

MF700

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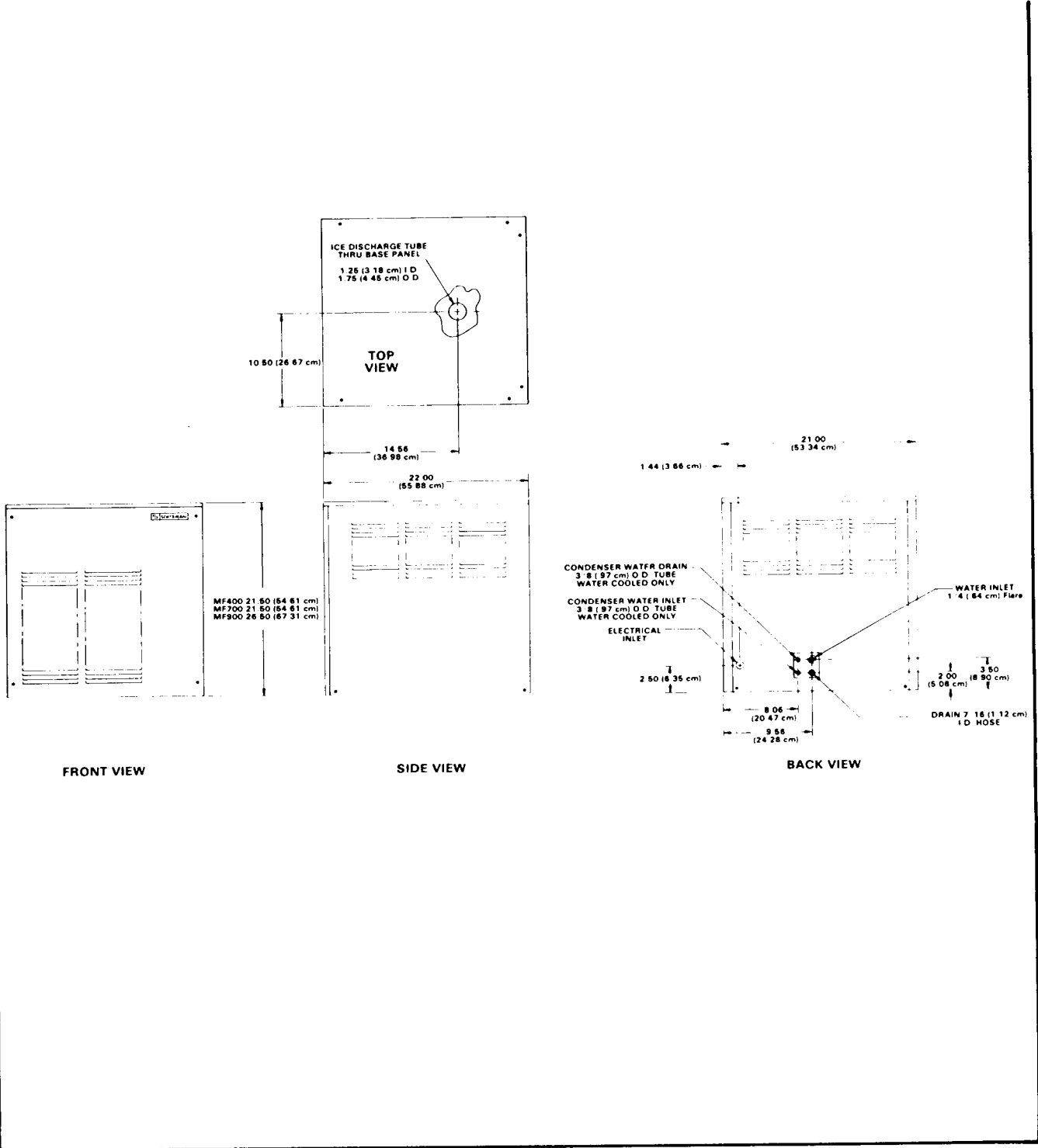
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Parts lists and wiring diagrams are in the center of this manual, printed on yellow paper.

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SPECIFICATIONS



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EASY ACCESS SERVICE PANELS

OPTIONAL PANELS KIT

SPKMF700A Stainless steel panel for use with the MF700.

SEE NAMEPLATE for electrical and refrigeration specifications. Locate the NAMEPLATE on the lower, left part of the Rear Panel. Shown at left.

MODEL NUMBER		MOTORS	VOLTS	HP/WATT	F.L.A.	L.R.A.
SERIAL NUMBER		COMP				
REFRIGERANT 12	HEATER	DRIVE				
07	WATTS	FAN				
	OTHER					
TEST PRESSURE 140 LO - 235 HI						
A.C. SUPPLY VOLTAGE			WIRES	CYCLES	PHASE	
MAXIMUM FUSE SIZE	AMPS	MINIMUM CIRCUIT AMPACITY				

Remove Front Panel to locate the Model/Serial Number plate, shown below, on the front center of the chassis base.

MODEL NUMBER	
SERIAL NUMBER	

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



This icemaker has been engineered to our own rigid safety and performance standards. The National Sanitation Foundation (NSF) seal, signifies that it is listed with the NSF and that it complies with the materials and construction standards of the NSF. In addition, the Underwriters Laboratories, Inc., (UL) Listing Mark and the Canadian Standards Association (CSA) Monogram, both signify that its construction and design have been inspected and tested by them. NSF, UL and CSA inspectors also periodically examine production icemakers at the factory, to assure continued compliance.

To retain the safety and performance built into this icemaker, it is important that installation and maintenance be conducted in the manner outlined in this manual.

GENERAL INFORMATION & INSTALLATION

INTRODUCTION

This manual provides the specifications and the step-by-step procedures for the installation, start-up and operation, and the maintenance and cleaning for the SCOTSMAN Model MF700 Modular Flakers.

The Model MF700 Modular Flakers are quality designed, engineered and constructed, and thoroughly tested ice-making systems, providing the utmost in flexibility to fit the needs of a particular user. Separate sections detail more specifically: General Information & Installation; Start Up Operation; Principles of Operation; Adjustment and Removal and Replacement Procedures; Maintenance and Cleaning Instructions; Service Diagnosis; Wiring Diagrams; and, the Illustrated Assemblies and Parts Lists.

DESCRIPTION

An attractive compact cabinet of leathergrain embossed steel, with charcoal brown baked enamel high glossy finish. Also, an optional stainless steel panel kit is available. These removable panels allow easy access to electrical and mechanical components for cleaning and maintenance.

SEALED REFRIGERATION SYSTEM

To provide quiet efficient operation of the Icemaker, the Compressor motor is internally spring-mounted. The Compressor motor is covered by a five year parts warranty. The Freezer Assembly is powered by a direct-drive, gear motor, Drivemotor Assembly.

STORAGE BINS

Since the MF700 Modular Flakers are continuous flow type icemakers and do not have their own attached ice storage bins, it is necessary to use an auxiliary bin, such as the bins listed below:

Use Bins: B60, B90

Recommended for B-60, BX25 Extension and KBT1 top.

UNPACKING AND INSPECTION

1. Call your authorized SCOTSMAN Distributor or Dealer, for proper installation. He's listed under ICE MAKING EQUIPMENT and MACHINERY in the yellow pages of the telephone book.
2. Visually inspect the exterior of the shipping container and skid and any severe damage noted, should be reported to the delivering carrier; and, a concealed damage claim filed subject to internal inspection, with carrier representative present.
3. BEFORE removal of any panels or packing, carefully lay the cabinet on its back and remove the shipping bolts and the shipping base or skid.
4. When ordered, install the optional leg levelers in the cabinet base sockets; then, raise the cabinet to the upright position.
5. Remove screws and shipping tape, and all doors and service panels from the cabinet, and inspect for any concealed damage. Notify carrier of any concealed damage claims, as stated in step 2 above.
6. Remove all internal support packing, tape and wires in machinery compartment.
7. Check that refrigerant lines do not rub or touch lines or other surfaces, and that fan blades, if any, move freely.
8. Check that the Compressor is snug on all mounting pads.
9. Use clean damp cloth or disposable paper wiper to wipe clean the exterior surfaces of the cabinet.
10. See NAMEPLATE on the rear service panel, near the left rear corner of the cabinet and check that the location source voltage corresponds with the voltage specified on the nameplate.

