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Safety During Snow Removal

Safe tips for snow removal using snow shovels, snowblowers and powered blades or sweepers are covered in this NebGuide.

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As the temperature drops and the grounds maintenance equipment is stored for the winter, position the snow removal equipment for quick access, and start thinking about snow removal safety.

About half the accidents involving snow removal equipment happen to first-time users or those using the equipment for the first time each winter.

Snow removal equipment falls in one of three groups: 1) the snow shovel, 2) the snow thrower or blower, and 3) the powered blade or sweeper.

The Snow Shovel

Although the snow shovel is the least popular and most labor intensive, it is still the best tool for snow removal where other equipment can't operate.

Heart failure due to overexertion is the most common and serious health problem associated with snow shoveling. Men are more likely to suffer heart attacks than women. When shoveling snow, follow these commonsense guidelines regardless of your physical condition:

- Dress for the occasion. Wearing clothing in layers is usually best because it allows better evaporation of perspiration (*Figure 1*). Shoes, boots or overshoes should have rubber soles (not leather or hard compositions) because rubber soles reduce slipping and falling.
- Use a lightweight shovel made of aluminum that has a Teflon coating. If the shovel doesn't have a Teflon coating, rub the surface with paraffin (wax) or coat it with a silicon spray. These surface conditioners prevent snow buildup and save time and effort.
- Use a shovel of modest size. Don't try to heap the snow on the shovel. The weight of the load



Figure 1. Wear clothing in layers. Don't heap snow on the shovel.

lifted -- rather than the number of movements made -- is the key to overexertion. Lightening the load reduces the strain on stomach, back and abdominal muscles. This reduces the pressure in the chest cavity and circulatory demand on heart walls.

- When lifting the shovel, use the entire body, letting the back and legs share the work. If the snow is deep, take small loads and rest often.
- Don't keep working to the point of exhaustion. Take frequent rests and go inside to warm up. Cold and overexertion are hard on the heart.

Snow Thrower or Blower

Snowblowers range from self-propelled to units mounted on tractors. They come in varying sizes, but usually are designed with similar mechanisms. Larger snowblowers operate in two stages.

First, the spiral-shaped auger blades bite the snow and pull it into a chamber. Next, a rotary impeller propels the snow out a discharge chute.

Smaller units operate in a single stage that collects snow in a fast-moving auger and throws it. Some snowblowers have no auger blades; instead, they use a drum fitted with rubber or plastic paddles that "sweep" snow away like a large, circular broom.

Whirling paddles, augers and blades have tremendous power. Accidents can be prevented by practicing safety and observing the following precautions:

- Inexperience causes accidents, so review the operator's manual before use. The manual can help you understand how the machine works and how to operate it safely. *Figure 2* shows common danger areas on a snowblower.
- Never allow children to operate the machine, and make sure adults who operate the snowblower have proper instruction.
- Coming in contact with the turning blades inside the discharge chute is the most common cause of injuries associated with snowblowers.

