

# Riding Lawnmower Safety Fact Sheet

HS21-003A (01-21)

Landscapers and lawn care crews rely on riding lawnmowers to cover more ground in less time. The tight, zero-turn radius on many riding lawnmowers also allows for closer mowing to buildings, trees, and other obstacles. However, with these advantages come the hazards of machine rollovers and contact with blade(s) or other moving parts.

The U.S. Consumer Product Safety Commission estimates that 35,000 injuries and hundreds of deaths related to riding lawnmowers occur each year.<sup>1</sup> The U.S. Bureau of Labor Statistics reports that 252 landscaping service workers died of work-related injuries in 2019.<sup>2</sup> These accidents, mostly due to loss of mower stability and operators thrown from or falling under the equipment, are preventable.<sup>3</sup>

## Safety Training

When safety precautions are ignored, riding lawnmower operators face potential dangers. Developing and implementing a comprehensive riding lawnmower safety training program that includes written rules and procedures based on the manufacturer's precautions can reduce injuries and help keep workers safe.



### ***Employers Must Provide Safe Equipment***

The first steps in any landscaping workplace program begin with ensuring that workers have safe equipment to use; and that they use and maintain all available safety devices.

- **Use a rollover protective structure (a roll bar) and a seat belt.**

Equip riding lawnmowers with rollover protection and seat belts to prevent injuries. For any riding lawnmower without rollover protection or seat belt as standard equipment, contact the manufacturer for a kit. When vertical clearances do not allow for a roll bar in the raised position, temporarily lower it, but continue to wear the seat belt. Return the roll bar to the raised position as soon as the vertical clearance allows.

- **Equip lawnmowers with an operator presence control (OPC) system.**

An OPC system is a safety device that will stop the rotary blade(s) when the mower operator rises out of the seat to perform a task or is thrown from the mower. This feature reduces the chance of injuries, such as lacerations, amputations, and even death.

- **Inspect lawnmowers before each use.**

Use a standard checklist to inspect the mower before each shift. Check the tire pressure and look for any missing or damaged guards. Ensure that the roll bar and seat belts are attached correctly and that the interlocks that keep the engine from starting while the mower is in gear are functioning.

- **Use only qualified personnel for servicing and repairs.**

Use experienced service personnel to inspect riding lawnmowers and for annual maintenance. Only qualified personnel should service and repair the mowers.

- **Provide personal protective equipment (PPE).**

Employees should wear heavy, close-fitting trousers and steel-toed, non-slip safety boots. Avoid baggy clothing, which can get caught in moving parts. Other PPE, which should be provided by the employer at no cost to the employee, include:

- **Safety glasses**

Require riding lawnmower operators to wear safety glasses at all times unless operating in an enclosed cab. Continue to wear safety glasses for all other landscaping duties when eyes may get hit with debris.

- **Hearing protection**

Require workers to wear earmuffs or earplugs to prevent hearing loss from exposure to loud noise. Earmuffs seal around the ears to muffle loud noises. Earplugs are inserted into the ear to block noise and are either reusable or disposable. Wash reusable earplugs with warm, soapy water after each use to prevent ear infection. Discard disposable earplugs after each use. The Occupational Safety and Health Administration (OSHA) Standard [1910.95\(i\)\(1\)](#) requires hearing protection when sound levels exceed daily limits that generally average 85 or 90 decibels.

- **Bump caps or hardhats.**

Advise workers to wear bump caps or hardhats when riding a lawnmower in the brush to protect the head from flying debris.