CAUTION

Improper voltage supplied to the Icemaker will void your parts replacement program.

12. Remove the Manufacturer's Registration Card from the front of the User's Manual and fill in all spaces including: Model Number and Serial Number taken from the aluminum plate located at the front center of the Chassis base, with Front Panel removed. Forward the completed, self addressed, registration card to the SCOTSMAN Factory.

LOCATION AND LEVELING

CAUTION

This Modular Flaker is NOT designed for outdoor installations where air temperatures are below 50-degrees F., or above 100-degrees F., and the water temperature is below 40-degrees F. or above 100-degrees F. Extended periods of operation at temperatures exceeding these limitations will constitute misuse, under the terms of the SCOTSMAN Manufacturer's limited warranty coverage.

1. Position the Flaker in the selected permanent location.

NOTE

Prior consideration for location site shall include:

1. *Minimum room temperature 50-degrees F. and maximum room temperature 100-degrees F.*
2. *Water inlet temperatures: Minimum 40-degrees F. and Maximum 100-degrees F.*
3. *Well ventilated location for Air-Cooled model, advising user to frequently clean Condenser, located directly behind front service panel.*
4. **SERVICE ACCESS:** *Adequate space for all service connections, through the rear of the Cabinet. A six-inch minimum clearance at rear, left and front louvered panels, for routing cooling air drawn into and exhausted out of the compartment, to maintain proper condensing operation on Air-Cooled models.*

2. Level the Cabinet in both the left-to-right and front-to-rear directions. The optional leveling legs can be adjusted with an open-end switch.

ELECTRICAL CONNECTIONS

SEE NAMEPLATE for current requirements to determine wire size to be used for electrical hookup. The Modular Flaker requires a solid earth ground wire. See wiring diagram.

Be certain the Modular Flaker is connected to its own electrical circuit and individually fused. The maximum allowable voltage variation should not exceed 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 overload switch and motor windings.

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

A. AIR-COOLED MODELS: The recommended water supply line is a 1/4-inch O.D. copper tubing. 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 Cabinet.

In some cases, a plumbing permit and services of a licensed plumber will be required.

CAUTION

To prevent damage to the freezer mechanism, DO NOT operate this unit when the water supply is OFF, or is below 20 PSI, the recommended water pressure. Position the master switch to the OFF position, until proper water supply is resumed.

The Icemaker in this Cabinet will not operate when water supply temperatures are below 40-degrees F. or above 100-degrees F.

B. WATER-COOLED MODELS: On Water-Cooled models a separate connection, to the Condenser is required. A 3/8-inch O.D. copper tubing is provided for a separate water inlet line to be connected and a separate drain line to be connected.

NOTE

The CAUTION, in the test above for the Air-Cooled models equally applies for the Water-Cooled models. In both type installations, water supply must be installed to conform with local plumbing codes. In some cases, a plumbing permit and services of a licensed plumber will be required.

- C. DRAIN CONNECTIONS: All drains are gravity type and must be 1/4-inch per foot on horizontal runs. The drains to be installed to conform with local code. The drain receptacle should be an open, trapped or vented construction.

Recommended Bin drain is 5/8-inch O.D. copper tubing, should be vented and run separately. Connect a drain line to 7/16-inch I.D. tube from the freezer drip pan and a separate drain line to 3/8-inch O.D. drain tube from the Water-Cooled Condenser, on Water-Cooled models.

CAUTION

This Modular Flaker will NOT operate when water supply temperature is below 40-degrees F., or above 100-degrees F. Requires 20 PSI flowing water pressure, without interruption.

BIN THERMO BRACKET INSTALLATION

When shipped from the factory, each Modular Flaker has a Nylobraid ice transport tube which must be attached to the end of the Ice Spout, with a hose clamp. The free end of the tube has a Bin Thermo Bracket installed and secured to it with tape. The Bin Thermostat capillary tube is also installed and secured through slots and snug around tabs on the Bin Thermo Bracket, ready for final installation into an ice storage bin.

Most SCOTSMAN upright or vertical Bins have pre-punched holes. Punch out hole that aligns with the hole in the Flaker cabinet base and install the Flaker on top of the bin. Next,

insert the assembled Bin Thermo Bracket through the two-inch hole in the cabinet base into the Bin. Attach the flange of the Bin Thermo Bracket to the cabinet base, two places, with two No. 8 Sheet Metal Screws; then, slide the Sealing Pad, on the tube, down flush with the cabinet base around the tube.

FINAL CHECK LIST

1. Is the Cabinet level? (IMPORTANT)
2. Have all electrical and piping connections been made?
3. Has the voltage been tested and checked against the nameplate rating?
4. Is the water supply line shutoff valve installed and electrical wiring properly connected?
5. Have the Bin and Cabinet been wiped clean?
6. Have the Compressor hold down nuts been checked, to be sure the Compressor is snug on the mounting pads?
7. Has the owner/user been given the User Manual and instructed on how to operate the Ice maker.
8. Has the Manufacturer's Registration Card been properly filled out? Check for correct Model and Serial numbers from Serial nameplate, then mail the completed card to the SCOTSMAN factory.
9. Check all refrigerant lines and conduit lines, to guard against vibration or rubbing and possible failure.
10. Is there at least six inches clearance behind and around Cabinet for proper air circulation?
11. Is the Cabinet in a room where ambient temperatures are a minimum of 50-degrees F. all year around?
12. Has water supply pressure been checked to insure a minimum of 20 PSI?
13. Has the owner been given name and telephone number of the authorized SCOTSMAN Service Agency serving him?

