

Scotsman®

Installation and
User's Manual for
Ice Maker-Dispenser

Models MDT3F12 and MDT4F12



MDT3F & MDT4F User Manual

Introduction

Purpose of this manual: To provide detailed installation and operation instructions; to give insights into how the machine works; and to list possible causes for basic problems.

The MDT3F and MDT4F are combination ice makers and dispensers. The refrigeration system is air cooled, using R-134a as a refrigerant. The control system uses electric eyes as a bin control and a water level sensor as the water safety control. As ice is made, it fills a plastic storage bin. When ice is needed, a motor rotates a stainless steel vane inside the storage bin and sweeps the ice into the spout.

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Note this symbol when it appears.



It marks a possible hazard.

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Specifications:

Scotsman ice machines, like the MDT3F or MDT4F, are designed to be installed indoors, in a controlled environment. The minimum and maximum operating conditions are:

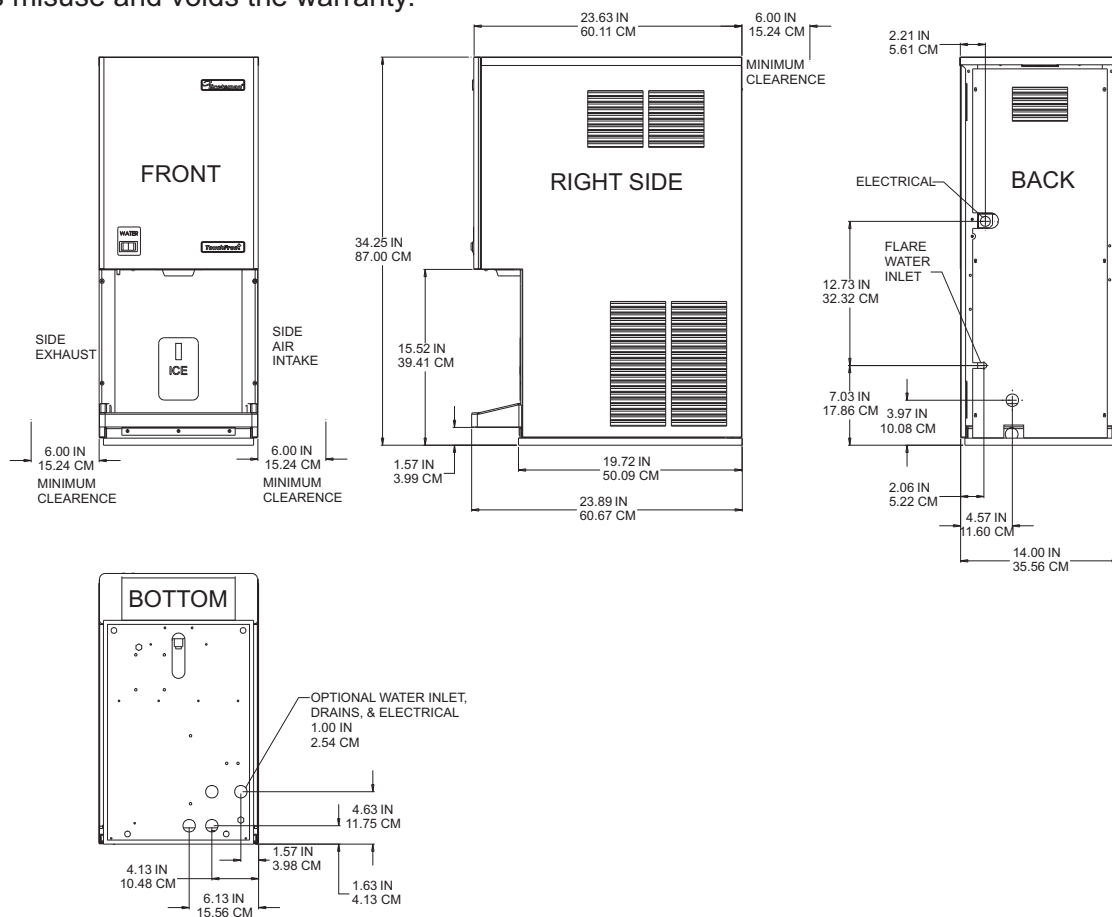
- Minimum Air Temperature: 50°F.
- Maximum Air Temperature: 100°F.
- Minimum Water Temperature: 40°F.
- Maximum Water Temperature: 100°F.
- 60 Hz voltage may vary between 104 and 126 volts.
- Water Pressure may vary between 20 and 80 psi.

Operating the machine outside these conditions constitutes misuse and voids the warranty.

Scotsman Ice Systems are designed and manufactured with the highest regard for safety and performance. They meet or exceed the standards of UL, NSF and CUL.

Scotsman assumes no liability or responsibility of any kind for products manufactured by Scotsman that have been altered in any way, including the use of parts and/of other components not specifically approved by Scotsman.

Scotsman reserves the right to make design changes and/or improvements at any time. Specifications and designs are subject to change without notice.



Specifications:

Model Number	Dimensions W" x D" x H"	Basic Electrical	Refrigerant Charge (R134a)	Min. Circuit Ampacity	Max Fuse Size
MDT4FA-1A	14 x 23 ⁷ / ₈ x 34 ¹ / ₄	115/60/1	14 oz.	15.1	20
MDT4FA-6A	14 x 23 ⁷ / ₈ x 34 ¹ / ₄	230/50/1	14 oz.	7.5	15
MDT3FA-1A	14 x 23 ⁷ / ₈ x 34 ¹ / ₄	115/60/1	12 oz.	9.4	15
MDT3FA-6A	14 x 23 ⁷ / ₈ x 34 ¹ / ₄	230/50/1	12 oz.	5.3	15

