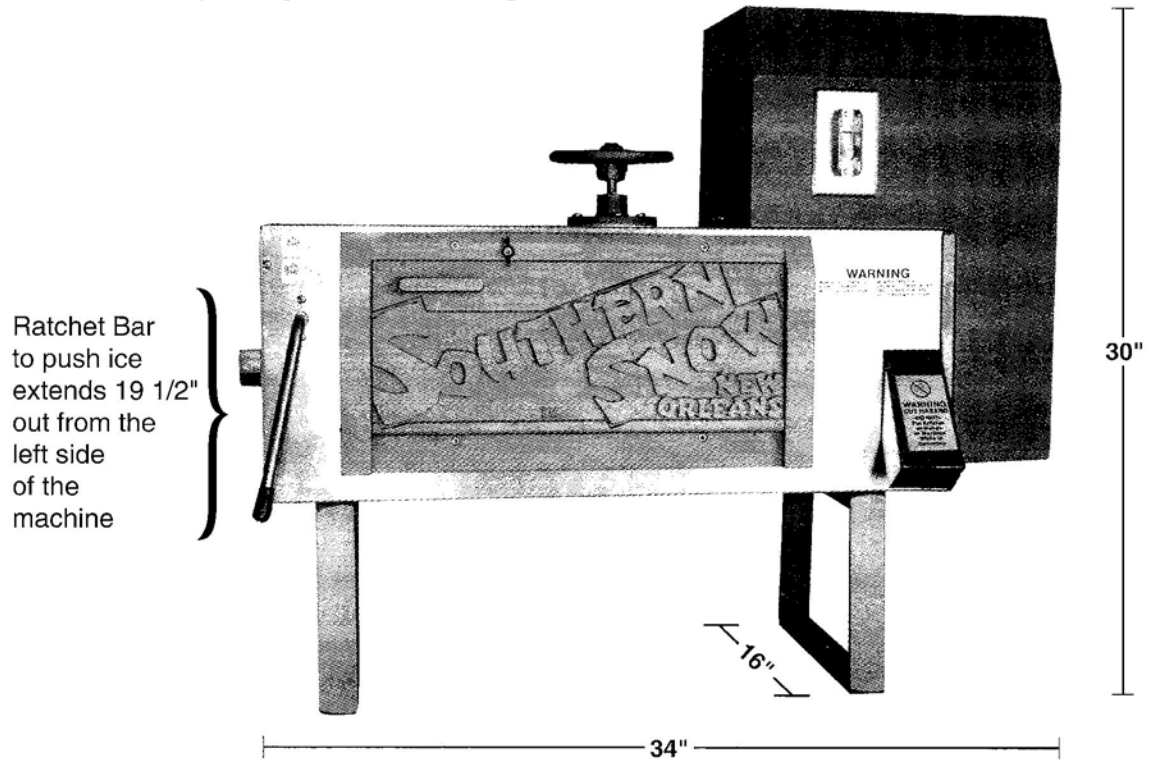


Southern Snow[®]

MACHINE OPERATION MANUAL

SOUTHERN SNOW[®] MACHINE



Southern Snow
MANUFACTURING, INC.

103 WEST "W" STREET • BELLE CHASSE, LA 70037 • (504) 393-8967

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SAFETY FIRST

FOR 110 VOLT MACHINES

USE ONLY 110 VOLT ELECTRIC CURRENT TO POWER THE SNOW MACHINE. This is for the protection of both the machine and operator.

READ ALL INSTRUCTIONS BEFORE USING THE MACHINE.

THIS MACHINE IS A COMMERCIAL ICE BLOCK SHAVER. IT IS NOT TO BE OPERATED BY CHILDREN.

- **CHILDREN** should not be left alone in the area where the machine is located.
- **CHILDREN** should not sit or stand on any part of the machine.
- **THE MACHINE** should be unplugged if children are present.

DO NOT PUT ARTICLES OR HANDS IN THE SNOW OUTLET SPOUT WHILE THE MACHINE IS IN OPERATION. At the internal end of the spout, there are moving parts that can cause injury.

IF THE MOTOR IS TURNED ON AND THE SHAVING HEAD DOES NOT SPIN. TURN THE MACHINE OFF. In this case you will hear the motor buzz; however, it will not rotate the shaving head. This is because the blades have adhered to the block of ice and the motor does not have enough torque (power) to break through the ice.