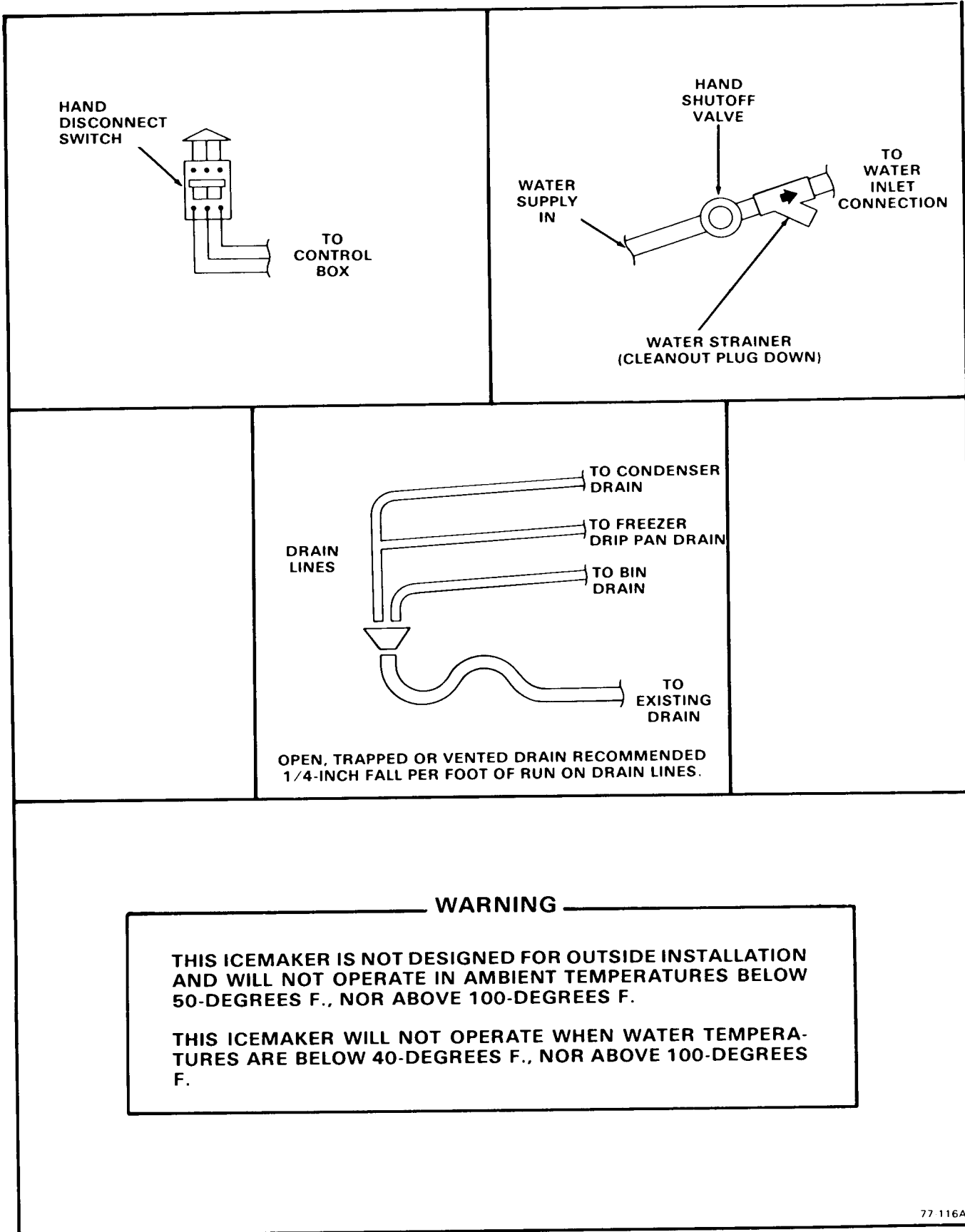


Figure 1-1. Installation Practice.

OPERATING INSTRUCTIONS

START UP

1. Remove screws and the Front Panel.
2. OPEN the water supply line shutoff valve.
3. Observe the water filling operation, see Figure 2 - 1:
 - a. Water flows into Water Reservoir.
 - b. Float moves up as water rises.
 - c. Water flows through water feed line to bottom of Freezer Assembly.
 - d. Float stops water flow, when water level reaches 3/8-inches below the molded horizontal line, on the body of the Water Reservoir.
4. Move the manual ON-OFF toggle switch, on the front of the Control Box to the ON position, to start the automatic icemaker operation.

5. After two or three minutes of operation, observe that flaked ice begins dropping off the Auger and out the Ice Spout, through the Nylobraid tubing and into the Ice Storage Bin.
6. Let the system operate for about 30 minutes or until ice covers the bottom of the Bin. Check for any excess noises beyond normal Compressor noise:
 - a. Fan noises, when Air-Cooled: Blades touch other surfaces; blades bent, out-of-balance.
 - b. Vibrating type, from touching lines.
 - c. Chattering: Lack of water in Freezer.
 - d. Compressor loose at one or more holddown bolts.

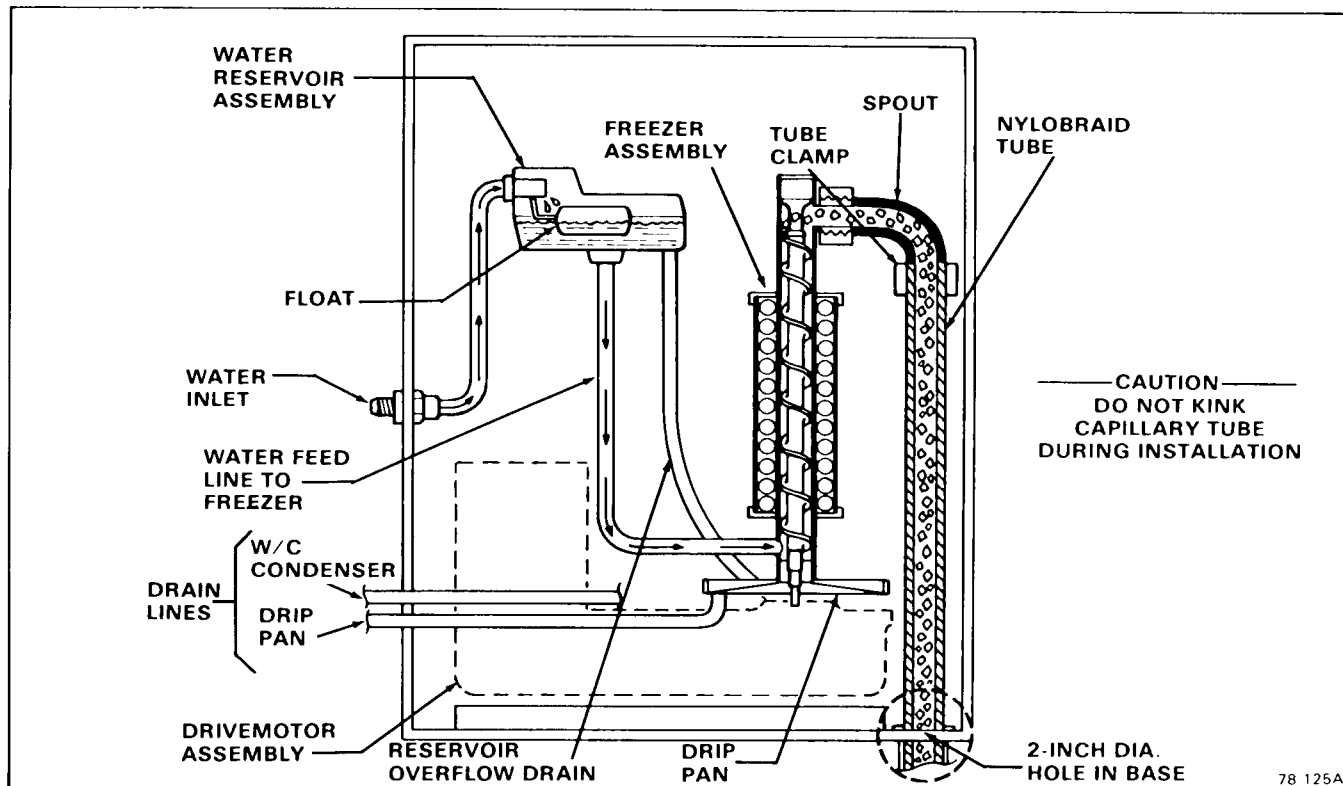


Figure 2 - 1. Water Schematic.

CAUTION

DO NOT operate this Icemaker when the water supply is shut **OFF**, or is **BELOW** the recommended **20 PSI** water pressure. Move the manual **ON-OFF** toggle switch on the front of the Control Box to the **OFF** position immediately.

7. Hold a handful of ice around the Ice storage Bin Thermostatic Control Bulb to test shutoff. Less than one minute is about normal for Bulb shutoff function to cause the Compressor to stop.

NOTE

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. Normal setting: about 35-degrees F. CUT-OUT and 45-degrees F. CUT-IN, to prevent short cycling.

8. 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 Service Agency serving him.

PRINCIPLES OF OPERATION

How It Works

ICEMAKER.

The water supply flows from the building source through the inline water strainer, enters at the Cabinet fitting and on to the Water Reservoir. The Water Reservoir functions to maintain a constant water level inside the Freezer Assembly. Water from the Water Reservoir enters at the bottom of the Freezer Assembly and is changed into ice by low temperatures inside the Freezer.

A stainless steel Auger within the Freezer is powered by the Drivemotor Assembly, a direct-drive gearmotor, and the rotating Auger carries the ice upward to the flared end of the Auger, see Figure 3-1, where excess water is pressed out of the ice, as it is extruded or flaked out through the Ice Spout, through the Nylo-braid tubing and into the Ice Storage Bin.

Moving the manual ON-OFF toggle switch, on the front of the Control Box, to the ON position starts the automatic and continuous ice-making process. When the Ice Storage Bin has been filled with ice, up to the level of the Thermostatic Control Bulb, the sensing bulb shuts off the icemaking process.

