



Super Safety Handout
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Safety Advisor

Equipment Loaders: Preventing Injuries and Death

Service technicians and operators are at risk of accidental load attachments dropping, vehicle rollovers and hitting other employees when they operate or perform maintenance on loaders.

The operator's seat and controls are often located between the two lift arms and in front of the lift arm pivot points. Operators of skid steer loaders must enter and exit the loader through the front of the machine. If the worker does not exit or enter properly, a foot or hand control may be unintentionally activated which may cause movement of the lift arms, bucket or other elevated attachment. Such an incident could cause death or serious injury.

Risk of Injury

The National Institute of Occupational Safety and Health (NIOSH) identified work-related fatalities involving skid steer loaders. The most common fatality incident is the victim being crushed by the elevated load or attachment. Fatalities resulted from the following types of incidents:

Incident Type

- Crushing the victim between the bucket and frame of the machine or between the lift arms and frame
- Vehicle rollovers crushing the operator
- The operator leaning out of the operator's compartment into the path of the moving arms, thus pinning the operator
- The operator injured while entering or exiting the equipment

Current Standards

Current Occupational Safety and Health Administration (OSHA) regulations for the construction industry do not specifically address loaders. However, they require employers to protect workers from several hazards

associated with operating and maintaining these machines.

The OSHA regulations apply to motor vehicles, mechanized equipment and marine operations. They address operator restraints, operating procedures, rollover protection, machine guarding and maintenance procedures. The OSHA regulations that apply to loaders are summarized as follows:

- Seat belts shall be provided, and they shall meet the requirements of the Society of Automotive Engineers (SAE) standard, Seat Belts for Construction Equipment. (J386-1969) [29 Code of Federal Regulations (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)].
- Scissors points on all front-end loaders, which constitutes a safety hazard to the operator during operation, shall be guarded. [29 CFR 1926.602(a)(10)].
- End-loader buckets and similar equipment attachments 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 motors 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 rollover protective structures (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 at 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)].

Current Equipment Safeguards

Interlocks - To keep workers from unintentionally activating controls, manufacturers of skid steer loaders began to equip them with interlocked control systems in the early 1980s. These interlocked controls require that a nonoperational control or fixture (such as a seat belt or restraint bar) be secured or activated before operational controls can function. Some machines connect the lift arm control to the seat belt to prevent movement of the lift arm unless the seat belt is fastened. Other machines connect the lift arm control to a bar that must be lowered in front of the operator or to a pressure switch in the seat. Manufacturers have recently introduced electronic systems to perform the interlocking function.

Rollover Protection Structures - Loaders now come equipped with ROPS, side screens and seat belts to protect the operator if the machine turns over. The side screens keep the operator from coming into contact with moving lift arms.

Using and Maintaining Safety Devices Provided by Manufacturers

Regularly inspect and maintain all safety devices provided by manufacturers.

Lift arm supports - Use the lift arm supports provided by or recommended by the manufacturer when it is necessary to work or move around the machine with the bucket in a raised position and the controls unattended. Machines now being manufactured have either the pin-type supports (which can be operated from inside the operator's cab) or the strut-type supports (which may also be operated from inside the cab or may require the help of a coworker). If the machine is not equipped with lift arm supports, contact the equipment manufacturer's representative for help in selecting proper support procedures. Never use concrete blocks as supports. They can collapse under even light loads. Hoists and jacks used for support must be free of defects such as bent, cracked, or twisted parts or pinched, frayed, or twisted cable. They must also be capable of supporting the load.

Interlocked controls - Regularly inspect and maintain interlocked controls in proper operating condition. These systems require the operator to be properly positioned and restrained before the loader can be used. Never bypass or defeat interlocked controls. Make sure that the seat belt is always securely fastened around the operator when the loader is in operation. Always use restraint bars if they are provided. Although workers and employers may perceive safety features such as interlocked controls and seat belts as obstacles to efficient machine operation, bypassing these devices increases the risk of death or serious injury.

Seat belts - Make sure the seat belt is secured around the operator whenever the seat is occupied. The seat belt protects the operator in several ways. If seat belts are part of the interlocked control system, they protect workers from being caught and crushed between the lift arms and frame. During rollovers, the seat belt maintains the operator within the protective envelope of the ROPS. The seat belt can also protect the operator from leaning or being jostled into the operating zone of the lift arms and bucket.

Retrofit packages - If side screens, interlocks, ROPS and seat belts are not present, contact the equipment dealer or manufacturer's representative about the availability of retrofit packages or replacement parts.

Operating Safely

If you are an employer, make sure that technicians understand all manufacturers' warnings and instructions before they operate loaders. Train technicians to use the following safe operating procedures:

- Operate the loader from the operator's compartment - never from the outside
- Stay seated while operating the loader controls
- Work with the seat belt fastened and the restraint bar in place
- Keep your arms, legs, and head inside the cab while operating the loader
- For maximum stability, travel and turn with the bucket in the lowest position possible
- Never exceed the manufacturer's recommended load capacity for the machine
- Operate on stable surfaces only

- Avoid traveling across slopes; travel straight up or down with the heavy end of the machine pointed uphill
- Always face the direction of travel
- Keep bystanders away from the work area
- **NEVER** modify or bypass safety devices

Entering and Exiting from a Loader Safely

- Enter only when the bucket or other attachment is flat on the ground, or when the lift-arm supports are in place. Use supports supplied or recommended by the manufacturer
- When entering the loader, face the seat and keep a three-point contact with handholds and steps
- Never use foot or hand control for steps or handholds
- Keep all walking and working surfaces clean and clear of debris
- Before leaving the operator's seat
 - lower the bucket or other attachment flat to the ground
 - set the parking brake
 - turn off the engine
- If you are unable to exit through the front of the machine, use the emergency exit through the roof or across the back

Servicing the Loader

- Follow the manufacturer's instructions for maintaining the loader. Follow specifications in the Operators Service Manual
- Keep the foot controls and the operator's compartment free of mud, ice, snow and debris
- Before servicing the loader
 - set the parking brake
 - lower the bucket or other attachment flat to the ground
 - turn off the engine
 - remove the key from the switch
- If the machine cannot be serviced with the bucket on the ground, use the lift arm supports recommended or provided by the manufacturer. If the machine is not equipped with arms supports, contact the equipment manufacturer's representative for help in selecting proper supports
- Never work on the machine with the engine running unless directed to do so by the operator's manual. Follow the manufacturer's safety recommendations to complete the task. If the adjustments require that the engine be in operation, use two persons to perform the task

Train operators and technicians who service the loaders to follow the manufacturer's operating and service procedures in the operator's manuals and on the loader's warning signs. For help with such training, contact the equipment manufacturer. Obtain manuals, instructional videos and operator training courses from the equipment manufacturer.

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