### **Operator Crushed by Riding Mower**

[\(OSHA Accident Inspection 107975153\)](#)

A riding lawnmower operator mowing on a hill was moving too fast when he took a sharp turn. The mower tipped on top of him, crushing his rib cage and puncturing his lungs. He died later that day. *Never make sharp turns at high speeds, especially on a hill.*

### **Employee Burned When Gas Ignites**

[\(OSHA Accident Inspection 002841710\)](#)

A riding lawnmower operator attempted to refuel the mower he had been using. As he filled the gas tank, some gasoline ignited as it spilled onto the hot motor. The employee suffered first degree burns to his face and forearms. *Always shut off the engine and wait at least five minutes for the mower to cool before fueling.*

### **Employee Injured When Mower Overturned on a Tailgate**

[\(OSHA Accident Inspection 125956334\)](#)

An employee was driving a riding lawnmower up a ramp to store it in a trailer. The hinge on the tailgate broke, and the mower overturned. The employee was hospitalized with back injuries. *Ensure that any ramp used is securely attached to the loading vehicle.*

## Ensure Safe Mowing Operations

Employers are responsible for providing workers with training on all equipment in a language and vocabulary they understand. Before operating a riding lawnmower, workers must prove that they know how to use the machines safely. Additionally, training should include, but is not limited to, the following:

- **Understand the use and purpose of all safety devices.**  
Demonstrate how to use, place, and secure rollover protective structures, guards, seat belts, and shields properly.
- **Know the importance of surveying the terrain.**  
Train workers to look for dangers in the mowing path, such as large rocks, signs, trash receptacles, tree stumps, low-hanging tree branches, soft or wet spots, or other areas that present risks to mower operations.
- **Identify stability and rollover hazards.**  
Provide training on the risks of operating riding lawnmowers on surfaces and terrains that can pose tip-over and rollover risks. Discuss hazards related to loading ramps, wet surfaces, slopes, ledges, retaining walls, barriers, streams, bodies of water, unprotected ditches, culverts, and excavations.
- **Never carry passengers.**  
Riding mowers are one-person machines.
- **Evaluate and retrain workers as needed.**  
Evaluation and retraining are necessary to ensure that employees maintain safe skills. Provide refresher training when a worker is observed practicing the following unsafe practices:
  - o An operator uses a lawnmower in an unsafe manner.
  - o A worker suffered an injury or was involved in a near-miss incident.
  - o A worker receives a new job assignment that includes operating an unfamiliar piece of equipment.
  - o A worker receives a new job assignment that includes mowing on unfamiliar surfaces or terrain that present hazards to the operator.

### Operator Severs Fingers When Mower Slides on Wet Grass

(OSHA Accident Inspection 112046834)

An employee operating a riding lawnmower on wet grass rested his right hand on the gas tank as he mowed near a tree on a slight incline. The mower slid and hit the tree in the spot where he was touching the gas tank. Three of his fingers were severed, and one was unable to be reattached. *Avoid mowing on wet grass and always keep hands on the riding lawnmower's steering wheel.*

### Operator Cut by Mower Blades

(OSHA Accident Inspection 125582973)

An employee was operating a riding mower without the blade guard in place. He dismounted the mower to move a picnic table in his path. The employee slipped on the wet grass and slid into the exposed rotating blade. He sustained a fractured right ankle, partial amputation of his left foot, and severe and extensive cuts. *Never operate a mower without all guards in place, and never dismount a running mower.*



## Encourage Employee Input and Responsibility for Safe Work Habits

Employees should provide input into developing a safety training program and take action to remain safe on the job site. Here are some steps they can take:

- **Commit to learning.** Workers need to understand and know where to find the operations, maintenance, limitations, and warning materials for all equipment. Read the operator manual's safety instructions and pay attention to the warning labels on the mower. If there are questions, stop and ask a supervisor before performing the work.
- **Focus on safety.** Before taking a hazardous shortcut, remember that accidents can leave workers permanently injured or dead. For everyone's safety, do not take risks. No deadline is so pressing that employees cannot take time to do the work safely.
- **Know the dangers of fatigue or impairment.** Never operate machinery when



overly-tired or if drug- or alcohol-impaired. Discuss all prescription and over-the-counter medications with a doctor or pharmacist to ensure it is safe for use while operating machinery.

## Safe Operating Practices

Preventing injuries requires focusing on safety during each step of the job. These operating practices can help ensure workers' safety.

### ***Pre-Start Inspections for Employees***

The best way to prepare for safe operations is a pre-start inspection. Before turning on the engine, complete a thorough visual inspection of the mower at the beginning of each day. Alert a supervisor if the mower needs any repairs.

