



Power lawn mowers

To prevent injuries from power lawn mowers, manufacturers must incorporate safety into their design. They also must set rules for safely operating power lawn mowers and provide these rules to purchasers of the machines.

1. Available data indicates that more incidents occur with rotary power mowers than with reel-and-sickle mowers. Therefore, the precautions discussed in this data sheet are directed primarily to rotary mowers. In most cases, however, they also apply to reel-and-sickle mowers, whether electric- or gasoline-powered.

Hazards

2. The hazards of power mowers are demonstrated by the alarming number of incidents involving them. Operators and bystanders have been injured by sections of cutting blades that flew off, by stones and by pieces of wire and other materials thrown by the high-speed blades. In addition, operators have injured feet and hands when they come into contact with revolving blades and other moving parts.

Design features

3. Mowers certified by an independent laboratory to meet the minimum design safety standards

of the American National Standards Institute bear a triangular label indicating this fact.

4. Power lawn mowers should be stable on rough terrain.

Features called for by ANSI

5. Power mowers should be constructed in accordance with the Safety Specifications for Power Lawn Mowers (ANSI/OPEI B71.4-2012). The design features in the following paragraphs are included in the ANSI standard.
6. Hazardous revolving parts must be covered with built-in guards. Never attempt to remove or alter guards. Openings in the skirt of the housing surrounding the blades must be large enough only to permit ejection of the grass.
7. Blade parts must be fastened to the main blade or disk very securely, so a blade part will not become loose and be thrown off. One design uses an extra heavy blade tip, properly tempered, that is mounted with a 3-inch center bolt and a self-locking nut along with one rivet.
8. The handle of a walk-behind mower must be long enough so the operator cannot pull the

mower back onto his or her feet. The handle must have a positive up-stop or latch preventing the rearward end of the handle from coming within 17 inches horizontally of the closest path of the blade.

9. Rotary mower blades must be governed so the speed of the blades at the tip does not exceed 19 fpm.
10. Mowers must be equipped with a positive on-off switch on the ignition or power supply.
11. Safety recommendations developed by the manufacturer for the operation and maintenance of a power mower must be included in the instructions accompanying each power mower sold.

Other design features

12. Electric extension cords and motors should bear the label of a nationally recognized testing agency, such as Underwriters Laboratories Inc.
13. The wheels should be large enough to give easy operation over rough or uneven terrain.

Operating precautions

14. Follow the manufacturer's recommendations for operation and maintenance completely. Consider these recommendations standard operating procedure.
15. An electric-powered mower should have a ground wire as a standard part of the machine unless the unit is double insulated (NFPA 70).
16. Do not use an electric-powered mower when it is raining, when the grass is wet, or when the mower is wet or damp from any cause. If the mower is known to be defective, replace it or avoid using it until it is properly repaired. Portable ground fault circuit interrupters also can be used as an additional protective measure.
17. Motors should be kept free from accumulations of grass, leaves and excessive grease. An accumula-

tion of such combustible materials could result in a fire, or heat build-up could damage the motor and working parts of the mower.

18. Before mowing any area, be sure it is cleared of rocks, stones, wire, sticks and any other debris. Blades should not be rotating when crossing graveled areas.
19. Start the mower on firm, clear, level ground. Maintain a firm grip on the mower, or place a foot on the housing. Stand to one side when starting the mower. Give full attention to operation of the mower.
20. When cutting tall, heavy grass or weeds, proceed slowly to avoid choking or stalling the motor.
21. While operating on rugged or uneven terrain, set the mower at the highest cutting point. This prevents it from accumulating or ejecting an excessive amount of debris.
22. When using walk-behind mowers, cut hills and banks sidewise instead of up and down. This method will allow better control of the mower and reduce the possibility of contact with it if control is lost. If the hill is extremely steep, have someone at the top of the hill hold a rope attached to the mower.
23. Keep the cutting area clear of all persons and animals. While a power mower is in operation, nobody but the operator should be allowed near it. If someone approaches, shut off the mower.
24. At no time should the operator reach under the housing, deck or guards to try making any adjustments or clearing the mower of grass unless the motor has been shut off and the power or spark plug wire has been disconnected. A hot gasoline engine could start of its own accord if the blades are turned while the plug wire is attached. If adjustment requires the motor be kept running, take extreme care to prevent parts of the body and clothing from coming into contact with moving parts. To

Figure 1. To operate walk-behind mowers safely, follow these practices.

