

Skid Steer Loader Safety

David W. Smith, Extension Safety Program
The Texas A&M University System

Skid-steer loaders can be lethal if not used according to the manufacturers instructions. You can reduce your risk of injury or death by following proper safety precautions before, during and after operating these machines.

Skid-steer loaders have been used in the construction and landscaping industry for years. They are also common on dairy, beef and swine operations. Unlike conventional tractors, these compact and maneuverable machines allow farmers to enter narrow alleyways and work under short vertical clearances. Skid-steer loaders are especially useful for removing manure, feed and other materials from animal confinement areas. These machines can also be lethal if not used according to the manufacturer's instructions.

Crushing Hazard

Skid-steer loaders account for many injuries and deaths each year. The design and construction of these machines require the operator to enter and exit the loader through the front of the machine and over the bucket.

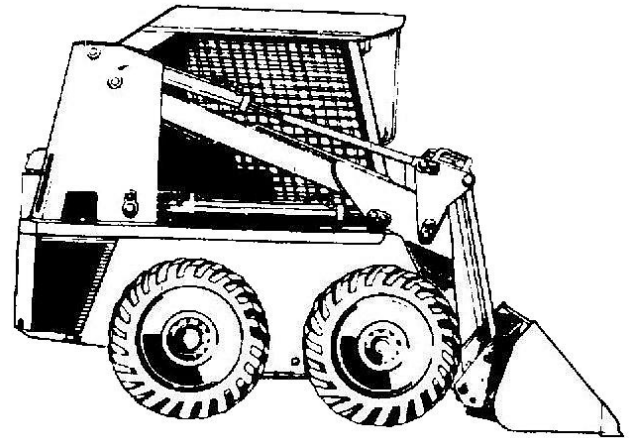
Typically, the control levers are positioned between the lift arms and in front of the lift arm pivot points. Many accidents occur when a foot or hand inadvertently activates the lift arms, loader bucket or other attachment, pinning or crushing the operator.

This is what led to the fatal accident described below.

October 29, 1993. A 26-year-old hog farmer was fatally injured when he was caught between the frame of a skid-steer loader and the lift-arm hydraulic cylinder. The victim was alone, using the loader to pile manure in one corner of a hog confinement building. The loader's rollover protective structure (ROPS) had been removed to permit operation under the 6 to 6½ foot ceiling of the building. The lift-arm support could be used only when the lift arms were fully raised. The loader stalled in front of and facing the manure pile with the bucket

raised, preventing the victim from dismounting through the front of the machine. As he tried to climb over the side of the machine, he unintentionally hit the lift-arm control lever, causing the lift arms to drop and crush him against the frame.

Source: Minnesota Department of Health



Overturn Hazard

Any self-propelled machine is most stable when its center of gravity is kept within its base of stability. Operating the machine on steep terrain, hauling loads that extend beyond the base of stability and making abrupt turns at high speeds can upset the machine and cause it to turn over. Overturning a steer-skid loader can cause serious injuries or fatalities.

September 20, 1996. A 43-year-old worker died after he backed a skid-steer loader over a 6-foot concrete retaining wall. The victim was spreading topsoil by driving toward the wall with a fresh load in the bucket, depositing the soil near the wall, then backing up and dragging the bucket to spread the soil. At the

of the incident, he approached the edge of the work area, turned the loader around and backed toward the wall, dragging the bucket on the ground. The left rear tire went over the wall followed by the right rear tire. The machine struck the ground rear end first, coming to rest on its left side. The victim, who was not wearing a seat belt, remained inside the cab but came out of the operator's seat.

Source: Missouri Department of Health

Maintenance Hazard

The skid-loader is basically a power source that operates a front-end loader implement. Accidents can occur if the loader arms and bucket fall while the operator is performing maintenance. These accidents can occur if the operator is negligent and fails to block up or secure the lift arms or bypasses the automatic safety switches.

Machine Safeguards

Using and maintaining manufacturer-installed safety devices will eliminate many skid-loader injuries and fatalities. Occupational Safety and Health Administration (OSHA) regulations and industry standards encourage the installation and use of these safety devices. Common skid-steer loader safety features include lift arm supports, interlocked controls, seat belts and rollover protection structures (ROPS).

Lift Arm Supports

Lift arm supports are often provided by the manufacturer and are recommended when it is necessary to work or move around the machine with the bucket in a raised position and the controls are unattended. Newer skid-steer loaders are equipped with pin or strut supports that can be engaged while sitting in the operator's cab.

Interlocked Controls

These systems require the operator to be seated and restrained before the skid-steer loader can be used. Some require that the seat belt be connected. Other interlock controls detect when the operator leaves the seat and shut down the machine, much like those in modern riding lawn mowers. Other models include a safety restraint bar like those found on roller coasters that must be lowered in front of the operator before the skid-steer loader will start.

Seat Belts

When worn on skid-steer loaders equipped with a rollover protection structure, seat belts restrain the operator within the zone of protection in case of a rollover. If seat belts are part of the safety interlock system, they protect operators from being caught or crushed between

the lift arms and frame. The seat belt will also keep the operator from reaching out of the cab or from being jostled out of the cab in rough terrain.