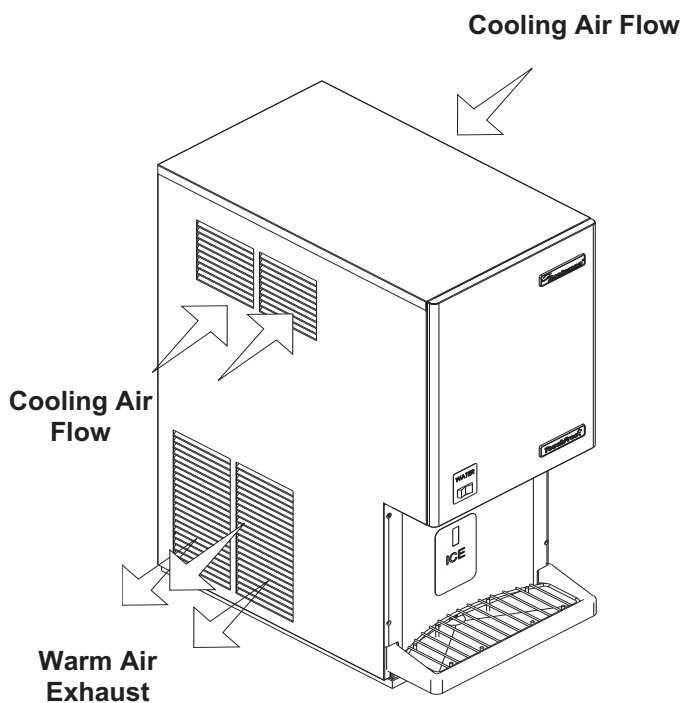
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To The Installer:

A professional installation of any product is critical to the long term satisfaction of the user. The ice maker-dispenser is designed to be installed either on a counter, or, using a wall hanging kit, hung from a wall.

Determine the location from the anticipated use and any options planned for.

This machine is air cooled and blows air out the lower left side of the cabinet. Do not install the machine where the side to side air flow might be blocked.



The machine will require electrical power, water and a drain. Follow all local codes. Rough in the utilities before placing the machine into position (see For The Electrician and For The Plumber).

Water Quality:

The quality of the water supplied to the machine will directly affect the purity of the ice and the reliability of the machine. While the condition of the water supplied to a building is normally out of the control of the user, water can be treated at the point of use.

There are two major types of water impurities: suspended solids (those that are carried along with the water and may be filtered out) and dissolved solids (those that are part of the water and have to be treated). A water filter is always a good idea, but does require regular maintenance to change the cartridge. In some water conditions, water treatment may be required. Generally this means a polyphosphate feeder of some kind. Water softeners are not recommended.

General Installation:

Place the machine in its final location. Remove the top, right and left side panels:

1. Remove two screws at the bottom of the front panel.
2. Disconnect wires from water switch.
3. Remove two screws at the front of the top panel. Lift the top panel and remove it.
4. Remove screws from the sides (top and bottom) of the side panels and from the splash panel.
5. Pull the side panels back and off the machine.

Plumbing connections may be made thru holes in the back of the cabinet or thru the base.

- Route the sink drain to the back of the cabinet. Route the bin drain to the back panel.
- Route the electrical power cord from the junction box inside the cabinet. thru the back panel .
- Route the inlet water line thru the back panel or base to the flare fitting inside the cabinet.

After all plumbing and internal wiring has been done, replace the side and back panels.

Level the unit front to back and left to right.

The machine does not require sealing to the counter due to the gasket on the base.

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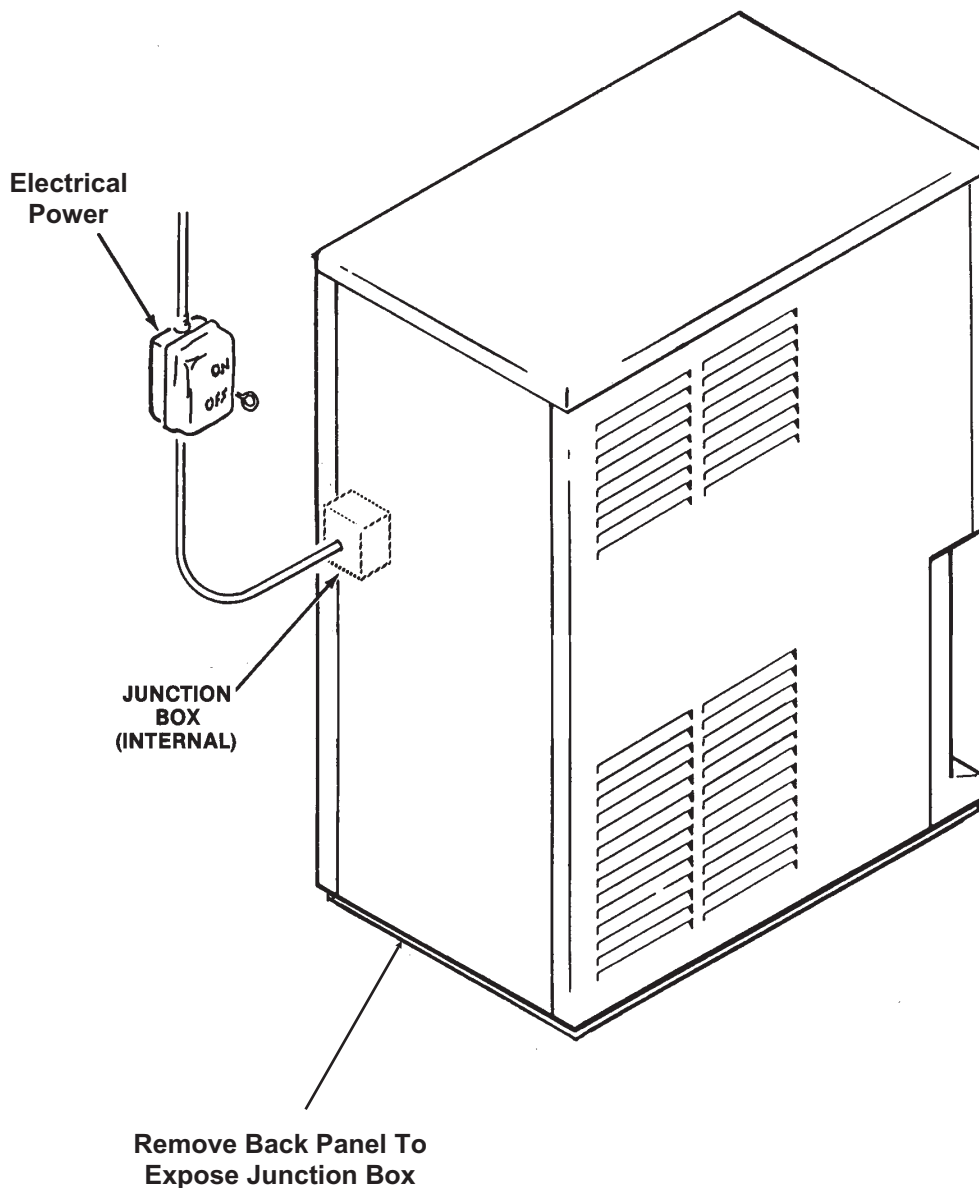
For The Electrician