<p>Safe operating practices for walk-behind mowers</p> <ul style="list-style-type: none">• Read the instruction manual and know your mower thoroughly.• Before clearing the mower of debris, shut off the machine. With an electric mower, disconnect the power.• Mow in daylight hours only, unless you have good artificial light.• Shut off the mower before moving it from one level to another. With an electric mower, disconnect the power.• Be certain of your footing and balance, especially when mowing on an incline. Wear steel-toe footwear.• Check your mower regularly for dangerous functioning and worn parts.• Don't leave the mower unattended while it is running.	<ul style="list-style-type: none">• Don't leave windup impulse starters in a charged position.• Don't use the mower when the grass is wet and slippery.• Don't refuel the mower while it is running or still hot from use.• Don't allow children or pets in the mowing area.• Don't lift or tip the mower while it is running, especially if it is a rotary-blade mower.• Don't put hands or feet near moving parts, especially blades, while the engine is running.• Never adjust wheel height while the engine (motor) is running.• When cleaning, repairing, or inspecting a gasoline-powered mower, disconnect the spark plug wire.• Do not pull backward on an operating power mower
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expose the underside of a mower for maintenance, tip it by the handle.

- 25.** Never leave a power mower running unattended. Numerous injuries have resulted from unauthorized persons attempting to operate power mowers left unattended and running, or left with the key in the ignition.
- 26.** Store gasoline in rated flammable-liquids safety containers bearing the FM or UL label. Keep the containers outdoors in a shed or a garage – not in the basement or utility room.
- 27.** An operator should not refuel a gasoline mower while it is hot, running, or in a closed area, or while the operator is smoking.
- 28.** Before being permitted to run one of these ma-

chines, any employee should be thoroughly instructed in safe and efficient operating procedures.

Riding mowers

- 29.** In addition to the usual contact hazards and the hazard of thrown objects present with walk-behind mowers, riding mowers present the additional hazard of overturning onto the operator.
- 30.** Riding mowers should have as low a center of gravity as is practicable to provide enough stability, enough power to operate on moderate inclines without undue strain on the motor and clutch-activated mower blades. Construction should conform to ANSI B71.1-2012
- 31.** Where applicable, observe the same precautions practiced with walk-behind mowers when operating riding mowers. Also, to prevent tipping, take

Figure 2. To operate riding mowers safely, follow these practices. This material is reproduced with permission from Consumer Turf Care Equipment - Pedestrian-Controlled Mowers and Ride-On Mowers - Safety Specifications. Copies of this standard may be purchased from the American National Standards Institute at 11 West 42nd Street, New York, NY 10036.

Safe operating practices for riding mowers (Adapted from ANSI/OPEI B71.1)