The remedy is to turn the machine off. Pull the bottom of the lower, large belt pulley toward you by reaching under the belt cover. This will disengage the blades from the ice block. You can now turn the machine on.

SNOW MACHINE BLADES ARE SHARP. Avoid sliding fingers along the blade edge at all times.

DO NOT REMOVE AN ICE BLOCK OR REMAINING WASTE PIECE OF BLOCK ICE WHILE THE MACHINE IS RUNNING. A running machine can cause dangerous involuntary movement and shattering of block ice.

ALWAYS REMOVE WASTE ICE WITH AN ICE PICK. This will keep fingers from coming in contact with the blades.

DO NOT OPERATE WITH THE DOOR OPEN. Moving blades and parts provide a cut hazard.

DO NOT LEAVE THE MACHINE RUNNING WHILE UNATTENDED.

UNPLUG THE MACHINE WHEN NOT IN USE.

UNPLUG THE MACHINE BEFORE CLEANING OR SERVICING.

ONLY OPERATE THE MACHINE FULLY ASSEMBLED.

ANY PERSON USING THE MACHINE SHOULD READ THIS MANUAL AND BE TRAINED

SAFETY FIRST

FOR 12 VOLT BATTERY POWERED MACHINES

USE A 12 VOLT, DIRECT CURRENT, DEEP CYCLE MARINE BATTERY TO POWER THE SNOW MACHINE. See the installation instructions that follow.

READ ALL INSTRUCTIONS BEFORE USING THE MACHINE.

THIS MACHINE IS A COMMERCIAL ICE BLOCK SHAVER. IT IS NOT TO BE OPERATED BY CHILDREN.

- **CHILDREN** should not be left alone in the area where the machine is located.
- **CHILDREN** should not sit or stand on any part of the machine.
- **THE MACHINE** should be disconnected from the battery if children are present.

DO NOT PUT ARTICLES OR HANDS IN THE SNOW OUTLET SPOUT WHILE THE MACHINE IS IN OPERATION. At the internal end of the spout, there are moving parts that can cause injury.

IF THE MOTOR IS TURNED ON AND THE SHAVING HEAD DOES NOT SPIN, TURN THE MACHINE OFF. In this case you will hear the motor buzz; however, it will not rotate the shaving head. This is because the blades have adhered to the block of ice and the motor does not have enough torque (power) to break through the ice.

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SNOW MACHINE BLADES ARE SHARP. Avoid sliding fingers along the blade edge at all times.

DO NOT REMOVE AN ICE BLOCK OR REMAINING WASTE PIECE OF BLOCK ICE WHILE THE MACHINE IS RUNNING. A running machine can cause dangerous involuntary movement and shattering of block ice.

ALWAYS REMOVE WASTE ICE WITH AN ICE PICK. This will keep fingers from coming in contact with the blades.

- DO NOT OPERATE WITH THE DOOR OPEN.** Moving blades and parts provide a cut hazard.
- DO NOT LEAVE THE MACHINE RUNNING WHILE UNATTENDED.**
- DISCONNECT THE MACHINE FROM THE BATTERY WHEN NOT IN USE.**
- DISCONNECT THE MACHINE FROM THE BATTERY BEFORE CLEANING OR SERVICING.**
- ONLY OPERATE THE MACHINE FULLY ASSEMBLED.**
- *ANY PERSON USING THE MACHINE SHOULD READ THIS MANUAL AND BE TRAINED***

INSTALLATION INSTRUCTIONS FOR SNOW MACHINES WITH 110 VOLT AC MOTORS

Set the drip pan on a surface approximately 30-38 inches high that completely supports the drip pan. The surface should have a tilt toward the drain hole. Leave room on the left-hand side of the machine so the ratchet bar can be fully extended to 19 1/2 inches outside the machine without interference. The ice throttle lever needs to be in the 12 o'clock position to allow the ratchet bar to slide by hand. Once the drip pan is in place, mark and drill the drain hole on the supporting surface. This drain should be connected to your plumbing system by pipe or hose for permanent installation.

Set the machine into the drip pan and push it to the rear of the pan. Turn the switch off and plug the machine into a 110 volt power source. The snow machine is now ready for operation.

