. Rinse all parts with clear water.
12. It is recommended that the ice be removed from the storage bin before scrubbing the base and evaporator assembly. Rinse with clear water.
13. Check to see that overflow or drain hole in the base is clear and that water drains through freely.
14. Reassemble unit. To sanitize unit, mix ONE TEASPOON OF SODIUM HYPOCHLORITE IN ONE GALLON WATER. Pour solution into sump, then turn toggle switch to the left to start water pump.

    Keep pouring solution into sump until system has enough to keep pump primed. After one minute, turn off pump and remove overflow tube to drain out solution (on 500 Series only). Repeat with clear water before turning switch back to the ice making position. Make visual inspection for leaks and operation before replacing the front panel.

IN PLACE CLEANING

If the above procedure for cleaning is impractical due to cabinet location or lack of facilities, proceed as follows:

1. Turn toggle switch to center (OFF) position, and shut off water supply.
2. Remove ice from storage bin.
3. Drain water from sump pan. On the 500 Series, this can be done by removing the overflow tube then replacing it. On the 300 Series, use a sponge to remove water.
4. Slowly pour one of the cleaning solutions listed above into the sump pan. Turn toggle switch to LEFT position to run water pump. Keep adding cleaning solution in the sump until float level is reached.
5. With water curtain in place, circulate cleaning solution until all parts are clean.
6. Empty sump pan, reassemble all parts, and turn on water, then flush until all parts are thoroughly rinsed. Empty sump pan again and restart unit.



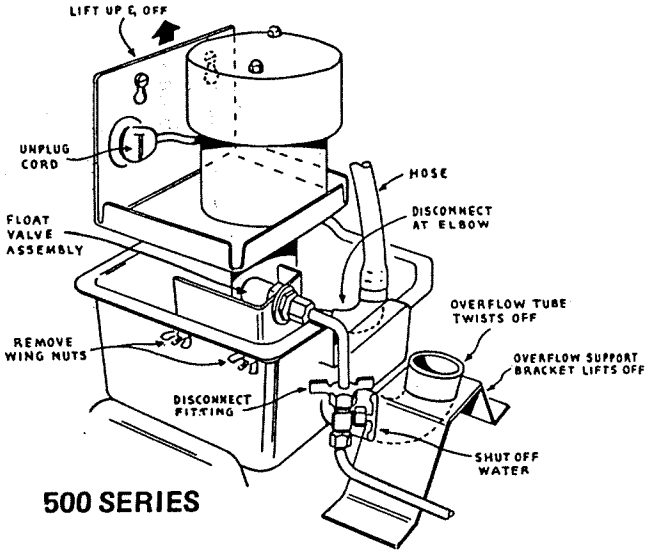
WATER SYSTEM SKETCH

Fig. 3

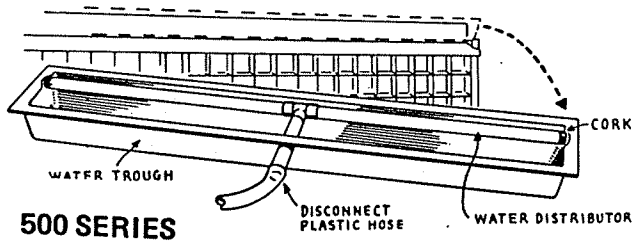
SERVICE ANALYSIS

COMPLAINT	CAUSE	CORRECTIVE MEASURES
Unit will not run	Power off.	Check main switch, fuses, and wiring.
	Manual switch in OFF position	Check.
	High pressure control locked out.	Reset and check for water turned off (water cooled models), contaminated condenser, defective fan (air cooled models).
	Low pressure control locked out.	Ambient temperature must be above 50°F. Loss of water to evaporator from pump. Repair pump.
	Refrigeration leak.	Repair leak, evacuate, and recharge.
Compressor cycles intermittently on overload	Low voltage	Check with volt meter.
	Air in system causing high head pressure.	Purge system. Evacuate, and recharge.
	Compressor windings shorted	Replace compressor.
Cubes small, short cycle.	Cube size control not properly set.	Set cube size control.
Cubes thick.	Cube size control set for thick ice bridge	Reset ice size control for proper size ice thickness.
Good cubes on lower half of evaporator, and shells at top of evaporator	Short of refrigerant.	Locate leak and repair.
	Expansion valve not feeding properly	Replace expansion valve.
	Contaminated water system	Clean water system.
Slow harvest	Contaminated or limed water system	Clean water system.
	Low ambient (air cooled models)	Must be above 50°F.
	Water valve set too low.	Adjust water valve to 125 PSIG head pressure.
	Leaking water valve (water cooled models)	Replace water valve.
High head pressure	Overcharge of refrigerant	Evacuate and recharge.
	Air in system.	Evacuate and recharge.
	Defective water valve (water cooled models)	Replace water valve.
	Defective fan (air cooled models)	Replace fan.
	Water valve not properly adjusted	Adjust water valve
	Contaminated air cooled condenser	Clean condenser
	Defective expansion valve.	Replace.
High Suction pressure	Contaminated condenser	Clean
	Defective fan.	Replace fan.
	Defective water valve (water cooled models)	Replace or adjust water valve.
	Moisture in system.	Replace drier, evacuate, and recharge.

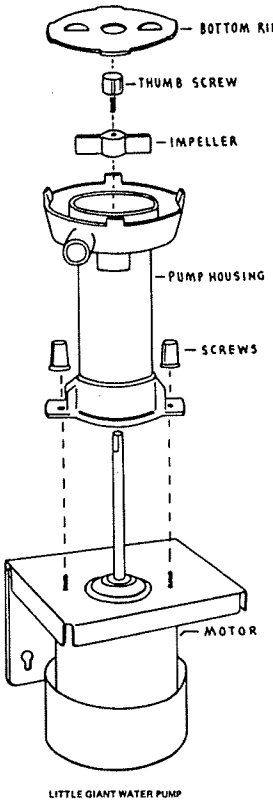
COMPLAINT	CAUSE	CORRECTIVE MEASURES
Low suction pressure	Shortage of refrigerant	Locate leak and repair.
	Moisture in system	Replace drier and evacuate system
	Ambient too low for operation	Must be above 50°F.
Unit noisy	Fan shroud touching fan blades	Adjust fan mounting brackets.
Ice Maker will not stop when full of ice.	Damper door not properly adjusted	Adjust damper door.
	Defective damper door micro switch	Replace damper door micro switch
Cube size control motor will not run.	Defective motor or gear assembly	Replace cube size control motor.
	Defective homing micro switch	Replace homing micro switch.
Cube size control will not actuate harvest cycle.	Defective ice size micro switch	Replace ice size micro switch.
	Defective thermo disc.	Check contact of thermo disc to suction line. Check thermo disc after suction line reaches 35° with OHM meter. Thermo disc should be closed.
Cube size control will not stop in rear position during harvest cycle.	Defective homing micro switch	Replace homing micro switch.
	Defective transfer contact relay	Replace transfer contact relay.