Electrical connections:

Check the nameplate for voltage and current requirements. An electrical cord is not supplied. Connect the MDT3F or MDT4F to a separate electrical circuit. Wiring to the machine must conform to all codes. A licensed electrician may be required in some situations.

Remove the back panel to make the electrical connection. The electrical connection is made on the terminal strip in the junction box inside the machine. Replace the back panel when the electrical connections are complete.

**FOLLOW ALL APPLICABLE LOCAL, STATE
AND NATIONAL CODES
This Unit MUST BE GROUNDED**



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For The Plumber

Drains:

The dispenser requires a gravity drain. The pitch on the drain tubes must be at least ¼ inch fall per foot of horizontal run. On long horizontal runs, a vent at the back of the cabinet will improve draining, and is recommended.

There are two drains to connect: A sink drain, a 7/8" ID plastic tube; and the bin drain, a 5/8" ID plastic tube. Install rigid tubing between the machine and the building drain. Route the drains separately to the building drain.

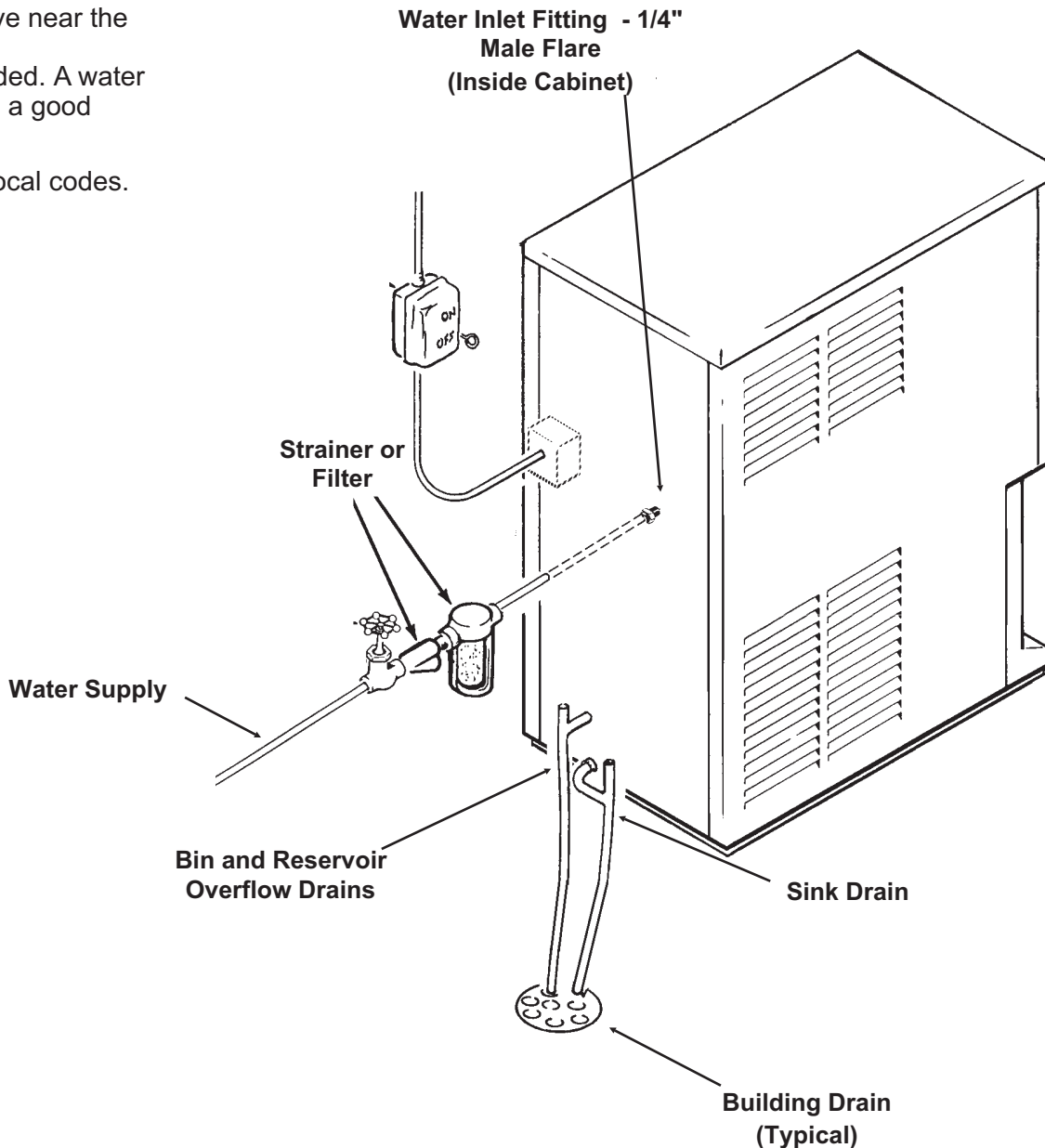
Water supply:

Connect cold, potable water to the machine. The inlet water fitting is a 1/4" male flare located on a wall inside the cabinet.

A hand valve near the location is recommended. A water filter is also a good idea.

Follow all local codes.