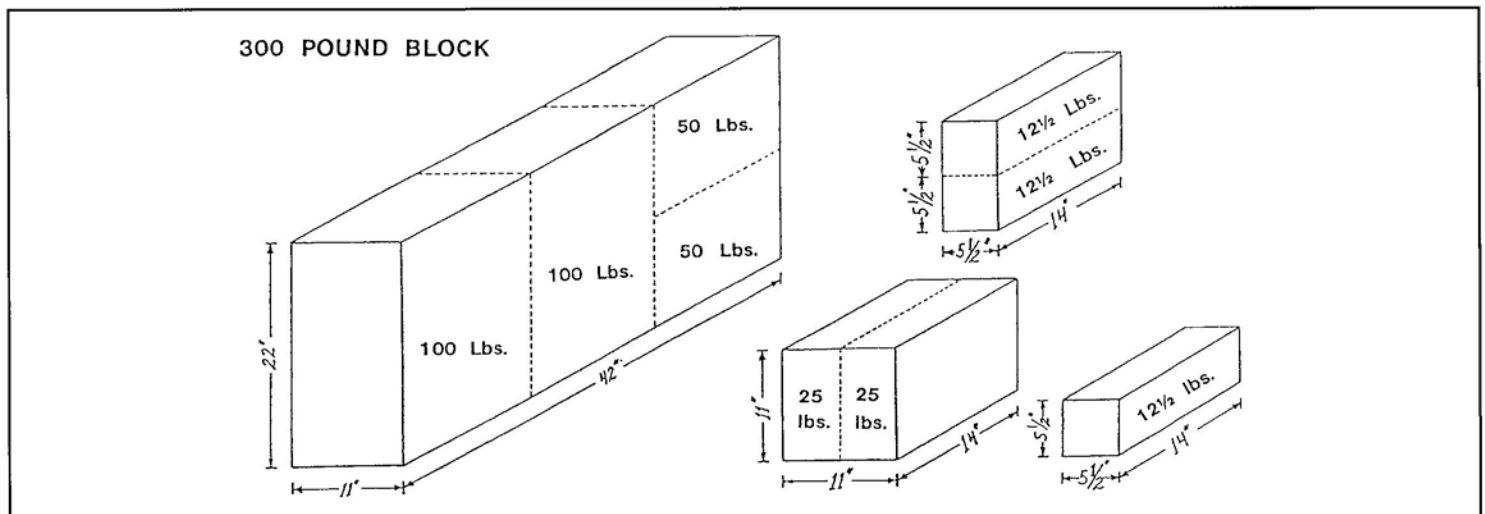
INSTALLATION INSTRUCTIONS FOR SNOW MACHINES WITH 12 VOLT DC MOTORS

Set the drip pan on a surface approximately 30-38 inches high that completely supports the drip pan. The surface should have a tilt toward the drain hole. Leave room on the left-hand side of the machine so the ratchet bar can be fully extended to 19 1/2 inches outside the machine without interference. The ice throttle lever needs to be in the 12 o'clock position to allow the ratchet bar to slide by hand. Once the drip pan is in place, mark and drill the drain hole on the supporting surface. This drain should be connected to your plumbing system by pipe or hose for permanent installation. Set the machine into the drip pan and push it to the rear of the pan. Turn the switch off. **USE A 12 VOLT, DIRECT CURRENT, DEEP CYCLE MARINE BATTERY TO POWER THE SNOW MACHINE.** Use marine battery terminals to connect the eyelets on the motor wire leads to the battery. The **BLACK** wire is **POSITIVE**. The **WHITE** wire is **NEGATIVE**. The green wire is ground and is not needed. If the black positive wire and white negative wire are connected to the wrong battery poles, the machine will run in reverse. This can unscrew the blade impeller and cause damage to the snow machine. The snow machine is now ready for operation.

ICE DATA SHEET

PURCHASING, SPLITTING, & DIMENSIONS

Ice is purchased from an ice house or delivered to retail outlets by an ice broker. The ice is manufactured into 300 lb. blocks measuring 42" x 11" x 22". The 300 lb. blocks are split with an ice pick into three 100 lb. blocks, then six 50 lb. blocks, and each 50 lb. block in to four 12 1/2 lb. blocks that measure approximately 14" x 5 1/2" x 5 1/2". The splitting of the ice into 12 1/2 lb. blocks is usually a free service of the ice house or ice broker. There is also a **SNO-BLOCK®** machine that produces 12 1/2 lb. blocks of ice especially for the snow machine. Visit www.southernsnow.com for details.



