

# MC35 SERVICE MANUAL

## TABLE OF CONTENTS

Specifications .....	Page 2
General Information.....	Page 3
Location & Stacking.....	Page 4
Bin Thermostat Installation .....	Page 5
Electrical & Water Installation .....	Page 6
Final Check List .....	Page 7
Start Up .....	Pages 8-11
Operation.....	Pages 12-13
Adjustment, Removal , and Replacement.....	Pages 14-20
Service Diagnosis.....	Pages 21-23
Maintenance and Cleaning .....	Pages 24-26

***Service Parts lists and wiring diagrams are located in the center of this manual, printed on yellow paper.***

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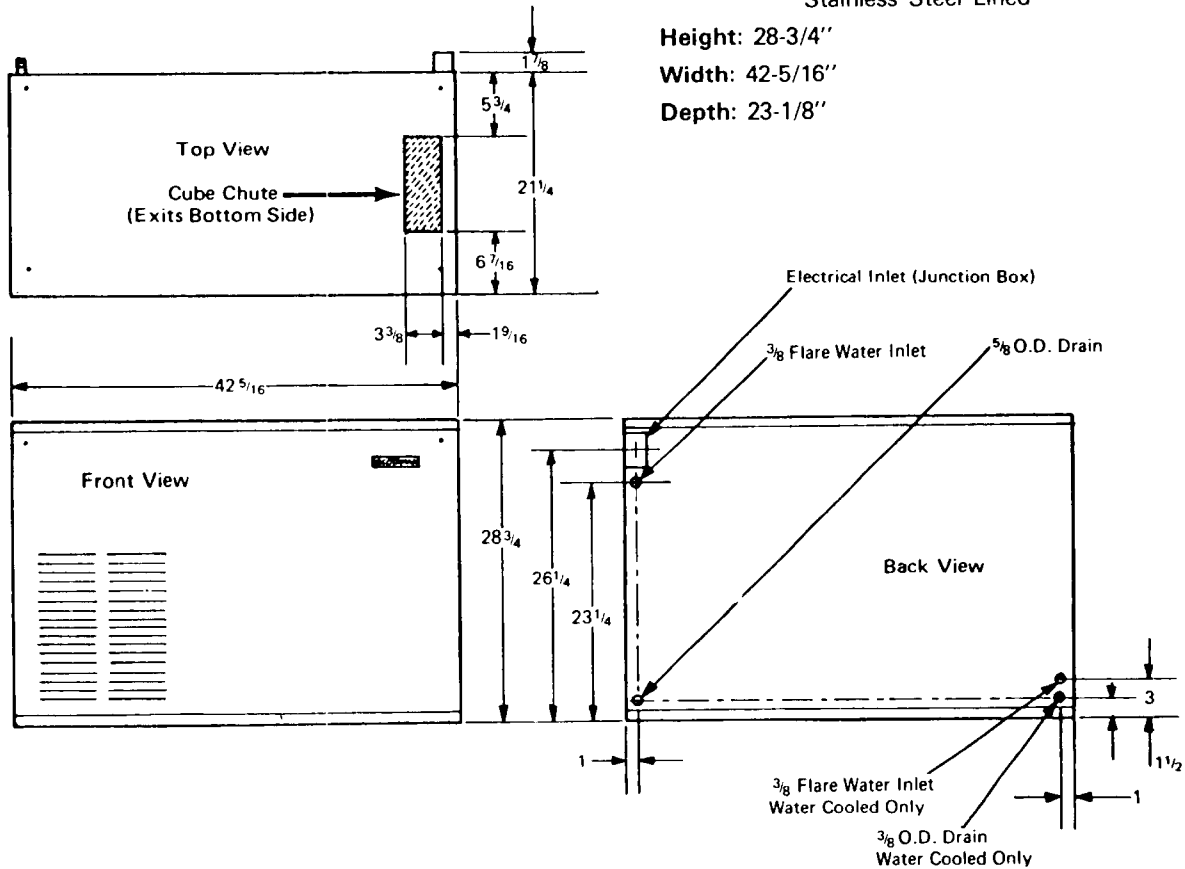


**SCOTSMAN**

# MC35 SERIES

Storage Bin: B40, B60, B80 and B90  
Stainless Steel Lined

Height: 28-3/4"  
Width: 42-5/16"  
Depth: 23-1/8"



## SPECIFICATIONS:

Model	Condensing Unit	Compressor Horsepower	Finish (P-painted) (SS-Stainless Steel)	Shipping Weight (lbs.)	Basic Electricals			Minimum Wire Sizes (w-wire) (g-gauge)			Total Amperages		
					Air Cooled			Water Cooled			Total Amperages		
					MCL35	MCM35	MCS35	MCL35	MCM35	MCS35	MCL35	MCM35	MCS35
MCL35AE	Air	1	P*	318									
MCL35AS	Air	1	SS	318									
MCL35WE	Water	1	P*	308									
MCL35WS	Water	1	SS	308									
MCM35AE	Air	1	P*	318									
MCM35AS	Air	1	SS	318									
MCM35WE	Water	1	P*	308									
MCM35WS	Water	1	SS	308									
MCS35AE	Air	1	P*	318									
MCS35AS	Air	1	SS	318									
MCS35WE	Water	1	P*	308									
MCS35WS	Water	1	SS	308									
					115/230/60/1	3w 14g	3w 14g	3w 14g	11.6	11.6	11.6		
					115/208-220/60/3	4w 14g	4w 14g	4w 14g	9.9	9.9	9.9		
					115/208/60/1	3w 14g	3w 14g	3w 14g	12.9	12.9	12.9		
					115/230/60/1	3w 14g	3w 14g	3w 14g	10.9	10.9	10.9		
					115/208-220/60/3	4w 14g	4w 14g	4w 14g	9.2	9.2	9.2		
					115/208/60/1	3w 14g	3w 14g	3w 14g	12.2	12.2	12.2		

\*Painted Models have sandlewood micomatte Finish with woodgrain front panel.

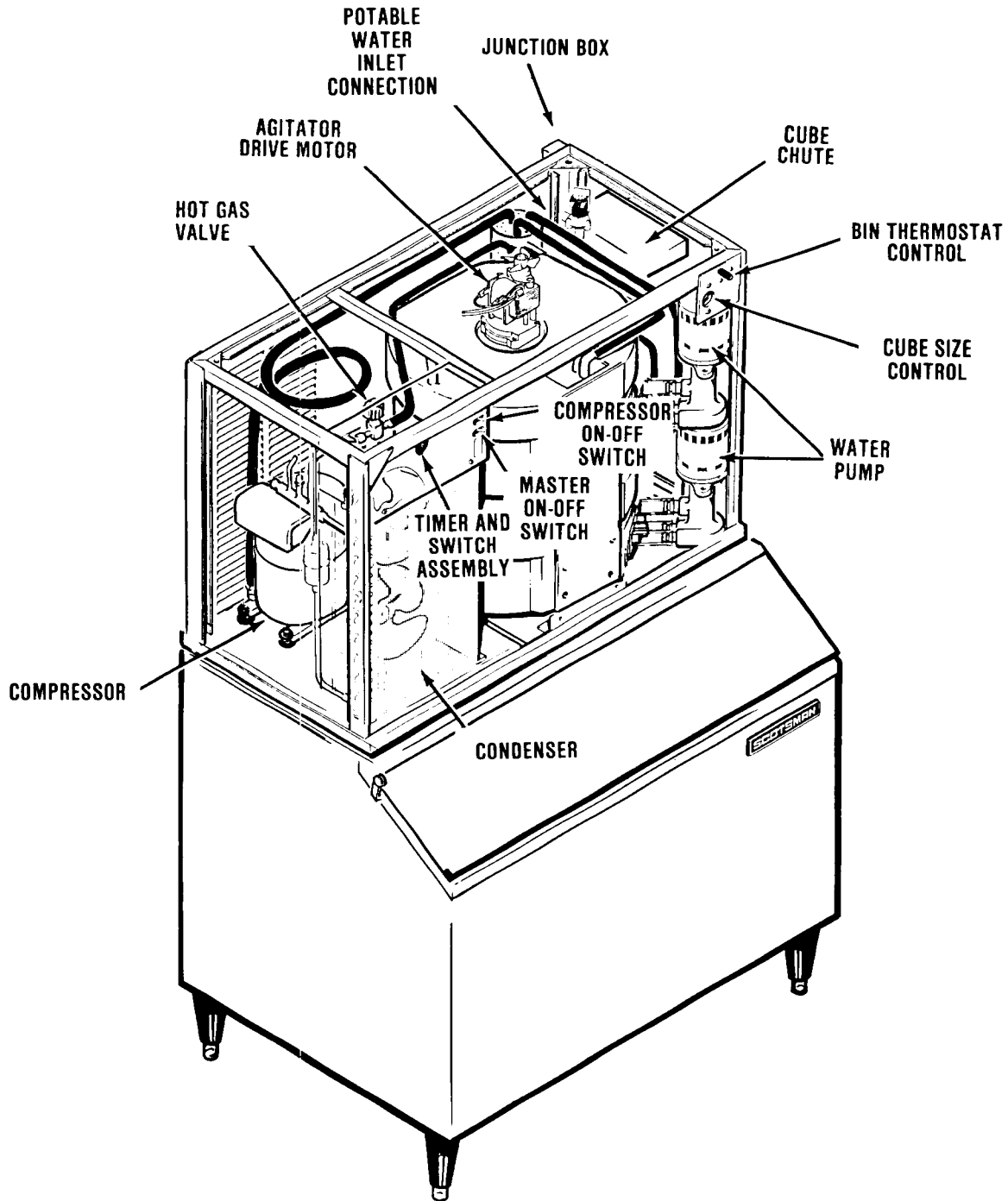
Specifications subject to change without notice.

# GENERAL INFORMATION AND INSTALLATION

## INTRODUCTION

These instructions provide the specifications and the step-by-step procedures for the installation, start up and operation for the Scotsman Model MC35 modular cuber.

The Model MC35 Modular Cubers are quality designed, engineered and constructed, and are thoroughly tested icemaking systems, providing the utmost in flexibility to fit the needs of a particular user.