FOLLOW ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES

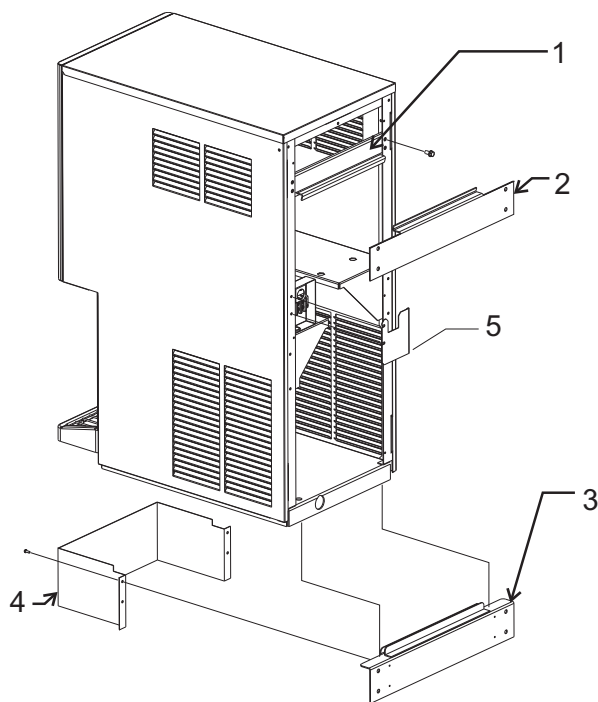


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Wall Mount Kit (KWB4):

Contents:

1. Top Case Hanger Bracket: Attaches to the frame of the dispenser.
2. Top Wall Bracket: Mounts to the wall and engages the top case hanger bracket to support the dispenser.
3. Bottom Wall Bracket: Mounts to the wall and spaces the base of the dispenser away from the wall.
4. Bottom Fittings Cover: Fastened to the bottom wall bracket to hide the utility connections.
5. Junction box cover.



Installation: Check building wall for the strength required to support a machine of this weight and size. Note that if at least 6" of space is not left above the machine, cleaning and most service of the machine will require removal of the machine from the wall mounts. All utilities are to be routed thru the base. The back panel is not used when the machine is hung from the wall.

Top Case Hanger Bracket

1. Remove back panel.
2. Place top hanger bracket on the inside of the frame and position it in line with the pre-punched holes in the frame.
3. Fasten the bracket to the frame with four ¼ - 20 screws from the kit.

Top Wall Bracket:

1. Hold the bracket on the wall where it will be mounted.
2. Mark the positions of the holes in the bracket onto the wall.
3. If needed, drill pilot holes for the fasteners.
4. Secure the bracket to the wall with fasteners of sufficient strength to hold up the dispenser.

Connect all internal utilities. Route tubes and wires out the bottom.

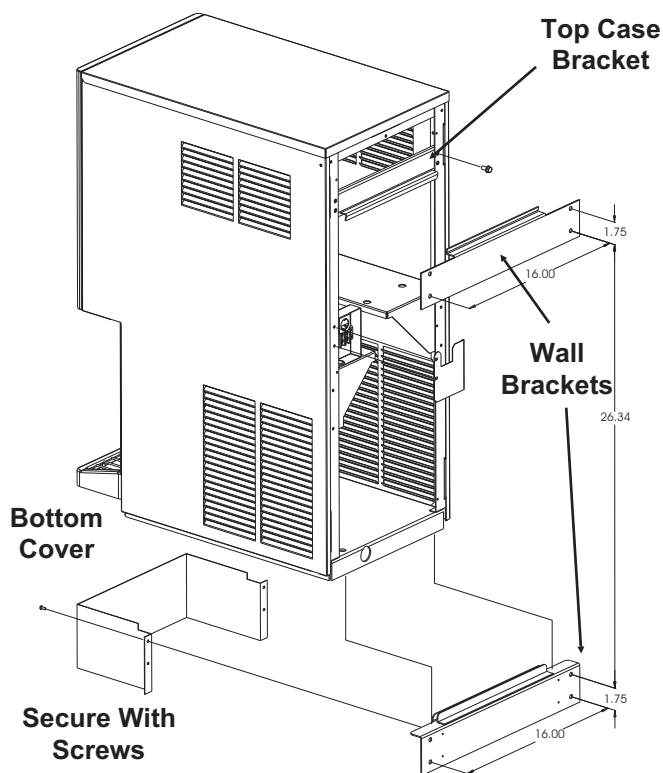
Junction box cover. Install on the junction box.

Bottom Wall Bracket:

1. Lift up and hang the dispenser from the top wall bracket.
2. Position the bottom wall bracket so that the molding on the dispenser base bottoms in the channel of the wall bracket.
3. Secure the bracket to the wall.

Bottom Fitting Cover:

1. Connect electrical power, water inlet, bin drain and sink drain of the dispenser thru the bottom of the case.
2. Secure bottom fitting cover to the bottom wall bracket with the four sheet metal screws provided in this kit.



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Final Check List & Initial Start Up

1. Is the machine located indoors where the temperature limitations are not exceeded?
2. Is there at least 6" clearance on both sides of the cabinet for adequate air flow?
3. Is the water supply adequate, and has a shut off valve been installed?
4. Is the cabinet level?
5. Have all of the electrical and drain connections been made?

Initial Start Up

1. Remove 2 screws at the bottom of the front panel.
2. Disconnect wires at water switch.
3. Remove screws and the top and side panels.
4. Open the water supply shut off valve.
5. Watch the water fill the reservoir. Check that water flows in and fills the reservoir near to the mark molded into the side of the reservoir. Check that the float shuts off the water flow when the tank is full. Check for leaks. Tighten hose clamps as needed.
6. Plug the unit in or switch on the electrical power. After about 15 seconds the machine should start.
7. Let the machine operate, listen for any unusual noises. If needed, reposition tubing & panels to eliminate vibration.

After the unit has been operating for about 10 minutes, there should be enough ice in the bin to test the dispense system.
8. Using a container, place in in front of the glass sensor and below the ice chute. See that ice is dispensed (the bin drive motor continues to run as long as the container is in place).
9. Move the water switch (rocker switch on the front panel) to ON. Place the container in front of the glass sensor and under the ice chute. Both water and ice should be dispensed.
10. Pour water into the sink and check that the drain does not leak but drains the water rapidly.
11. Explain to the user the maintenance requirements and operation of the machine.
12. Fill out the Warranty Registration and Customer Evaluation form. Mail it to Scotsman.
13. Leave the service manual with the owner/user and explain who should be called if service is needed.