WHITE ICE vs. CLEAR ICE *(Applies to 300 pound blocks only)*

White ice and clear ice are two grades of block ice sold by ice houses. White ice has a frosted white color throughout and is used for its cooling qualities only. Clear ice is used by the beverage and shaved ice industry. White ice will produce snow when shaved by the snow machine; however, the syrup will produce slush on contact causing the snow top to slide off. Always ask for clear ice or beverage quality ice. Ice made from **SNO-BLOCK®** machines or 12 pound molds has a frosted color; however, it does not have any of the negative qualities of the 300 pound white ice blocks sold by ice houses.

ICE TEMPERATURE AND SNOW VARIANCE *(Applies to the **Southern Snow®** machine only)*

Most retail outlets shave snow from an ice block that is in a melting state. The quality of the snow is that of real snow. All machines that use cube ice or that spin a block of ice should use ice in a melting state.

The **Southern Snow®** machine will produce ice similar to freshly fallen snow if the block of ice is taken from a freezer set at 0° F. Syrup will collapse this snow as much as 50% on contact. Thus, the snow will need to be packed with a funnel or additional ice and syrup may need to be added twice to complete one shaved ice product.

Snow made from ice in a melting state is firm and can be packed into a hard ball that syrup will not penetrate. Light packing is recommended. Snow from 0° F ice can be packed much harder and the snow will remain soft. By packing the ice, the syrup will need to be applied only once.

This optimum temperature ice for snow can be consistently achieved by first storing the ice blocks in a chest freezer set at 0° F overnight. Take the ice directly from the chest freezer to the snow machine as needed. If the ice in the snow machine reaches an undesirable temperature, return the ice to the freezer. This block can be used later when it reaches 0° F.

A chest freezer is preferred to an upright freezer because cold air is heavier than hot air. Cold air flows onto your feet every time the upright freezer door is opened. A chest freezer will retain more cold air with its door open and is thus more efficient. The freezer door may be opened twenty times a day. If an upright freezer must be used, do not place the ice directly onto the wire shelving. The ice will melt on top of the wire and freeze again. The freezer will need to be defrosted to remove the ice. Place plastic drop cloths over the wire shelving to prevent the ice from sticking.

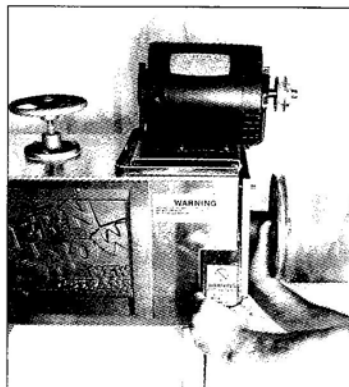
Freezers have a temperature control knob to adjust the temperature. Most freezers will be at 0° F with the knob set at the warmest setting. The knob is a fine setting feature. Allow 24 hours for the temperature to stabilize before checking the results of the temperature change adjustments. The first time the freezer is opened each day the thermometer should read 0° F.

If a freezer colder than 0° F must be used for ice storage, there is a less convenient method to achieve optimum temperature ice. First, store the ice in the freezer overnight. Remove the required ice (2 to 6 blocks) from the freezer approximately 30 minutes before it will be needed. Place the ice into an ice chest with the lid open. This ice is frosted and sticks to your fingers. After approximately 30 minutes, two sides of the block will begin to melt and the other two sides of the block will remain frosted. This is the optimum temperature ice for the best quality snow. To hold the ice at this optimum temperature for an extended period of time, close the lid on the ice chest. If the ice in the machine reaches an undesirable temperature, return the ice to the freezer.

BLADE CHANGING INSTRUCTIONS

Step #1 REMOVE THE SHAVING HEAD FROM THE BODY.

Unplug the machine from the electrical outlet. Remove the two wing nuts and washers that hold the bottom of the plastic motor cover. Remove the thumb screw on the left side of the motor cover. Remove the motor cover from the machine by forcing the bottom over the large pulley. Unplug the motor cover from the machine. Remove the remaining two wing nuts that secure the shaving head. Remove the drive belt by forcing the belt off the big pulley while turning the big pulley. Next, remove the shaving head from the body. Place your right hand under the shaft housing between the big pulley and the shaving head. Lift with your right hand while tapping the snow spout lightly away from the machine body with your left hand.