As the ice is removed from the Ice Storage Bin, the Thermostatic Control Bulb warms up, restarting the automatic icemaking process.

Factory settings are 35-degrees F. CUT-OUT and 45-degrees CUT-IN.

Altitude correction begins at 2000 feet, CUT-IN and CUT-OUT screws should be adjusted equally, not more than one-fourth turn at a time.

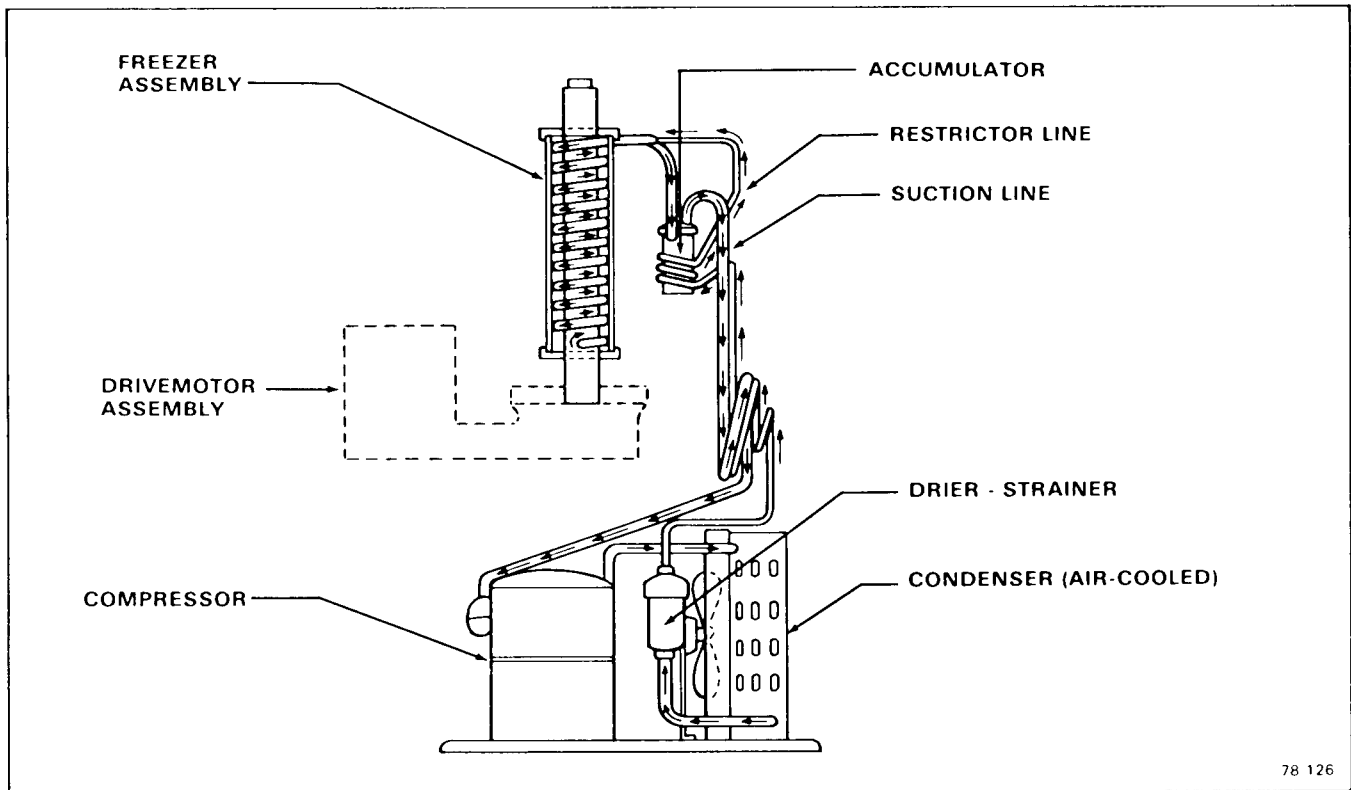


Figure 3 - 1, Refrigeration Cycle.

ELECTRICAL/REFRIGERATION

This ice flaker is designed to operate on 115 volts, 60 hertz, single phase. Special voltages may be produced, so always check the nameplate for voltage and ampacity.

Cold air temperatures around the cabinet, and interruptions in the water supply are conditions that can cause excessively hard ice and **overloads** within the evaporator, which in turn causes the auger drive motor to overload.

When the auger drive motor slows down to a certain speed, a switch within the motor opens the electrical circuit to the compressor contactor, stopping the refrigeration of the evaporator. As the drive motor continues to turn, and the evaporator warms up, the load on the drive motor will decrease. Eventually the auger drive motor will reach the speed at which the internal switch will close, and compressor will be restarted.

A **spout switch** is mounted on the side of the spout, and is actuated by the movement of the spout elbow. If ice jams in the spout elbow, the pressure of ice from the evaporator will push the elbow assembly (against a spring) pulling a switch actuator with it. If it moves far enough, the switch actuator will push open a microswitch, stopping the ice maker. This switch must be manually reset. The spout switch acts a backup to the bin thermostat, and if it trips, the thermostat or it's location would be suspect.

There are two safety control in the air cooled model's control box. One is the **low pressure** control. This control is an automatic reset control connected to the low side of the refrigeration system. It is set to open at 0-4 psig. It re-closes at 17-20 psig. The other control is the **auger delay** control. Its function is to temporarily maintain drive motor operation after the bin control has switched off the compressor. Water cooled models also have a **high pressure** control that opens at 250 psig (as when the water supply to the condenser is cut off).

Check the wiring diagram to trace the circuits involved.

As shown on all Scotsman wiring diagrams, the controls are in the icemaking mode. Checking the auger delay:

The 1-2 contacts are closed. At start up they would be open.

The 3-2 contacts are open. At start up they would be closed.

The contacts switch position as the low side pressure drops past 20 psig. This removes the operating controls, such as the bin thermostat, from the gear motor circuit. If one of the operating controls opens, it will shut off the compressor, but the drive motor will keep running through contacts 1-2 of the auger delay control. When the low side refrigeration pressure gets high enough (over 32 psig) the auger delay will reset, and contacts 1-2 will open, removing power from the gear motor. The machine is again ready to restart. Note that there is a contactor isolation relay (relay B) in the circuit. It is there to prevent momentary arcing of the compressor contactor as the auger delay switches the gearmotor off.

On all models, there is a **low water pressure** control switch. It's function is to stop the machine should water pressure to the ice maker fall below 10 psig. It will not allow the machine to restart until the water pressure is above 20 psig.

On water cooled models, the head pressure is maintained by a **water regulating valve**, and should be around 135 psig. Air cooled models' head pressure will vary depending upon air temperature around the cabinet, but is usually about 130 psig.

Suction pressure should be 13 psig and the frost line should extend out from the accumulator.

Suction pressure will vary about 2 psig plus or minus, depending upon air and water temperatures.

Always charge the machine to the nameplate charge.

ADJUSTMENT AND REMOVAL AND REPLACEMENT PROCEDURES

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 upper part of the Control Box Assembly.

CAUTION

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 illustrations. Over-adjusting or erratic guessing, can foul the instrument and cause ultimate delay and part replacement, **WHICH COULD HAVE BEEN PREVENTED.**

ADJUSTMENT IS FOR UNITS INSTALLED 2,000 FEET OR MORE ABOVE SEA LEVEL

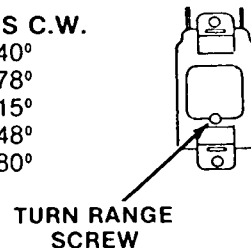
Read the instructions thoroughly before performing any adjustment or removal and replacement procedures.