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User Operation

The MDT3F and the MDT4F are automatic ice vending machines. All either requires is cool air, clean water and an adequate supply of electrical power.

To Vend Ice:

Place a container in front of the Touch Free sensor and below the ice spout. Hold it there until the container is full of ice. Do NOT overfill the container or a build up of ice in the sink or a back up of ice in the spout will occur.

To Vend Ice and Water.

Switch the Water Switch to ON. Place a container in front of the Touch Free sensor and below the ice spout. Water and ice will be dispensed into the container below the spout. Note: The water is NOT cooled, it is the same temperature as the building supply water.

Daily Maintenance: Pour hot water into the sink to flush out any debris or build up. Wipe the cabinet off, wash the sink and grill to keep minerals from accumulating.

Caution:

Unless the touch free sensor is de-activated by pushing the Cleaning Switch in, ice and/or water may be dispensed during cleaning.

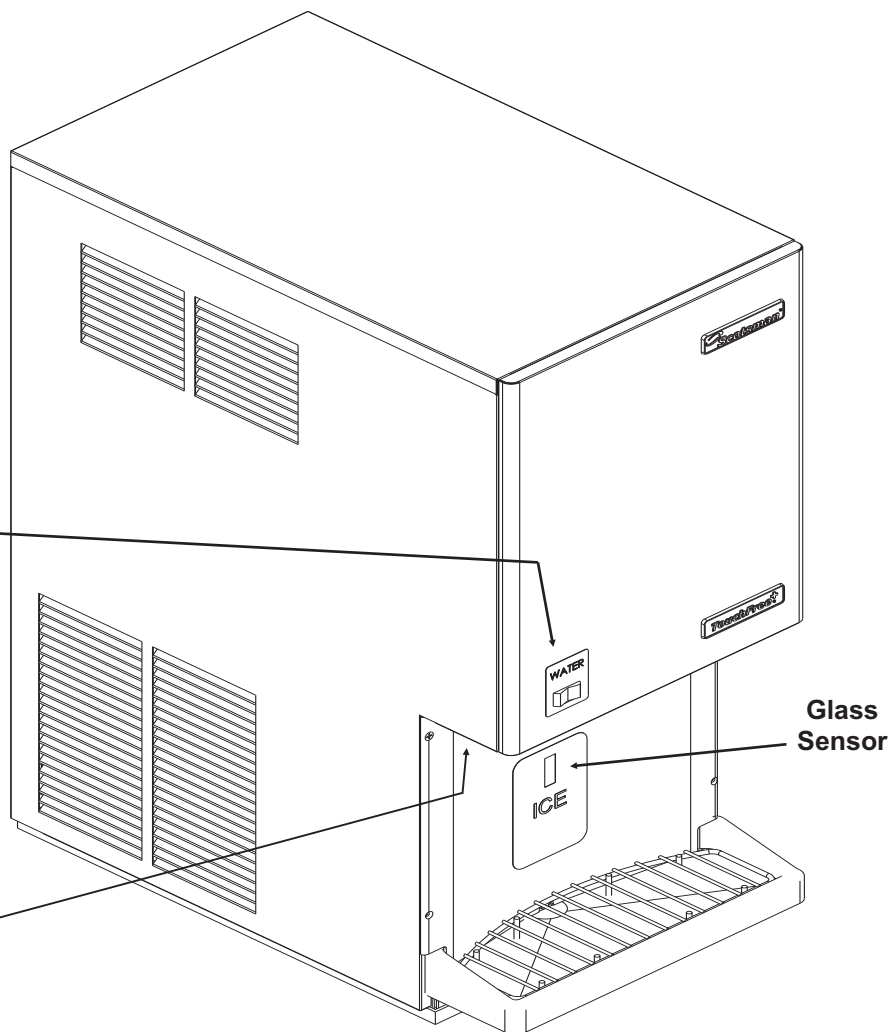
The Cleaning Switch is a button, located to the left of the ice chute, that temporarily shuts off the sensor for cleanup of the splash panel.

Pushing the button in will disable the sensor for 2 minutes, pushing the button in again will return the sensor to normal operation.



Touch Free
Disable
Switch

Water
Switch



Glass
Sensor

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Mechanical Operation

General:

The machine makes, stores and dispenses ice. It also dispenses water. The ice making portion of the machine produces flaked ice at about 32°F. The ice falls thru a chute into the dispensing bin. Above the cylindrical bin is a dispense drive motor and electric eyes. The drive motor is connected to an ice vane in the bin. When the user holds a container in front of the glass sensor and below the ice chute, the dispense drive motor rotates the vane and the ice. There is a slot in the base of the bin, located just above the vend spout and glass filler lever. When the ice moves over that slot, some of the ice on the bottom of the bin falls thru the slot, into the chute and fills the container.

ON/OFF Control:

Flaked ice is produced by the ice maker until ice builds up between the electric eyes. When the electric eyes can no longer “see” each other, they send a signal to the control board to shut the machine off. The refrigeration compressor stops but the auger drive motor will continue to operate for about 2 minutes to clear the evaporator of ice.

Water Control:

Because water is such an important requirement for making ice, a water level sensor has been placed in the reservoir. If the water supply to the machine should fail, the water level sensor will send a signal to the control board to shut down the machine.

Refrigeration:

The refrigeration system uses a hermetic compressor (specifically designed for R-134a), forced draft air cooled condenser, capillary tube and vertical flaked ice evaporator. Inside the evaporator is a slowly rotating auger. The auger is supported by bearings at each end, and there is a face-type water seal above the bottom bearing. The auger is driven by a 1/10 HP direct drive gear reducer. The auger drive motor has a speed operated switch on it that will keep the compressor from operating if the auger motor is not turning at full speed.

Water System

Water flows from the building supply to the reservoir and to the electric solenoid valve. Water from the reservoir is used to make ice. Water the flows thru the solenoid is dispensed.

The bin, sink and reservoir overflow all have drains.