- Component Location

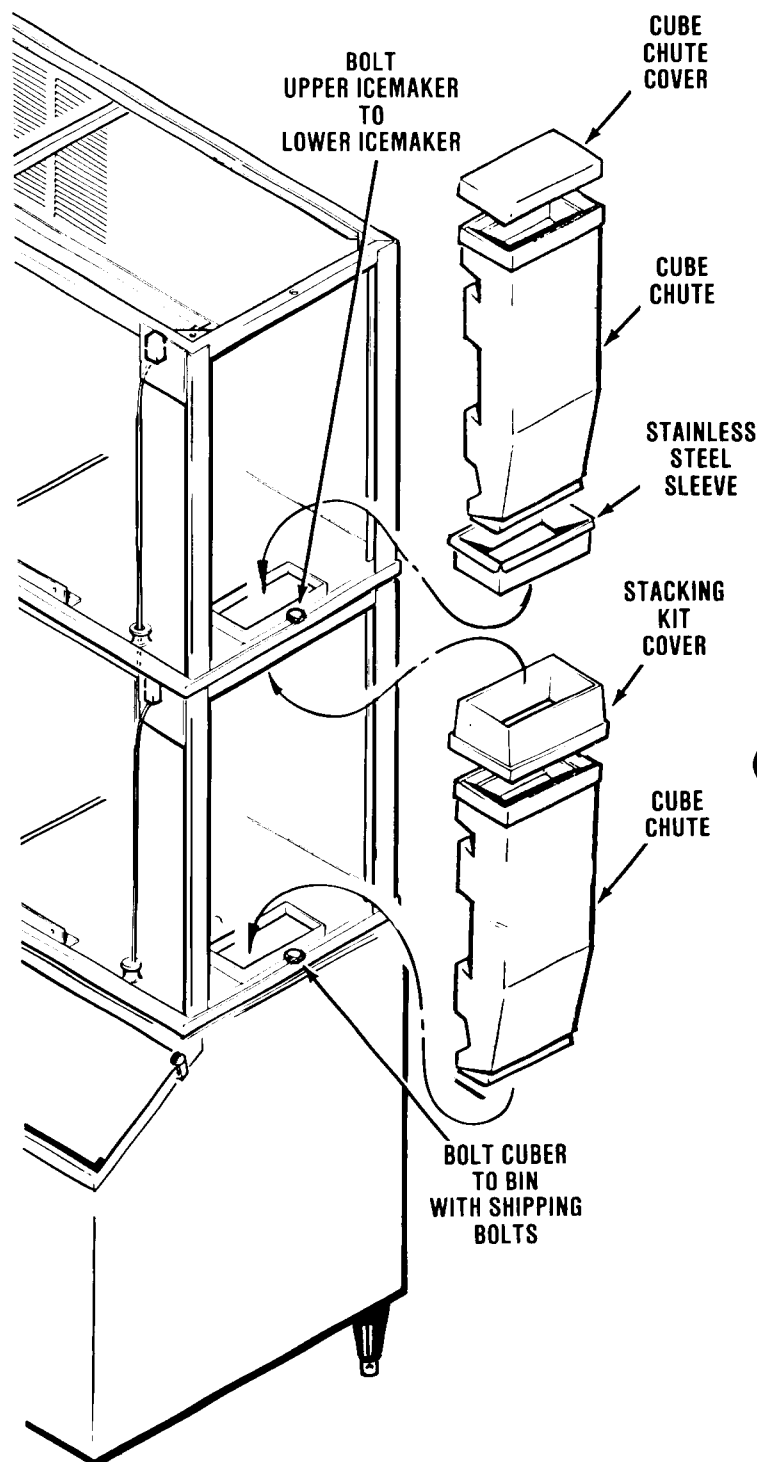
# GENERAL INFORMATION & INSTALLATION

## LOCATION & LEVELING

1. Position the selected bin in the permanent location, which should have a minimum room temperature of 50-degrees F., and maximum room temperature of 100-degrees F. Level the bin, adjusting the leg levelers in both the front-to-rear and side-to-side directions. Select a well-ventilated location for the air-cooled models.
2. Inspect the bin top mounting gasket, which should be flat, with no wrinkles, to provide a good seal when the MC35 Cuber is installed on top of the bin.
3. Install the MC35 modular cuber on top of the selected bin, using care to be sure a good seal is made between the two cabinets.
4. Remove screws, top panel, front panel, and both side panels.
5. Remove cube chute from the machine.
6. Bolt the cuber to the bin using the two hex head bolts, retained from the shipping skid. Thread the bolts down through the cuber base into the top edge of both storage bin side panels.
7. Install cube deflector. Hook the cube deflector over the flange in base of the icemaker. See Detail.

## STACKING

1. Top panel of bottom machine may be set aside, as it is not used when machines are stacked. Remove the cube chute from top machine. Place upper machine directly on frame of lower machine. Bolt together with 2 bolts used to hold machine to the crate skid.
2. Slide cube chute into cube chute opening of bottom icemaker.
3. Position stacking kit cover over cube chute of bottom icemaker.
4. Slide the stainless steel sleeve through cube chute opening of upper icemaker and into the stacking kit cover.
5. Slide cube chute into cube chute opening of upper icemaker.
6. See Installing Bin Thermostat Capillary Tube with steps to thread the capillary tube from each icemaker into the cube deflector.
7. Install cube chute and cover on top machine, and replace all cabinet panels on both machines.



## GENERAL INFORMATION & INSTALLATION

### INSTALL BIN THERMOSTAT CAPILLARY TUBE

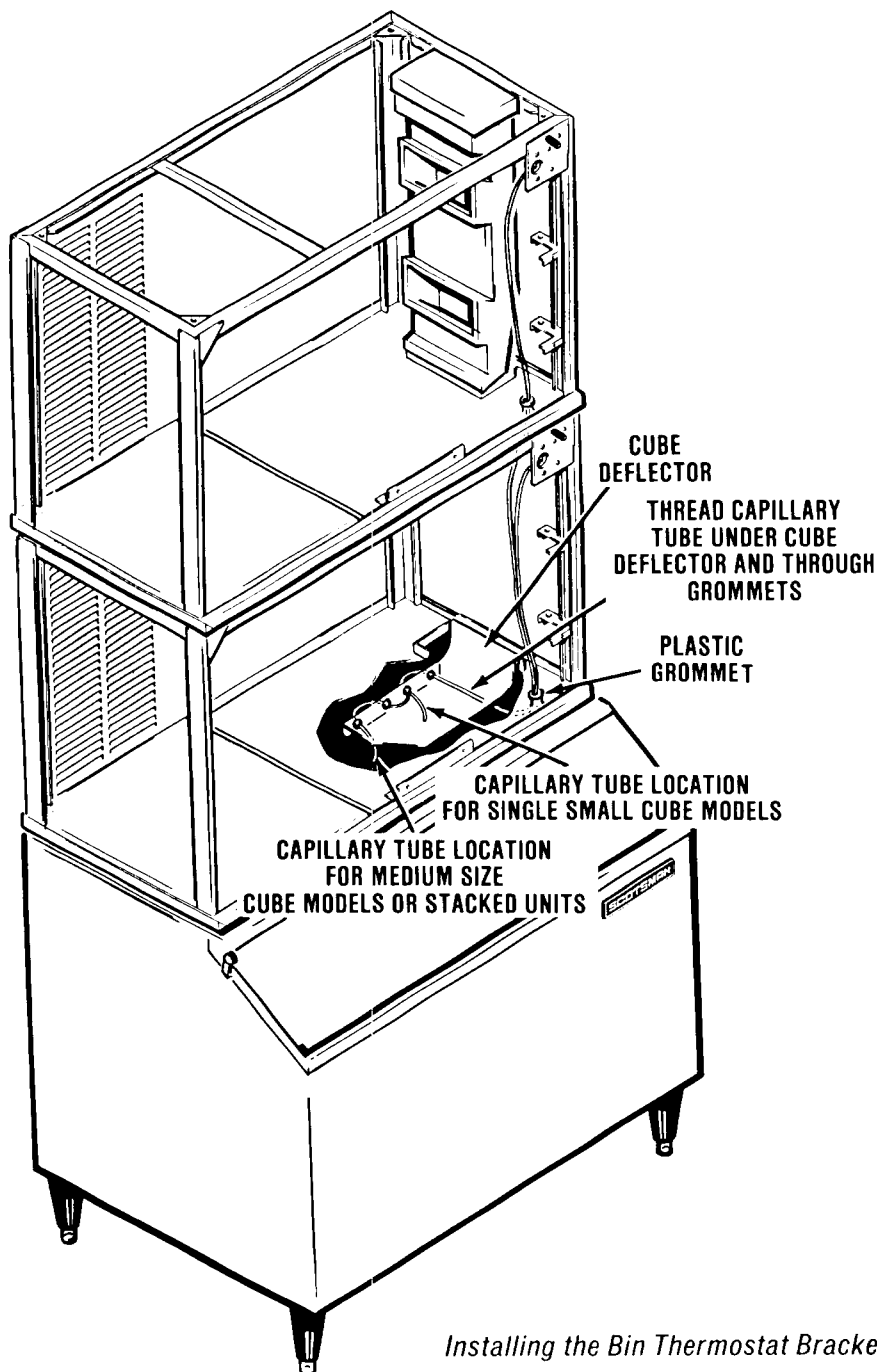
#### CAUTION

Careful handling of the bin thermostat capillary tube is required.

1. Uncoil the bin thermostat capillary tube and route from the bin thermostat control down through the plastic grommet in the icemaker base and under the cube deflector.

2. Thread the capillary tube through the grommets in the cube deflector as indicated. See *Installing the Capillary Tube* illustration.

Stacking modular MC35 cubers: Route the bin thermostat capillary tube from the upper icemaker through the plastic grommet and into the chassis of the lower icemaker, through the plastic grommet of the lower icemaker, under and into the cube deflector.



*Installing the Bin Thermostat Bracket.*

# GENERAL INFORMATION & INSTALLATION

## ELECTRICAL CONNECTIONS

SEE NAMEPLATE for current requirements to determine wire size to be used for electrical hookup. The cuber requires a solid chassis-to-earth ground wire. See Wiring Diagram.

Be certain the cuber is connected to its own electrical circuit and individually fused. Voltage variation should not exceed  $\pm$  ten percent of the nameplate rating, even under starting conditions. Low voltages can cause erratic operation and may be responsible for serious damage to the icemaker.

All external wiring should conform to the national, state and local electrical code requirements. Usually an electrical permit and services of a licensed electrician will be required.

## WATER SUPPLY AND DRAIN CONNECTIONS

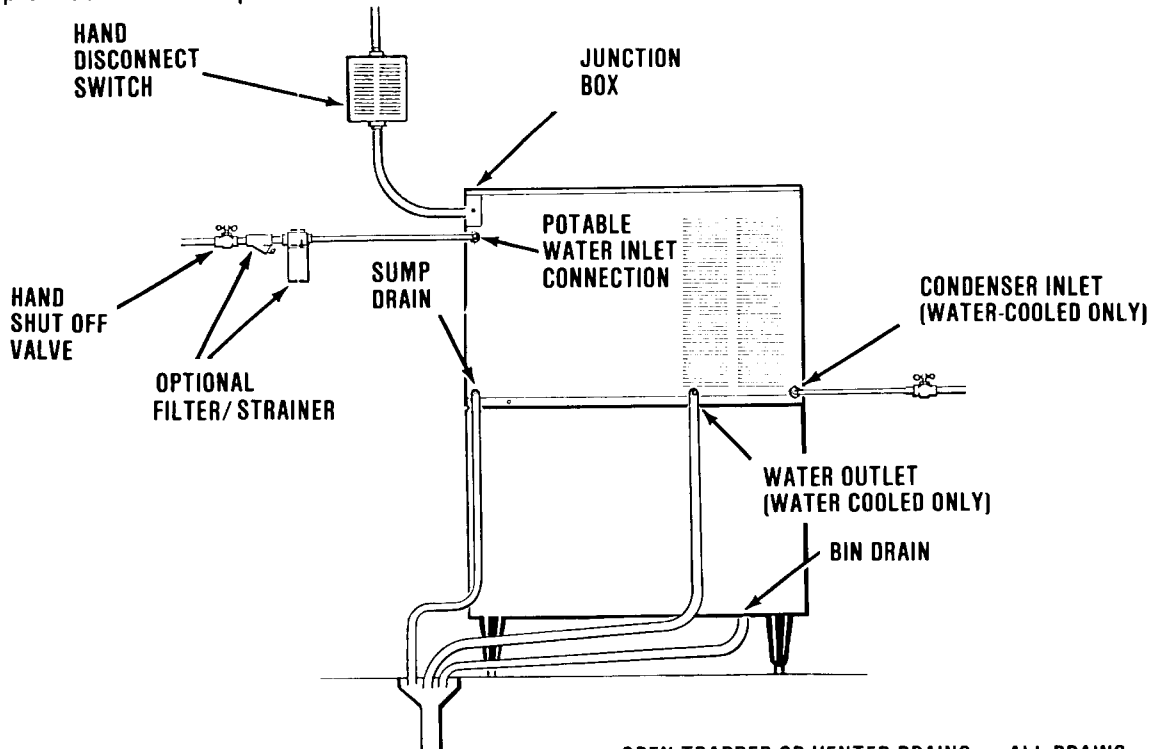
**AIR-COOLED MODELS:** The recommended water supply line is a 3/8-inch O.D. copper tubing with a minimum operating pressure of 20 PSIG and a maximum of 120 PSIG. Connect to cold water supply line with standard plumbing fittings, with a shutoff valve installed in an accessible place between the water supply and the cuber. In some cases a plumbing permit and services of a licensed plumber will be required.