ADJUSTMENT OF THE BIN THERMOSTAT CONTROL

(Installations 2,000 feet above sea level only)

ALTITUDE CORRECTION (ROBERTSHAW ONLY)

ALTITUDE	TURNS C.W.
2,000	40°
4,000	78°
6,000	115°
8,000	148°
10,000	180°



See Figure 4-1 for location and direction of rotation, clockwise (CW) or counterclockwise (CCW), of the adjusting screws on the Temperature Control, in the particular Control Box the adjustment is to be performed.

ADJUSTMENT OF THE LEG LEVELERS

When the MF700 Flaker or Bin is ordered with the optional Leg Levelers, the Cabinet must be leveled in the front-to-rear and side-to-side directions. This adjustment should be performed during initial installation of the Cabinet and anytime the Cabinet is moved from the original location to another site.

- A. Using an open-end wrench, and a carpenter's bubble level, rotate the threaded Leveler in each Leg to RAISE or LOWER the Cabinet until the Cabinet is level in the front-to-rear direction.
- B. Repeat step A, for leveling in the side-to-side direction.
- C. Recheck both the front-to-rear and the side-to-side leveling and repeat adjustments, as necessary.

ADJUSTMENT OF THE WATER REGULATOR ASSEMBLY

The correct head pressure on Water-Cooled models is 135 PSIG. Adjustments can be performed on the Water Regulator Assembly to increase or decrease the head pressure.

To Adjust the Water Regulator Assembly:

- A. To INCREASE the Head Pressure: Rotate the adjusting Screw, on the Water Regulator Assembly IN or CLOCKWISE.
- B. To DECREASE the Head Pressure: Rotate the adjusting Screw, on the Water Regulator Assembly OUT or COUNTERCLOCKWISE.

ADJUSTMENT OF THE WATER RESERVOIR FLOAT

The correct water level in the Water Reservoir should be 3/8-inch below the raised molded line, on the side of the body of the Water Reservoir. When the water line level is above or below the raised molded line, adjustment can be performed to raise or lower the water level by raising or lowering the Water Reservoir in the slots on the Mounting Brackets, which in turn will adjust the action of the float.

- A. To RAISE the Water Level: Loosen the two Screws which attach the Water Reservoir Assembly to the Mounting Bracket

and RAISE the Water Reservoir Assembly, in the slots, the desired amount; then, tighten the Screws.

- B. To LOWER the Water Level: Loosen the two Screws which attach the Water Reservoir Assembly to the Mounting Bracket and LOWER the Water Reservoir Assembly, in the slots, the desired amount; then, tighten the Screws.

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.

REMOVAL AND REPLACEMENT OF THE AUGER, WATER SEAL, BEARINGS AND COUPLING

- A. To Remove the Auger, Water Seal, Bearings, and Coupling:
 1. Remove screws and the Front Panel and the Left Side Panel.
 2. Remove the Freezer Cap from the top of the Freezer Assembly.
 3. Perform the steps in procedure IV-XIII to remove the Spout Assembly.
 4. Grasp the wire Cap Hook at the top of the Freezer Assembly and pull out the Auger and attached Cap, Bearing/Retainer, Bearing and O-Rings, at the top of the Auger; and, the top half of the Water Seal at the bottom of the Auger.

NOTE

When the Auger cannot be pulled out, proceed to steps 12 and 13, to gain access to the bottom of the Auger. Then, with a rawhide mallet or placing a piece of wood on the bottom end of the Auger, tap the bottom of the Auger to break it loose and pull the Auger out, as in the step 4 above.

5. Remove the Cap Hook from the Bearing/Retainer.
6. Remove the Retaining Ring and the Cap.
7. Remove the Cap Screw and Washer and remove the Bearing/Retainer from the Auger.
8. Clean away the old grease from the top of the Auger, the Bearing/Retainer, Cap, Cap Screw and Washer, and the O-Ring and Retaining Ring.

9. Inspect the O-Ring at the top of the Bearing/Retainer and the O-Ring at the bottom outside of the Bearing/Retainer, for cuts, tears and general worn condition to determine replacement.
10. Inspect the Bearing pressed into the top of the Bearing/Retainer and, if it is to be replaced, remove the Retaining Ring and press the Bearing out of the Bearing/Retainer.
11. Slide the upper half of the Water Seal off of the bottom of the Auger.

NOTE

1. Any time the Auger is removed for replacement, or, for the inspection and replacement of the Bearings or Coupling, use extra care in handling the Water Seal parts, so no dirt or foreign matter are deposited on the surfaces of the Seal.
2. If there is any doubt about the effectiveness of the Water Seal or O-Ring, **REPLACE THEM**. A dirty, worn or faulty Water Seal or O-Ring will cause a leak and ultimately require a second, time consuming removal and replacement procedure to be performed, that **COULD HAVE BEEN PREVENTED**.

12. Remove four screws and lockwashers which attach the Freezer Assembly to the Adaptor on the Drivemotor Assembly.
 13. Raise the Freezer Assembly off of the Adaptor, to gain access to the Bearing and Retainer; then, temporarily secure the Freezer Assembly out of the way to allow room to work. Be careful not to damage the gasket.
 14. Using a suitable length and size wooden dowel or stick inserted through the top of the open Freezer Assembly, tap the lower half of the Water Seal and the lower Bearing in the Retainer, out the bottom of the Freezer Assembly.
 15. Inspect the lower half of the Water Seal. If reusable, use care to protect it from dirt, etc. prior to replacement procedure.
 16. Inspect the lower Bearing in the Retainer; and, if the Bearing is to be replaced, press the Bearing out of the Retainer.
 17. Reach through the Adaptor and remove the Coupling on the Drivemotor for inspection.
 18. Check the Coupling for cracks, chipping and excessive wear.
- B. To replace the Auger, Water Seal, Bearings, and Coupling, reverse the removal procedure.

NOTE

1. When installing the Retainer assembled with Bearing, in the bottom of the Freezer Assembly, some Retainers will insert as a slip fit, and some will have to be forced into place because of very tight fit. Carefully tap a piece of wood positioned across the bottom of the Retainer, to evenly seat the Retainer in the chamber of the Freezer.
2. After assembling the parts on the upper end of the Auger and **BEFORE** installing the Cap and Cap Hook, apply an ample coating of Shell Alvania 3 Grease, P/N 19-0309-01, to the upper part of the Bearing/Retainer to cover the Retaining Ring and the Cap Screw and Washer. Then, install the Cap and Cap Hook in place.

REMOVAL AND REPLACEMENT OF THE COMPRESSOR ASSEMBLY

NOTE

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.

A. To Remove the Compressor Assembly:

1. Remove screws and the Left Side Panel.
2. Remove two screws and the Cover from the Compressor Junction Box.
3. Disconnect the electrical leads at the Compressor Junction Box, that originate in the Control Box.
4. Bleed off or blow the refrigerant charge through the Schrader valves.
5. Unsolder the suction line from the Compressor.
6. Unsolder the discharge line from the Compressor.
7. Unsolder the process header tube from the Compressor and retain for installation on the Replacement Compressor.
8. Remove four bolts, lockwashers and washers which secure the Compressor to the Chassis mounting base.
9. Slide the Compressor and remove through the left side opening of the Cabinet.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Compressor Assembly, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE CONDENSER — AIR-COOLED MODELS

NOTE

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.

A. To Remove the Condenser:

1. Remove screws and the Front Panel and the Left Side Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder and disconnect the Condenser inlet tube at the Condenser.
4. Unsolder and disconnect the Condenser outlet tube at the Condenser.
5. Remove three screws, lockwashers and washers securing the Condenser to the Chassis Base.
6. Remove the Condenser out through the front opening of the cabinet.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Condenser, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE CONDENSER — WATER-COOLED MODELS

NOTE

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.

A. To Remove the Condenser:

1. Remove screws and the Front Panel and the Left Side Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder the refrigerant inlet and outlet lines from the Condenser.
4. Disconnect the water inlet and outlet lines from the Condenser.
5. Remove two bolts, lockwashers and washers which secure the Condenser to the Chassis mounting base.
6. Remove the Condenser from the Cabinet.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Condenser, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE DRIER

NOTE

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.