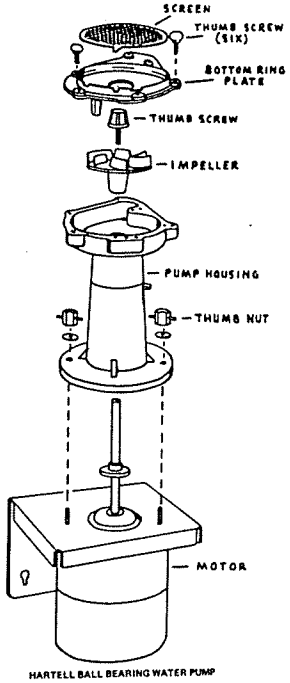
500 SERIES



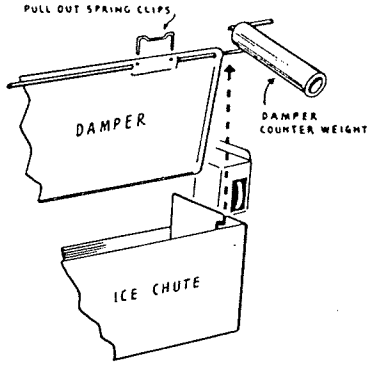
500 SERIES



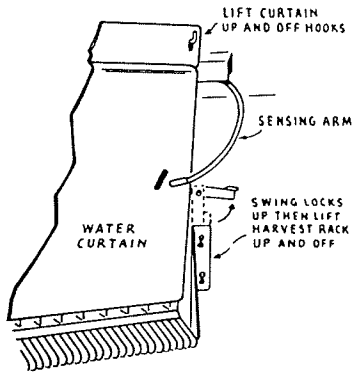
LITTLE GIANT WATER PUMP

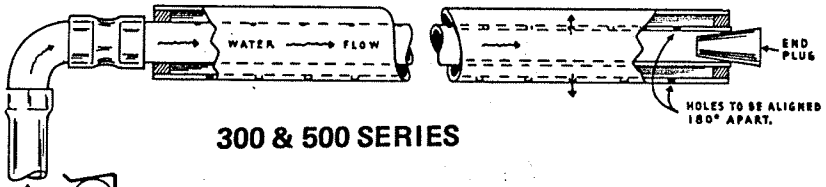


HARTELL BALL BEARING WATER PUMP

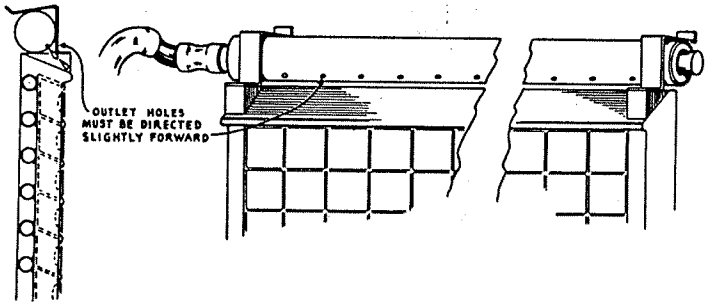


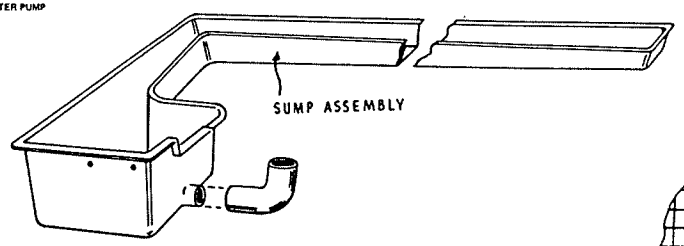
500 SERIES



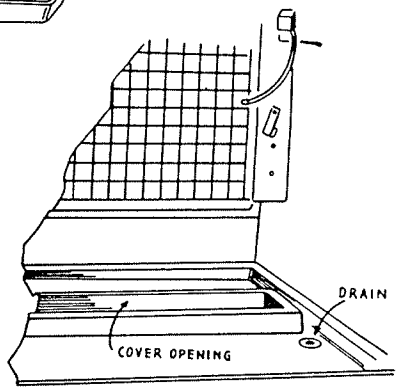


300 & 500 SERIES





500 SERIES



500 SERIES

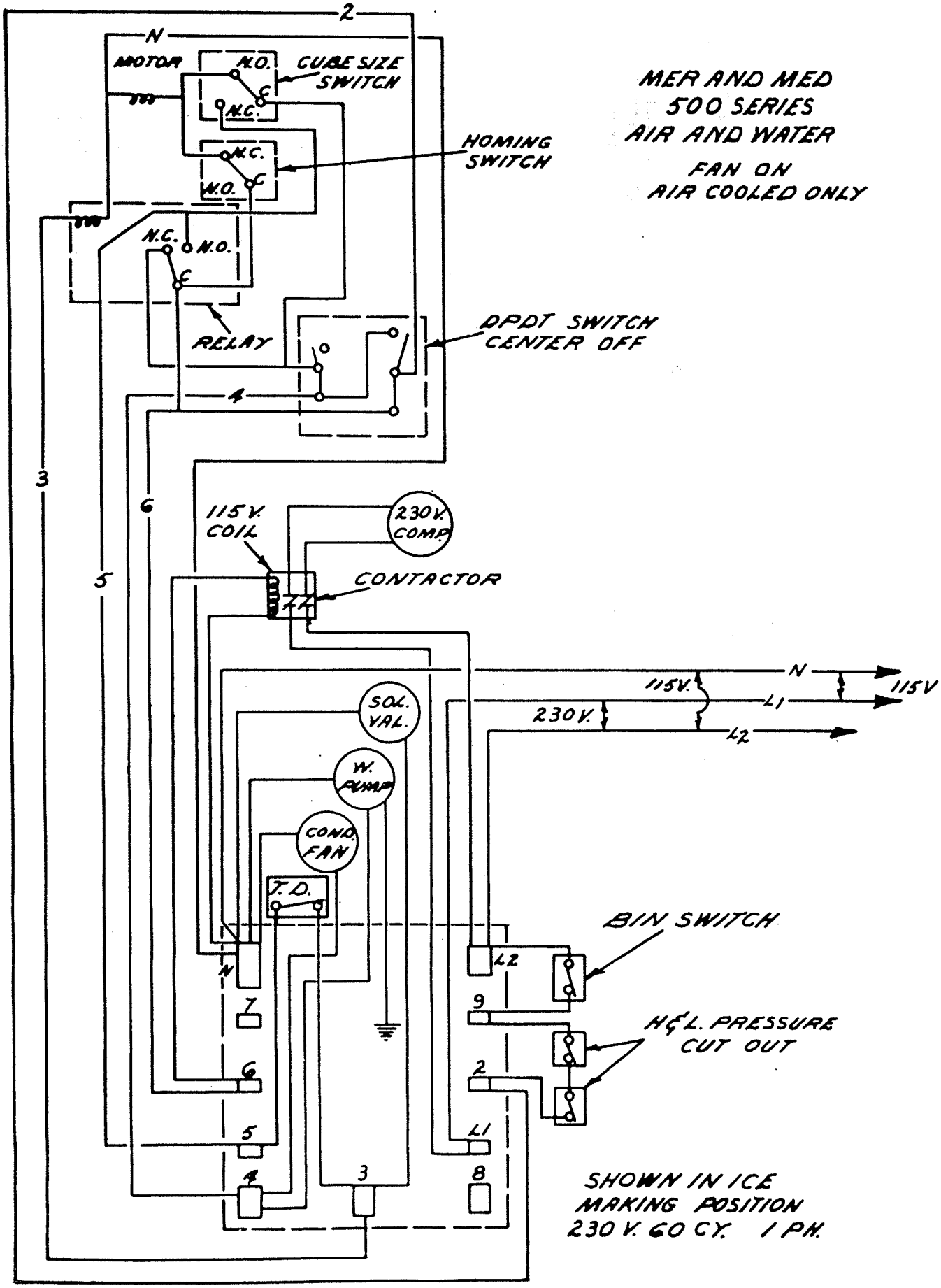
CLEANING INSTRUCTIONS
Fig. 4

SUGGESTED STOCK PARTS LIST

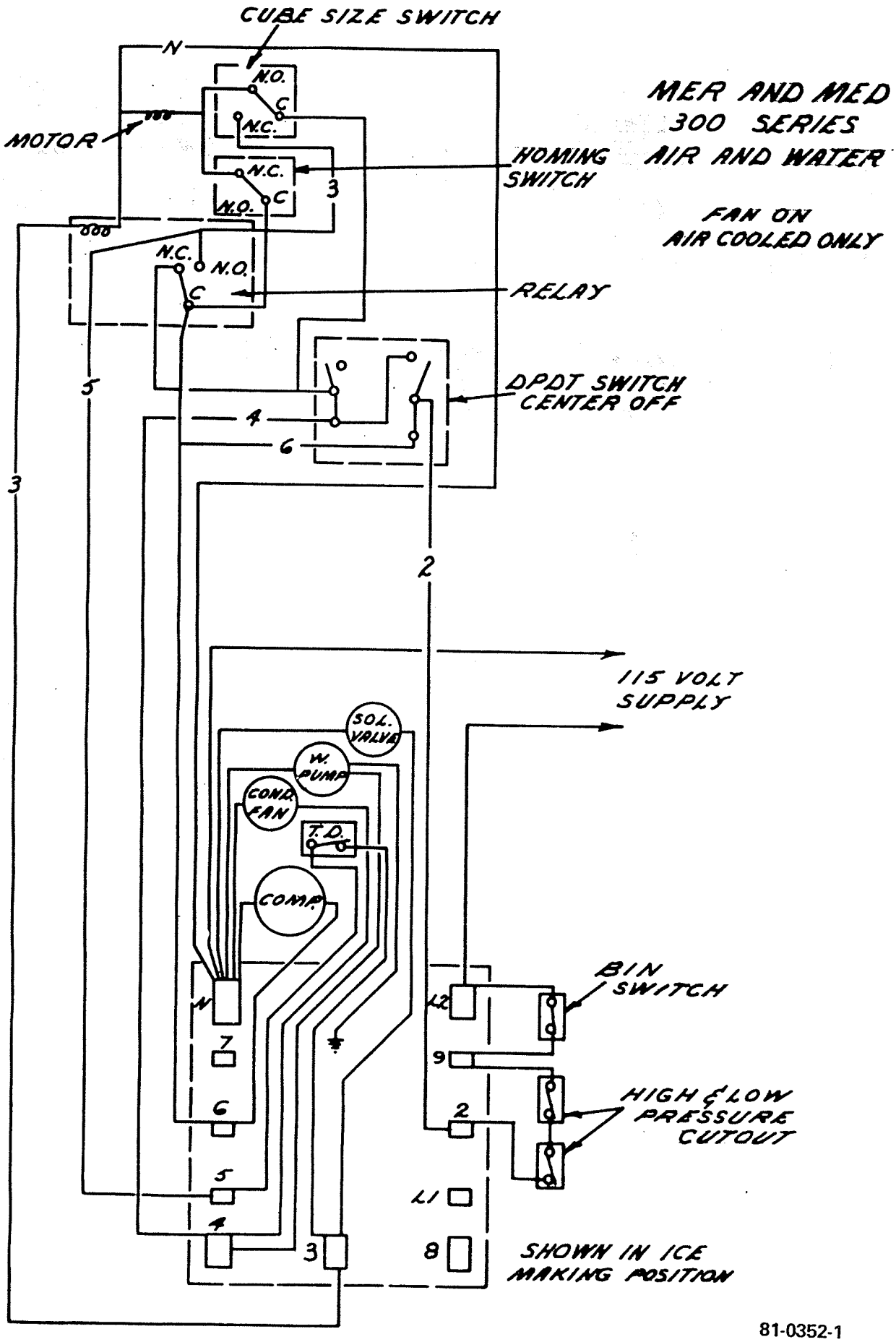
MED & MER 300 AND 500 SERIES ICE CUBERS

PARTS DESCRIPTION	300 SERIES	500 SERIES
Ice Size Motor	24-0194-1	24-0194-1
Homing Micro Switch	23-0063-1	23-0063-1
Ice Size Micro Switch	23-0072-1	23-0072-1
Homing Relays	24-0207-1	24-0207-1
Off Ice Water Pump Switch	23-0056-1	23-0056-1
Hot Gas Solenoid	24-0116-1	24-0116-1
Expansion Valve	13-6111-1	13-6110-1
High Low Pressure Control	23-5076-1	23-5076-1
Fan Motor (Air Cooled)	24-0213-1	
Fan Motor (Air Cooled)		24-0159-1
Water Valve (Water Cooled)	13-6063-1	13-6063-1
Float Assembly	13-6103-1	13-6103-1
Water Pump (Less Bracket)	14-8023-1	14-8023-1
Bin Door Micro Switch	23-0060-1	23-0060-1
Sensor Arm Tip	37-1047-1	37-1047-1
Water Restrictor	10086-1	
Sensor Arm (Less Tip)	37-1048-1	37-1048-1
Therm-o-disc	23-5002-1	23-5002-1
Compressor	14-0164-1	
Compressor		14-0170-1
Relay	15-0001-1	
Relay		15-0235-1
Capacitor (start)	15-0002-1	
Capacitor (start)		15-0237-1
Capacitor (run)		15-0238-1
Overload Protector	15-0003-1	
Brass Fuseable Plug	13-6039-1	13-6039-1
Water Curtain	12521-1	
Water Curtain		76-1913-1
Harvest Rack	10065-1	
Harvest Rack		76-2621-1
Water Trough Tube Assembly	10048-1	
Water Trough Tube Assembly		76-1914-1
Water Supply Tube 19" long	44-0757-1	
Water Supply Tube 36" long		44-0757-1
Water Trough Tube (2 per cuber)	10039-1	
Water Trough Tube (2 per cuber)		76-1920-1
Water Trough inlet Tube 3¾"	44-0698-1	44-0698-1
Nickel Plated tee (5/8" x 5/8" x 5/8")	13-0041-1	13-0041-1
End rubber stopper	44-0138-1	44-0138-1
Water Trough Tubing assembly starting (s.n. 704722)	12541-1	
Water Trough tubing assembly starting (s.n. 704423)		12558-1
90° Wrot Elbow		13-0042-1
Vinyl Water Supply Tube 28"'		44-0757-1
Vinyl water supply tube 19"		44-0757-1
Vinyl water supply tube 1¼" long	44-0757-1	
Ice Chute Assembly (less damper door)	10093-1	
Ice Chute Assembly (less damper door)		10257-1
Damper door assembly	10075-1	
Damper door assembly		10280-1
Front Panel Assembly	10017-1	
Front Panel Assembly		76-1927-1
Top Cover Assembly	10006-1	76-2474-1
Front Panel Trim	45-4136-1	45-4135-1
Front Panel Assmebly used with (170 & c 400 bins only)	10403-1	
Sensor Arm Spring	33-0234-1	33-0234-1
Sensor Cam	37-1061-1	37-1061-1