- **Belts**  
Check for loose or damaged belts. Loose belts can slip, causing friction and possibly a fire. Belts can also break and fly from the mower. Tighten loose belts or replace belts if any ply separation or cracks are visible.
- **Blades**  
Use heavy-duty gloves when inspecting the blades. Make sure blades are secure, balanced, and covered to prevent injury. Report a bent, cracked, or worn blade to a supervisor.

- **Fluid Leaks**

Fluid leaks can cause fire hazards as well as break-downs. Report signs of leaking fluid to a supervisor immediately.

- **Grass or Grease Build-Up**

Check the mower deck and chute for grass clippings, leaves, grease, or other debris. Debris build-up on moving parts is a fire hazard and can cause break-downs.

### **Prepare the Mowing Area**

Prepare the mowing area to ensure a safe working environment. Walk the location and remove hazardous obstacles. Debris picked up by a mower can be thrown from the machine at speeds up to 200 m.p.h.<sup>4</sup> It can also cause the equipment to jam or malfunction. Also, look for hard-to-see holes, ruts, bumps, or other uneven areas in tall grass that can cause tip-overs.

### **Safe Start-Up**

- Make sure all attachments are disengaged.
- Shift into neutral before starting the engine.
- Always start on flat ground.
- Start the mower from the operator's seat only.

### **Assess the Surrounding Risks**

Before mowing an area, look at the conditions of the land and take the following precautions.

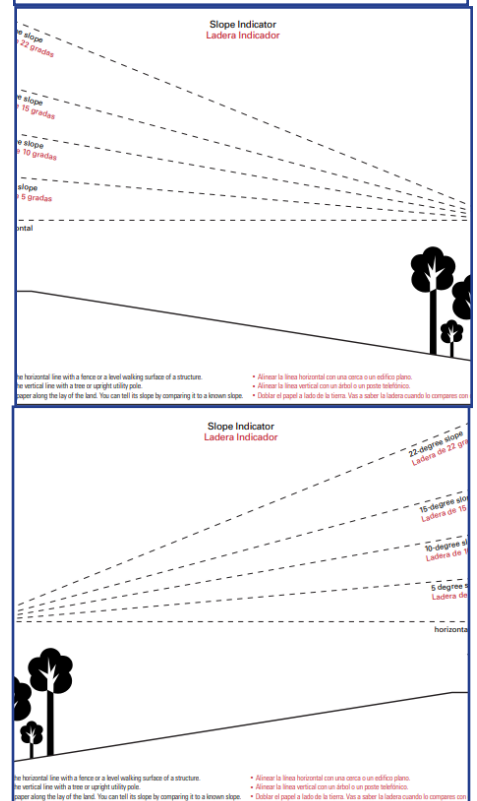
- **Consider the slope.**

Never operate riding lawnmowers on slopes that exceed the manufacturer's angle limits, and never leave a mower unattended on a slope. A label on the mower should provide the manufacturer's slope recommendations. If the label is missing, do not mow on slopes over 15-degrees. Slope indicators (also known as clinometers or inclinometers) are available for purchase and can attach to a mower. OSHA offers a downloadable, printable [left slope indicator](#) and [right slope indicator](#) with tips on finding the slope by aligning vertical objects with the horizon. Additionally, smartphone applications that measure slopes are available through the [Apple App Store](#) or [Google Play](#).

- **Stay away from unprotected drop-offs.**

Never operate mowers in areas where the machine's wheels are within five feet of an unprotected edge, such as retaining walls, barriers, levees, ditches, culverts, or other locations that present tip-over hazards. The lawnmower could suddenly roll if a wheel goes over the edge or the ground under the wheel shifts. Instead, use a string trimmer or push mower in these locations.

### **OSHA Downloadable [Left](#) and [Right](#) Slope Indicators**





- **Create a safety zone near water hazards.**  
Examine the slope and the terrain's firmness before mowing near ponds, creeks, reservoirs, canals, bayous, sloughs, lakes, golf course water hazards, or similar bodies of water. Establish a zone around the water hazard to ensure that the mower operates at a safe distance — the width of two mowers is often adequate.