**WATER-COOLED MODELS:** On water-cooled models, a separate cold water supply inlet is required, to be connected to a second 1/2-inch O.D. male flare fitting at the rear of the cabinet. Additional drain lines are required to drain the water-cooled condenser.

**DRAIN CONNECTIONS:** All drains are gravity type and must have a minimum of 1/4-inch fall per foot on horizontal runs. The drains to be installed to conform with the local plumbing code. Install separate drain line for discharge water from the water-cooled condenser. The drain receptacle should be an open, trapped or vented construction.

Recommended bin drain is 5/8-inch O.D. copper tubing and should be vented and run separately.

Install Drain Cup. A drain hole is located at the cabinet rear base lower left corner and a Drain Cup is provided and must be installed. Coat both inside corners of Drain Cup with a small amount of sealant to insure a proper water seal, and attach Drain Cup to icemaker base using screws. Attach suitable length of 1/2-inch O.D. drain tube and route tubing to drain.



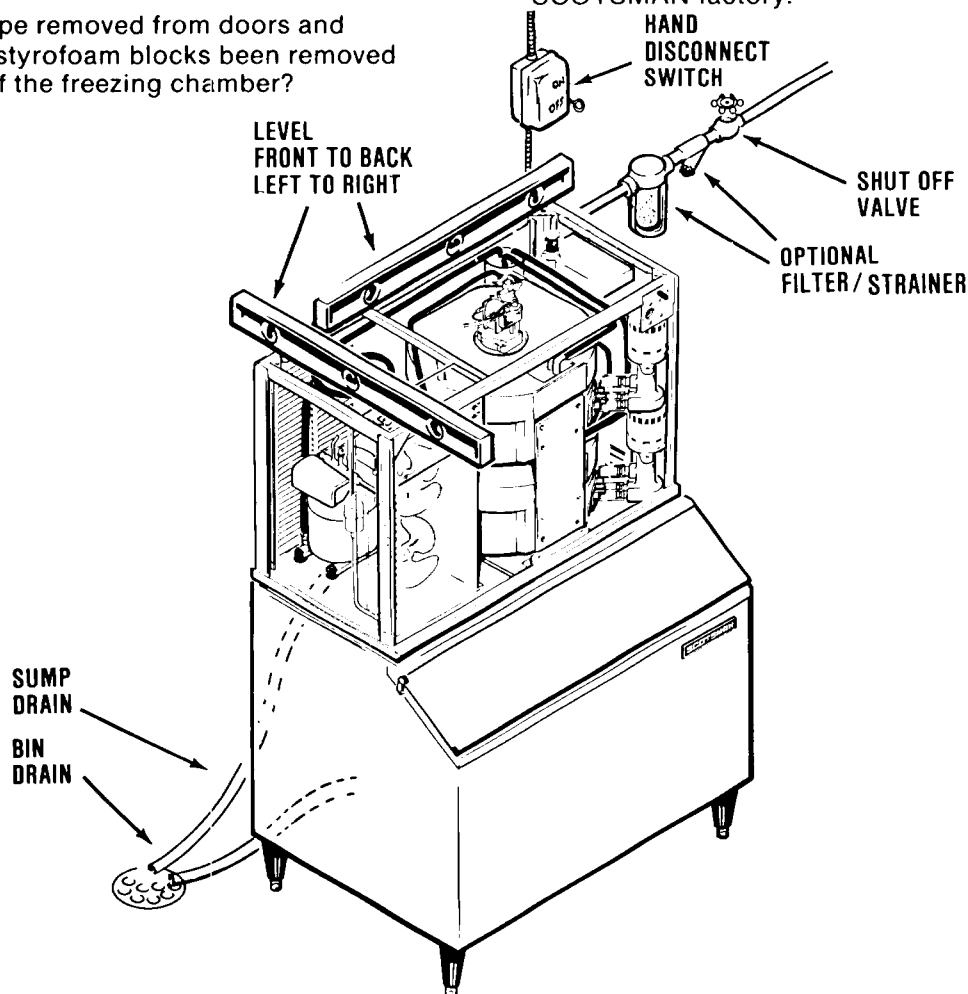
OPEN TRAPPED OR VENTED DRAINS — ALL DRAINS MUST HAVE 1/4 PER INCH FALL

*Installation, Electrical, Water Supply and Drain Connection*

# GENERAL INFORMATION & INSTALLATION

## FINAL CHECK LIST

1. Is the cabinet/bin level and the cuber bolted to the bin? (IMPORTANT)
2. Is the cuber in a location where ambient temperatures are a minimum of 50-degrees F. all year around and do not exceed a maximum of 100° F?
3. Is there at least a six-inch clearance behind and around the cabinet for all connections and for proper air circulation?
4. Have all electrical and piping connections been made?
5. Has the electrical power supply wiring been properly connected, and the voltage tested and checked against the nameplate rating? Has proper chassis-to-earth ground been installed?
6. Is the water supply line shutoff valve installed and opened and has the inlet water supply pressure been checked to ensure a minimum of 20 PSIG and a maximum pressure of 120 PSIG?
7. All masking tape removed from doors and panels? Have styrofoam blocks been removed from the top of the freezing chamber?
8. Have the compressor holddown bolts been checked to be sure the compressor is snug on the mounting pads?
9. Check all refrigerant lines and conduit lines to guard against vibration and possible failure.
10. Has the bin thermostat capillary tube been properly installed in the cube deflector?
11. Has the cuber and the bin been wiped clean with clean damp cloths?
12. Has the owner/user been given the User Manual and instructed on how to operate the icemaker and the importance of periodic maintenance?
13. Has the owner/user been given the name and telephone number of the Authorized Scotsman Distributor or Service Agency serving him?
14. Has the Manufacturer's Registration Card been properly filled out? Check for correct Model and Serial Numbers from nameplate, then mail the completed card to the SCOTSMAN factory.



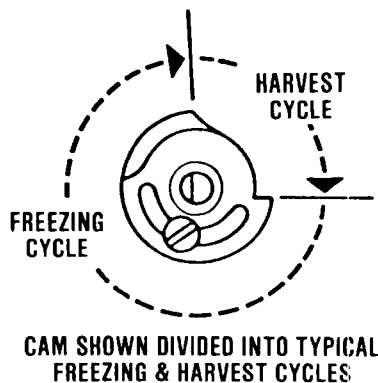
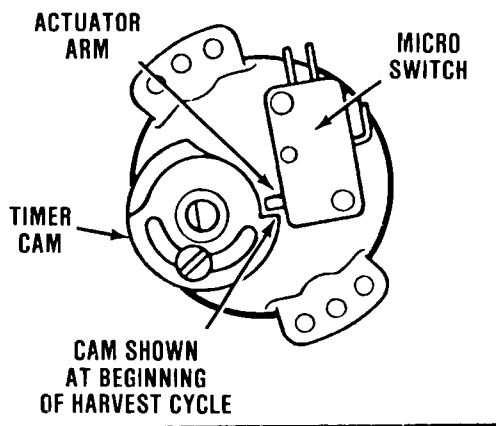
*Final Checklist*



# OPERATING INSTRUCTIONS

## START—UP

1. Remove screws and remove the top and front panels.
2. Check that the two toggle switches, the MASTER ON-OFF toggle switch and the COMPRESSOR ON-OFF toggle switch are in the OFF position, on the control box.
3. OPEN the water supply line shutoff valve.
4. Protruding through the control box cover is the shaft of the timer and the switch assembly. Rotate the shaft of the timer and switch assembly clockwise until the actuator arm on the microswitch drops off outer cam into cam slot, the start of the harvest cycle. See Timer Cam Positions. An audible click can be heard, but in a noisy area, look at the cam and switch to observe the event.



*Timer Cam Positions*

5. Move the master ON-OFF toggle switch, the bottom toggle switch, to the ON position.
6. Observe that the water inlet solenoid valve OPENS and inlet water flows from the valve through tubing and can be seen flowing to the defrost water tube, at the top rear of the freezing chamber, where the water then flows around the inverted ice cube cups and drains into the freezing chamber sump. Excess water is overflowed through the stand pipe and drain tube. This cycle will take about three minutes, when the Timer will CLOSE the water inlet solenoid valve.

Advancing the shaft of the timer and switch assembly through the remaining cycles into a new harvest cycle, restarts the timer and allows a check that: Water inlet solenoid valve OPENS and the reservoir overflows through the stand pipe. Water inlet valve CLOSES, stopping water overflow.

7. When the second harvest cycle is completed, move the compressor ON-OFF toggle switch, to the ON position.
8. Check operation of freezing cycle:

Agitator motor is operating, as seen by fan rotating on top of the freezing chamber.

Water pump is operating, as seen at Tygon tubes on pump and looking at water being sprayed into inverted ice cube cups, from rotating spray bar, seen inside freezing chamber.

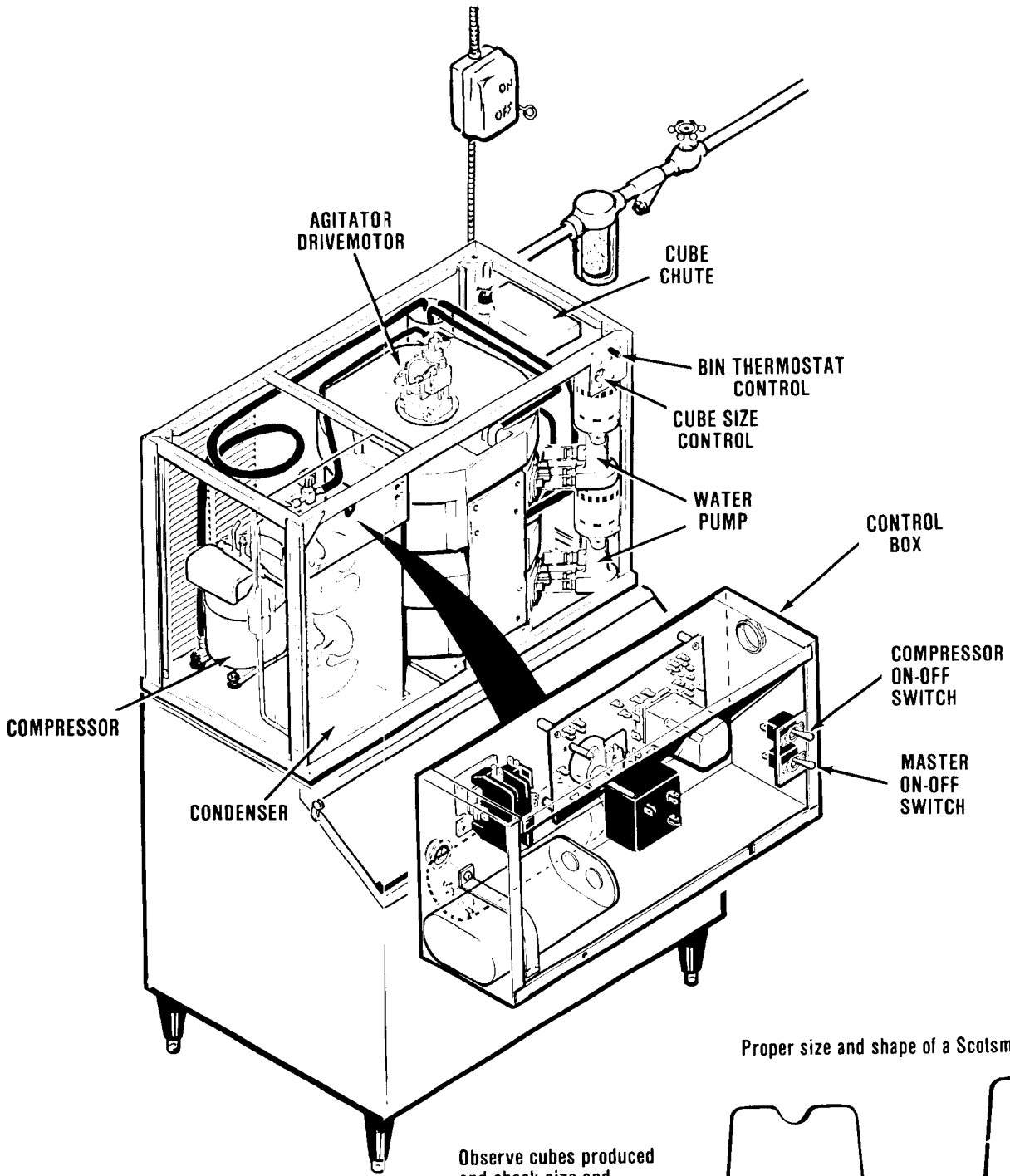
The icemaking process begins; feeling the metal parts of the evaporator reveals cold temperature, very shortly ice begins to form. Tubing will become frosted at the top of the evaporator inlet located on the top front portion at the freezing chamber.

