

AERIAL & SCISSOR LIFT SAFETY

ALLIANZ RISK CONSULTING



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AERIAL LIFTS



An aerial lift is any vehicle-mounted device used to elevate personnel, including:

- Extendable boom platforms
- Aerial ladders
- Articulating (jointed) boom platforms
- Vertical towers
- Any combination of the above

Aerial lifts have replaced ladders and scaffolding on many job sites due to their mobility and flexibility. They may be made of metal, fiberglass reinforced plastic, or other materials. They may be powered or manually operated, and are considered to be aerial lifts whether or not they can rotate around a primarily vertical axis.

Many workers are injured or killed on aerial lifts each year.

OSHA provides the following information to help employers and workers recognize and avoid safety hazards they may encounter when they use aerial lifts.

HAZARDS ASSOCIATED WITH AERIAL LIFTS

The following hazards, among others, can lead to personal injury or death:

- Fall from elevated level
- Objects falling from lifts
- Tip-overs
- Ejections from the lift platform
- Structural failures (collapses)
- Electric shock (electrocutions)
- Entanglement hazards
- Contact with objects
- Contact with ceilings and other overhead objects



TRAINING

Only trained and authorized persons are allowed to operate an aerial lift. Training should include:

- Explanations of electrical, fall, and falling object hazards
- Recognizing and avoiding unsafe conditions in the work setting
- Instructions for correct operation of the lift (including maximum intended load and load capacity)

- Demonstrations of the skills and knowledge needed to operate an aerial lift before operating it on the job;
- When and how to perform inspections; ~~and~~
- Manufacturer's requirements.

Retraining

Workers should be retrained if any of the following conditions occur:

- An accident occurs during aerial lift use
- Workplace hazards involving an aerial lift are discovered
- A different type of aerial lift is used

Employers are also required to retrain workers who they observe operating an aerial lift improperly.

WHAT TO DO BEFORE OPERATING AN AERIAL LIFT

Pre-start Inspection

Prior to each work shift, conduct a pre-start inspection to verify that the equipment and all its components are in safe operating condition. Follow the manufacturer's recommendations and include a check of:

Vehicle components

- Proper fluid levels (oil, hydraulic, fuel and coolant)
- Leaks of fluids
- Wheels and tires
- Battery and charger
- Lower-level controls
- Horn, gauges, lights and backup alarms
- Steering and brakes

Lift components

- Operating and emergency controls
- Personal protective devices
- Hydraulic, air, pneumatic, fuel and electrical systems
- Fiberglass and other insulating components
- Missing or unreadable placards, warnings, or operational, instructional and control markings
- Mechanical fasteners and locking pins
- Cable and wiring harnesses
- Outriggers, stabilizers and other structures
- Loose or missing parts
- Guardrail systems

Do not operate any aerial lift if any of these components are defective until it is repaired by a qualified person. Remove defective aerial lifts from service (tag out) until repairs are made.

WORK ZONE INSPECTIONS

Employers must assure that work zones are inspected for hazards and take corrective actions to eliminate such hazards before and during operation of an aerial lift. Items to look for include:

- Drop-offs, holes, or unstable surfaces such as loose dirt
- Inadequate ceiling heights
- Slopes, ditches, or bumps
- Debris and floor obstructions
- Overhead electric power lines and communication cables
- Other overhead obstructions
- Other hazardous locations and atmospheres
- High wind and other severe weather conditions, such as ice
- The presence of others in close proximity to the work

WHAT TO DO WHILE OPERATING AN AERIAL LIFT

Fall Protection:

- Ensure that access gates or openings are closed.
- Stand firmly on the floor of the bucket or lift platform.
- Do not climb on or lean over guardrails or handrails.
- Do not use planks, ladders, or other devices as a working position.
- Use a body harness or a restraining belt with a lanyard attached to the boom or bucket.
- Do not belt-off to adjacent structures or poles while in the bucket.