PARTS DESCRIPTION	300 SERIES	500 SERIES
Yoke	76-2600-1	76-2600-1
No. 10-32 Hex nut (mtg. sensor arm)	54-2943-1	54-2943-1
No. 10 lock washer (mtg. sensor arm)	55-4464-1	55-4464-1
Sensor Arm Screw Mtg. Sensor Arm	50-1309-1	50-1309-1
S.S. Sensor Mtg. Plate	76-2603-1	76-2603-1


2
N
MOTOR
N.O.
CUBE SIZE SWITCH
C
N.C.
N.C.
HOMING SWITCH
N.O.
C
N.C.
N.O.
C
RELAY
DPDT SWITCH CENTER OFF
4
3
6
115 V. COIL
230 V. COMP.
5
CONTACTOR
N
115V.
L1
115V
230V.
L2
SOL. VAL.
W. PUMP
COND. FAN
T.D.
BIN SWITCH
N
L2
7
9
H.P.L. PRESSURE CUT OUT
6
2
5
L1
4
3
8
SHOWN IN ICE MAKING POSITION
230 V. 60 CY. 1 PH.
MER AND MED 500 SERIES AIR AND WATER FAN ON AIR COOLED ONLY

81-0353-1


CUBE SIZE SWITCH
N
N.O.
C
N.C.
MOTOR
N.C.
HOMING SWITCH
3
N.O.
C
N.C.
N.O.
C
RELAY
DPDT SWITCH CENTER OFF
5
4
6
3
2
115 VOLT SUPPLY
SOL. VALVE
W. PUMP
COND. FAN
T. D.
COMP.
N
7
6
5
4
3
L2
9
2
L1
8
BIN SWITCH
HIGH & LOW PRESSURE CUTOUT
SHOWN IN ICE MAKING POSITION
MER AND MED 300 SERIES AIR AND WATER
FAN ON AIR COOLED ONLY

81-0352-1

UNCRATING AND INSPECTION

All MGR and MGD 300 Series Ice Cubers and Bins are shipped in separate corrugated cartons.

To uncrate, remove the wood strips stapled around the lower edge of the carton, lift the carton upwards and off, and inspect for concealed damage. Machine section is held to the skid by two bolts. Remove these skid bolts and set the machine on the bin.

See Page 2 of manual for uncrating 500 Series Models MCR and MCD.

INSTALLATION LOCATION (See Page 2)

SERIAL AND ELECTRICAL PLATE (See Page 2)

REMOVING FRONT PANEL (See Page 2)

ELECTRICAL CONNECTIONS

300 Series MGR and MGD – 115V – 60 Cy. – 1 Ph.
500 Series MCR and MCD – 115V/230V – 60 Cy. – 1 Ph.
300 Series MGR and MGD – 230V – 50 Cy. – 1 Ph.
500 Series MGR and MGD – 230V – 50 Cy. – 1 Ph.

GENERAL REQUIREMENTS (See Page 3)

CONNECTING ELECTRICAL POWER (See Page 3)

CONNECTING WATER SUPPLY (See Page 3)

DRAIN CONNECTIONS (See Page 3)

CHECK LIST FOR STARTING UNIT

Remove tape securing the damper door, splash curtain, harvest rack, water pump, and float valve.

Remove and discard screw securing the water pump mounting bracket to the cabinet wall. Raise the pump enough to remove the corrugated packing protecting the pump during shipment.

Turn on water, and observe that the float valve shuts off the water when the level is about 2 inches deep. Loosen the wing nuts to adjust the entire float valve up or down. Tighten the wing nuts securely.

Turn the toggle switch, located on top of the ice size control box, to "water pump", left position. The water pump will start pumping water into the tube located at the top of the evaporator. Return water will flow into the sump.

CHECK FOR THE FOLLOWING THINGS:

A higher than necessary water level wastes water and reduces ice making capacity.
Turn the machine on and off several times to flush clean water through the system and to observe that waste water drains properly.

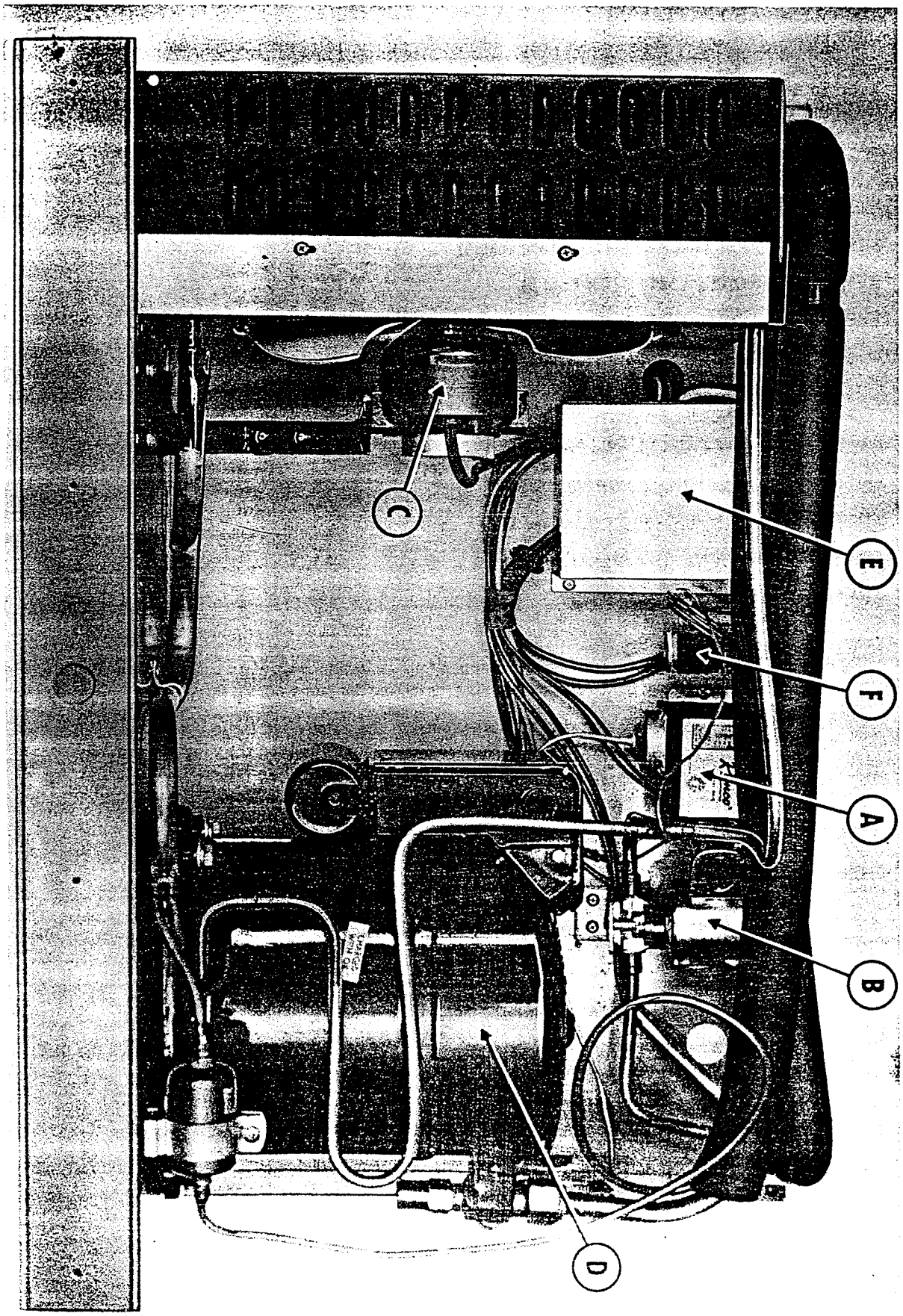
With the toggle switch in the "ICE" position, reach down and push the damper door open. The entire machine should stop and remain off until the damper is released.

The installer should replace the top on the head unit, put the front panel in place, and check the first harvest of cubes to see that the machine functions properly.

The basic change in the MG and MC Series has been the ice size control. This consists of a Ranco or Penn reverse-acting pressure control (opens on pressure rise) and a Paragon time clock.

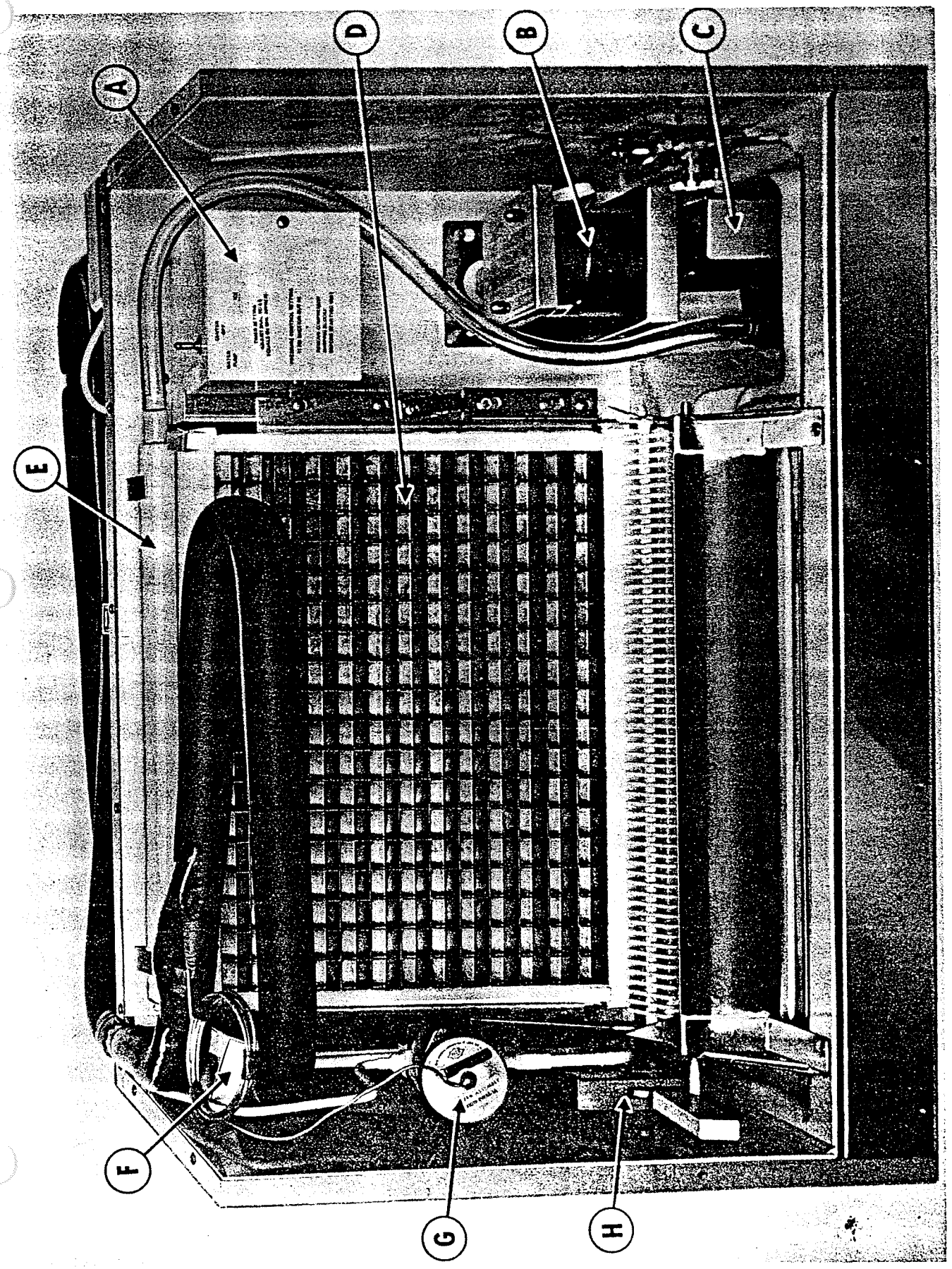
These controls are factory set and should need no adjustment except in altitudes above 5,000 feet.