Freezing time will range between 20 and 30 minutes in a 70-degree F. ambient temperature. Longer time for temperatures above 70-degrees F., and shorter time required when temperatures are below 70-degrees F. Average complete cycle range is about 17 to 22 minutes.

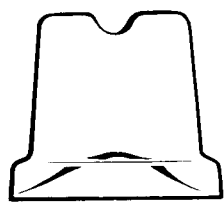
9. Replace the plastic cube chute before the harvest cycle begins.

(Continued on page 10)

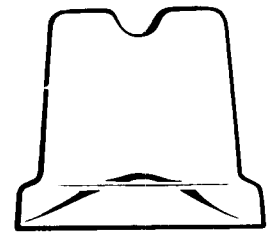
# OPERATING INSTRUCTIONS



Proper size and shape of a Scotsman Round Cube:



SMALL SIZE



MEDIUM SIZE

Observe cubes produced and check size and shape — compare cubes to example on page 10.

Normal cube size is with a one-quarter inch depression in the crown.

## Operation

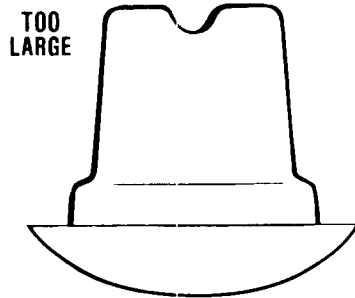
## OPERATING INSTRUCTIONS

### 10. Observe first ice cube harvests:

All cubes should drop from the freezing chamber by the end of the timed portion of the

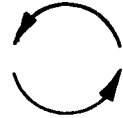
harvest cycle. If required, the harvest time should be adjusted.

Check size of ice cubes:

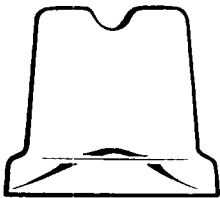


A cube this size and shape is TOO LARGE and requires longer freezing cycle which may cause evaporator freeze ups.

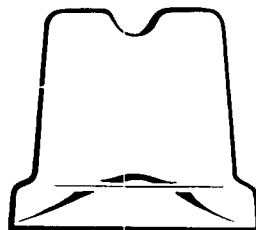
Adjust cube size control counter clockwise to produce a smaller cube.



### Proper size and shape of a Scotsman Round Cube:



SMALL SIZE

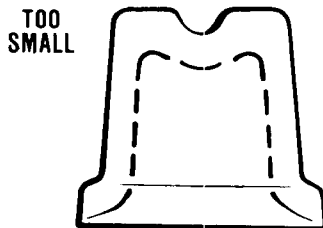


MEDIUM SIZE

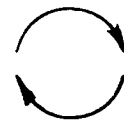
PROPER SIZE AND SHAPE of the round cube. Icemaker operates at peak efficiency when a cube this size and shape is produced.

### NOTE

Normal cube size is with a one-quarter inch depression in the crown.



A cube this size and shape is TOO SMALL. Adjust cube size control clockwise to produce a larger cube. Cubes this size or shape are too small and cause excessive cycling.



# OPERATING INSTRUCTIONS

## ADJUSTMENT OF CUBE SIZE

To produce **LARGER** sized ice cubes:

Locate cube size control, in the top right end of the icemaker chassis.

Rotate the adjusting screw one-eighth of a turn **CLOCKWISE** to **COLDER**.

Observe size of ice cubes in the next two cube harvests and adjust in one-eighth turn or less increments, until correct ice cube size is achieved.

To produce **SMALLER** sized ice cubes:

Locate cube size control, in the top right section of the chassis.

Rotate the adjusting screw one-eighth of a turn **COUNTERCLOCKWISE** to **WARMER**.

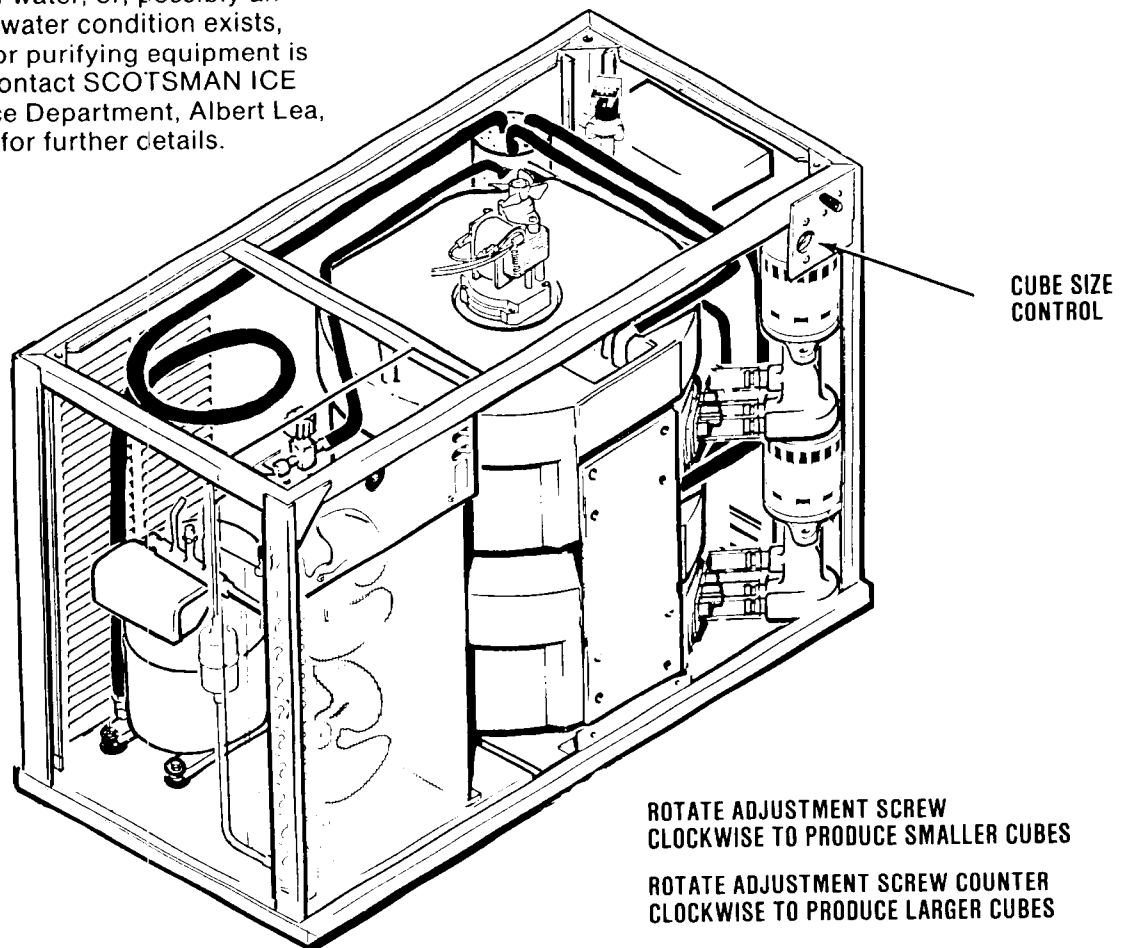
Observe size of the ice cubes in the next two ice cube harvests and adjust in one-eighth turn or less increments, until correct ice cube size is achieved.

Check texture of ice cubes; when partially cloudy throughout, suggests icemaker is operating short of water; or, possibly an extreme problem water condition exists, wherein filtering or purifying equipment is recommended. Contact **SCOTSMAN ICE SYSTEMS**, Service Department, Albert Lea, Minnesota 56007 for further details.

11. With the icemaker in the harvest cycle, hold ice against the bin thermostat control bulb to test shutoff, which should cause the icemaker to shut OFF at the **END OF THE HARVEST CYCLE**.

Within minutes after the ice is removed from the sensing bulb, the bulb will warm up and cause the icemaker to restart. This control is factory set and should not be reset until testing is performed.

12. Replace control box cover and all cabinet panels and screws.
13. Thoroughly explain to the owner/user the significant specifications of the icemaker, the start up and operation, going through the procedures in the operating instructions. Answer all questions about the icemaker by the owner; and inform the owner of the name and telephone number of the authorized **SCOTSMAN** Distributor, or service agency serving him.



*Cube Size Control Adjustment*

# OPERATING INSTRUCTIONS

## FREEZING CYCLE

Water from the sump in the reservoir of the freezing chamber is pumped to a rotating spray bar assembly, which is powered by the agitator drivemotor on top of the freezing chamber. The spray bar assembly has ten jets through which water is uniformly sprayed up into the inverted ice cube cup molds of the freezing chamber evaporator. See *Freezing cycle* illustration. At the beginning of the freezing cycle, the electrical circuit is completed to the compressor, the gas agitator drivemotor and the water pump. The water pump and the agitator drivemotor operate continuously, through both the freezing cycle and the harvest cycle.