- Know the controls and how to stop quickly. Read the owner's manual.
- Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instruction.
- Do not carry passengers. Keep children and pets a safe distance away.
- Clear the work area of objects that might be picked up and thrown.
- Before trying to start the engine (motor), disengage all attachment clutches and shift into neutral.
- Before leaving the operator's position, disengage power to attachment(s), and stop the engine (motor).
- Before making any repairs or adjustments, disengage power to attachment(s) and stop the engine (motor).
- When transporting the mower and when it is not in use, disengage power to attachment(s).
- When leaving the vehicle unattended, take all possible precautions such as disengaging the power take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine and removing the key.
- When going uphill or downhill, do not stop or start suddenly. Mow up and down the face of steep slopes – never across the face.
- To prevent tipping or loss of control, reduce speed on slopes and in sharp turns. When changing direction on slopes, exercise extreme caution.
- Stay alert for holes in the terrain and other hidden hazards.
- Use care when pulling loads or using heavy equipment:
 - a. Use only approved drawbar hitch points.
 - b. Limit loads to those you can safety control.
 - c. Do not turn sharply; use care when backing.
 - d. Use counterweight(s) or wheel weights when suggested in the owner's manual.
- When crossing or near roadways, watch out for traffic.
- When using any attachments, never direct discharge of material toward bystanders, and do not allow anyone near the vehicle while in operation.
- Handle gasoline with care; it is highly flammable.
 - a. Use approved flammable-liquids safety container.
 - b. Never remove a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.
 - c. If the engine is run in the garage, open doors. Exhaust gases are dangerous. Do not run the engine (motor) indoors.
- Keep the vehicle and attachments in good operating condition, and keep safety devices in place.
- To be sure the equipment is in safe working condition keep all nuts, bolts and screws tight.
- Never store the equipment with gasoline in the tank inside a building where vapors may reach an open flame or spark. Before storing in any enclosure, allow the engine to cool.
- To reduce fire hazard keep the engine free of grass, leaves and excessive grease.
- After striking a foreign object, stop the vehicle and attachments and inspect for damage.
- Before restarting and operating the equipment, repair any damage.
- Do not change the engine governor settings or over-speed the engine.
- When using the vehicle with mower, proceed as follows:
 - a. Mow only in daylight or in good artificial light.
 - b. Never adjust cutting height while the engine (motor) is running if you must dismount to do so.
 - c. When removing the grass catcher or unclogging the chute, shut off the engine (motor).
 - d. Frequently check the blade mounting bolts for proper tightness.
- Check the grass catcher bags frequently for wear or deterioration. Replace with new bags for protection.

greater care to avoid sudden dips and chuckholes in lawns. Only the operator should be allowed on a riding mower.

- 32.** Riding mowers usually have a longer wheelbase than tread width, so it is advisable to mow inclines vertically rather than horizontally. Never make turns while on the slope. When engaging the clutch, take care to avoid tipping backward or forward. If the incline to be mowed seems too steep, it might be advisable to use a walk-behind mower and to follow the procedure outlined in paragraph 23.
- 33.** Numerous cases have been reported of operators backing over small children who could not be heard because of the noise of the engine. Such incidents often result in severe injuries or death. To avoid such mishaps, keep backing to a minimum and, whenever backing is necessary, make sure there is no one behind the mower. Always face the direction of travel.

Personal protection

- 34.** Operators of a power mower should wear heavy, close-fitting trousers and steel-toe safety shoes. Operating a power mower while wearing loose-fitting clothes or open-toe shoes, or while barefoot, is inviting injury. For using a riding mower around brush, bump caps are advised.
- 35.** Power mower operators must wear safety glasses. Accident data shows frequent eye injuries from being hit by flying objects or brushing over-hanging branches.

Maintenance

- 36.** Before storing mowers, allow them to cool and clean them.
- 37.** Observe a systematic schedule for inspecting mowers and lubricating all moving parts. Remove mower blades periodically, then have them re-sharpened and balanced.

- 38.** Whenever a blade is badly damaged from striking a rock or other heavy object, the blade must be either reground and properly balanced or replaced with a new blade.
- 39.** It is advisable to have only experienced mechanics or power mower service persons repair these machines.

Sources of information

American National Standards Institute/ Outdoor Power Equipment Institute. Consumer Turf Care Equipment-Walk-Behind Mowers and Ride-On Machines with Mowers-Safety Specifications, ANSI OPEI B71.I. New York: ANSI, 2012.

ANSI/OPEI B71.1-2012
Consumer Turf Care Equipment - Pedestrian-Controlled Mowers and Ride-On Mowers - Safety Specifications

National Fire Protection Association. National Electrical Code, ANSI NFPA 70. Quincy, MA: NFPA.

ANSI B71.1-2012 Consumer Turf Care Equipment Walk-Behind Mowers and Ride-On Machines with Mowers Safety Specifications