All tubing and components are joined by silver brazing, except the suction service port.



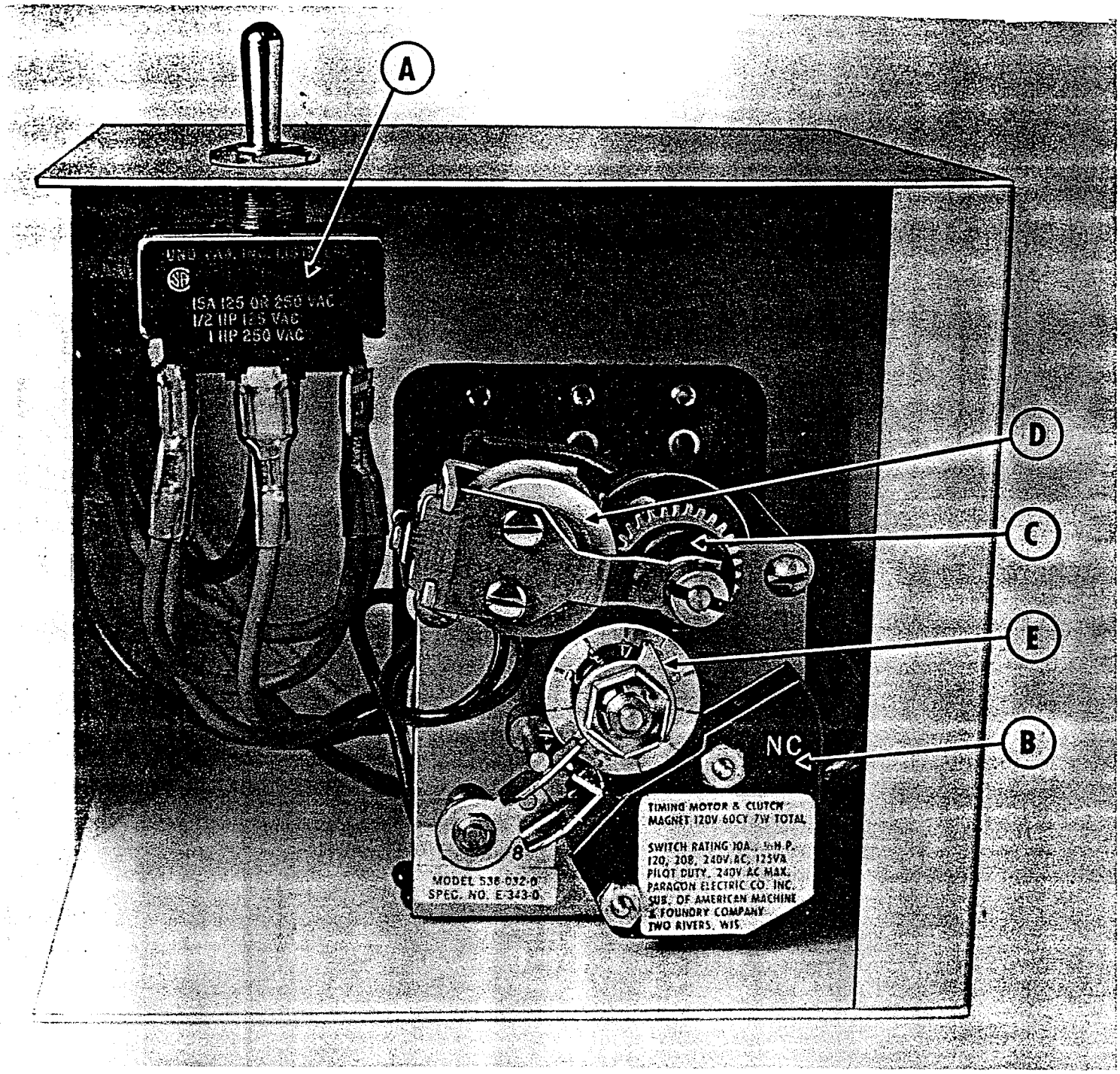
MG SERIES MACHINE SECTION

A. Ranco Reverse Acting Pressure Control
B. Hot Gas Solenoid Valve
C. Condenser Fan Motor
D. 1/2 H.P. Copelaweld Compressor
E. Terminal Box
F. High Pressure Cut-Out



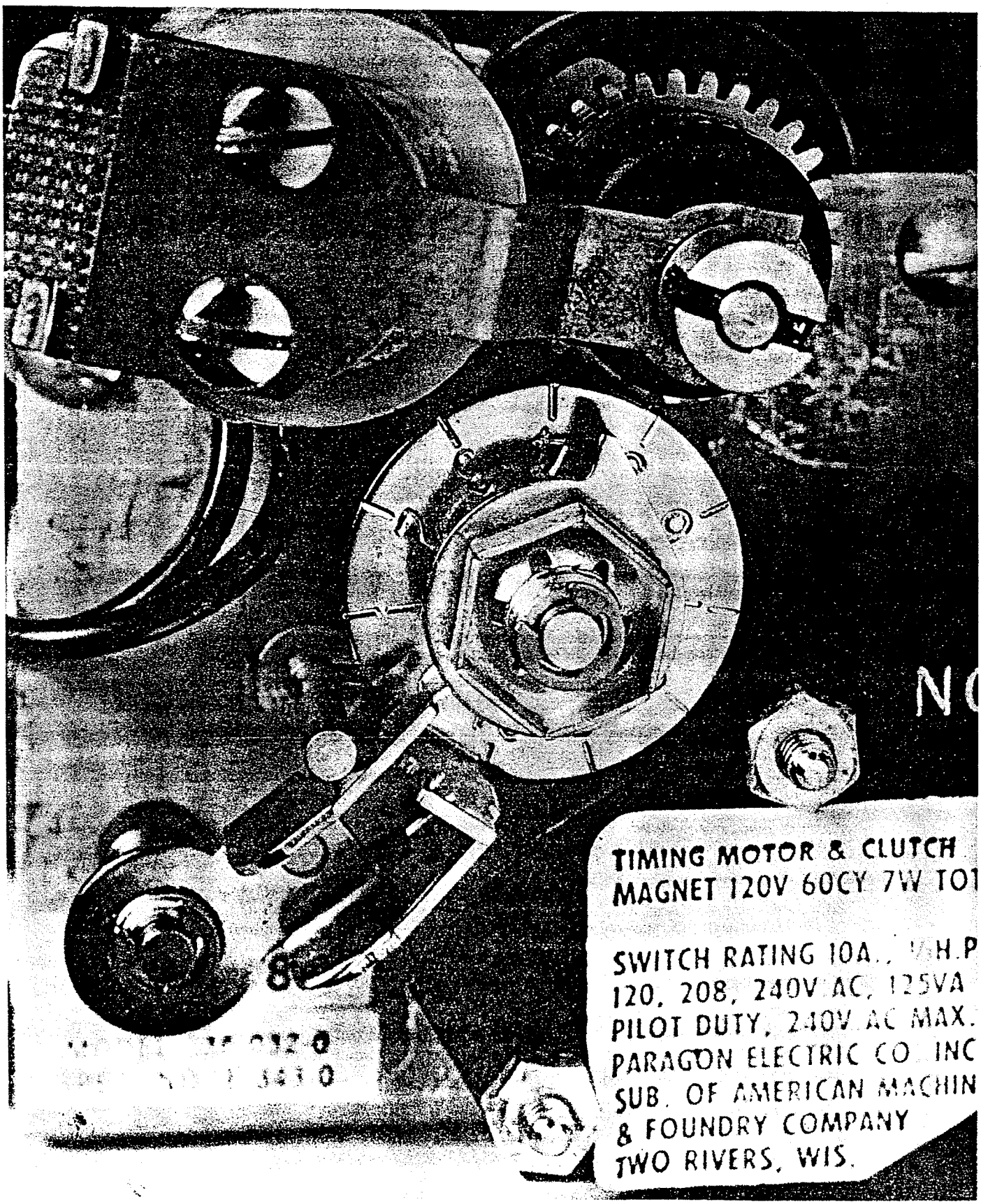
MG SERIES ICE MAKING SECTION

A. Time Clock Assembly
B. Water Pump
C. Float Assembly
D. Evaporator
E. Water Distributor Tube
F. Thermo Disc
G. Expansion Valve
H. Bin Switch



TIMER ASSEMBLY

A. Toggle Switch
B. Micro Switch
C. Clutch
D. Coil
E. Time Setting



TIME CLOCK DIAL SETTING

MANITOWOC'S FREEZE AND HARVEST CONTROL FOR MODELS MGR – MGD – MCR – MCD

Freeze and harvest cycles on the above model Manitowoc Cubers are regulated by three very simple controls. The basic control is a low side reverse-acting pressure regulator made by either Ranco or Penn. This is mounted in the compressor compartment at the upper edge of the bulk head which separates this area from the freezing section. The second control is a Paragon Timer, located in the upper right hand portion of the freezing compartment. The third is a thermo disc installed on the suction line outlet of the evaporator.