A. To Remove the Drier:

1. Remove screws and the Front Panel and the Left Side Panel.
2. Remove screw and Drier Brace attaching the Drier to the Chassis base.
3. Bleed off or blow the refrigerant charge through the Schrader valve.
4. Unsolder refrigeration lines at each end of Drier, remove the Drier and separate the Drier from the Drier Brace.

B. To replace the Drier:

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. Install the Drier Brace on the Drier.
3. Solder the Drier into the lines, two places.
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 the Front Panel and the Left Side Panel and attach both with screws removed earlier.

REMOVAL AND REPLACEMENT OF THE DRIVEMOTOR ASSEMBLY

A. To Remove the Drivemotor Assembly:

1. Perform all steps in procedure IV-XII to gain access for removal of the Drivemotor Assembly.
2. Remove bolts, lockwashers and washers which attach the Drivemotor to the Chassis base.
3. Lift the Drivemotor from the Chassis base and out of the Cabinet.

B. To replace the Drivemotor Assembly, reverse the removal procedure.

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

NOTE

Before beginning this procedure, observe the Fan Blade position on the shaft of the Fan Motor and mark the Fan Blade so it will be correctly positioned during reassembly. Direction of air flow should be toward the Fan Motor.

A. To Remove the Fan Motor Assembly:

1. Remove screws and the Front Door and the Left Side Panel.
2. Disconnect the electrical lead from the Fan Motor.
3. Remove four screws securing the two Fan Mounting Brackets to the Condenser Shroud and remove the Fan Motor and Brackets out through the left side opening of the Chassis.
4. Remove the nut from the end of the Fan Motor shaft and remove the Fan Blade.
5. Remove four screws securing each Fan Mounting Bracket, upper and lower, to the Fan Motor and separate the Motor from the Brackets.

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

REMOVAL AND REPLACEMENT OF THE FREEZER ASSEMBLY

NOTE

1. *The Cabinet may have to be removed from its permanent location, especially if located in a corner, in order to have access to the left side and rear of the Chassis.*

2. *In addition to shutting OFF electrical power and inlet water to the icemaker, be sure to disconnect the inlet water line at the rear of the Cabinet BEFORE moving the icemaker from the permanent location.*
3. *Always install a replacement Drier, anytime the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.*

A. To Remove the Freezer Assembly, see Figure 4-2:

1. Remove screws and left side, front and rear panels.
2. Refer to procedure IV-XIII and remove the Spout Assembly.
3. Remove Corbin clamp and Tygon tube from the Freezer Assembly that connects to the Water Reservoir Assembly.
4. Bleed off or blow the refrigerant charge through the Schrader valve.
5. Unsolder the suction line from the Compressor.
6. Unsolder the capillary line at the Drier.
7. Remove four screws, lockwashers and washers which attach the bottom of the Freezer Assembly to the Adaptor on the Drivemotor Assembly.

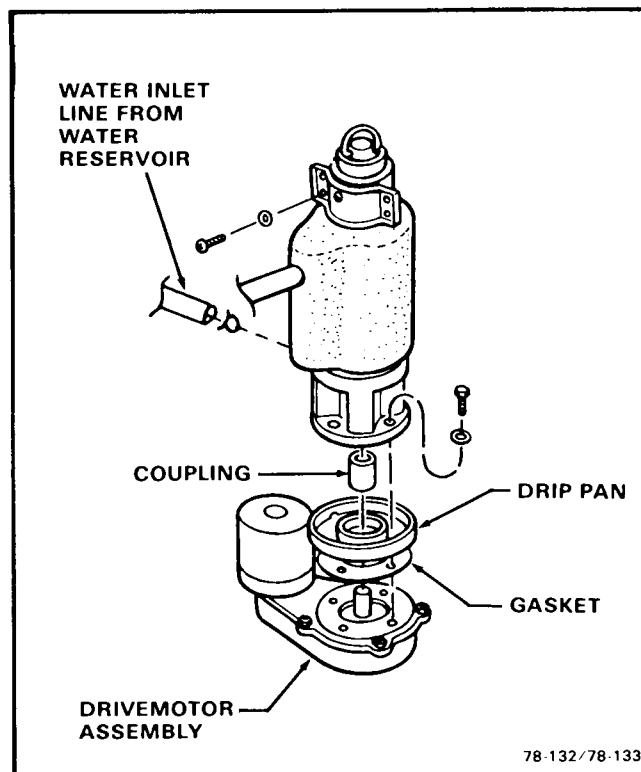


Figure 4-2. Removal of the Freezer Assembly.

- Lift the Freezer Assembly up and off of the Adaptor and Drivemotor Assembly.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- To replace the Freezer Assembly, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE SPOUT ASSEMBLY

- To Remove the Spout Assembly, see Figure 4-3:
 - Remove screws and the Front Panel and Left Side Panel.
 - Remove the Hose Clamp and disconnect the Nylobraid tube from the end of the spout.
 - Remove the Freezer Cap from the top of the Freezer Assembly.
 - Disconnect the electrical leads from the Spout Switch.
 - Remove four screws and washers and separate the Spout Assembly from the Spout Plate on the Freezer Assembly.

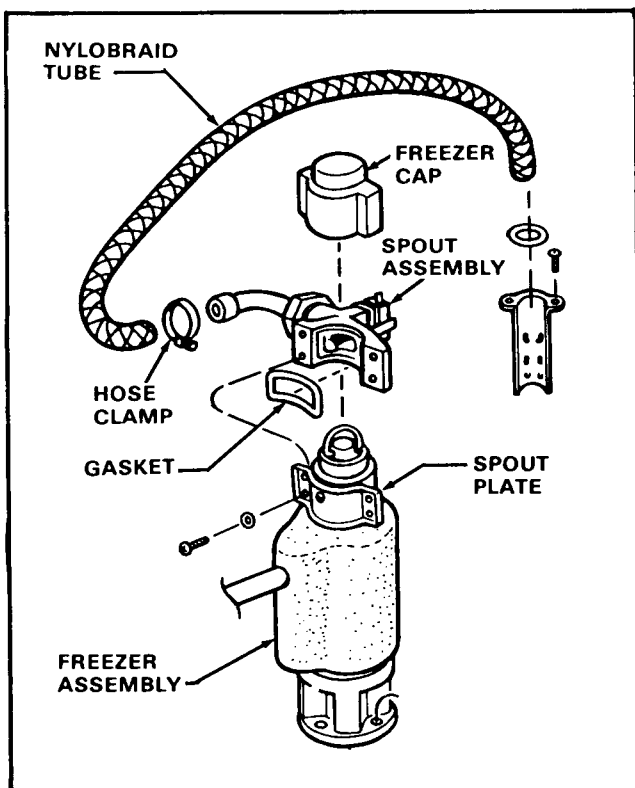


Figure 4-3. Removal of the Spout Assembly.

NOTE

At this time, inspect the spout Gasket and retain for the replacement procedure. Replace a torn, cut or worn, defective gasket.

- To replace the Spout Assembly, reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE WATER PRESSURE CONTROL

- To Remove the Water Pressure Control:
 - Remove screws and the Front Panel and the Left Side Panel.
 - Remove screws and the Control Box Cover.
 - Disconnect the two blue electrical leads of the Water Pressure Control, from the terminals on the Auger Delay Control and the Bin Thermostat device in the Control Box Assembly.
 - Unscrew the flare nut fitting and disconnect the Water Pressure Control from the Utility Bracket and the Tee on the inlet water tubing.

NOTE

At this time, inspect the O-Ring and retain for the replacement procedure. Replace O-Ring that is cut, torn or indicates excessive wear.

- To replace the Water Pressure Control, reverse the removal procedure.

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

- To Remove the Water Regulator Assembly:

NOTE

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.