Operation/Traveling/Loading:

- Do not exceed the load-capacity limits. Take the combined weight of the worker(s), tools and materials into account when calculating the load.
- Do not use the aerial lift as a crane.
- Do not carry objects larger than the platform.
- Do not drive with the lift platform raised (unless the manufacturer's instructions allow this).
- Do not operate lower level controls unless permission is obtained from the worker(s) in the lift (except in emergencies).
- Do not exceed vertical or horizontal reach limits.
- Do not operate an aerial lift in high winds above those recommended by the manufacturer.
- Do not override hydraulic, mechanical, or electrical safety devices.

Overhead Protection:

- Be aware of overhead clearance and overhead objects, including ceilings.
- Do not position aerial lifts between overhead hazards if possible.
- Treat all overhead power lines and communication cables as energized, and stay at least 10 feet (3 meters) away.
- Ensure that the power utility or power line workers de-energize power lines in the vicinity of the work.

Stability in the Work Zone:

- Set outriggers on pads or on a level, solid surface.
- Set brakes when outriggers are used.
- Use wheel chocks on sloped surfaces when it is safe to do so.
- Set up work zone warnings, such as cones and signs, when necessary to warn others.

Insulated aerial lifts offer protection from electric shock and electrocution by isolating you from electrical ground. However, an insulated aerial lift does not protect you if there is another path to ground (for instance, if you touch another wire). To maintain the effectiveness of the insulating device, do not drill holes in the bucket.

STANDARDS THAT APPLY

OSHA Standards:

29 CFR 1910.67, 29 CFR 1910.269(p), 29 CFR 1926.21, 29 CFR 1926.453, 29 CFR 1926.502.

American National Standards Institutes standards:

ANSI/SIA A92.2-1969, ANSI/SIA A92.3, ANSI/SIA A92.5, ANSI/SIA A92.6.

SCISSOR LIFTS



Scissor lifts provide a safe and reliable platform for workers to perform job tasks when used according to the manufacturer's instructions. When not used properly, scissor lifts can present a serious hazard to workers. Employers are responsible for keeping workers safe. This Hazard Alert highlights specific hazards present in workplaces where scissor lifts are used and controls employers must implement to prevent injuries or fatalities

INTRODUCTION

Scissor lifts are work platforms used to safely move workers vertically and to different locations in a variety of industries including construction, retail, entertainment and manufacturing. Scissor lifts are different from aerial lifts because the lifting mechanism moves the work platform straight up and down using crossed beams functioning in a scissor like fashion. Although scissor lifts present hazards similar to scaffolding when extended and stationary, using scissor lifts safely depends on considering equipment capabilities, limitations and safe practices. Over a one-year period, OSHA investigated ten preventable fatalities

and more than 20 preventable injuries resulting from a variety of incidents involving scissor lifts. OSHA's investigations found that most injuries and fatalities involving scissor lifts were the result of employers not addressing:

- Fall Protection
- Stabilization
- Positioning

HOW TO SAFELY USE SCISSOR LIFTS

Employers need to assess the worksite to identify all possible hazards in order to select the appropriate equipment for the task. Employers who use scissor lifts need to evaluate and implement effective controls that address fall protection, stabilization and positioning. Only trained workers should be allowed to use scissor lifts, and employers should make sure that those workers show that they can use a scissor lift properly. Safe scissor lift use includes properly maintaining the equipment, following the manufacturer's instructions, providing workers training and needed personal protective equipment (PPE), and implementing safe work practices.



FALL PROTECTION

Scissor lifts must have guardrails installed to prevent workers from falling (see 29 CFR 1926.451(g) or 29 CFR 1910.29(a)(3)(vii)). Employers should train workers to:

- Check to see that a guardrail system is in place before working on the scissor lift.
- Only stand on the work platform; never stand on the guardrails.
- Keep work within easy reach to avoid leaning away from the scissor lift.