On starting a warm machine, the suction pressure may be upwards of 75 PSIG; but as the compressor runs, the suction pressure and temperature within the line is lowered. When the line temperature reaches 35°F., the thermo disc "cuts in" and closes the clutch on the timer and holds it "in" continuously through the freezing cycle. When the suction pressure reaches 9 lbs. in the regular cube unit (11 lbs. in the dice cube unit), the pressure control electrically activates the timer motor. The cam on the timer motor is set at approximately 4½. This is equal to 6½ minutes running time. The clock continues to run until the cam stalls against the harvest micro switch. This places the unit in defrost, and it will stay in defrost until released by the bin damper switch when the sheet of ice falls into the bin. The thermo disc remains closed during the entire harvest cycle. It opens only when the temperature of the suction line rises to 65°. This is a safety measure to prevent overheating in case the unit would stay in harvest.

If the dimple in the cubes is too pronounced, you may set the timer dial to 5. This will increase the freezing time. Likewise, if the bridging between cubes is too heavy, you may set the dial back to about 4. This shortens the freezing time.

CONTROLS

HIGH PRESSURE CUT-OUT (See Page 6)

SUCTION LINE THERMO DISC

The suction line thermo disc is located on the suction line behind the evaporator on MC500 Series, and in the upper left hand front corner on the MC300 Series. This control is a Klixon switch that opens at 65°F + – 5°, and closes at 35°F + – 5°. The thermo disc acts only as a safety device to prevent overheating of the machine. Should the damper door switch fail after harvest, the thermo disc will open. When the suction temperature reaches 65°F. + – 5° this will return the machine to its normal freezing cycle by disengaging the clock clutch located on the clock.

TOGGLE SWITCH

The main power "ON and OFF" toggle switch is a double pole, double throw switch with "OFF" in the center position. With the toggle switch in the "water pump" (Left) position, only the water pump and the condenser fan operate. This is for checking the water inlet float level, pump operation, and for circulating cleaning solution.

With the toggle switch in the "ICE" (Right) position, the water pump, compressor, and condenser fan (air cooled models), run for a normal ice making cycle.

RANCO OR PENN PRESSURE CONTROL

This control is a reverse-acting pressure control that opens on pressure rise. Upon decrease in suction pressure (11 lbs. dice cube, 9 lbs. regular cube), the pressure control closes, actuating the time clock.

PARAGON TIME CLOCK

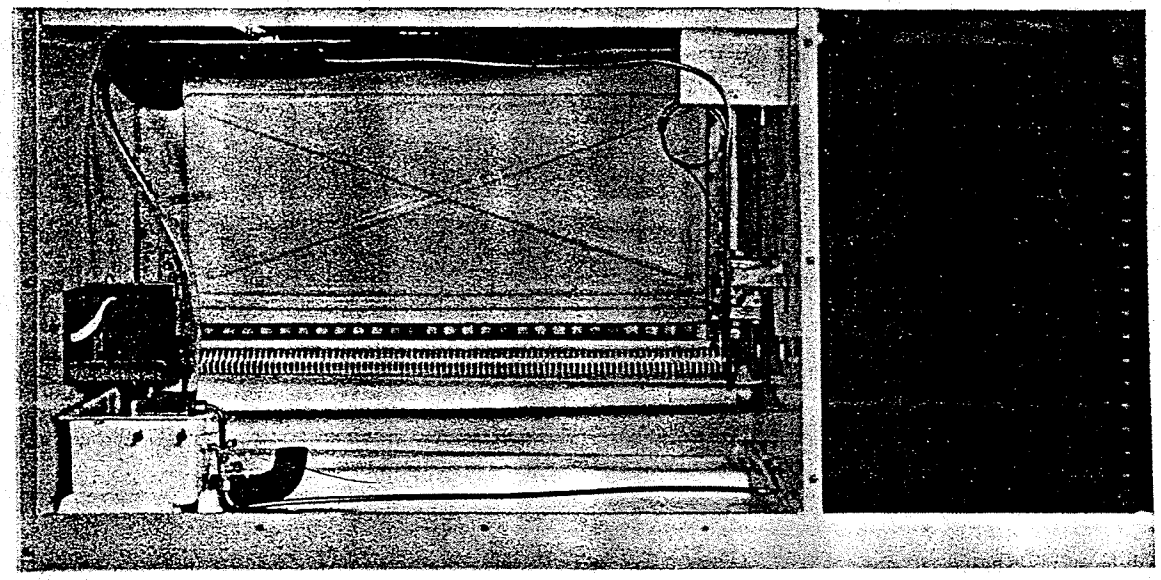
After the pressure control energizes the time clock, the time clock motor turns a cam for 6½ minutes (number 4½ on time clock face). When the 6½ minutes have elapsed, the cam trips a micro switch which in turn cycles the machine into hot gas or harvest cycle. Simultaneously, the water pump (and condenser fan on air cooled models) are shut off.

DAMPER DOOR SWITCH

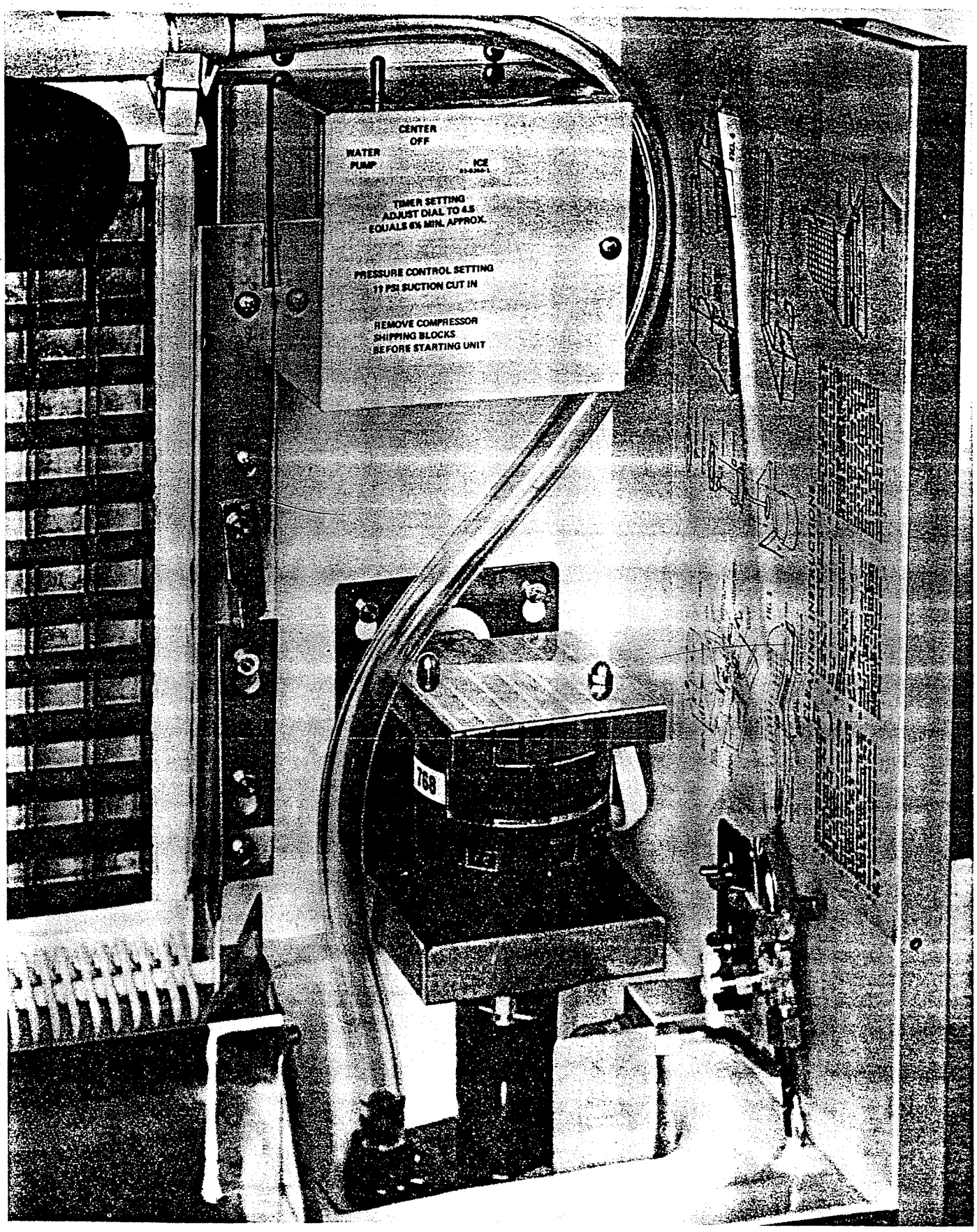
When the harvest is completed, the ice falls through the damper door tripping the damper door switch. This in turn, opens the holding clutch on the time clock momentarily to reset the clock and return the machine to its normal freeze cycle.

When the ice bin is full, the ice holds the bin switch open keeping the machine shut off.

Should the damper switch fail, the suction line thermo disc will open to reset the time clock.



MC 500 SERIES ICE CUBER
60 and 50 CYCLE



WATER PUMP AND TIME CLOCK ASSEMBLY

CLEANING INSTRUCTIONS – REFER TO 300 AND 500 SERIES (See Pages 7 and 8)