Step #2 DISASSEMBLE THE SHAVING HEAD.

Use a "L" drive hex wrench to loosen the hex head screw on the big pulley. Slide the big pulley, shaft key, and white washer off the shaft. Slide the impeller with shaft out of the drum. DO NOT HIT THE SHAFT WITH A HAMMER. If there is a burr or scratch on the shaft causing a problem, use 400 grit sandpaper to remove it.

Step #3 REMOVE THE DULL BLADES

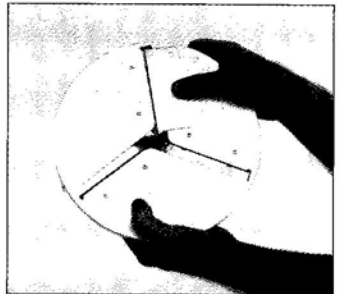
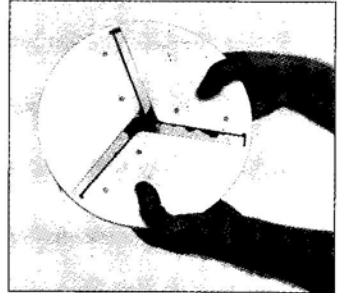
Note the setting and position of the dull blades before removing them. The blades are set with a blade gauge the thickness of a worn nickel coin, approximately .064", above the impeller surface. Use the ball driver hex tool to loosen the six hex head screws that secure the three blades. Carefully, push the three blades as far back into the impeller as they will go. Cautiously, remove each blade, one at a time, by pulling them forward.

Step #4 INSTALL THE SHARPENED BLADES.

Slide the sharpened blades one at a time into the impeller as far as the screw in each blade slot will allow. Slide all three blades to an approximate blade gauge thickness above the impeller surface. You may need to hold one blade up by tightening a blade slot screw and the other two blades can be held with one of your hands on each blade. As the blades are pushed above the impeller surface, they meet in the center. If the points meet before the blades can be pushed the thickness of the blade gauge above the impeller surface, you will need to grind the blade points on a bench grinder until the blades meet properly.

Once the blades meet properly, apply a thin layer of waterproof plumber's grease or Petro-Gel® on the side of the blade touching the impeller and to the impeller surface area that receives the blades. Also, be sure to keep grease on the blade slot screw threads. This grease will prevent the blades from binding to the impeller and protect the screw hole threads from corrosion.

Using a nickel coin, blade gauge, or metal ruler the thickness of a worn nickel approximately .064", set each blade edge this thickness above the impeller surface. Hold the blade with two fingers at the desired setting. Tighten each screw evenly by tightening one and then the other several times. The blade edge needs to be set parallel with the impeller surface, thus being set the thickness of the blade gauge at each end. Loosen the screws to a light pressure and tap the blades on either end with the ball driver hex tool handle to achieve the final blade setting.



Step #5 ASSEMBLE THE SHAVING HEAD.

Apply a thin layer of grease on the shaft and on the sealed bearing on the inside of the drum. Slide the impeller shaft through the two sealed bearings. DO NOT USE A HAMMER OR FORCE. If there is a burr or scratch on the shaft causing a problem, use 400 grit sandpaper to remove it. Place the white plastic washer on the shaft followed by the pulley and shaft key. Turn the entire shaving head face down onto a rag or rubber mat. This action will keep the impeller pressed into the drum. Push the pulley snug against the white plastic washer and drum. Tighten the pulley set screw. Use the "L" drive hex wrench to apply the proper pressure. There should not be any movement that would allow the impeller to wander outside the drum during machine operation. Finally, attach the entire shaving head to the body in reverse order of its removal described in step #1. The wing nuts and thumb screw need to be only hand tight.

MAINTENANCE

The machine should be cleaned and lubricated at least once a year or if the machine is to be stored. Clean the ice compartment with a mild detergent to remove any calcium buildup. If you spray up the snow spout, the blade wheel, and inside the ice chamber with a 50% solution of water and vinegar daily, the calcium deposits will turn to powder in approximately nine days. This powder will wash out of the machine completely in about nine days with regular use. Fruit acid (citric acid solution) will dissolve calcium deposits faster. Sharpen the blades and grease the bearings and other shaving head parts as described in the "Blade Changing Instructions." When changing blades, remove all blade screws. Use the dull blades to scrape excess grease deposits and aluminum oxidation that is between the blades and blade contact area of the impeller. An uneven blade contact surface can cause the hardened blades to crack. Press some grease into the blade screw holes. After the shaving head is assembled, grease the threaded rod that operates the ice vise and the joint where the threaded rod attaches to the ice vise.