- Remove screws and the Front Panel.
- Bleed off or blow the refrigerant charge through the Schrader valve.
- Unsolder the Capillary line from the Water Regulator Assembly, where connected at the process header.
- Disconnect the water inlet line at the rear of the Water Regulator.
- Disconnect the Condenser water inlet tube at the front of the Water Regulator.

6. Remove two screws, lockwashers and washers which attach the Water Regulator Assembly bracket to the Chassis base and remove the Water Regulator Assembly and bracket.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Water Regulator Assembly reverse the removal procedure.

REMOVAL AND REPLACEMENT OF THE WATER RESERVOIR ASSEMBLY

- A. To Remove the Water Reservoir Assembly, see Figure 4-4:

1. Remove screws and the Front Panel and the Left Side Panel.

NOTE

Be prepared with container or rags, to catch water left in lines, when lines are disconnected in next steps, to prevent draining water on parts, components, electrical lines, etc.

2. Disconnect the water inlet tube from the Water Reservoir Assembly.
3. Remove two Corbin clamps and two tubes from the bottom of the Water Reservoir Assembly.
4. Unscrew and remove the wing nut from the bottom of the Water Reservoir Assembly.
5. Lift and remove the Water Reservoir Assembly from the mounting bracket.

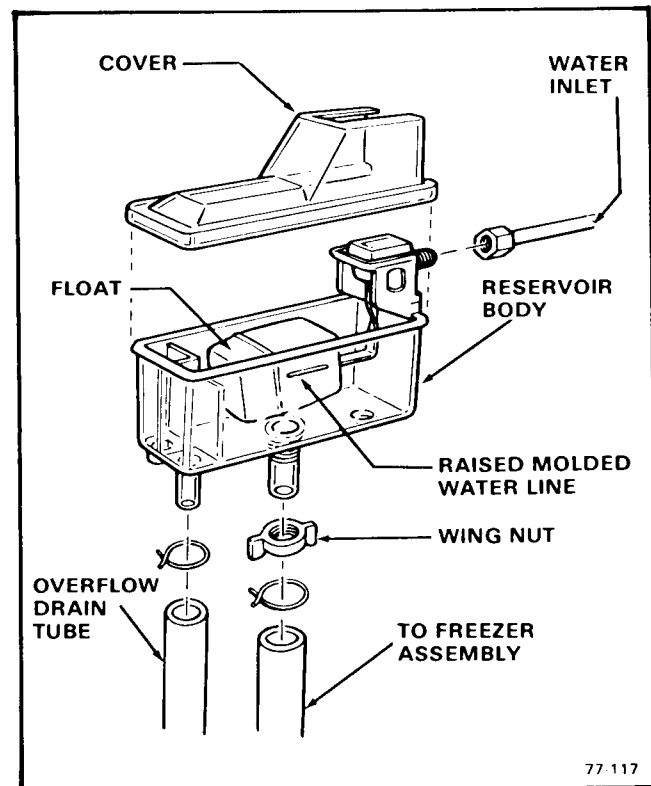


Figure 4-4. Removal of the Water Reservoir Assembly.

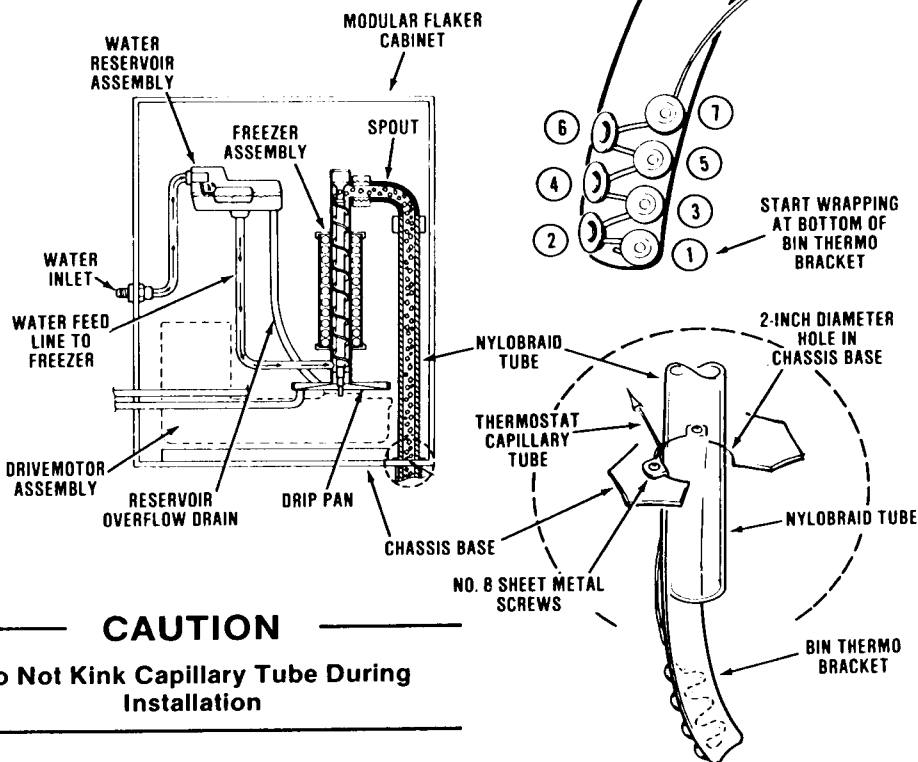
- B. To replace the Water Reservoir Assembly, reverse the removal procedure.

NOTE

Check that the installed replacement Water Reservoir Assembly float moves freely. The correct water level in the Water Reservoir is 3/8-inch below the raised molded line, on the side of the body of the Water Reservoir.

BIN THERMO BRACKET INSTALLATION INSTRUCTIONS

1. Align two-inch diameter hole in flaker with proper hole in bin top.
2. Wrap the capillary tube on the bracket as shown in the drawing.
3. Insert bin thermo bracket and cap tube assembly through two inch hole in base and on into bin.
4. Attach the flange of the bin thermo bracket to the flaker base with two No. 8 screws. Make certain bracket is at 90° to inside top of bin.
5. Slide the rubber washer on the tube down on top of the cabinet base.
6. Connect ice transport tube to ice spout elbow with hose clamp.



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 ICE-MAKER. CALL YOUR AUTHORIZED SCOTSMAN SERVICE AGENCY.

1. Check and clean water line Strainers.
2. Remove cover from Water Reservoir and depress the float to ensure that a full stream of water enters the Reservoir.
3. Check that the Icemaker cabinet is level, in side-to-side and front-to-rear directions.
4. Check that the water level in the Water Reservoir is below the overflow, but high enough that it does not run out of the spout opening.

NOTE

It is not abnormal for some water to emerge from the Ice Spout with flaked ice during normal ice production.

5. Clean the Water Reservoir and interior of the Freezer Assembly, using a solution of SCOTSMAN Ice Machine Cleaner. Refer to procedure V-III, CLEANING-Icemaker.

NOTE

Cleaning requirements vary according to local water conditions and individual user operation. Visual inspection of the Auger before and after cleaning will indicate frequency and procedure to be followed in local areas.

6. When doubtful about refrigerant charge, install refrigerant gauges on Schrader valves and perform steps 6 and 7. Check gauge for Compressor head pressure:

AIR-COOLED MODELS: Varies between 130 to 145 PSIG.

WATER-COOLED MODELS: Set at 135 PSIG. Adjust screw on top of Water Regulator Valve to raise or lower head pressure.

7. Check gauge for Suction line pressure:
Varies between 12 to 16 PSIG, depending upon inlet water temperature and ambient air temperature.
8. Check Drivemotor operation:
Normal operating temperatures are about 160-degrees F., which is hot to touch.
9. Check operation of the centrifugal sensing switch:
MF700: 1/4 HP Motor.
Switch will OPEN between 850-950 RPM and the Compressor STOPS, with the Drivemotor operating. Switch will CLOSE between 1100-1250 RPM and the Compressor will RESTART, with Drivemotor building back up to normal operating speed.
10. Remove the Insulation Strap and Clip, the Right and Left Spout Insulation pieces, the Retaining Ring and the Hook and Cap from the top of the Freezer Assembly.
11. Inspect the Top Bearing. If moisture is around Bearing, wipe clean of all grease and apply a coating of Shell Alvania 3 Grease, Scotsman P/N 19-0309-01, 1-lb. Can. Replace parts removed in step 10.