SERVICE ANALYSIS

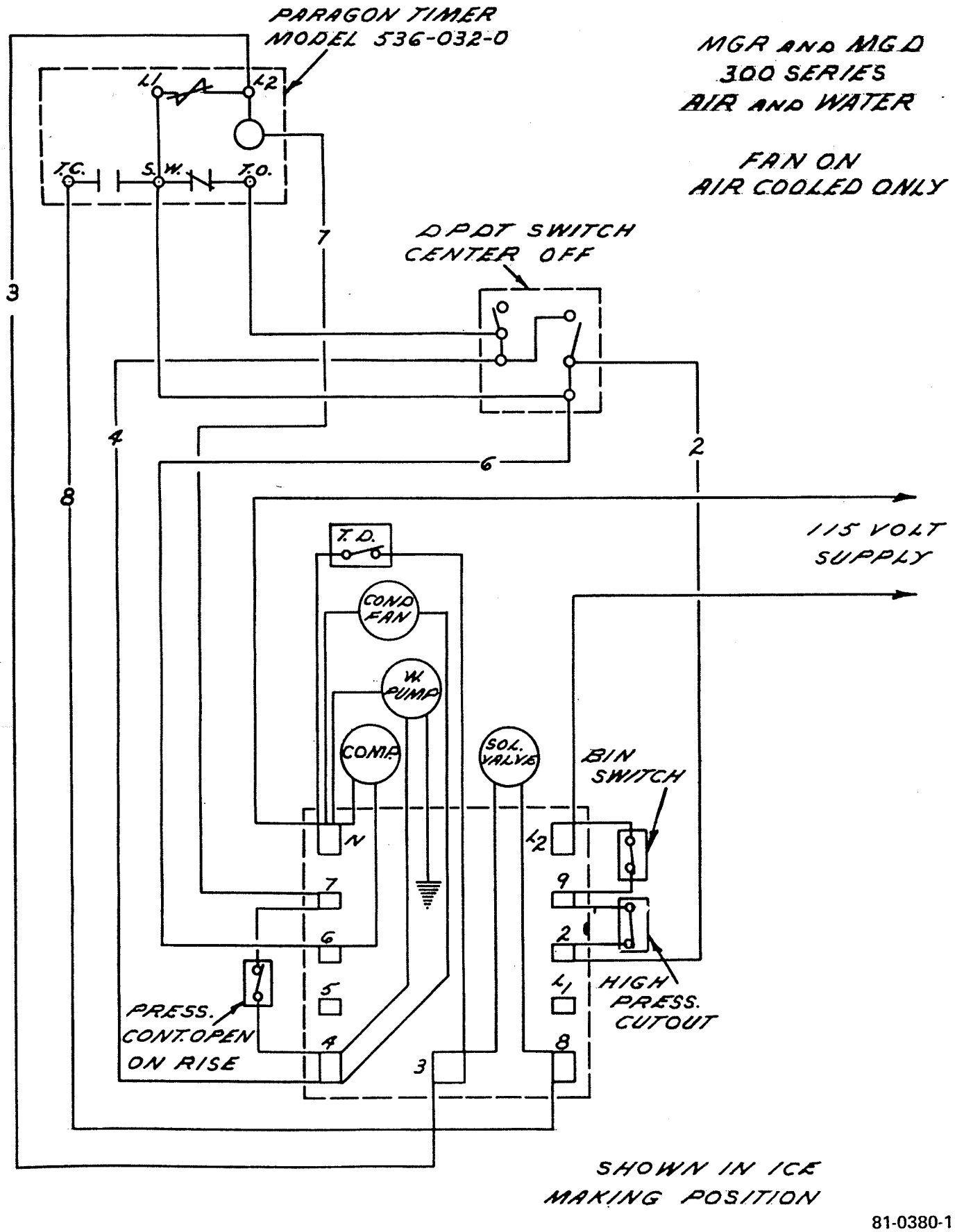
COMPLAINT	CAUSE	CORRECTIVE MEASURES
Slow harvest.	Contaminated or limed water system.	Clean water system.
	Low ambient (air cooled models)	Must be above 50°F.
	Water valve set too low	Adjust water valve to 125 PSIG head pressure
	Leaking water valve (water cooled models)	Replace water valve.
High head pressure	Air in system.	Evacuate and recharge
	Defective water valve (water cooled models)	Replace water valve
	Defective fan (air cooled models)	Replace fan
	Water valve not properly adjusted	Adjust water valve
	Contaminated air cooled condenser.	Clean condenser
	Defective expansion valve	Replace
High suction pressure	Contaminated condenser	Clean
	Defective fan.	Replace fan
	Defective water valve (water cooled models)	Replace or adjust water valve
	Moisture in system	Replace drier, evacuate, and recharge
Low Suction Pressure	Shortage of refrigerant	Locate leak and repair
	Moisture in system	Replace drier, evacuate system
	Ambient too low for operation	Must be above 50°F.
Unit noisy	Fan shroud touching fan blades	Adjust fan mounting brackets
Ice maker will not stop when full of ice.	Damper door not properly adjusted.	Adjust damper door
	Defective damper door micro switch	Replace damper door micro switch
Time clock will not operate	Ranco pressure control not closing.	Replace control.
Time clock will not actuate harvest	Timer micro defective.	Replace micro switch
	Thermo disc is not closed	Check thermo disc.
Small cube bridge	Ranco pressure control not opening.	Replace control.
	Leak in refrigeration system	Locate leak, repair, evacuate, and recharge.
Machine will not cycle into harvest.	Defective time clock clutch coil.	Replace
	Defective time clock micro switch	Replace

PARTS LIST FOR MGR, MGD and MCR, MCD CUBERS (60 Cycle)

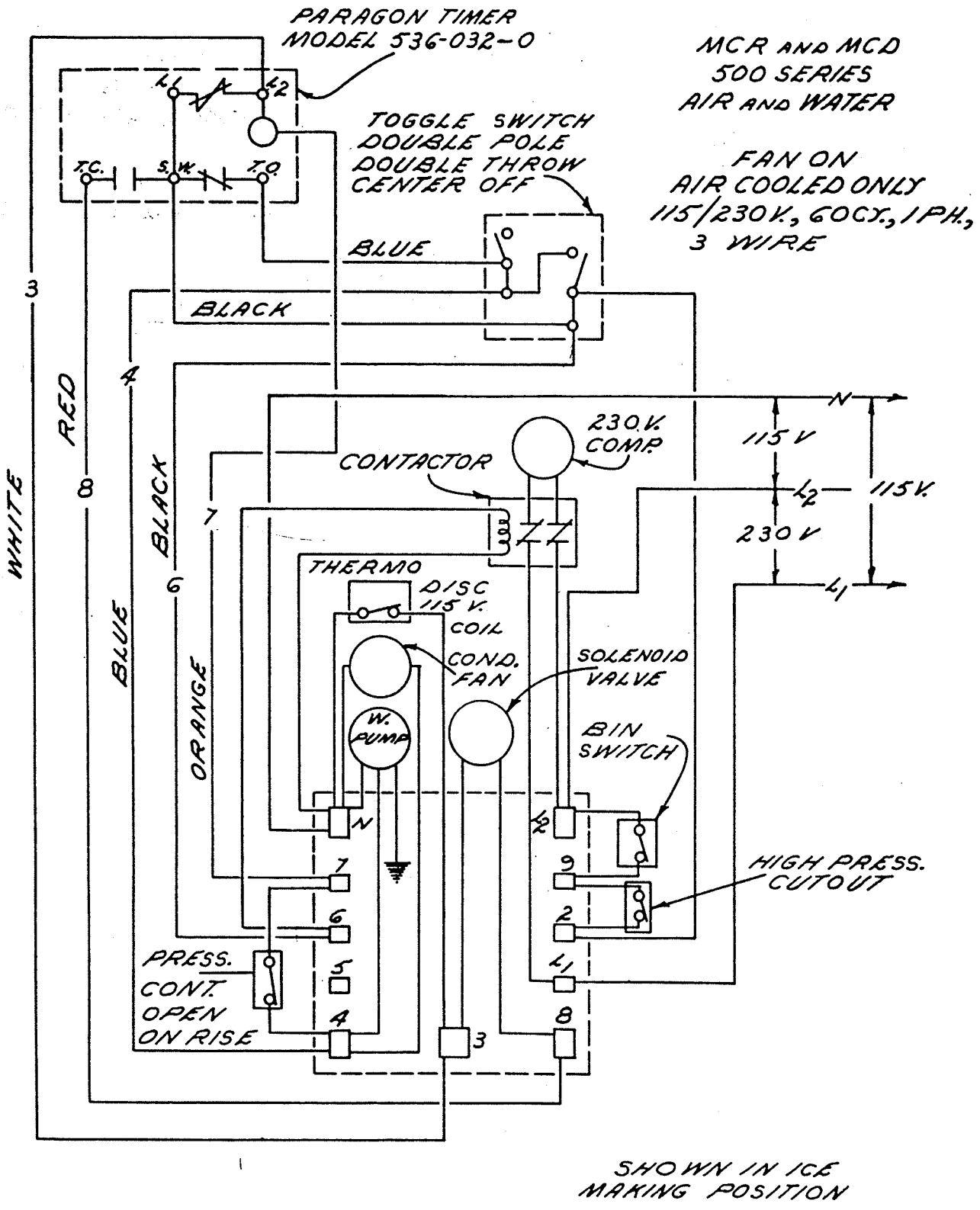
	300 Series MG	500 Series MC
Paragon Timer	24-0217-1	24-0217-1
Toggle Switch	23-0056-1	23-0056-1
Hot Gas Solenoid	24-0218-1	24-0116-1
High Pressure Cut-Out	23-5078-1	
Ranco Pressure Control	23-5079-1	23-5079-1
Fan Motor (Air Cooled)	24-0213-1	24-0159-1
Water Valve (Water Cooled)	13-6117-1	13-6117-1
Float Assembly	13-6103-1	13-6103-1
Water Pump	14-8023-1	14-8023-1
Bin Door Micro	23-0060-1	23-0060-1
Water Restrictor	10086-1	
Thermo Disc	23-5002-1	23-5002-1
Compressor	14-0001-1	14-0170-1
Relay	15-0001-1	15-0235-1
Start Capacitor	15-0002-1	15-0237-1
Run Capacitor		15-0238-1
Overload Protector	15-0003-1	
Water Curtain	12521-2	12629-1
Harvest Rack	10065-1	76-2621-1
Water Supply Tube (Tygon)	44-0757-1	44-0757-1
Rubber Stopper	44-0138-1	44-0138-1
Water Distributor Assembly	12541-1	12558-1
Damper Door Assembly	10075-1	10280-1
Expansion Valve		13-6110-1
Expansion Valve Power Assembly	13-6118-1	
Expansion Valve Cage	13-6121-1	
High Low Pressure Control		23-5076-1

PARTS LIST FOR MGR, MGD and MCR, MCD CUBERS (50 Cycle)

Toggle Switch	23-0056-1	23-0056-1
High Pressure Cut-Out	23-5078-1	
Ranco Pressure Control	23-5079-1	23-5079-1
Water Valve (Water Cooled)	13-6117-1	13-6117-1
Float Assembly	13-6103-1	13-6103-1
Bin Door Micro	23-0060-1	23-0060-1
Water Restrictor	44-0001-1	
Thermo Disc	23-5002-1	23-5002-1
Water Curtain	90-0003-1	
Harvest Rack	10065-1	76-2621-1
Water Supply Tube (Tygon)	44-0757-1	44-0426-1
Rubber Stopper	44-0138-1	44-0138-1
Water Distributor Assembly	12541-1	12558-1
Damper Door Assembly	10075-1	10280-1
Expansion Valve		13-6110-1
Expansion Valve Power Assembly	13-6118-1	
Expansion Valve Cage	13-6121-1	
High Low Pressure Control		23-5076-1
Compressor	14-0005-1	14-0006-1
Water Pump	14-8024-1	14-8025-1
Hot Gas Solenoid	24-0401-1	24-0402-1
Fan Motor (Air Cooled)	24-1201-1	24-1202-1
Paragon Timer	24-0603-1	24-0603-1