STABILIZATION

Employers should ensure that scissor lifts are stable and will not tip over or collapse. Some safe work practices to ensure safe, stable conditions for scissor lift use include:

- Follow the manufacturer's instructions for safe movement—this usually rules out moving the lift in an elevated position.
- Isolate the scissor lift or implement traffic control measures to ensure that other equipment cannot contact the scissor lift.
- Select work locations with firm, level surfaces away from hazards that can cause instability (e.g., dropoffs, holes, slopes, bumps, ground obstructions, or debris).
- Use the scissor lift outside only when weather conditions are good. Scissor lifts rated for outdoor use are generally limited to wind speeds below 28 miles per hour. Although rare, the collapse of scissor lifts can be prevented if employers:
- Ensure that safety systems designed to stop collapsing are maintained and not bypassed.
- Never allow the weight on the work platform to exceed the manufacturer's load rating.
- Never allow equipment other than the scissor mechanism to be used to raise the work platform (e.g., using a forklift to lift the work platform).
- Keep the lift from being struck by other moving equipment on the worksite.

POSITIONING

Positioning the scissor lift to avoid crushing or electrocution hazards is important for safe use. Crushing hazards are present in workplaces using scissor lifts and may expose workers nearby, even those not working on the scissor lift. Scissor lifts present crushing hazards similar to vehicles and other mobile equipment at worksites. Employers should train workers to be watchful when:

- A moving scissor lift is near a fixed object.
- A moving vehicle and the scissor lift are operating closely.
- The scissor lift passes under a fixed object, such as a door frame or a support beam. Positioning the scissor lift to avoid electrocution, arc flash, and thermal burns is important for safely using scissor lifts near energized power lines. Since electricity can arc or jump from the power line to the scissor lift or worker, electrocution can occur even if neither the scissor lift nor the worker touches the power line. Employers should use the following work practices to ensure that scissor lifts are safely positioned:
- Implement traffic control measures around the scissor lift to prevent other workers or vehicles from getting too close.

- Use ground guides when operating or moving the scissor lift around the workplace.
- Select work locations that do not approach electrical power sources (e.g., power lines, transformers) by at least 10 feet and that do not pose other overhead hazards (e.g., other utilities, branches, overhangs, etc.).
- If the job task requires work near an electrical source, ensure that the worker is qualified and has received the required electrical training. (29 CFR 1910.269; 29 CFR 1910.333; 29 CFR 1926 Subpart V).

MAINTAINING SCISSOR LIFTS

Employers must regularly maintain scissor lifts to ensure that they are safe to use (e.g., prevent the lifting mechanism from collapsing). Manufacturer's maintenance and inspection instructions will generally include how to:

- Test and inspect controls and components before each use.
- Ensure that guardrail systems are in good working condition.
- Verify that brakes once set will hold the scissor lift in position.

TRAINING WORKERS

Employers must provide workers training on hazards, including how to work safely with or near scissor lifts. (29 CFR 1926.454). Training must, at a minimum, include:

- Manufacturer's instructions for operating the scissor lift vertically and while in transit.
- How to handle materials on the scissor lift, including weight limits.
- Other worksite hazards workers may encounter when working on a scissor lift (e.g., contact with electrical wires).
- Reporting any equipment defects or maintenance needs.

OSHA STANDARDS

Employers must comply with the following OSHA standards (29 CFR) to protect workers from hazards associated with scissor lifts.

General Industry

- 1910.23 – Guarding Floor and Wall Openings and Holes
- 1910.28 – Safety Requirements for Scaffolding
- 1910.29 – Manually Propelled Mobile Ladder Stands and Scaffolds (Towers)
- 1910.333 – Selection and Use of Work Practices Shipyards

- 1915.71 – Scaffolds or Staging Construction
- 1926.21 – Safety Training and Education • 1926.451 – General Requirements
- 1926.452 – Additional Requirements to Specific Types of Scaffolds
- 1926.454 – Training Requirements

ADDITIONAL INFORMATION

All photos were obtained from various OSHA web pages.

Many scissor lifts are covered under OSHA's Scaffolding standard. For technical assistance, please refer to OSHA's e-Tool and other resources on scaffolding.

<https://www.osha.gov/SLTC/etools/scaffolding/scissorlifts/index.html>

The American National Standards Institute (ANSI) has standards for manufacturing, owning and operating scissor lifts. They can be found in ANSI A92.3-2006 (Manually Propelled Elevating Aerial Platforms) and A92.6-2006 (Self-Propelled Elevating Work Platforms).

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