NOTE

BEFORE next step, move the manual ON-OFF toggle switch, on the front of the Control Box, to the OFF position to stop the Fan Motor and Icemaker.

12. Clean the Air-Cooled Condenser, using vacuum cleaner, whisk broom or brush. Instruct customer to clean frequently and to be sure Icemaker and Fan Motor are OFF.
13. Check that Fan Blades move freely, are not touching any surfaces and are not bent or out of balance.
14. Check for refrigerant leaks and for proper frost line, which should frost out of accumulator at least half way to the compressor and in some areas, back to service valve.

15. Check for water leaks. Tighten drain line connections. Pour water down Bin drain to be sure that drain line is open and clear.
16. Check the quality of ice. Ice flakes should be wet when formed, but will cure rapidly to normal hardness in the Bin.
17. Check the Bin Thermostatic Ice Control Bulb.

NOTE

The Bin Thermostat is factory set at 10-degrees F. differential and should keep the entire Icemaker system shut off at least 10 minutes in high ambient temperatures, longer in low ambient temperatures during normal operation. Settings are 35-degrees F. CUT-OUT and 45-degrees F. CUT-IN.

18. Check the Spout Switch.

NOTE

The Spout Switch is manually reset and functions as a safety switch, to automatically stop the icemaking process if the Bin Thermostat Bulb were to fail and cause ice to jam up in the Ice Tube.

CLEANING - Icemaker

1. Remove screws and the Front Panel.
2. Move the manual ON-OFF toggle switch, on the front of the control Box, to the OFF position.
3. Remove all ice from the Ice Storage Bin.
4. CLOSE the water supply shutoff valve; or block the float in the Water Reservoir.
5. Disconnect the tube between the Water Reservoir and the bottom of the Freezer Assembly and drain water from the Reservoir and tube. Reconnect the tube.

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.

6. Prepare cleaning solution: Mix eight ounces of SCOTSMAN Ice Machine Cleaner with two quarts of hot water.
7. Remove the Cover to the Water Reservoir.
8. Slowly pour the cleaning solution into the Water Reservoir.
9. Move the manual ON-OFF toggle switch, on the front of the Control Box, to the ON position.
10. Continue to slowly pour the cleaning solution into the Water Reservoir, maintain level just below the Reservoir overflow.
11. Continue icemaking, using the cleaning solution, until all the solution is used up and the Water Reservoir is almost empty. DO NOT allow the icemaker to operate with empty Reservoir.
12. Move the manual ON-OFF toggle switch, on the front of the Control Box to the OFF position.
13. Wash and rinse the Water Reservoir.
14. OPEN the water supply shutoff valve; or remove the block from the float in the Water Reservoir.
15. Move the manual ON-OFF toggle switch, on the front of the Control Box, to the ON position.
16. Continue icemaking for at least 15 minutes, to flush out any cleaning solution. Check ice for acid taste - continue icemaking until ice tastes sweet.
17. Move the manual ON-OFF toggle switch, on the front of the Control Box, to the OFF position.

CAUTION

DO NOT use ice produced from the cleaning solution. Be sure none remains in the bin.

18. Remove all ice from the Ice Storage Bin.
19. Add hot water to the Ice Storage Bin and thoroughly wash and rinse all surfaces within the Bin.
20. Clean and sanitize the Ice Storage Bin each week.

SERVICE DIAGNOSIS

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

The following charts lists 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
Water Leaks.	Defective water seal. Gravity feed line leaking. Water level in reservoir too high. Storage bin drain and connecting fittings.	Replace Seal. Check hose clamps. Adjust water level to 3/8-inch below reservoir overflow, then raise reservoir until water flows out freezer spout, then lower reservoir 3/4-inch. Check and repair.
Excessive noise or chattering.	Mineral or scale deposit on auger and inner freezing chamber walls Intermittent water supply. Water level in reservoir too low. Gear Reducer loose on frame. Motor compressor not solid on rubber mounts. Gearmotor end-play or worn bearing.	For severe deposit, remove and manually polish auger, sand inner chamber walls of freezer barrel. For lighter concentration, use Scotsman Ice Machine Cleaner periodically. Check and clean water strainer. Check gravity feed line for air lock. Remove air lock. See CORRECTION for Water Leaks above. Tighten Gear Reducer. Repair or replace rubber mounts. Repair or replace bearing.
Making wet ice. (Ice melts too quickly, is not cold enough to properly cure in the Bin.)	Surrounding air temperature too high. Under or over-charge of refrigerant.	Correct or move cabinet. Recharge with proper amount. Should frost out of accumulator at least 8-inches. See nameplate for correct charge. See CORRECTION for Water Leaks above.

ICEMAKING - REFRIGERATION SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Making wet ice (cont'd)	Back pressure too high. Faulty compressor or valve plate.	Overcharge of refrigerant. Faulty compressor or high head pressure. Lower pressure as indicated. Repair or replace compressor or valve plate.
Low ice production.	Loss of refrigerant. Under or over-charge of refrigerant. Drivemotor weak. Dirty or plugged condenser. Low water level in water reservoir. Partial restriction in capillary tube or drier. Inlet water strainer partially plugged. Corroded or stained auger due to water condition.	Check and recharge. See NAMEPLATE for correct charge. Replace Drivemotor. Clean condenser. See CORRECTION for Water leaks above. Moisture in system. Overcharge of oil in system. Remove charge by blowing back through cap tube. Replace drier and recharge. Remove screen and clean. Remove auger and clean, or use Scotsman Ice Machine Cleaner. See Maintenance Section.
Gearmotor noise.	Low on oil.	Remove case cover to check for proper oil level. Top of gears should be covered. Use: Sun Oil Company Prestige 50-EP
Icemaker will not operate.	Blown fuse in line. Bin thermostat set too high. Loose electrical connection. Switch in OFF position. Inoperative master switch. Off on manual-reset pressure control.	Replace fuse and check for cause of blown fuse. Adjust thermostat. Set at 35-degrees cut-out, 45-degrees cut-in. Check wiring. Set switch to ON position. Replace switch or thermal overload. Reset.
Icemaker continues to operate with full storage bin.	Bin thermostat not properly set or is defective.	Re-set or replace bin thermostat Re-set to 35-degrees cut-out, 45-degrees cut-in.
Compressor cycles intermittently.	Low voltage. Dirty condenser. Air circulation blocked. Inoperative condenser fan motor.	Check for overloading. Clean condenser. Remove cause or move unit. Replace motor.

ICEMAKING - REFRIGERATION SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Compressor Cycles intermittently (cont'd)	<p>Non-condensable gases in system.</p> <p>Bin thermostat differential too small causing short cycling.</p> <p>Cycling on ice spout microswitch.</p>	<p>Check for gas leaks, evacuate and recharge.</p> <p>Widen differential 35-degrees cut-out, 45-degrees cut in.</p> <p>Set or replace Bin thermostat.</p>
Icemaker operates but makes no ice.	<p>Loss or undercharge of refrigerant.</p> <p>Water not entering freezing chamber.</p> <p>Moisture in system</p> <p>Water seal leaking.</p> <p>Water turned off while unit was operating.</p> <p>Drivemotor or drive coupling stripped.</p>	<p>Check for leaks and recharge. See NAMEPLATE for correct charge.</p> <p>Plugged strainer or supply line. Check and clean. Air lock in gravity feed line. Check and remove air lock.</p> <p>Check, evacuate, replace drier. Recharge. See NAMEPLATE for correct charge.</p> <p>Replace seal.</p> <p>Freezer inlet water line froze shut. Unit must be turned off and defrosted.</p> <p>Repair or replace drivemotor or drive coupling.</p>