PARAGON TIMER
MODEL 536-032-0
MGR AND MGD
300 SERIES
AIR AND WATER
FAN ON
AIR COOLED ONLY
L1
L2
T.C.
S.W.
T.O.
DPDT SWITCH
CENTER OFF
3
7
4
6
2
8
115 VOLT
SUPPLY
T.D.
COND FAN
W. PUMP
COMP.
SOL. VALVE
BIN SWITCH
N
L2
9
7
2
6
L1
5
HIGH PRESS. CUTOUT
PRESS. CONT. OPEN ON RISE
4
3
8
SHOWN IN ICE
MAKING POSITION

81-0380-1



SHOWN IN ICE MAKING POSITION

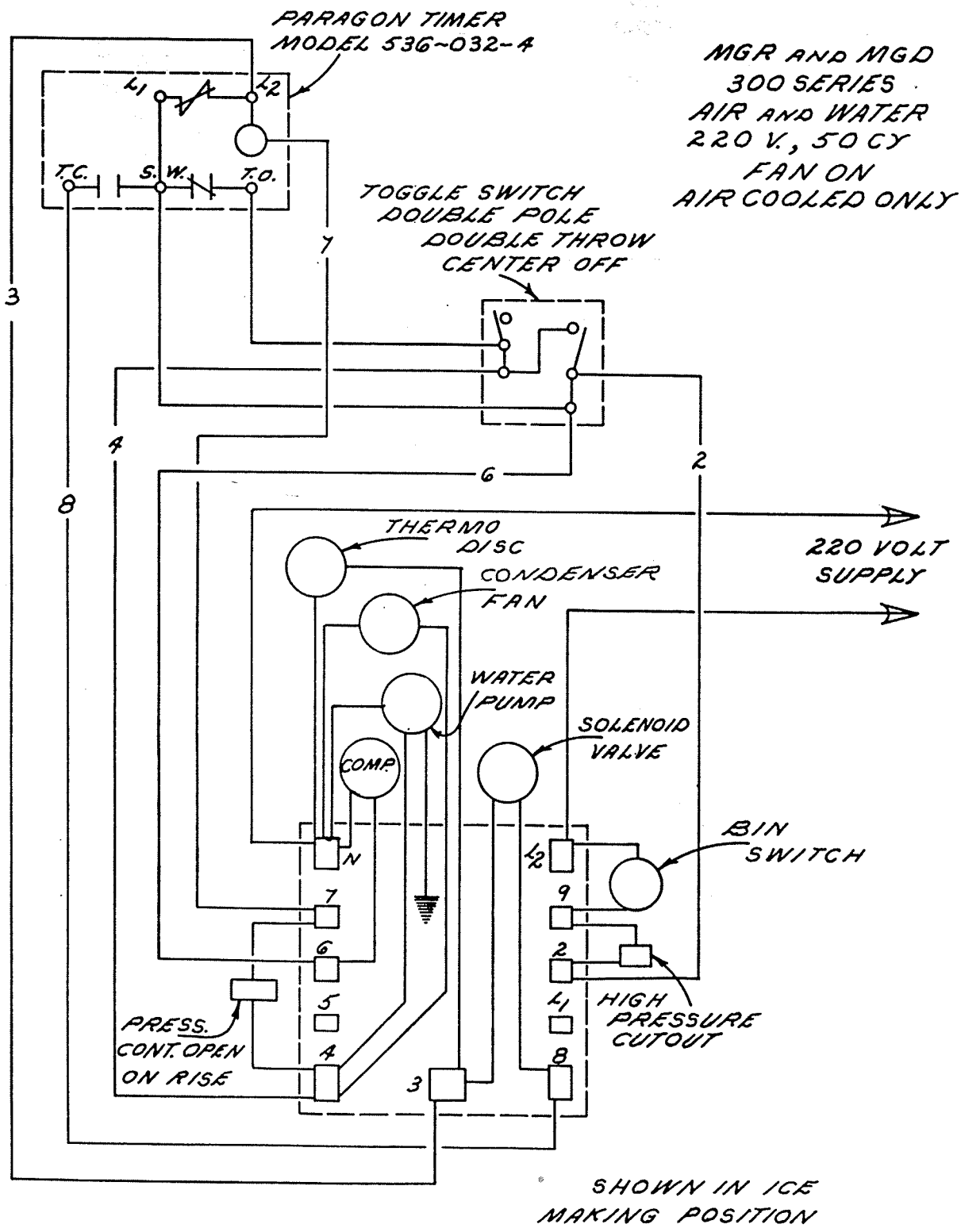
81-0406-1

60 CYCLE

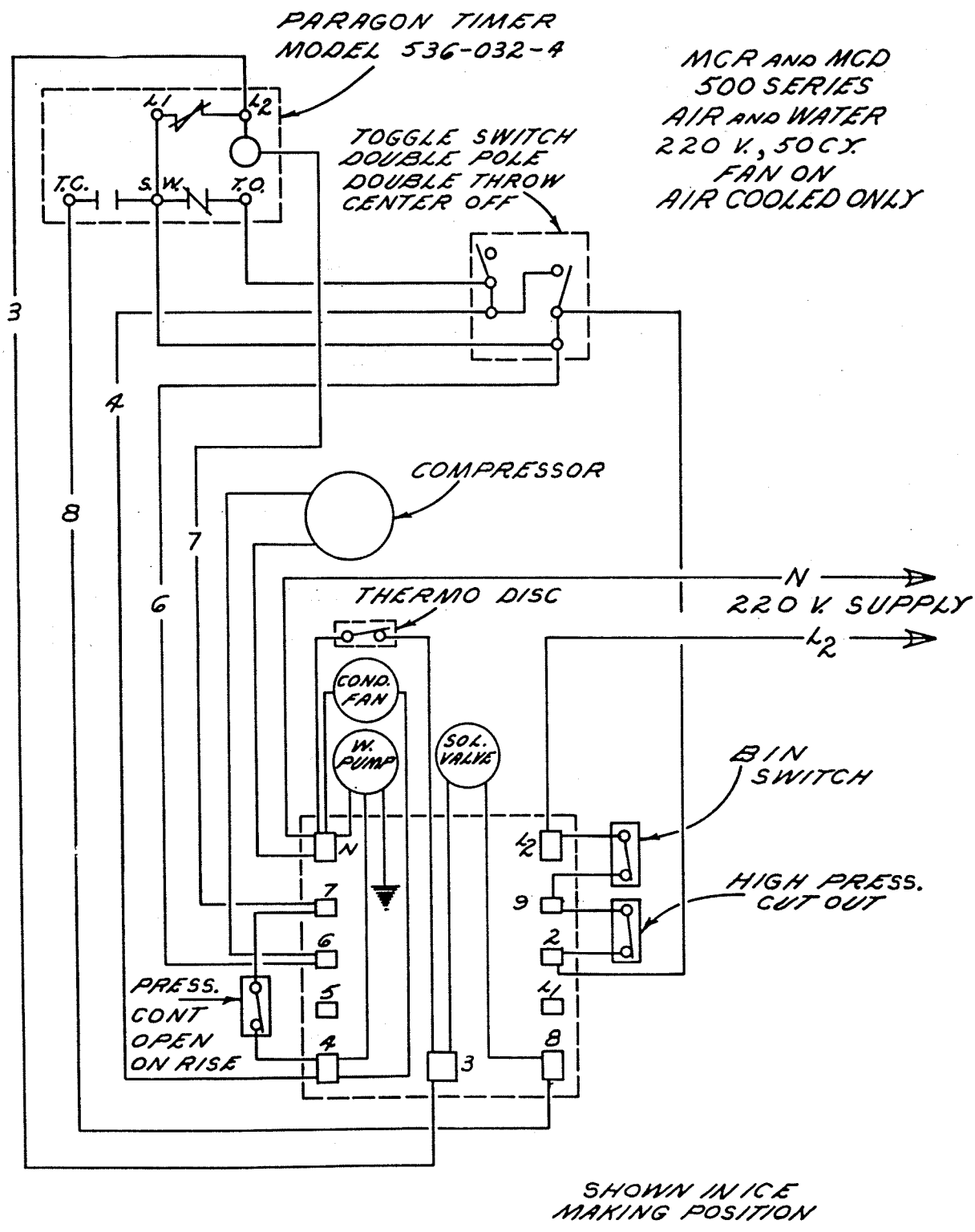
CUBER MODEL	MER & MED 300 SERIES WATER COOLED 60 Cycle	MER & MED 300 SERIES AIR COOLED 60 Cycle	MCR-MCD & MER MED 500 SERIES WATER COOLED 60 Cycle	MCR-MCD and MER-MED 500 SERIES 60 Cy. AIR COOLED	MGR & MGD 300 SERIES WATER COOLED 60 Cycle	MGR & MGD 300 SERIES AIR COOLED 60 Cycle
Compressor Model	RSF20050-1AA	RSF20050-1AA	SSC2-0100-CAV	SSC2-0100-CAV	RSN2-0050-1AA	RSN2-0050-1AA
Compressor Voltage	115V-60Cy-1Ph	115V-60Cy-1Ph	230V-60Cy-1Ph	230V-60Cy-1Ph	115V-60Cy-1Ph	115V-60Cy-1Ph
Winding Resistance Common to Run	.6 OHMs	.6 OHMs	1.7 OHMs	1.7 OHMs	.6 OHMs	.6 OHMs
Winding Resistance Common to Start	3.8 OHMs	3.8 OHMs	6.3 OHMs	6.3 OHMs	3.8 OHMs	3.8 OHMs
Start Capacitor Rating	189-210MFD220V	189-210MFD220V	145-175MFD220V	145-175MFD220V	189-210MFD-230V	189-210MFD-230V
Run Capacitor Rating			15 MFD-370V	15 MFD-370V		
Fan Motor Model	MORRILL	MORRILL	MORRILL	MORRILL	MORRILL	MORRILL
Fan Motor Amps	.82	.82	1.4	1.4	.82	.82
Fan Motor Watts	9 Watt	9 Watt	35 Watt	35 Watt	9 Watt	9 Watt
Fan Motor Volts	115 Volts	115 Volts	115 Volts	115 Volts	115 Volts	115 Volts
Fan Winding Resistance	28 OHMs	28 OHMs	11 OHMs	11 OHMs	28 OHMs	28 OHMs
Solenoid Valve Volts	115 V	115 V	115 V	115 V	115 V	115 V
Solenoid Valve Winding Resistance	49 OHMs	49 OHMs	49 OHMs	49 OHMs	49 OHMs	49 OHMs
Little Giant Water Pump Winding Resistance	11 OHMs	11 OHMs	11 OHMs	11 OHMs	11 OHMs	11 OHMs
Little Giant Water Pump Amperage	1.5 Amps	1.5 AMPS	1.5 Amps	1.5 Amps	1.5 Amps	1.5 Amps
Hartell Water Pump Winding Resistance	9.5 OHMs	9.5 OHMs	9.5 OHMs	9.5 OHMs	9.5 OHMs	9.5 OHMs
Hartell Water Pump Amperage	1.8 Amps	1.8 Amps	1.8 Amps	1.8 Amps	1.8 Amps	1.8 Amps
Refrigerant Charge –R-12	36 ozs.	36 ozs.	41 Ozs.	42 Ozs.	36 ozs.	28 ozs.
Normal machine amperage	13 Amps	14 Amps	10.5 Amps.	12 Amps	14 Amps	14 Amps
Room Temperature	70 | 90 | 110	70 | 90 | 110	70 | 90 | 110	70 | 90 | 110	70 | 90 | 110	70 | 90 | 110
HEAD PRESSURE Maximum		130 | 160 | 200		136 | 161 | 210		135 | 175 | 215
HEAD PRESSURE Minimum		105 | 125 | 170		113 | 138 | 180		110 | 135 | 175
Suction Pressure Maximum		18 | 19 | 21		16 | 17 | 20		21 | 19 | 28
Suction Pressure Minimum		9 | 10 | 11		5 | 6 | 6		8 | 9 | 10
Water Temperature Condenser Out	100 | 100 | 100		100 | 100 | 100		100 | 100 | 100	