### **Safe Slope Operations**

Slopes are a major factor related to tip-overs and loss of stability on riding lawnmowers. Mowing on slopes requires extra caution to prevent injuries and deaths.

- **Mow vertically.**  
Mow slopes up and down (vertically) rather than across (horizontally) to avoid rollovers.
- **Do not stop, start, or shift on a slope.**  
Use a low ground speed to prevent having to stop or shift while on a slope. Never shift to neutral or let the mower coast downhill. If the clutch must be engaged, take care to avoid tipping backward or forward. Do not start or stop on a slope to avoid losing traction. If the tires lose traction, disengage the blade(s), and proceed straight down the slope.
- **Avoid turning on a slope.**  
If an operator cannot back-up on the slope or feels uneasy doing so, either do not mow it or use a walk-behind mower later. If a turn must be made on a slope, turn downhill slowly with the mower's heavy end uphill.

- **Decrease speed when the mower is traveling down slopes or around sharp corners.**  
Keep all movements on slopes slow and gradual. Avoid any sudden change in speed or direction to avoid a rollover.

### **Prevent Blade Injuries**

Lawnmower blade(s) are capable of throwing objects and amputating hands and feet. These safe practices can prevent severe injury or death to the operator or bystanders from lawnmower blade(s).

- **Keep hands and feet away from rotating mower parts.**  
Never reach around or beneath a running mower. Keep clear of the grass discharge chute at all times. Never put a foot on the ground to attempt to stabilize a riding lawnmower. Keep both feet on the machine at all times while it is running. Feet hanging off the mower can get pulled under the machine and into the blades.
- **Use caution on wet grass.**  
Mowing on wet grass may make tires lose traction. Slipping or skidding on wet grass

can throw the operator off the lawnmower and into the machine's moving parts.

- **Shut off the engine before removing debris.**

Unclog the chute or clear the mowing area of rocks, wire, or other objects that might be thrown by the blade(s) only after shutting off the engine.

- **Do not mow around others.**

Be aware at all times of the location of coworkers and bystanders while mowing. Stop the lawnmower if anyone enters the mowing area.

- **Point the discharge chute away from objects and people.** Never point the discharge chute at someone or against a wall, fence, or another object. The material can injure others or ricochet back, harming the operator. Always stop the blade(s) when crossing gravel surfaces.

- **Do not remove shields and guards.** Never operate a riding lawnmower without all shields, guards, and other safety features in place.



- **Never leave a running riding lawnmower unattended.**

Always stop the blade(s), set the parking brake, turn off the engine, and remove the key before dismounting to clean the mower, remove the grass catcher, unclog the discharge guard, or perform any repairs.

- **Never add a blade or chain not recommended by the manufacturer.**

A blade or chain not designed for a specific lawnmower can seriously injure or kill a mower operator.

- **Do not mow during low visibility.**

Operate riding lawnmowers only in daylight or good artificial light.

- **Use caution when crossing roadways.**

Watch for traffic and pedestrians when operating near or crossing a roadway, driveway, parking lot, building corners, shrubs, trees, and other blind spots. Be aware of the surroundings at all times.

- **Avoid backing.**

Avoid mowing in reverse, but if unavoidable, remain alert and look behind the mower and down at the ground before and while backing.

- **Start the mower from the driver's seat.**

Never start the mower while standing beside it.

- **Never place the mower in motion until the worker is ready and belted in the seat.**

Putting the mower in gear before the operator is prepared can jerk it forward and throw the worker down or under the mower.

- **Never dismount a mower while it is running.**  
Leaving the mower while it is running may cause the operator's feet or toes to pass under the mower housing and get caught in the blade(s).

### **Safe Shut Down**

- Disengage the blade(s) and other attachments.
- Lower all of the attachments to the ground.
- Shift into neutral.
- Set the parking brake.
- Turn off the engine.
- Remove the key (if applicable).

## **Loading & Towing Safety**

Loading and towing riding lawnmowers on trailers or truck beds is dangerous if not handled properly. Use the following steps to avoid severe injury or death.