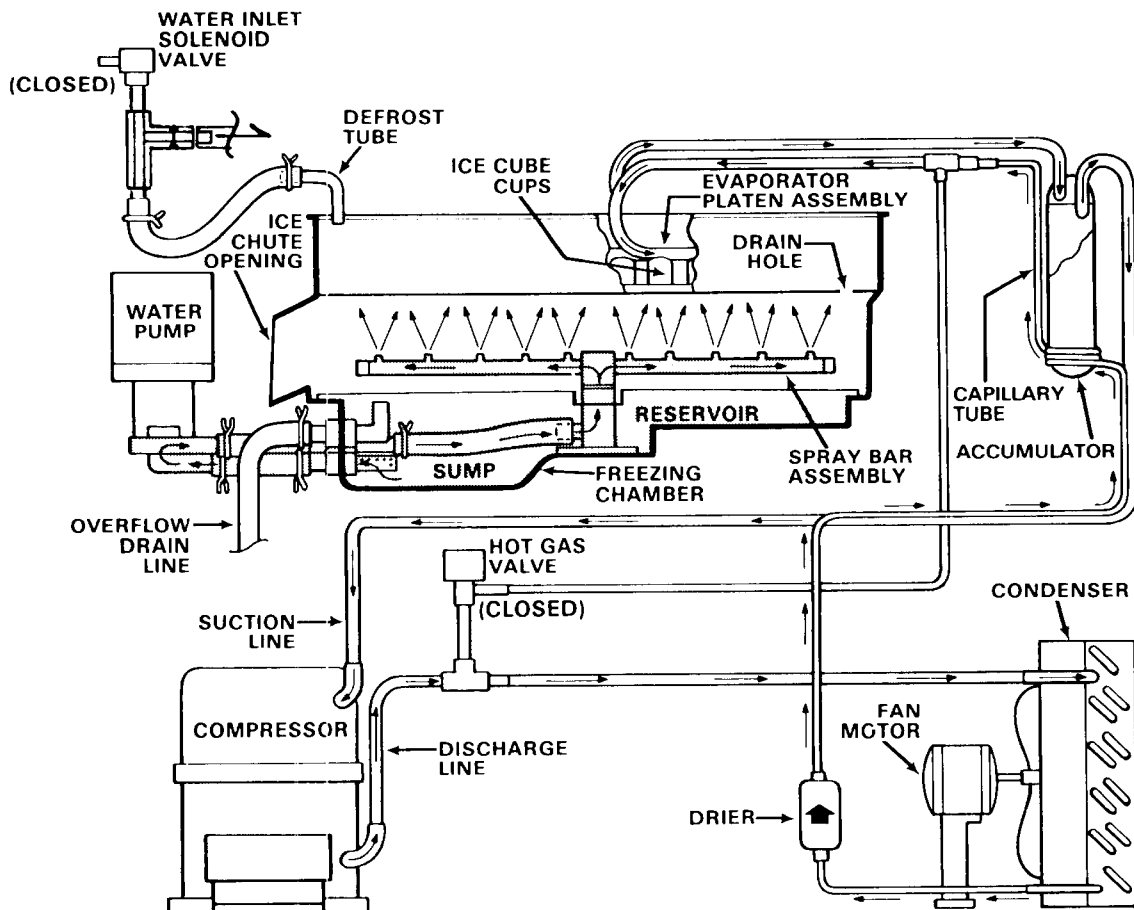
In the compressor, gaseous refrigerant is compressed and discharged into the condenser, as a high pressure, high temperature. The refrigerant is cooled and condensed, by either air or water, into a high pressure, medium temperature liquid. This liquid refrigerant is then distributed through the capillary tube where the temperature and pressure of the liquid refrigerant are lowered and enters the evaporator. The refrigerant is warmed by the water sprayed up into

the ice cube molds of the evaporator and begins to boil off and become a gas. The refrigerant next travels through the heat exchange area of the suction line and into the accumulator, where any remaining liquid refrigerant boils off and returns to the compressor as a low pressure, low temperature gas, and the cycle starts again.

During the freezing cycle, the hot gas solenoid valve is CLOSED and the water inlet solenoid valve is CLOSED.

When the ice cubes are about three-quarters formed, the cube size control bulb located on the suction line coming out of the evaporator platen assembly, will sense the temperature at which it is preset to Close. This will complete the electrical circuit to the timer. The timer then controls the remainder of the cycle.

The timer will keep the icemaker operating in the freezing cycle for a selected length of time. This will give the ice cubes time to fully form. After that selected length of time, the timer will switch the icemaker into the harvest cycle, through the contacts of the timer assembly microswitch.



*Freezing Cycle*

# OPERATING INSTRUCTIONS

## HARVEST CYCLE

When the timer switches the icemaker into the harvest cycle, high pressure, high temperature gaseous refrigerant being discharged from the compressor is diverted from the condenser through the hot gas solenoid valve into the evaporator. During this cycle, the gaseous refrigerant bypasses the condenser and the capillary tube.

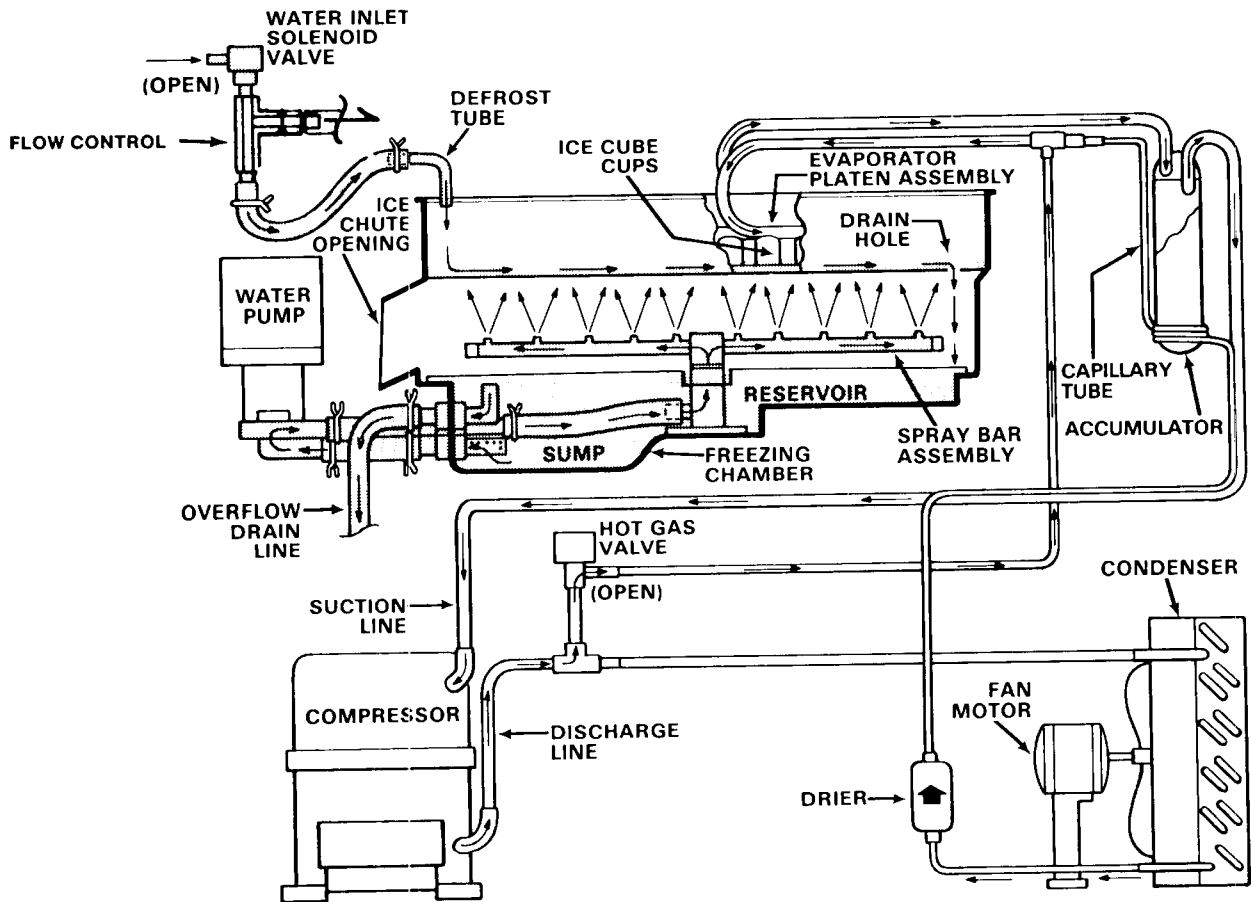
In the electrical circuit, the compressor agitator drivemotor and the water pump operate and the hot gas solenoid valve is energized and OPEN and the water inlet solenoid valve is OPEN.

On air-cooled models, the bottom fan is de-energized.

The water inlet solenoid valve OPENS and allows a fresh water supply to be discharged into the top

of each evaporator platen assembly. The finished ice cubes are released from the evaporator by the warming effect of the hot gas flowing through the evaporator tubes and the water flow around the ice cube molds. The released ice cubes drop into the inner bottom of the freezing chamber and are pushed by the rotating spray bar assembly out the slanted ice chute opening, down the plastic cube chute and into the ice storage bin.

At the end of the harvest cycle, the timer cam will push the actuator arm of the microswitch IN. If the bin thermostat is still CLOSED, a whole new cycle will begin. If the bin thermostat is OPEN, the icemaker will shut OFF, at this time.



Harvest Cycle

# ADJUSTMENT AND REMOVAL AND REPLACEMENT

The procedures provided in this Section are arranged in alphabetical order, to make specific Adjustment and Removal and Replacement information easy to locate.

Read the instructions thoroughly before performing any Adjustment or Removal and Replacement Procedures.

## ADJUSTMENT OF THE BIN THERMOSTAT CONTROL

The control for the Bin Thermostat is the Temperature Control, located in the right side of the gusset in the front upper corner of the Chassis frame.

See Adjustment of the Temperature Control Illustration for location and direction of rotation, clockwise (CW) or counterclockwise (CCW), of the adjusting screws on the Temperature Control, the Adjustment is to be towards warmer as altitude increases.

### WARNING

The adjusting screws on the Temperature Control device have very sensitive response to adjustment. **DO NOT** attempt to adjust the screw until after thoroughly reading and understanding the following instructions and illustration. Over-adjusting or erratic guessing, can foul the instrument and cause ultimate delay and part replacement, WHICH COULD HAVE BEEN PREVENTED.

## ADJUSTMENT OF THE CUBE SIZE CONTROL

### CAUTION

**BEFORE** performing actual adjustment to the Cube Size Control, check other possible causes for cube size problems, refer to **SERVICE DIAGNOSIS** section for problem review and analysis.

**DO NOT** perform adjustment when a new Cube Size Control is installed, until the control bulb has been properly installed in the tube well, on the refrigerant tube of the Platen Assembly and the Icemaker has progressed through several complete freezing and harvest cycles, to observe size and quality of ice cubes and whether or not a cube size problem exists.

As a reverse acting temperature control, adjustment on the Cube Size Control is performed to either cause larger sized ice cubes or smaller sized ice cubes to be produced.

To Produce LARGER Sized Ice Cubes:

Locate the Cube Size Control, in the left side of the gusset in the front upper corner of the Chassis frame.

Rotate the adjusting screw one-eighth of a turn **CLOCKWISE** toward **COLDER**.

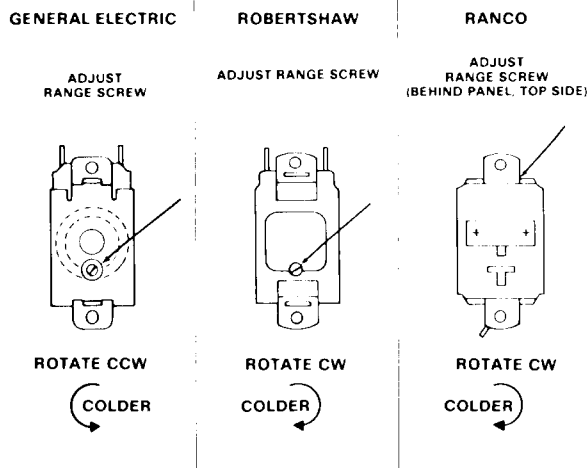
Observe size of ice cubes in next two ice cube harvests and repeat step 2 above, in one-eighth turn increments, until desired ice cube size is achieved.

To Produce SMALLER Sized Ice Cubes:

Locate the Cube Size Control, in the left side of the gusset in the front upper corner of the Chassis frame.

Rotate the adjusting screw one-eighth of a turn **COUNTERCLOCKWISE**.

Observe size of ice cubes in next two ice cube harvests and repeat step 2 above, in one-eighth turn increments, until desired ice cube size is achieved.



Adjustment of the Temperature Control.