BLADE SHARPENING

Most sharpening shops have machines that can put a bevel on the three flat snow machine blades. Once beveled, the blades have a rag edge or burr that must be removed by an oil stone. Dragging the blade edge through a block of wood or moving the blade to a finer dry stone does not properly remove the burr. CAUTION: DO NOT SLIDE FINGERS ALONG BLADE CUTTING EDGE. EVEN DULL BLADES CAN CUT FINGERS OPEN. If the burr has not been sufficiently removed, you will feel the burr catch your fingernail as it slides off the blade edge. Existing burrs will fold over upon ice block contact in the snow machine and thus will perform worse than ordinary dull blades. The blades cannot be sharpened on a bench grinder. Blades may be returned to the factory for sharpening.

BLADE DATA SHEET

The general rule is to sharpen blades every 2,000 lbs. of ice shaved or roughly every 4,000 12 oz. snow balls. There are retail outlets that have their blades sharpened every week and others that manage to shave snow all season on one sharpening. Variables may include the temperature of the ice, the quality of the ice, and machine operation desired.


Signs that the blades need sharpening:

- 1) The machine bogs down and loses power when attempting to shave the ice.
- 2) The machine makes a loud vibration noise as the dull blades scrape rather than shave the ice.
- 3) The ice throttle lever becomes uncomfortably hard to push.
- 4) The machine shaving head freezes solid with ice thus stopping snow flow and causing the motor to bog down or stop. The frozen shaving head needs to be thawed before it will shave again. Dull blades will scrape the ice rather than shave the ice. The dull-blade-scraped ice is a powdery ice that sticks to all metal parts and causes an ice buildup. In some cases the quality or temperature of the ice will be at fault. Ice from the previous day will shave into snow more easily than fresh ice. A sharp set of blades is a cure-all for all frozen shaving head problems.
- 5) The quality of the snow changes to chipped ice.

MACHINE CLEANING

Spray a 50% solution of vinegar and water on the blade wheel from inside the ice chamber. Spray inside the ice chamber and up the snow discharge spout. This will prevent calcium deposits. If there are calcium deposits, this procedure will dissolve and remove the calcium deposits in approximately ten days. For faster results, spray a 50% solution of citric acid (Southern Snow Fruit Acid).

MACHINE OPERATION PROBLEMS, PROBABLE CAUSES, AND REMEDIES

PROBLEMS	PROBABLE CAUSES AND REMEDIES
Pressure is applied to the ice throttle lever and the ice block will not push into the shaving head.	<ul style="list-style-type: none"> • The machine may be out of ice. When the ratchet bar stopper is against the body of the machine, it is out of ice. • The ice throttle lever may be at the 9 o'clock position and it is too high to produce the leverage needed. Turn the ice throttle lever clockwise and stop at the 7 or 8 o'clock position for more leverage. • The ice pusher may have jumped off the tracks and is jammed against the door housing. Place it back on the track. • The ice may have a protruding piece keeping it from sliding past the door housing. Use an ice pick to chip the protruding ice off.
Pressure is applied to the ice throttle lever and it is difficult to push.	<ul style="list-style-type: none"> • The ice vise is too tight. Turn the ice vise hand wheel to reduce pressure on the block of ice.
The ice block is bouncing in the ice compartment.	<ul style="list-style-type: none"> • The ice vise is too loose. Tighten the ice vise with the ice vise hand wheel.
The machine is turned on and the motor makes a humming sound, but the shaving head does not rotate.	<ul style="list-style-type: none"> • Turn the machine off immediately. The blades have stuck securely in to the block of ice and the motor does not have enough starting torque (power) to break through the ice. The remedy is to turn the machine off. Pull the bottom of the lower belt pulley toward you by reaching under the motor and belt cover. This will disengage the blades from the ice block. You can now turn the machine on.
While shaving ice, the snow stops coming out of the snow spout.	<ul style="list-style-type: none"> • The snow has frozen the opening at the top of the snow spout. Turn off the motor. Stop the blades from spinning by pushing the ice throttle lever to move the ice block into the blades. Once the blades have stopped spinning, use the rubber spatula to clear the snow spout. If the entire shaving head is frozen solid, pull the ice block away from the blades using an ice pick. Throw or squirt water at the center of the blade wheel and up the snow spout. Turn the machine on to discharge the snow and ice accumulation. Operations with frequent snow clogging problems should have a spray nozzle, the same as used with a household sink.
Broken blades.	<ul style="list-style-type: none"> • There are two main causes. The first is an uneven blade contact surface because of aluminum oxidation or hard, dry grease buildup. Read the "Maintenance" section for the remedy. The second cause is over tightening the blade screws. Use only the leverage of the ball driver hex tool with screwdriver handle to tighten the blade screws snugly.
<p>The outer edge of all three blades are chipped.</p> 	<ul style="list-style-type: none"> • The impeller is wandering out of the drum and hitting the machine body. Read the "Blade Changing Instructions" step #5 for the remedy.