ROPS and Side Screens

Roll-over protection structures and side screens prevent the operator from being thrown from the steer-skid loader and crushed during a rollover. Usually, the ROPS is part of the enclosed cab design and contains side and rear metal grate screens to prevent the operator's hands, head and other body parts from extending into the area between the lift arms and frame.

Safety Tips

Pre-operation Check

Maintaining the skid-steer loader in good working condition will reduce the risk of injury by reducing the number of times you need to enter and exit the machine. Before you start a skid-steer loader, you should check:

- Fuel and oil
- Hydraulic fluid
- Cooling system fluid
- Operator cab, seat belt and seat bar
- Lift arm and cylinder pivot points
- Safety interlock systems
- Tires

Repair any hydraulic system leak immediately. A leaking hydraulic system may cause the lift arm to lower rapidly, injuring you or others or damaging property.

Operation

To safely operate a skid-steer loader, you must read and follow the operator's manual as well as the warning decals on the machine.

Children should never be allowed to operate skid-steer loaders. To ensure safety, an operator should:

- Know how to operate the machine safely and be familiar with the location and purpose of all controls
- Know how to load, tie down, transport and unload the loader safely
- Enter the loader with the bucket in the lowered position
- Wear ear and head protection
- Use the safety treads and grab handles to get on and off the loader
- Use the seat bar and fasten the seat belt
- Carry the bucket or other attachments as low as possible
- Load, unload and turn on level ground
- Drive straight up and down slopes with the heavy end of the loader facing uphill
- Avoid carrying passengers in or on the skid-steer loader

- Avoid using the bucket to lift people or using it as a work platform
- Watch for overhead power lines when raising the bucket
- Set the parking brakes and lower the bucket before dismounting
- Never let children operate a skid-steer loader

Maintenance

Read the operator's manual carefully for instructions on when and how to maintain the skid-steer loader. Obey all safety warnings; use safety interlocks; and chock or block all equipment and parts that could release stored energy during maintenance.

Never disable or remove guards, shields or other safety devices unless it is specified in the operator's manual. Set the parking brake and lower the bucket when working around the skid-steer loader. If the machine cannot be serviced with the bucket on the ground, use the lift arm supports.

Inform all workers of ongoing maintenance and never allow a child to be in the area or to sit in the cab while you are working on the skid-steer loader.

OSHA Regulations

The following OSHA regulations are designed to protect employees from workplace hazards.

They apply to motor vehicles, mechanized equipment and marine operations, including skid-steer loaders.

- Seat belts shall be provided, and they shall meet requirements of the Society of Automotive Engineers (SAE) standard, Seat Belts for Construction Equipment (J386-1969) [29 CFR* 1926.602(a)(2)].
- All bidirectional machines shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction [29 CFR 1926.602(a)(9)(i)].
- Scissor points on all front-end loaders, which constitute a hazard to the operator during normal operation, shall be guarded [29 CFR 1926.602(a)(10)].
- End-loader buckets and similar equipment shall be either fully lowered or blocked when being

repaired or when not in use. All controls shall be in a neutral position, with the motor stopped and the brakes set, unless work being performed requires otherwise [29 CFR 1926.600(a)(3)(i)].

- Equipment manufactured on or after September 1, 1972, shall be equipped with ROPS which meet the minimum performance standards prescribed in 29 CFR 1926.1001 and 1926.1002 or shall be designed, fabricated and installed in a manner which will support, based on the ultimate strength of the metal, at least two times the weight of the equipment applied to the point of impact [29 CFR 1926.1000(b) and 1926.1000(c)(2)].
- No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation and maintenance instruction plates, tags or decals shall be changed accordingly [29 CFR 1926.602(c)(ii)].

**Code of Federal Regulations.*

SAE Standard for skid-steer loaders

In 1985, the Society of Automotive Engineers developed a manufacturers' standard for skid-steer loaders for the American National Standards Institute [SAE J1388 (June 1985)]. The standard requires manufacturer's of skid-steer loaders to:

- Provide warnings, operator instructions and maintenance procedures
- Equip the machine with a seat belt, ROPS and side screens
- Provide a means to prevent the lift arm from lowering when the operator is entering or exiting from the machine
- Provide handholds and steps to facilitate entry and exit from the loader
- Provide two openings for emergency exit
- Provide safety signs and instructions to warn of hazards during normal operation and maintenance

Skid-steer loaders pose many hazards for operators and those nearby. To prevent injuries or death, follow all safety precautions when operating or maintaining these machines.

Produced by Agricultural Communications, The Texas A&M University System
Extension publications can be found on the Web at: <http://tcebookstore.org>

Visit Texas Cooperative Extension at <http://texasextension.tamu.edu>

Educational programs conducted by Texas Cooperative Extension serve people of all ages regardless of socioeconomic level, race, color, sex, religion, handicap or national origin.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas Cooperative Extension, The Texas A&M University System.

New