# ADJUSTMENT AND REMOVAL AND REPLACEMENT

## ADJUSTMENT OF THE TIMER & SWITCH ASSEMBLY

The timer and switch assembly is factory set, so one complete revolution of the cam on the timer represents eight minutes. Five and one-half minutes comprise the freezing cycle event during cam rotation, and the final two and one-half minutes program the defrost and harvest cycle. Rotating the shaft of the timer cam **CLOCKWISE** will allow positioning the actuator arm of the microswitch on the cam at the selected start position for either the freezing cycle or harvest cycle, as required in the **CLEANING** instructions.

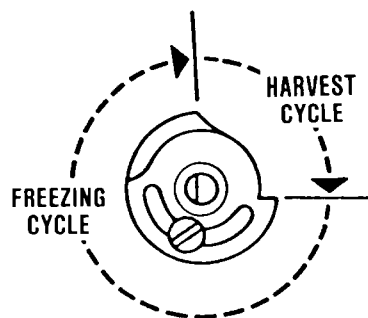
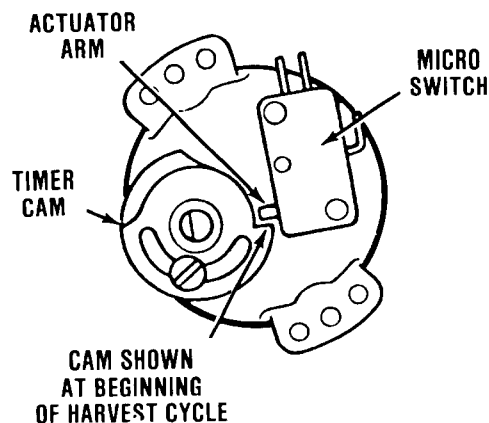
### //////////////////// **WARNING** //////////////////////

**Disconnect electrical power supply to icemaker whenever adjustment procedures are performed.**

### ////////////////////

TO ADJUST THE TIMER & SWITCH ASSEMBLY:

- A. **HARVEST CYCLE:** Slowly rotate the shaft of the timer and switch assembly, located in the control box, **CLOCKWISE**, until the actuator arm on the microswitch initiates the harvest cycle. An audible click can be heard, but in a noisy area, look at the cam and switch to observe the event.
- B. **FREEZING CYCLE:** Slowly rotate the shaft of the timer and switch assembly, located in the control box, **CLOCKWISE**, until the actuator arm on the microswitch initiates the freezing cycle.
- C. The length of the harvest cycle can be changed by loosening the adjustment screw on the cam. The minimum harvest setting is two minutes; the maximum is three and one-half minutes. It is important that the length of the harvest cycle allow enough time for all the ice cubes to fall from the evaporator. Too short of a time will cause the evaporator to freeze up and stop ejecting ice into the bin. Too much time wastes icemaking capacity, energy and water. Adjustment of the harvest cycle may require a corresponding adjustment of the cube size control.



*Adjustment of the Timer & Switch Assembly*

### //////////////////// **WARNING** //////////////////////

**Be sure the electrical power open circuit breaker supply and the inlet water supply are OFF, BEFORE starting any of the following REMOVAL AND REPLACEMENT procedures as a precaution to prevent possible personal injury or damage to equipment.**

### ////////////////////



## ADJUSTMENT AND REMOVAL AND REPLACEMENT

### ADJUSTMENT OF THE WATER REGULATOR ASSEMBLY — WATER-COOLED MODELS

The correct Compressor head pressure on Water-Cooled Models is 135 PSIG. Adjusting the Water Regulator Valve increases or decreases the rate of flow of water, through the Water-Cooled Condenser; which increases or decreases the affected temperature/pressure of the Compressor head pressure. INCREASED water flow, results in DECREASED or LOWER head pressure; while, DECREASED water flow, results in INCREASED or HIGHER head pressure.

To adjust the Water Regulator Assembly:

To INCREASE the head pressure: Rotate the adjusting screw COUNTERCLOCKWISE.

To DECREASE the head pressure: Rotate the adjusting screw CLOCKWISE.

Check change in Compressor head pressure, and adjust as necessary to achieve desired operating head pressure.

### ////////////////////// WARNING ////////////////////////

Be sure the electrical power supply and the water supply are OFF BEFORE starting any of the following REMOVAL AND REPLACEMENT procedures as a precaution to prevent possible personal injury or damage to equipment.

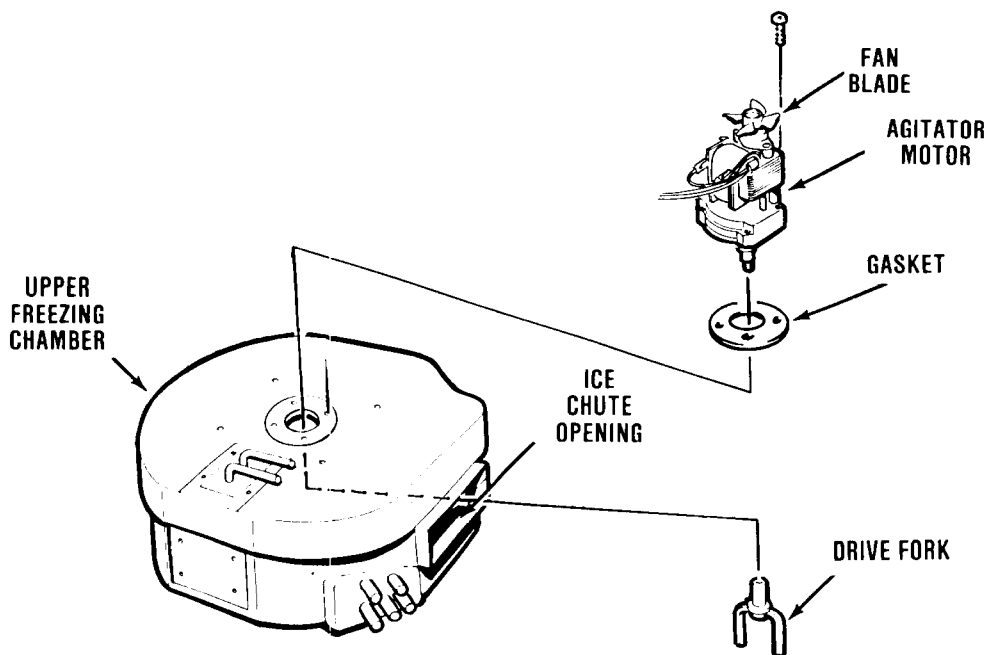
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### REMOVAL AND REPLACEMENT OF THE AGITATOR MOTOR ASSEMBLY

*The Agitator Motor in the                  Cuber is installed on top of the upper Freezing Chamber.*

To Remove the Agitator Motor Assembly:

1. Remove screws and the Top Panel and Front Panel to gain access to the Agitator Motor.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.
3. Remove three U-Type Clips and the plastic Curtain Assembly.
4. Reach through the ice chute opening in the Freezing Chamber and feel for the Spray Bar.
5. Move hand to the center hub and rotate the Spray Bar, so one end is aligned with the ice chute opening.
6. Lift the Spray Bar up, off the jet bearing hub, then, remove the Spray Bar through the ice chute opening.
7. Disconnect electrical leads and ground wire from terminals on the Agitator Motor.
8. Reach through the same ice chute opening, and grasp the Drive Fork with one hand, and the Agitator Motor Fan, on top of the Freezing Chamber, with the other hand.



*Removal of the Agitator Motor Assembly*

## ADJUSTMENT AND REMOVAL AND REPLACEMENT

9. Hold the Fan blades still and rotate the left-hand Drive Fork to the right, COUNTERCLOCKWISE, and unscrew the Drive Fork from the Agitator Motor.
10. Remove four screws and lift the Agitator Motor off the Freezing Chamber.

To replace the Agitator Motor Assembly, reverse the removal procedure.

### REMOVAL AND REPLACEMENT OF THE BIN THERMOSTAT CONTROL

#### ////////// WARNING //////////

Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.

#### ////////// //////////

To remove the Bin Thermostat Control:

1. Remove screws and the Front Panel to gain access to the Bin Thermostat Control.
2. Trace capillary tube, from the Bin Thermostat Control, down to the Cube Deflector.
3. Carefully remove the capillary tube from the bulb holder holes on the side of the Cube Deflector.
4. Carefully withdraw the capillary tube from the Bin, up through the Chassis Base.
5. Remove electrical leads from the Bin Thermostat Control.
6. Remove screws and the Bin Thermostat Control.

To replace the Bin Thermostat Control, reverse the removal procedures.

### REMOVAL AND REPLACEMENT OF THE COMPRESSOR ASSEMBLY

#### ////////// WARNING //////////

Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.

#### ////////// //////////

To remove the Compressor Assembly:

1. Remove screws and the Top, Front and Left Side Panels.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Remove the cover from the terminal box on the Compressor; then, remove electrical leads from the Compressor.
4. Unsolder the refrigerant suction line and the discharge line from the Compressor.
5. Unsolder the process header from the Compressor and retain for installation on the replacement Compressor.

6. Remove four bolts and washers which secure the Compressor to the Chassis mounting base.
7. Slide and remove the Compressor from the Cabinet.

To replace the Compressor Assembly, reverse the removal procedure.

*Always install a replacement Drier, any time the sealed refrigerant system is opened. Do not replace the Drier until all other repair or replacement has been completed.*

### REMOVAL AND REPLACEMENT OF THE CONDENSER — AIR-COOLED MODELS

#### ////////// WARNING //////////

Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.

#### ////////// //////////

To remove the Condenser:

1. Remove screws and the Left Side Panel and Front Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder and disconnect refrigerant lines from the Condenser.
4. Unsolder and remove the Drier from the refrigerant lines connecting to the Condenser.
5. Remove screws, lockwashers and the Condenser from the Chassis base.

To replace the Air-Cooled Condenser, reverse the removal procedure.

*Always install a replacement Drier, any time the sealed refrigerant system is opened. Do not replace the Drier until all other repair or replacement has been completed.*

### REMOVAL AND REPLACEMENT OF THE CONDENSER — WATER-COOLED MODELS

To remove the Condenser:

1. Remove screws and the Front Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Check to be sure building source water inlet supply shutoff valve to rear of Chassis is OFF.
4. Disconnect water inlet supply line at the left bottom rear of Chassis.

## ADJUSTMENT AND REMOVAL AND REPLACEMENT

5. Disconnect Water-Cooled Condenser inlet water line at the Water Regulator Assembly outlet fitting.
6. Unsolder the refrigerant capillary tube at the Drier.
7. Unsolder the Compressor discharge line, at the top of the Water-Cooled Condenser.
8. Unsolder the Condenser refrigerant outlet line, at the bottom of the Water-Cooled Condenser.
9. Remove two screws and washers and the Water-Cooled Condenser from the Cabinet.

To replace the Water-Cooled Condenser, reverse the removal procedures.

*Always install at replacement Drier, any time the sealed refrigerant system is opened. Do not replace the Drier until all other repair or replacement has been completed.*

### REMOVAL AND REPLACEMENT OF THE CUBE SIZE CONTROL

#### ////////// **WARNING** //////////

**Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.**

//////////

To remove the Cube Size Control:

1. Remove screws and the Front Panel to gain access to the Cube Size Control.
2. Trace capillary Tube, from the Cube Size Control, to the refrigerant suction line on the Evaporator Platen Assembly; then peel back the insulation.
3. Remove clips and the coiled capillary tube bulb out of the Freezer section of the Cabinet.
4. Remove electrical leads from the Cube Size Control.
5. Remove screws and the Cube Size Control.

To replace the Cube Size Control, reverse the removal procedure.

### REMOVAL AND REPLACEMENT OF THE CURTAIN ASSEMBLY (TWO)

To remove the Curtain Assembly:

1. Remove screws and the Right Side Panel to gain access to the Curtain Assembly to be removed.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.