50 CYCLE

CUBER MODEL	MGR & MGD 300 SERIES AIR COOLED 50 CYCLE	MGR & MGD 300 SERIES WATER COOLED 50 CYCLE	MCR & MCD 500 SERIES AIR COOLED 50 CYCLE	MCR & MCD 500 SERIES WATER COOLED 50 CYCLE
Compressor Model	RSH2-0050-1AG	RSH2-0050-1AG	SSE-0100-CAG	SSE-0100-CAG
Compressor Voltage	230V-50Cy-1Ph.	230V-50Cy-1Ph.	230V-50Cy-1Ph	230V-50Cy-1Ph
Winding Resistance Common to Run	1.2 OHMS	1.2 OHMS		
Winding Resistance Common to Start	7.6 OHMS	7.6 OHMS		
Start Capacitor Rating	41-53 MFD-220VAC	41-53 MFD-220VAC		
Run Capacitor Rating				
Fan Motor Model	MORRILL	MORRILL	ELECTRIC MOTORS	ELECTRIC MOTORS
Fan Motor Amps	.5	.5	.54	.54
Fan Motor Watts	7.5 WATT	7.5 WATT	23.2 WATTS	23.2 WATTS
Fan Motor Volts	230 VOLTS	230 VOLTS	230 VOLTS	230 VOLTS
Fan Winding Resistance	20 OHMS	20 OHMS	18 OHMS	18 OHMS
Solenoid Valve Volts	230 VOLT	230 VOLT	230 VOLT	230 VOLT
Solenoid Valve Winding Resistance	22 OHMS	22 OHMS	22 OHMS	22 OHMS
Hartell Water Pump Winding REsistante	46.5 OHMS	46.5 OHMS	46.5 OHMS	46.5 OHMS
Hartell Water Pump Amperage	.77 AMPS	.77 AMPS	.77 AMPS	77 AMPS
Refrigerant Charge — R-12	28 Ozs.	36 Ozs.	42 Ozs.	41 Ozs.
Normal machine amperage	7.1 AMPS	7.1 AMPS	14 AMPS	10.5 AMPS
Room Temperature	70 90 110	70 90 110	70 90 110	70 90 110
HEAD PRESSURE Maximum	135 175 215		136 161 210	
HEAD PRESSURE Minimum	110 135 175		113 138 180	
SUCTION PRESSURE Maximum	21 19 28		16 17 20	
SUCTION PRESSURE Minimum	8 9 10		5 6 6	
Water Temperature Condenser Out		100 100 100		100 100 100


PARAGON TIMER
MODEL 536-032-4
MGR AND MGD
300 SERIES
AIR AND WATER
220 V., 50 CY
FAN ON
AIR COOLED ONLY
L1
L2
T.C.
S.W.
T.O.
TOGGLE SWITCH
DOUBLE POLE
DOUBLE THROW
CENTER OFF
3
7
4
6
2
8
THERMO
DISC
CONDENSER
FAN
220 VOLT
SUPPLY
WATER
PUMP
SOLENOID
VALVE
COMP.
BIN
SWITCH
N
L2
9
7
6
2
5
L1
HIGH
PRESSURE
CUTOUT
PRESS.
CONT. OPEN
ON RISE
4
3
8
SHOWN IN ICE
MAKING POSITION

81-0411-1


PARAGON TIMER
MODEL 536-032-4
MCR AND MCD
500 SERIES
AIR AND WATER
220 V., 50 CY.
FAN ON
AIR COOLED ONLY
L1
L2
T.C.
S.W.
T.O.
TOGGLE SWITCH
DOUBLE POLE
DOUBLE THROW
CENTER OFF
3
4
8
7
6
COMPRESSOR
THERMO DISC
N
220 V. SUPPLY
L2
COND. FAN
W. PUMP
SOL. VALVE
BIN SWITCH
HIGH PRESS. CUT OUT
PRESS. CONT OPEN ON RISE
9
2
5
1
SHOWN IN ICE MAKING POSITION

81-0410-1

SERVICE AND PARTS PROCEDURES

Order and Pricing Procedure

All replacement parts for the Manitowoc ice machine equipment are to be ordered directly from the factory; however, any distributors or dealers who may be interested in stocking replacement parts for the machines they sell, in order to provide their customers with a prompt and efficient service, may purchase these parts with the understanding that, any time they feel they have parts they no longer need or feel they no longer want to carry replacement parts, they are to notify the factory's Parts Department as to which parts they wish to return.

Upon receipt of this listing, we will immediately send them written authorization to return these parts; and upon receipt of these parts, full credit will be issued. There will be no charge for restocking these parts. Of course, credit can only be issued if the parts are returned in a new and unused condition.

When placing your order, be sure to do as follows:

1. Print name and address plainly.
2. If special routing is requested, please show the name of the carrier.
3. Indicate quantity desired, print catalogue part number plainly and print name as shown in the catalogue.
4. Indicate model and serial number of the unit. The complete serial number is needed.
5. If uncertain as to the proper part number, please give a complete description or sketch of the part and the location of the part which is needed.
6. Check to see that all required information is contained in your order to facilitate prompt shipment.

All replacement parts are shipped from the factory on a f.o.b. Manitowoc basis. It is company policy to bill for all field replacement parts, according to terms as specified by our Credit Department.

All parts orders will be honored by the factory and will be billed according to our parts list schedules.

Parts which are covered by our warranty policy are to be returned to the factory for credit, transportation charges prepaid. Upon receipt of these parts here at the factory, they will be inspected; and if they are found to be defective, in material and workmanship, under normal use and service, credit will be issued.

Transportation companies are responsible for damage in transit as all shipments are tendered to them in good condition; and our responsibility ceases upon receipt of a signed bill of lading from the carrier. If the shipment arrives in a damaged condition or is short, the delivering carrier should be notified immediately.

Return of Defective Parts

All defective parts returned to the factory, transportation prepaid, must be tagged with a return material tag properly filled in. It is especially important that the cabinet serial number be secured and recorded on the tag, securing as much information as possible about the nature of the defect to prevent any delays in issuing credit. All parts should be returned as they are removed from the cabinet and not mutilated or tampered with. The return material tags are provided on a no-charge basis by the factory upon receipt of your request.

Our warranty and protection plan does not apply to cabinets that are not registered; therefore, it is necessary that, upon completion of the installation of the cabinet, the registration card be signed on the date of installation and mailed promptly to the factory Service Department in order for the cabinet to be registered.

Return of Hermetically-Sealed Units

Extreme care should be used in servicing the hermetically-sealed mechanism. It is important that the trouble be correctly determined before the unit is changed. Be sure it is not the control, relay, or overload causing the trouble. The defect must be listed on the return material tag.

The inoperative assembly should be returned to the factory, freight prepaid, making certain that all service valves and tubing are sealed properly so as not to let in dirt, air, or moisture into the system. After inspection of the returned hermetic mechanism, if it has been determined that the reason for failure is the result of defective workmanship and material, credit will be issued. If a returned hermetic mechanism is found, after inspection, not to be defective, it will be returned to the sender, along with

the necessary charges to cover the inspection, handling, and freight. Credit will not be allowed for defective mechanisms damaged from improper packaging or handling.

Return of Complete Machines

No complete machines may be shipped back to the factory for repairs without first securing prior permission from the factory. If an unauthorized shipment is received at the factory, it will be refused by our warehouse and immediately returned to the sender. Upon receipt of your request to return a cabinet, if we feel that your request is legitimate, you will be sent an authorized return label authorizing you to return this cabinet to the factory freight prepaid.

Service and Labor Charges

In accordance with our warranty and protection plan, which is included in each cabinet, this protection plan provided is available only through distributors and dealers who will be solely responsible for service and labor charges.

Ice Machine and Bin Warranty

From the date of original installation, we do hereby warrant each new Ice Machine and Bin to be free from defects in material and workmanship, under normal use and service, for a period of one year, and four additional years on the hermetic motor compressor in the Ice Machine.

Our obligation under this warranty is limited solely to correcting or replacing without charge at the factory in Manitowoc, Wisconsin any part or parts of this equipment which shall have been returned, transportation prepaid, and which our examination discloses to our satisfaction to be defective.

This warranty does not apply to any equipment that has been damaged by flood, fire, or suffered abuse, misuse, neglect or accident, or to any Ice Machine which has been altered so as to affect performance or reliability, except where such alteration has been accomplished with our prior written consent.

We further limit this warranty in that we shall not be held liable under this contract for any special, indirect, or consequential damages whatsoever resulting from any defect in material and workmanship which interferes with the normal use and service of such Ice Machine and Bin.

This warranty is a complete and exclusive statement of all terms of the agreement between the Manitowoc Equipment Works and the owner of the equipment, and all representations of the parties. This agreement shall not be varied, supplemented, qualified or interpreted by any prior course of dealing between the parties or by any usage of the trade.

Sales are made on the express understanding that there are no express or implied warranties other than the express warranty herein contained and that there are no implied warranties that the goods shall be merchantable or fit for a particular purpose other than the expressed one year and five year warranty set forth above.

To validate this warranty, the registration card must be signed on the date of installation and mailed promptly to the Manitowoc Equipment Works, Manitowoc, Wisconsin.

DEALER _____

_____

_____

INSTALLATION DATE _____

MANITOWOC EQUIPMENT WORKS
Div. of THE MANITOWOC COMPANY
500 South 16th Street
Manitowoc, Wisconsin 54220

Form 80-0032-1
ALL