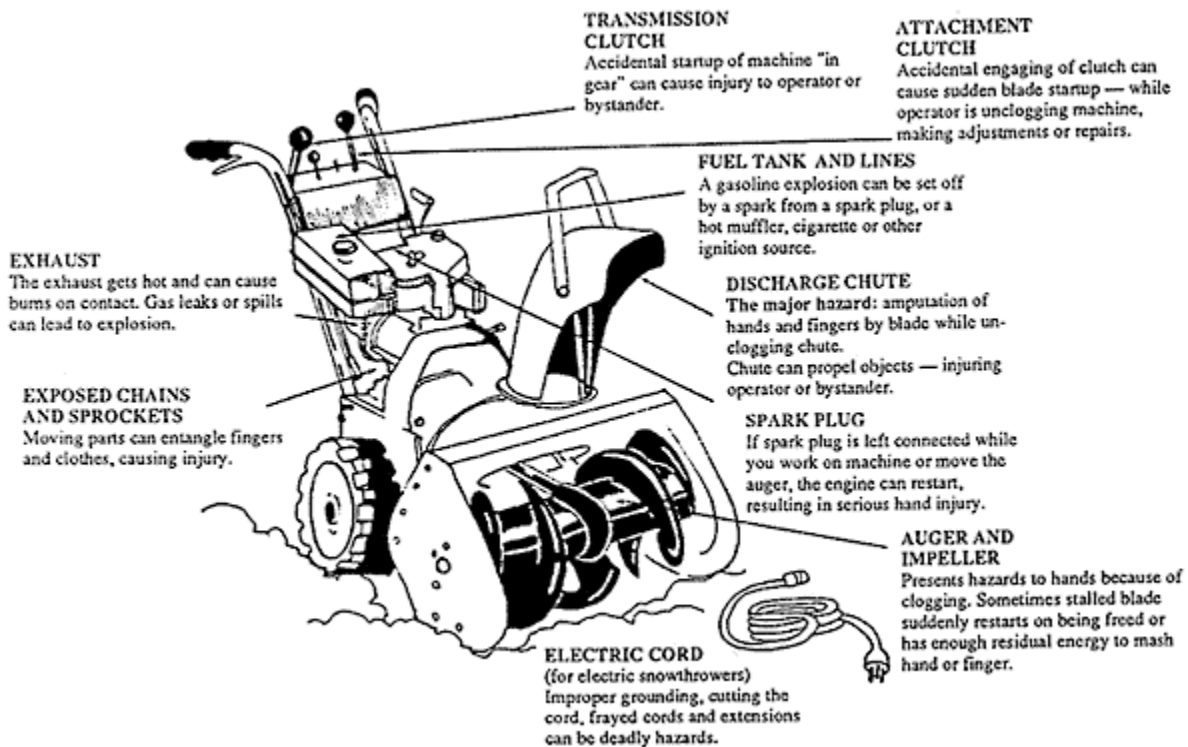


Figure 2. Common danger spots on a snowblower. Read the operator's manual to learn to operate it safely!

- Accidents occur most often when the discharge chute clogs with wet, heavy snow. You can't see the whirling blades down in the chute because snow covers the blades. If you use your hand or a stick to remove the clog, the blades could strike the stick or your hand. In either case, injury can occur.
- Stop the engine before cleaning foreign objects or snow from the equipment. Know how to stop the engine or the throwing unit quickly in case a problem arises.
- The best way to prevent accidents is to avoid clogging the chute of an operating snowblower. If plugging does occur, resist the temptation to put your hand into the auger or discharge chute because the tension built up by the plug could trigger rotation upon clearing.
- Proper clothing and footwear are essential (*Figure 3*). Heavy clothing provides warmth, but reduces mobility and may reduce your field of vision. Maneuvering on snow and ice can be difficult for both the operator and snowblower. According to university studies, there is a correlation between accidents and difficulty in moving while operating snow removal equipment. About one-fifth of the injury victims lost their footing and accidentally stuck their hands into the discharge chute while trying to steady themselves.
- Maintain and use the "continuous operator," or dead-man controls. You must hold these controls continuously for the auger and drive train to be engaged. The snowblower halts if the operator slips and falls or releases the controls for any reason. The machine will stop and contact with moving parts will be avoided. Snowblowers certified by the Outdoor Power Equipment Institute (indicated by a triangular sticker) have this feature.



Figure 3. Warm clothing and rubber boots protect an operator from the cold while allowing needed agility.