*Before removing the Curtain Assembly in the next step, look inside the ice chute opening to note the irregular end of the plastic stiffener of the Curtain Assembly is installed at the left side of the opening.*

3. Remove three U-Type Clips and the plastic Curtain Assembly from the top lip of the chute opening.

To replace the Curtain Assembly, reverse the removal procedure.

*Be sure to install the replacement Curtain Assembly with the irregular end of the plastic stiffener positioned at the left side of the ice chute opening; and, the edge of the Curtain is dressed evenly with the top lip of the ice chute opening and secured with three U-Type Clips. The thin, clear plastic sheet of the curtain should hang down evenly.*

#### ////////// **CAUTION** //////////

1. If the factory seal is broken on the replacement Drier, exposing it to the atmosphere more than a few minutes, the Drier will absorb moisture from the atmosphere and lose substantial ability for moisture removal.
2. Be sure the replacement Drier is installed with the arrow positioned in the direction of the refrigerant flow.

//////////

1. Remove the factory seals from the replacement Drier and install the Drier in the refrigerant lines with the arrow positioned in the direction of the refrigerant flow.
2. Solder the Drier into the lines, two places.
3. Secure Drier to Chassis with the drier brace.
4. Purge the system and check for leaks.
5. Thoroughly evacuate the system to remove moisture and non-condensables.
6. Charge the system with refrigerant, by weight. SEE NAMEPLATE.
7. Replace and attach the Left Side Panel and the Front Panel.

### REMOVAL AND REPLACEMENT OF THE FAN MOTOR ASSEMBLY — AIR-COOLED MODELS

#### ////////// **WARNING** //////////

**Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.**

//////////

## ADJUSTMENT AND REMOVAL AND REPLACEMENT

To remove the Fan Motor Assembly:

1. Remove screws and the Left Side Panel and the Front Panel.
2. Disconnect the two electrical leads from the Fan Motor at the Control Box Assembly.
3. Remove screws and the Fan Motor Assembly; and remove the Fan Motor and Bracket from the Condenser shroud.
4. Loosen set screws on the Fan Blade and remove the Fan Blade from the Fan Motor.
5. Remove screws and lockwashers and separate the Fan Motor from the Fan Motor Bracket.

To replace the Fan Motor Assembly, reverse the removal procedure.

*Be sure to replace the Fan Blade with the hub of the Fan Blade facing the Fan Motor, to ensure air flow is toward the Fan Motor.*

### REMOVAL AND REPLACEMENT OF THE FREEZING CHAMBER (TWO)

//////////////////// **WARNING** //////////////////////

**Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.**

////////////////////////////////////

To remove the Freezing Chamber:

1. Remove screws and the Top Panel, Front Panel and the Right Side Panel to gain access to the Freezing Chamber.
2. Tilt the top of the plastic Cube Chute forward slightly, then lift the Cube Chute up for removal.
3. Remove three U-type Clips and the plastic Curtain Assembly.
4. Reach through the ice chute opening in the upper Freezing Chamber and feel for the Spray Bar.
5. Move hand to the center hub and rotate the Spray Bar so one end is aligned with the ice chute opening.
6. Lift the Spray Bar up, off of the jet bearing hub, then remove the Spray Bar through the ice chute opening.
7. Disconnect electrical leads and ground wire from terminals on the Agitator Motor.
8. Reach through the same ice chute opening, as before, and grasp the Drive Fork with one hand, and the Agitator Motor Fan on top of the Freezing Chamber, with the other hand.
9. Hold the Fan Blades still and rotate the left-hand thread Drive Fork to the right, and unscrew the Drive Fork from the Agitator Motor.

10. Remove four screws and lift out the Agitator Motor.
11. Insert and hold firm, a screwdriver through a hole in the top jet bearing, then reach through the ice chute opening of the lower Freezing Chamber and rotate the left-hand thread Drive Fork to the right, COUNTERCLOCKWISE, to unscrew the bottom Drive Fork from the Water Tube.
12. Raise the screwdriver and top jet bearing up, an inch or so, to expose the hole in the Water Tube; next, insert and hold firm, a second screwdriver in the hole in the upper end of the Water Tube; then, rotate the screwdriver in the top jet bearing to the left, CLOCKWISE, to unscrew the bearing from the Water Tube.
13. Remove bearing, both screwdrivers and push the Water Tube UP, and remove the tube through the hole in the Platen and Cover Assembly.
14. Remove hose clamps and work loose four Tygon Tubes from the Freezing Chamber, three from the Water Pump and one drain tube.
15. Remove hose clamps and work loose four Tygon Tubes from the Freezing Chamber, three from the Water Pump and one drain tube.
16. Carefully lift the Platen and Cover Assembly, and tie off or use a board to support and give ample space to allow removal of the Freezing Chamber.
17. Remove screws, lockwashers, bolts, and the front Freezer Mount Plate; also 2 screws and lockwashers from rear Freezer Mount Plate.
18. Carefully work the upper Freezing Chamber out of the Chassis.

To replace the Freezing Chamber, reverse the removal procedure.

### REMOVAL AND REPLACEMENT OF THE WATER PUMP ASSEMBLY (TWO)

//////////////////// **WARNING** //////////////////////

**Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.**

////////////////////////////////////

To remove the Water Pump Assembly:

1. Remove screws and the Right Side Panel and the Front Panel.
2. Unclip and disconnect electrical leads from water pump motor.
3. Remove one screw and one end of the ground wire from the Water Pump Bracket.

## ADJUSTMENT AND REMOVAL AND REPLACEMENT

4. Remove two screws and washers attaching the Water Pump Assembly to the Water Pump Bracket.
5. Remove three spring type clamps and one screw type hose clamp connecting the four Tygon Tubes to the Freezing Chamber; then lift the Water Pump Assembly off of the Water Pump Bracket and work loose the attached Tygon Tubes from the Freezing Chamber.

To replace the Water Pump Assembly, reverse the removal procedure.

### REMOVAL AND REPLACEMENT OF THE WATER REGULATOR ASSEMBLY — WATER-COOLED MODELS

#### ////////////////////// WARNING ////////////////////////

**Be sure the electrical power supply to the icemaker is OFF before proceeding with removal procedures.**

#### //////////////////////

To remove the Water Regulator Assembly:

1. Remove screws and the Left Side Panel and the Front Panel.
2. Check to be sure building source water inlet supply shutoff valve to rear of Chassis is OFF.
3. Bleed off or blow the refrigerant charge through the Schrader valve.
4. Disconnect water inlet supply line at the left bottom rear of the Chassis.
5. Disconnect water line at the inlet and outlet fittings on the Water Regulator Assembly.
6. Unsolder the Water Regulator Valve capillary tube from the Compressor refrigerant discharge line.

*Always install a replacement Drier, any time the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.*

7. Remove the Water Regulator Assembly from the Chassis Base.

To replace the Water Regulator Assembly, reverse the removal procedure.

### REMOVAL AND REPLACEMENT OF THE SPRAY BAR AND WATER TUBE ASSEMBLY

To remove the Spray and Water Tube Assembly:

1. Remove screws and the Right Side Panel to gain access to the Spray Bar Assemblies.
2. Tilt the top of the plastic Cube Chute forward slightly, then, lift the Cube Chute up for removal.
3. Remove three U-type Clips and the plastic Curtain Assembly.
4. Reach through the ice chute opening in the Freezing Chamber and feel for the Spray Bar.
5. Move hand to the center hub and rotate the Spray Bar, so one end is aligned with the ice chute opening.
6. Lift the Spray Bar up, off of the jet bearing hub, then, remove the Spray Bar through the ice chute opening.
7. Disconnect electrical leads and ground wire from terminals on the Agitator Motor.
8. Reach through the upper ice chute opening, and grasp the Top Fork with one hand, and the Agitator Motor Fan on top of the Freezing Chamber, with the other hand.
9. Hold the Fan Blades still and rotate the left-hand thread Drive Fork to the right, COUNTERCLOCKWISE, and unscrew the Drive Fork from the Agitator Motor.
10. Remove four screws and lift out the Agitator Motor.
11. Insert and hold firm, a screwdriver through a hole in the top bearing; then, reach through the ice chute opening of the lower Freezing Chamber and rotate the left-hand thread Drive Fork to the right, COUNTERCLOCKWISE, to unscrew and remove the bottom Drive Fork from the Water Tube. Remove the lower Spray Bar.

# SERVICE DIAGNOSIS

The Service Diagnosis Section is for use in aiding the serviceman in diagnosing a particular problem and for pin-pointing the area in which the problem lies. It is an ever available reference for proper corrective action.

The following charts list corrective actions for the causes of known symptoms of certain problems that can occur in the Icemaking-Refrigeration system.

## ICEMAKING - REFRIGERATION SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Irregular shape cubes and some cloudy.	Some jets plugged.	Clean jets.
	Shortage of water.	See Shortage of water CORRECTION.
	Unit not level. Water overflowing vent holes on low side, burning cubes.	Level cabinet, as required.
Cube improper size.	Cube Size Control set too cold.	Rotate Cube Size Control dial toward WARMER.
	Cube Size Control set too warm.	Rotate Cube Size Control dial toward COLDER.
	Partially restricted capillary tube.	Blow refrigerant charge; replace drier; evacuate system; add refrigerant charge.
	Moisture in system.	Same as above CORRECTION.
	Shortage of water.	See Shortage of water CORRECTION.
	Loss of refrigerant.	Check for refrigerant leaks, correct leaks; recharge system.
Cloudy Cubes.	Shortage of water.	See Shortage of water SYMPTOM.
	Dirty water supply.	Install water filter or softener.
	Accumulated impurities.	Use SCOTSMAN Ice Machine Cleaner.
Shortage of water.	Water spraying out through curtain.	Hang curtain in proper position.
	Water solenoid not opening.	Repair or replace solenoid.
	Water leak in sump area.	Locate leak and repair or correct condition.
	Partial restriction in water strainer, located within water inlet of water solenoid.	Clean or replace strainer.
	Flow control plugged.	

## SERVICE DIAGNOSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Decreased ice capacity	Poor circulation or extreme hot location.	Relocate the cabinet; or provide ventilation by cutting openings.
	Dirty Air-cooled condenser or faulty fan motor.	Clean Air-cooled condenser, or replace or repair fan motor.
	Lo water pressure to Water-cooled condenser.	Restore water pressure.
	Improper charge of refrigerant.	Refer to refrigerant charge indicated on name plate and correct.
	Non-condensable gas in the system.	Purge the system.
	Hot gas solenoid valve leaking.	Replace valve.
	Partially restricted capillary tube.	See Cubes too small CORRECTION.
Decreased ice capacity	Defective compressor.	Replace compressor.
	Leaky inlet water valve.	Repair or replace valve.
Poor harvests.	Too short defrost time.	Check and adjust harvest cycle. Check Timer 3.5-minute setting.
	Restriction in water inlet line.	Check strainer and flow check valve. DO NOT remove flow control washers.
	Hot gas solenoid does not open.	Binds or burned out. Replace.
	Plugged air vent holes in upper part of cube cups.	Clean out air vent holes.
	Improper refrigerant charge.	Check or recharge system.
Poor harvests.	Water pressure too low.	Check for 20 PSI flowing water.
Compressor cycles intermittently.	Dirty condenser.	Clean condenser with vacuum cleaner or brush. NO WIRE BRUSH.
	Air circulation blocked.	Locate cabinet with adequate air space for proper air flow.
	Low voltage.	Check for circuit overload. Check building supply voltage; if low, contact power company.
	Defective Fan Motor.	Replace Fan Motor.
	Non-condensable gases in system.	Purge the system.
	Check compressor, start components.	Replace defective components.