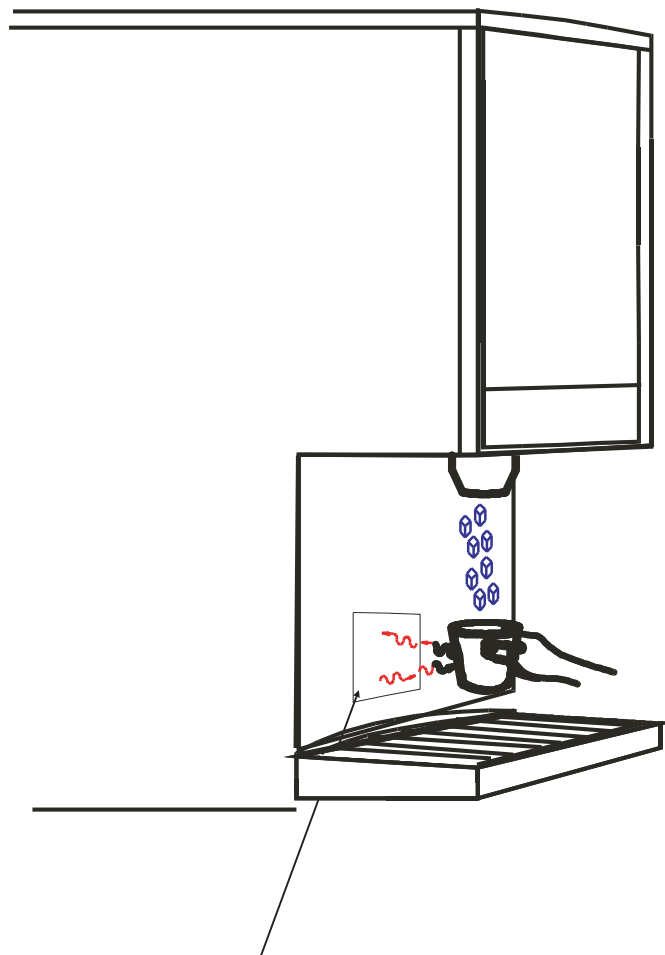
Ice Vending

Dispensing takes place when the touch free sensor's infrared beam bounces back to the sensor from a container placed directly in front of the sensor and under the ice chute.

When the beam is reflected back, it signals the circuit board to connect power to the dispense drive motor, and ice is then moved over the slot in the base of the bin, where it falls by gravity thru the chute into the container.

If the Water switch is On, water is also dispensed at the same time.

Dispensing continues until the beam is no longer reflected back to the sensor.



Touch Free Sensor

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Maintenance:

Although the ice in this dispenser is completely untouched, the water and ice vending systems will need to be periodically sanitized and de-mineralized. The air cooled condenser will also need to be kept clean.


Schedule the sanitation, cleaning and de-mineralization on a regular basis to keep the ice clean and the machine operating efficiently. Twice per year is the standard recommendation.

Sanitation and Cleaning

Water System:

This ice machine requires periodic sanitation and de-mineralization.

1. Vend all ice from the machine.
2. Remove top and right side panels.
3. Unplug or disconnect electrical power.
4. Shut off water supply.
5. Drain reservoir.
6. Mix 8 ounces of Scotsman Ice Machine Scale Remover and 3 quarts of hot (95°F. -115°F.) potable water.

<p>Scotsman Ice Machine Cleaner contains acids. These compounds 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.</p>	<p>⚠ WARNING</p> 
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7. Pour the water into the reservoir.
8. Wait 15 minutes for the cleaner to dissolve the minerals inside the evaporator.
9. Plug in the machine or reconnect electrical power.
10. As the machine operates, pour in the balance of the cleaning solution.
11. Reconnect water supply, operate the machine for 15 more minutes, then switch it off.
12. Repeat steps 3-11, except substitute a locally approved sanitizing solution for the cleaner. A

possible sanitizing solution may be obtained by mixing 1 ounce of household bleach with 2 gallons of clean, warm (95°F.-115°F.) water.

13. Unplug or disconnect electrical power.
14. Remove bin top, pour in warm potable water to melt out any ice.
15. Pull out the vane and bin bottom from the bin.
16. Thoroughly wash the bin's interior, bin top interior, spout, ice vane and bin bottom with the sanitizing solution. Pour some down the bin drain.
17. Reassemble the bin bottom, vane and bin cover.
18. Wash the sink area with the sanitizing solution and pour sanitizing solution down the sink drain.
19. Replace all panels and reconnect water and electrical power.

Air Cooled Condenser:

1. Disconnect electrical power.
2. Remove top panel
3. Remove right and left side panels.
4. Use pressurized air to blow the lint from the outside of the condenser in towards the fan motor. A vacuum cleaner hose placed on near the fan motor should pick up most of the dust. Check for interior dirt. If needed, use coil cleaner to de-grease the condenser.
5. Replace all panels and reconnect electrical power.

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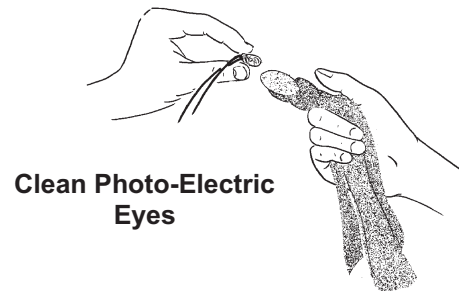
Inspection:

Photo-Electric Eyes

The photo electric eyes used to “see” the ice build up in the top of the bin cover must be clean to get a good “look” at the ice. If clouded by mineral scale, the eyes will cause the ice machine to shut off and stay off.

To clean the photo-electric eyes.