- Clear the area of any debris before you begin snow removal. It will save time and prevent injuries. Don't forget that some machines can send snow flying 30 feet and small, solid objects, such as stones or ice, up to 75 feet. When clearing a gravel area, don't try to remove all the snow. Set the blades about an inch above the gravel.
- Plan a route before you start. Before snow falls, mark or make a map of the areas that need snow removed. Note manhole covers, stumps, banks, curbs, large rocks, small shrubs and other obstructions that may be undetected beneath a layer of snow. Start on the windward side of the area to be cleared and work across the wind, throwing snow with the wind. The wind will help disperse the snow and prevent it from settling on cleared areas. When operating an electric snowblower, begin nearest the electrical outlet and work outward to minimize the chance of running over the power supply cord.
- Always clear snow up and down the face of slopes, not across the face. Use extreme caution when changing direction on slopes. A good rule of thumb is not to attempt to clear anything steeper than a 35 percent slope (or 19.3 degrees). Any slope with 3.5 feet rise in 10 ft. is too steep to clear safely.
- Do not exceed the snowblower's capacity. The snowblower works most efficiently when operated at a smooth travel speed and fed a continuous ribbon of snow. Avoid overloading the engine, and keep the blades moving rapidly. If the blades are slowed, the in-feed capacity may be too great, causing inefficient operation, clogging and potential problems.
- Shut off equipment before making repairs or mechanical adjustments. Always shut off the engine and remove the spark plug wire to prevent injuries. Never leave the equipment running unattended because it could be stolen or involved in an accident.
- Handle gasoline with care. Keep in mind these basic tips for handling flammable materials:
 - Use an approved fuel container for storage.
 - Don't remove the fuel cap or add gasoline to a running or hot engine.
 - Only fill the fuel tank outdoors.
 - Wipe up any spilled gasoline.
 - Keep both the snowblower and fuel away from open flames and sparks.
- Clean off excess slush and lubricate the drive train prior to storage. To prevent possible freeze-up of the rewind starter, pull the starter rope hard with a continuous full arm stroke three or four times while the engine is still running. Pulling the starter rope produces a clattering sound, but is not harmful to the engine or starter. These tips will make the snowblower easier to start and use the next time. If equipment is stored in an unheated garage or shed, bring it into a warm area for an hour so it will start easier.
- Remove the key as a safeguard against unauthorized use. If the system doesn't have a key ignition, remove the spark plug wire from the plug.

Powered Blade or Sweeper

The powered blade and the sweeper are most often mounted on the front of a power unit such as a small tractor, a pick-up truck (*Figure 4*), or as special attachments for grounds keeping equipment. They also can be mounted on the rear of a tractor. In each case, the ability to produce traction is usually the limiting factor to move snow. To increase traction, use tire chains or add additional weight to the unit.



Figure 4. An even flow of snow over the blade makes snow removal more efficient and safer.

On some specialized units the front- or rear-mounted device is driven with a hydraulic motor or belt drives and activated with a cylinder. This enables the unit to be lifted over obstructions without having to go around them. Apply most of the safety precautions used for the snowblower to the powered blade, but remember several additional tips:

- Maintain good steering capability. Many times the front blade will have a digging action that may lift all the weight from the front steering wheels. This makes it difficult to steer effectively. Operators should reduce the amount of snow bite or add more weight on the unit's front.
- Have several drop points for the snow. Most blades and sweeps push the snow to one side. In wet, heavy snow the accumulation may not flow. Instead, it may stick and ball in front of the blade or sweeper. For these situations, have plenty of drop points and move the loads into the drop points as needed.
- Take small bites that will flow across the blade surface. Approach piles of snow at a reasonable speed. The impact of the blade on a pile of snow when approached at a fast speed can severely damage the machine's drive train and possibly injure or throw the operator from the machine.
- Stay clear of obstacles like curbs, stumps, posts, bridges and rocks that are close to embankments. Striking any of these objects could cause the machine to roll down the embankment.
- Often these power units are used in the summer as well as the winter, so they need to be prepared to operate in the existing conditions. In winter, replace heavy summer grade oil with light grade oil. The lighter oil makes the engine easier to start and provides adequate lubrication during the first few minutes of operation. Keep the battery well charged and the antifreeze at the correct level for liquid-cooled engines.

Summary

About half the accidents involving snow removal equipment happen to first-time users or those using the equipment for the first time each winter. Safety precautions for snow removal with snow shovels, snowblower and powered blades or sweepers should be stressed whenever used.

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