## SERVICE DIAGNOSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Icemaker will not operate.	Blown fuse in line. Master switch in OFF position. Hi head pressure reset open.  Faulty Master switch. Timer contacts open. Faulty Bin thermostat.	Replace fuse and check for cause. Set switch to ON position. Reset control.  Replace switch. Replace Timer microswitch. Replace faulty Bin thermostat.
Freeze-up.	Dirty condenser coil (Air-cooled) Loss of water or water pressure. High Ambient. Faulty water solenoid. Faulty hot gas solenoid. Faulty agitator motor. Faulty timer. Faulty cube size control. Loss of refrigerant. (Leak) Harvest cycle too short. Cold air temp. and cold water.	Clean coil. Restore water pressure. Adjust cube size control warmer. Replace water solenoid. Replace hot gas solenoid. Replace agitator motor. Replace timer. Replace cube size control. Repair leak and recharge. Adjust harvest cycle time.



# MAINTENANCE & CLEANING INSTRUCTIONS

## GENERAL

The periods and procedures for maintenance and cleaning are given as guides and are not to be construed as absolute or invariable. Cleaning especially will vary, depending upon local water conditions and the ice volume produced; and, each icemaker must be maintained individually, in accordance with its own particular location requirements.

## ICEMAKER

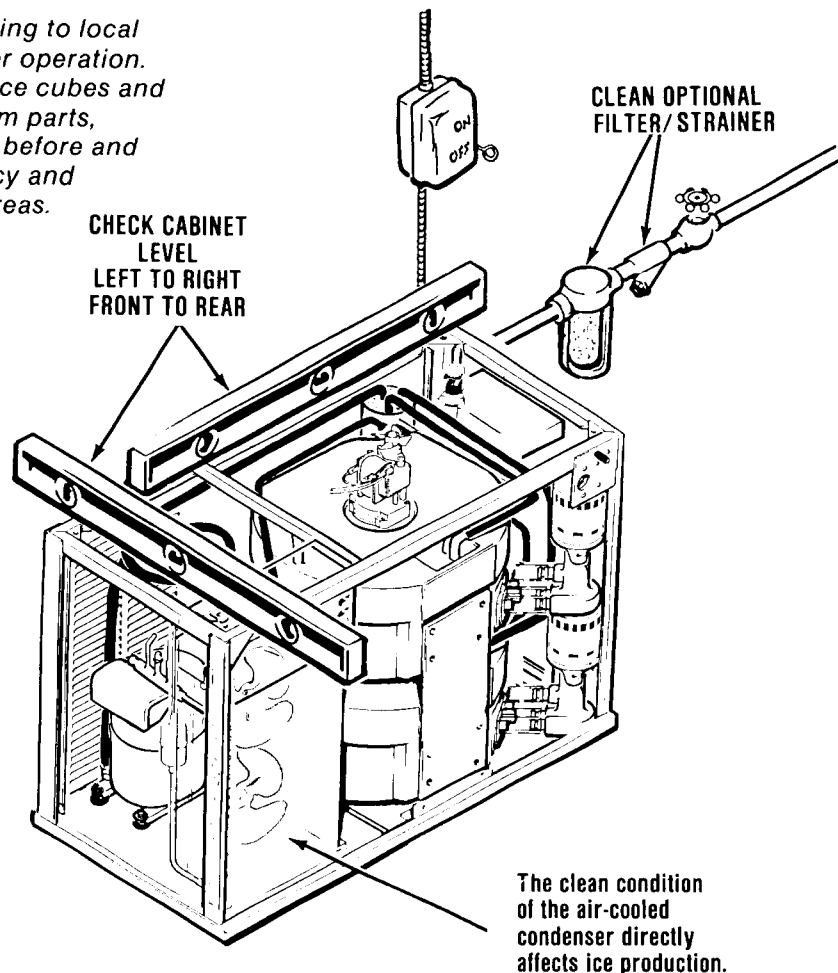
THE FOLLOWING MAINTENANCE SHOULD BE SCHEDULED AT LEAST TWO TIMES PER YEAR ON THIS ICEMAKER. CALL YOUR AUTHORIZED SCOTSMAN SERVICE AGENCY.

1. Check and clean or service any optional water treatment devices, if any installed.
2. Check the MC35 cabinet is level, in the side-to-side and front-to-back directions.
3. Clean the water system, evaporator freezing chamber reservoir and spray bar using a solution of SCOTSMAN Ice Machine Cleaner. Refer to CLEANING.

*Cleaning requirements vary according to local water conditions and individual user operation. Continuous check of the clarity of ice cubes and visual inspection of the water system parts, evaporator and the sump assembly before and after cleaning will indicate frequency and procedure to be followed in local areas.*

4. Check that the plastic curtain hangs down evenly within the opening.
5. Check and tighten all bolts and screws.
6. Check and tighten all electrical connections.
7. Check hot gas solenoid valve for correct operation.
8. With MASTER ON-OFF switch and COMPRESSOR ON-OFF switch in the OFF position, clean the condenser using vacuum cleaner, whisk broom or brush. Instruct customer to clean condenser frequently. DO NOT USE A WIRE BRUSH.
9. Check for water leaks and make corrections.
10. Check the bin thermostat control bulb to test shut off. Holding ice against bin thermostat control bulb should cause the icemaker to shut off at the end of the harvest cycle.

Within minutes after ice is removed from the bin thermostat control bulb, the icemaker will restart.



*Maintenance and Cleaning*

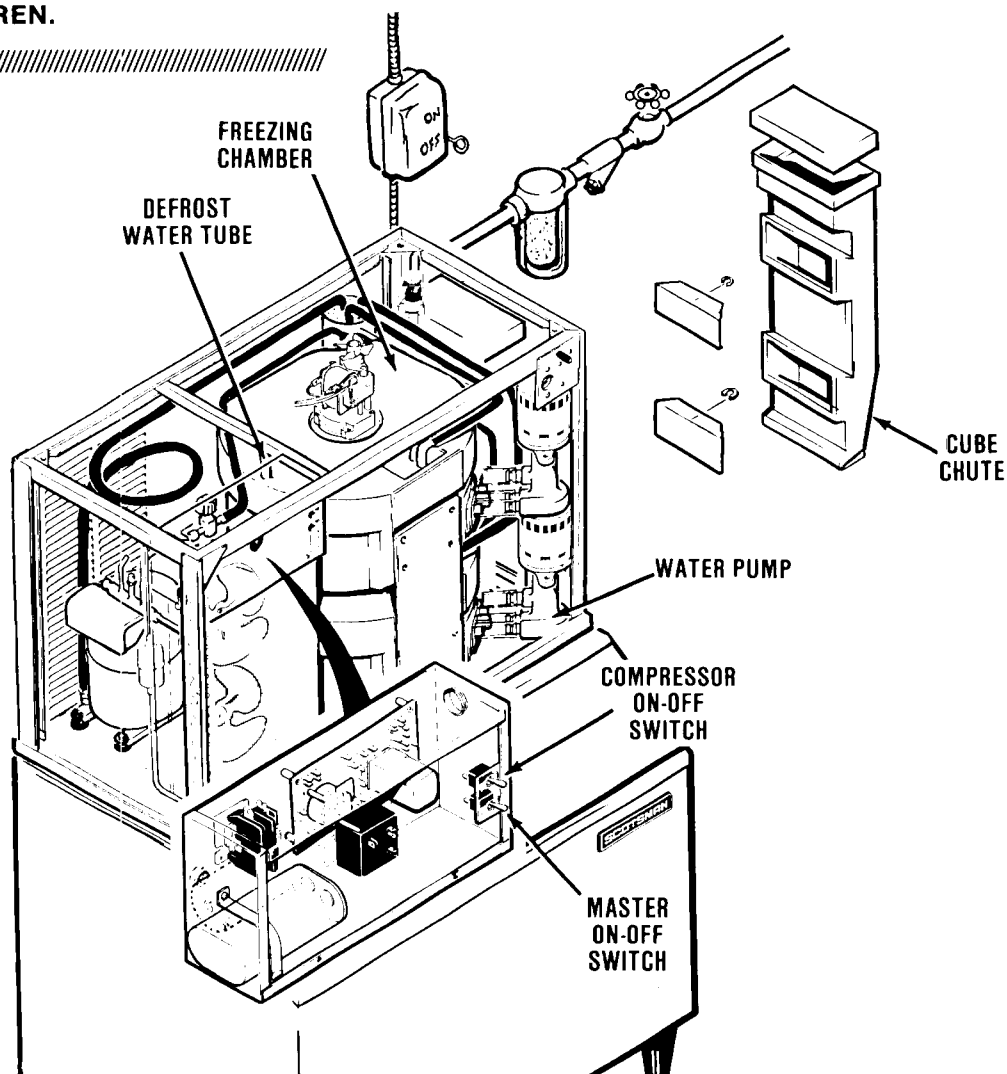
# MAINTENANCE & CLEANING INSTRUCTIONS

## CLEANING - Icemaker

1. Remove screws and front, top, and right side panel.
2. Move the Master ON-OFF switch and the compressor ON-OFF switch, on the control box, to the OFF positions.
3. Tilt the top of the plastic cube chute forward slightly, then lift the cube chute up for removal.
4. Drain sumps using drain hose clipped to pumps, then re-attach drain hose.
5. Prepare the following cleaning solution: Mix 16-ounces of SCOTSMAN Ice Machine Cleaner with eleven pints of fresh, potable water in a clean container.
6. Pour the batch of prepared cleaning solution into the upper and lower freezing chamber through each curtain opening.
7. Immediately replace the defrost water tube; then, move the master ON-OFF switch, on the control panel, to ON.
8. Allow the icemaking system to operate normally for twenty minutes in the freezing cycle. NO ICE CUBES will be made, because the compressor has been switched OFF.
9. At the end of twenty minutes, rotate the shaft of the timer and switch assembly, CLOCKWISE, to start a second harvest cycle. See Start Positions illustration.

## WARNING

SCOTSMAN Ice Machine Cleaner contains Phosphoric and Hydroxyacetic acids. These compounds are corrosive and may cause burns. If swallowed, DO NOT induce vomiting. Give large amounts of water or milk. Call physician immediately. In case of external contact, flush with water. KEEP OUT OF THE REACH OF CHILDREN.



## MAINTENANCE & CLEANING INSTRUCTIONS

10. Rotate the shaft of the timer and switch assembly, protruding through the hole in the front of the control box cover, until the microswitch actuator arm drops into the cam slot, the START POSITION of the harvest cycle, then stop. See *Start Positions* illustration.
11. Allow the icemaking system to operate normally through the harvest cycle; then, when the harvest cycle is completed, rotate the timer again THROUGH the freezing cycle to START another harvest cycle. Perform this harvest cycle operation three times. During each harvest cycle, fresh inlet water is introduced into the water system and acts to rinse all water-related parts and to wash away most mineral concentration through the drain.
12. Wash the curtain assembly and the cube chute in a solution of one ounce of household bleach in one gallon of water.
13. Using a clean, damp cloth or disposable paper wiper, wipe off the curtain assembly and the cube chute.
14. Replace the curtain assembly and the cube chute.

15. Move the compressor ON-OFF switch, on the control box, to the ON position.
16. Check each ice cube harvest, until the ice cubes are clear and the acid taste is eliminated.

//////////////////// **WARNING** //////////////////////

**DO NOT USE ice cubes produced from the cleaning solution. Be sure no ice remains in the bin. Rinse and wipe clean inside bin walls.**

////////////////////////////////////

17. Pour hot water over ice cubes in the bin, to melt the ice cubes and allow the same cleaning solution to be used to thoroughly wash the inner surfaces of the bin and the solution to help clean the drain lines as it drains. Rinse inner surfaces of bin.
18. Replace all panels and screws.
19. Clean and sanitize the interior bin surfaces each week.