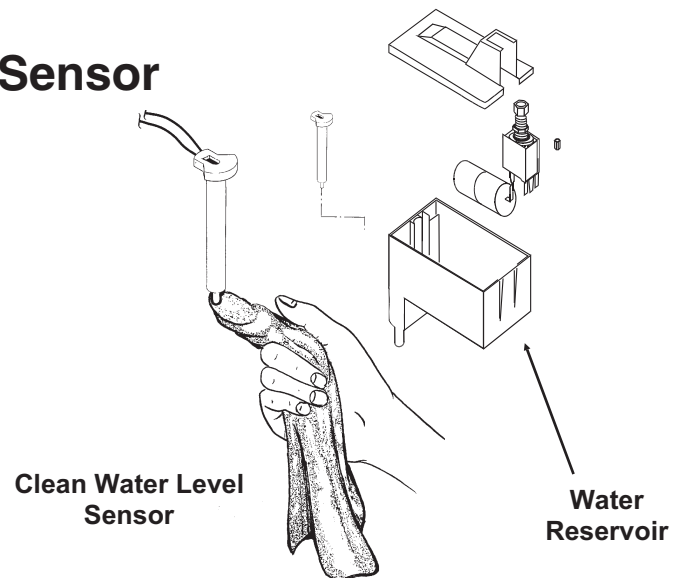
1. Remove the top panel.
2. Pull both of the photo-electric eyes out of their rubber grommets.
3. Wash both eyes with a clean cloth dipped in Scotsman Ice Machine Scale Remover.
4. Wash the eyes off with clean water.
5. Replace the eyes in the grommets
6. Replace the top panel



Water Level Sensor

The water level sensor may not shut the ice machine off when the reservoir goes dry if there is a film of mineral scale on the probe tip.

1. Remove the top panel.
 2. Remove the reservoir cover.
 3. Pull the water level probe up and out of the reservoir.
 4. Carefully wipe the tip of the probe with a clean cloth. Ice machine cleaner may be needed.
- Note: The tip is made of glass.
5. Reinsert the water level sensor in the reservoir.
 6. Replace the reservoir cover and the top panel.



Coupling

Use the grease zerk on the side of the coupling to add grease once per year.

Bearing and Water Seal

The top bearing should be checked every time the machine is cleaned. Unscrew the cap and check. A visual check can determine if corrosion is occurring. If worn or corroded, have the bearings and water seal changed.

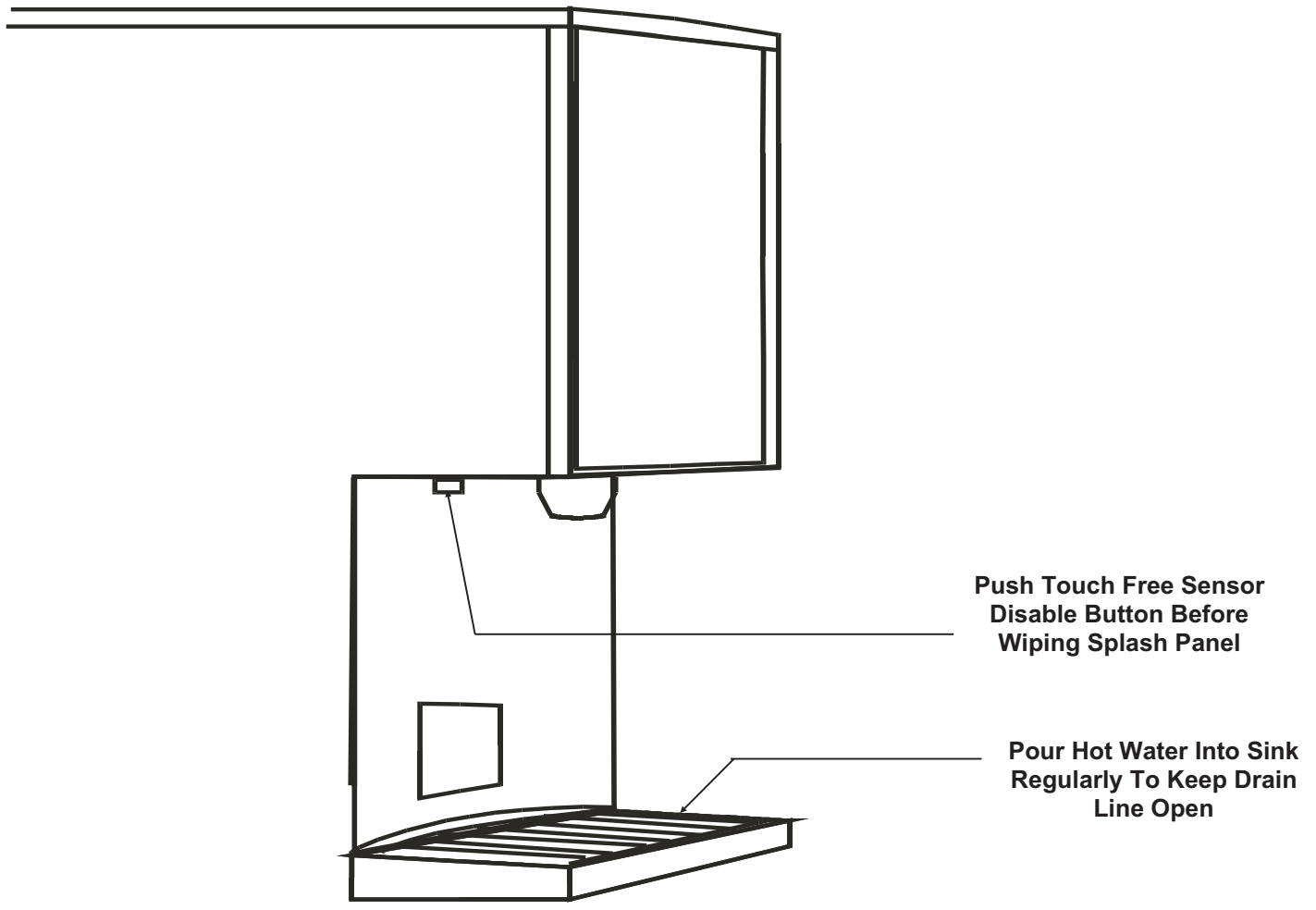
Also check for water leaks from the bottom of the evaporator. If there is a leak, the bearings and water seal must be replaced. The gear reducer will also need to be checked for water infiltration.