Read the "Blade Data Sheet" section for problems caused by dull blades.

WHY DO SNOW BALL MACHINES FREEZE-UP?

THERMAL DYNAMICS — the constant temperature changing of the ice, water, and metal parts. Machines often freeze-up after the waste piece of melting ice is replaced by a much colder block from the freezer. Most freeze-ups start at the internal end of the snow spout. The snow produced is as fluffy and light as nature's own. The snow builds across the snow spout opening until the opening is closed. As soon as snow stops coming out of the snow spout, stop pushing the throttle. The throttle can be pushed hard once to produce chipped ice that can blow through the collection of snow. If the spout is not clear, the ice shaving head needs to be thawed. Turn the machine off. Pull the ice away from the blades using an ice pick. Use a hose or squirt nozzle to send water up the snow spout and into the center of the blade wheel. Turn the machine on and the frozen ice and snow will discharge from the snow spout.

WHAT CAN YOU DO TO REDUCE FREEZE-UPS?

- A sharp set of blades is a cure-all for all frozen shaving head problems. Dull blades will scrape the ice rather than shave the ice. The dull blade scraped ice is a powdery ice that sticks to all metal parts and causes an ice buildup. See the “Blade Sharpening” section of the machine manual.

- Ice blocks at zero to +10 degrees Fahrenheit produce fluffy snow. Colder blocks are not necessary and cause more freeze-ups. See the “Ice Temperature and Snow Variance” section of the machine manual.

- Ice that is a few days old shaves better than fresh ice.

- When the machine is turned off, the center of the blade wheel and snow spout can be squirted with a water hose to completely thaw the shaving head after each block of ice. Thus, each new block of ice starts with zero ice and snow buildup.

- Keep a steady flow of snow going through the shaving head. Slowing the machine to produce a perfect point on the snow ball slows the snow flow and allows the snow to collect inside the shaving head. The fluffy snow needs to blow out of the snow spout at a steady rate of speed. A funnel can be filled with snow at a steady rate and placed on top of the snow ball.

- Blade settings affect the quality of the snow produced. Blades set at the height of the blade gauge .064" (the thickness of a worn nickel) requires a light touch on the ice throttle to avoid chipped ice the first day. Lowering the blades to the thickness of a dime will produce fluffy snow the first day; however, the blades will perform as dull blades after the first few days. These blades raised later to the height of the blade gauge will perform as sharper blades.

WARRANTY LIMITED LIFETIME WARRANTY

The manufacturer warrants that this machine will be free from defects in workmanship and materials, and will repair or replace all defective parts, excluding blades, to include labor and return shipping charges, for the life of the machine to the original retail purchaser. **Blade sharpening service is not covered by the warranty.** The standard 110 volt A.C. motor warranty is limited to six (6) years. Special and optional motors are limited to the manufacturer's warranty.

This warranty does not cover damages resulting from accident, misuse or abuse, lack of reasonable care and maintenance, the affixing of any attachment not provided with the product, loss of parts, or subjecting the unit to any but the specified voltage.

This warranty provides for the repair or replacement of defective parts, at our option, free of charge. Unit must be sent prepaid and properly crated to the factory. Proof of purchase required. No warranty service will be performed on machines if the Serial Number has been removed, defaced, or marred in any manner. Warranty will be voided.

This warranty give you specific legal rights, and you may also have other rights, which may vary from state to state. No other warranties or express warranty is given.