### **Things to Consider Before Loading**

Before lowering a trailer ramp or sliding a ramp onto a truck's tailgate, consider the following:

- **Watch for low ground clearance.**  
Riding lawnmowers with cutting decks installed have low ground clearance and do not handle well on steep inclines. If transporting the mower in a truck bed, position the ramp carefully to ensure the mower can clear the lip of the tailgate to prevent tip-overs.
- **Consider the wheel width and load weight.**  
Make sure the ramp is wide enough for the mower's wheel gap and weight capacity. Zero-turn mowers have offset wheels and uneven weight distribution, requiring extra care.
- **Know the mower's center of gravity.**  
The center of gravity on most riding lawnmowers is high and can lead to tipping or flipping when going up a steep incline. Longer loading and unloading ramps provide more stability.

### **The Proper Loading Process**

- **Park on a flat surface.**  
Park on a flat surface to reduce the steepness of the loading angle. Remember to set the parking brake. Always block the rear wheels.
- **Use care when lowering or placing the ramps.**  
If using a pick-up bed, unfold the ramps and place the finger or plate ends on the edge of the tailgate. Use tie-down straps or trailer safety chain loops to secure the ramps to the truck. Secure the tie-down straps to a steel bumper, so they do not slide out while the riding lawnmower is on the ramp.
- **Back the mower up the ramp.**  
Back the riding lawnmower onto the trailer or truck bed to keep the heaviest part of the mower low to prevent the front wheels from raising off of the ramp (a wheelie). It also allows the operator to drive forward down the ramp when unloading.

- **Never stop and start on a ramp.**

If conditions prohibit backing the mower up the ramp, use a low gear to drive the mower forward up the ramp. Never stop and start midway when driving forward on ramps to prevent tipping. If the operator stops on the ramps, let the mower roll completely to the ground before trying again.

- **Secure the mower.** Set the mower's parking brake. Always chain and block the mower, so it does not move during transport.

### **Safe Towing**

- **Use an approved hitch.** Utilize a hitch designed for towing. Follow all manufacturer's recommendations for weight and slope limits.
- **Tell others to stay clear.** Keep bystanders at a safe distance. Never allow a person to travel on towed equipment.
- **Travel slowly and allow extra stopping distance.** The weight of the towed mower can cause loss of traction or loss of control.

## **Safe Fueling Practices**

Gasoline and other fuels are flammable, and the vapors are explosive. Use extreme care when handling gasoline to avoid injury or property damage.

### **Safe Gasoline Handling**

- **No smoking.** Do not smoke, strike a match, or create other ignition sources near gasoline.
- **Store the mower away from flames.** Never store a riding lawnmower or a fuel container near an open flame, spark, or pilot light, such as a water heater or other appliances.
- **Turn off the engine when fueling.** Never remove a gas cap or add fuel with the engine running, and never while indoors.
- **Fill gasoline containers outside on the ground.** Never fill fuel containers inside a vehicle or on a plastic truck-bed liner.
- **Use only approved fuel containers.** Use fuel containers designed to provide safe gas storage that minimizes spillages, fuming, and overflow. Always store fuel containers in a well-ventilated area away from direct sunlight.
- **Do not use a gasoline dispenser nozzle to fuel a riding lawnmower on a truck or trailer.** Use a nozzle to refill the mower only when it is on the ground. If the mower must be refueled while on a trailer or truck bed, use a portable container.
- **Remove all fuel-soaked debris.** If fuel spills on clothes, change clothes immediately.
- Never clean hands with gasoline. Use a non-flammable solvent to safely clean hands.

### **Safe Fueling Procedures**

- **Shut off the engine.** Always shut off the engine and wait at least five minutes for the engine to cool before refueling.

- **Discharge static shock.**  
Touch the fuel nozzle to the riding lawnmower before removing the fuel cap to prevent a static spark from igniting the fuel.
- **Prevent spills.**  
Use a funnel or a non-spill nozzle when fueling to reduce spillage. Keep the nozzle or funnel in contact with the fuel tank while filling. Never overfill the fuel tank. Replace the gas cap and tighten securely.
- **Clean any spillage.**  
Wipe up all fuel and oil spills immediately before starting the engine.