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Dispense Area Sanitation

1. The spout may be removed by taking out the two mounting screws. Wash and sanitize it.
2. The sink grill may be removed for washing and sanitizing.
3. The sink should be flushed with hot water and wiped clean with sanitizer.
4. The splash panel requires special attention to clean it.
 - Push and release the Cleaning Switch located to the left of the ice spout. This disables the Touch Free Sensor so the splash panel may be cleaned without vending ice or water.
 - Wash the splash panel and wipe with sanitizer.
 - Re-push the clean switch or allow 2 minutes to pass for the Touch Free system to reset.



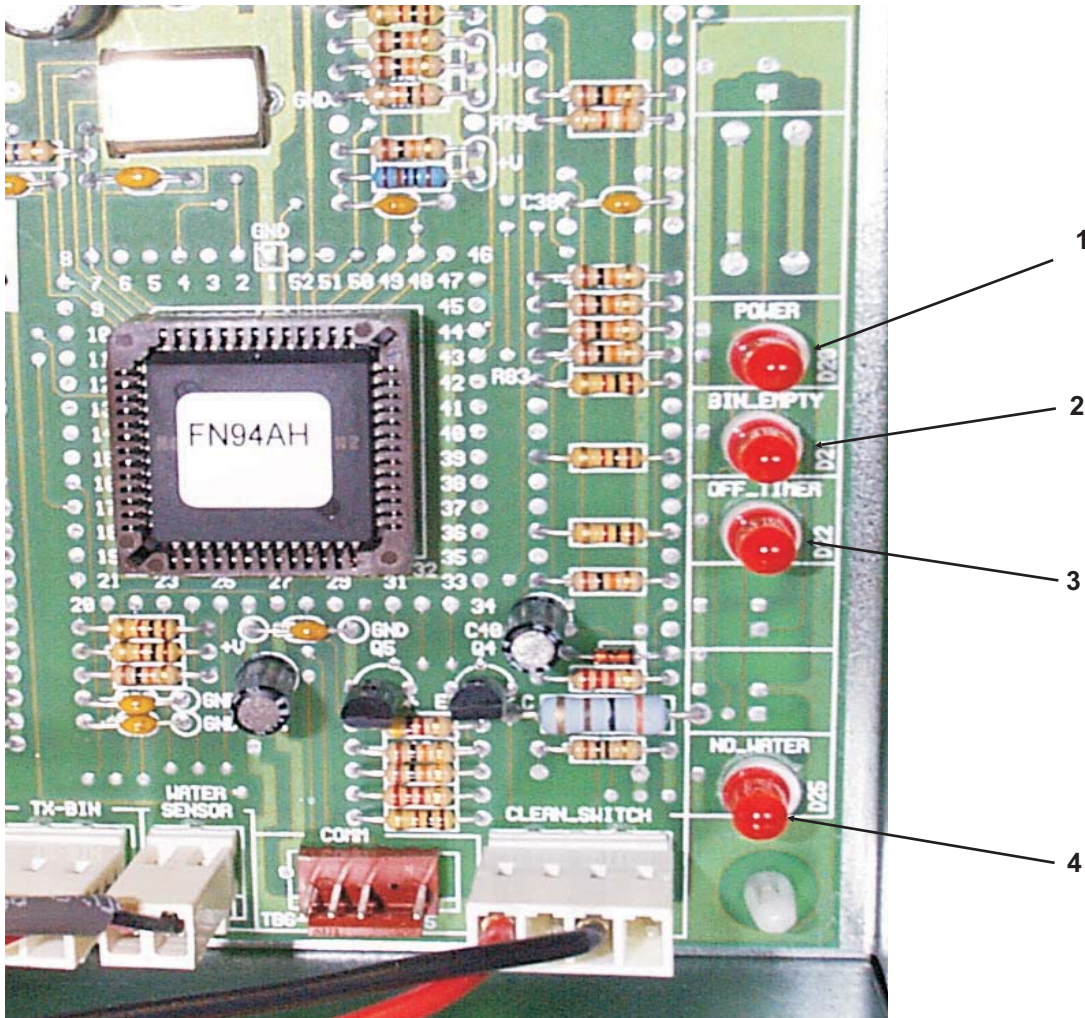
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Service Diagnosis

PROBLEM	POSSIBLE CAUSE	PROBABLE CORRECTION
No ice is dispensed.	No ice in bin due to:	
	• No electrical power	Check/restore power
	• Overuse	Recheck ice needs vs. machine capacity.
	• Water supply turned off	Check water filter/hand valve/float valve
	• Bin controls dirty	Check & clean bin control (electric eyes)
	• Water sensor dirty	Check & clean water sensor
	• Control system malfunction	Check control system
	• Auger drive motor open	Check auger drive motor
	• Centrifugal switch open	Check centrifugal switch
	• Auger does not turn	Check coupling & gear reducer
	• No refrigeration	Check refrigeration system
	Ice in bin, but will not dispense:	
	Drive motor does not turn	
	• Vend system does not work	Check/replace vend system Check that cleaning switch has been released.
	• Dispense motor open	Check/replace dispense motor
	• Dispense output shaft broken	Check/replace output shaft
	Ice in bin, motor turns vane.	
	Ice jammed up	
	• Users held cup against dispense spout and jammed unit.	Advise owner/manager to instruct users.
	• Bin bottom slot not over spout	Check bin bottom position
	• Ice will not slide down bin wall, bin out of round.	Check bin interior wall for rough texture or out of round.
	• Wet ice in the bin from high water level or high suction pressure	Check water level, check suction and discharge pressures

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Service Diagnosis: Circuit Board



Explanation of Indicator Light	Position On Board	Name and Meaning of Light or Reset
On at all times when the master switch is ON and machine is connected to electrical power.	1	Power , ON = Normal
On when ice level is low (unit making ice).	2	Bin Empty , ON = Needs Ice
Normal 6 minute off/delay start. To prevent short cycling, the machine will not restart after any shut off (except power to the board) until 6 minutes have passed.	3	Off Timer , ON = Unit cycling off
On when water level is low in the reservoir.	4	No Water , ON = Trouble

To check the electrical system, first check the lights on the circuit board.

1. Remove the top panel.
2. Remove the left side panel.
3. Remove the control box cover.

SCOTSMAN ICE SYSTEMS

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