### **Carbon Monoxide Safety**

Carbon monoxide (CO) is a colorless, tasteless gas that can poison and kill. Symptoms of CO poisoning include headache, nausea, weakness, dizziness, and loss of consciousness.

**Operate riding lawnmowers outside only** to avoid CO poisoning. If operators must work indoors, create ample ventilation to prevent CO exposure.

## **Riding Lawnmower Servicing**

### **Maintenance**

Establish regular maintenance schedules and following these general service safety precautions:

- **Service in a well-ventilated area.**  
Never operate a riding lawnmower in a closed area.
- **Tighten all nuts and bolts regularly.**  
Keep all mower parts, especially blade mounting bolts, tight and in safe working condition.
- **Check to ensure all safety devices function correctly.**  
Never alter or remove guards or shields. Check the grass catcher and discharge guard often. Always use the manufacturer's recommended parts when replacement is needed.
- **Remove the spark plug wire before maintenance.**  
Disconnect the spark plug wire and allow moving parts to stop before unclogging, adjusting, changing blades, or making any repairs on the mower.

- **Remove debris build-up.**  
Keep riding lawnmowers free of grass, leaves, and foreign materials.
- **Replace grass bags as needed.**  
Check the grass catcher bags frequently for wear or deterioration. Replace with new bags for protection against instability.
- **Inspect the mower when running over an object.**  
If the riding lawnmower hits an object, stop, turn off the mower, and inspect the machine. Make any needed repairs before restarting. Never make repairs or adjustments with the engine running.
- **Keep mower blade(s) sharp and balanced.**  
Always wear gloves and wrap the blade(s) in rags when sharpening, repairing, or replacing the blade(s).
- **Check brakes often.**  
Adjust and service the brakes as needed.
- **Create a maintenance and inspection schedule.**  
Maintain a schedule for inspecting mowers and lubricating all moving parts. Replace safety and instruction labels as needed.

- **Use knowledgeable service technicians.**  
Utilize only experienced mechanics to conduct maintenance, inspections, and repairs.

For more information on landscape services safety, download any of the free DWC publications:

- Gardening and Back Injuries - Take 5 for Safety ([English/Spanish](#)).
- Landscapers vs. Critters Fact Sheet ([English/Spanish](#)).
- Lawn Equipment Safety - Take 5 for Safety ([English/Spanish](#)).
- Poison Ivy, Oak, and Sumac Fact Sheet ([English/Spanish](#)).
- Tree Trimming and Removal Safety Fact Sheet ([English/Spanish](#)).
- Zero Turn Radius Riding Mower Safety - Take 5 for Safety ([English/Spanish](#)).

## References

- <sup>1</sup> U.S. Consumer Product Safety Commission, CPSC Fact Sheet: Riding Lawnmowers. Website. <https://cpsc-prod.ctacdev.com/s3fs-public/588%20Riding%20Lawnmower%20Fact%20Sheet.pdf>. Accessed January 26, 2021.
- <sup>2</sup> U.S. Bureau of Labor Statistics, Occupational Injuries/Illnesses and Fatal Injuries Profiles, 2019 by Industry [56173x]. Website. <https://data.bls.gov/gqt/InitialPage>. Accessed January 26, 2021.
- <sup>3</sup> U.S. Consumer Product Safety Commission, CPSC Fact Sheet: Riding Lawnmowers. Website. <https://cpsc-prod.ctacdev.com/s3fs-public/588%20Riding%20Lawnmower%20Fact%20Sheet.pdf>. Accessed January 26, 2021.
- <sup>4</sup> Kansas State University Research and Extension, "Mowing and Trimming Safety." Website. [https://cfaessafety.osu.edu/sites/safety/files/imce/mowing-trimming\\_safety\\_manual.pdf](https://cfaessafety.osu.edu/sites/safety/files/imce/mowing-trimming_safety_manual.pdf). Accessed January 28, 2021.



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Division of Workers' Compensation (DWC)

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