

## Aerial Lifts

### What is an Aerial Lift?

An aerial lift is any mobile device equipped with a basket or platform used to elevate and position personnel. Most commonly, baskets or platforms are elevated through the use of a vertical-only “scissor” mechanism, or an extendable boom. In the case of extendable booms, the boom may be equipped with one or more articulating “elbows” or “knuckles”.

### Hazards with Aerial Lifts

Most work-related deaths from aerial lifts involve scissor lifts and boom-supported lifts. The following hazards, but not limited to, 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, and
- Contact with ceilings and other overhead objects

Employees may also be killed or injured by contact with exposed energized electrical parts, such as overhead power lines, electrical wiring, or fixtures. This may occur when the employee in the work basket is injured by direct contact. However, if employees on the ground are making simultaneous contact with the aerial lift and the ground when an energized conductor is contacted, they too may be killed or injured.

### ANSI and OSHA Standards:

OSHA covers aerial lifts in the standard 29 CFR 1910.67. The standard establishes requirements pertaining to ANSI approval of aerial lifts, fall protection, modification of aerial lifts, employee training, safe operating practices, inspections, etc.

Aerial lifts *may* be “field modified” for uses other than those intended by the manufacturer, provided the modification has been certified in writing by the manufacturer or by any other

equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of ANSI A92.2 - 1969 and this section, and to be at least as safe as the equipment was before modification.

Aerial lifts acquired for use before July 1, 1975 which do not meet the requirements of ANSI A92.2 - 1969, may not be used unless they have been modified so as to conform with the applicable design and construction requirements of ANSI A92.2 - 1969.

### Manufacturer’s warnings, instruction, ratings, etc.

- All aerial lifts must be maintained, serviced, and used only as permitted by the manufacturer.
- All manufacturer-provided warning labels, instructions, etc. must be maintained in a legible condition.

### Training

Only trained and authorized persons are allowed to operate an aerial lift.

Training should include:

- Explanations of electrical, fall, and falling object hazards
- Procedures for dealing with 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
- 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.

### Inspection

Aerial lifts must be inspected prior to each day's use. In nearly all cases, the manufacturer can provide checklists for inspections.

At a minimum, inspections must include the following:

- Checking tire condition
- Hydraulic hoses and connections
- Controls and instrumentation
- Visual inspection of welds
- Fall protection equipment, including anchorage points
- Railings, flooring, gate, and gate latches
- Unusual noise, odor, behavior, movement
- Electrically insulating equipment/materials
- 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.

### 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

### Weather

Weather conditions have the potential to negatively affect the safe operation of aerial lifts:

- Snow, ice, or rain may cause poor traction between the vehicles and the driving surface, or may cause slick footing for employees on the working platform
- Rain may cause puddles and soft ground, leading to instability and rollovers
- Use of aerial lifts when lightning is present may cause electrocution from lightning strikes
- High winds may cause the aerial lift to topple
- Heat and direct sun may cause employees to develop heat-related illness.
- Always consult and follow manufacturer's recommendations on safe conditions for operation.

### 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.

### Tip-over Incidents/Work Zone Stability

If provided, outriggers must always be used as directed by the manufacturer. If operating surfaces are overly soft or unstable, pads must be used in conjunction with outriggers. Many of these incidents also result from operating aerial lifts on unsafe surfaces. This includes ground surfaces that are overly soft, unstable, or uneven (potholes, curbs, etc.). The travel path must be inspected prior to travelling over it. Aerial lifts may not be used on excessive inclines or declines. Consult the manufacturer on limits.

### Electrical Safety/Overhead Protection

Aerial lifts may not be used near exposed energized conductors or parts, such as overhead power lines, except by employees who are qualified for such work.

- Clearance distances outlined in 29 CFR 1910.333(c) must be maintained at all times.
- 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.
- Be aware of overhead clearance and overhead objects, including ceilings.

### Questions

If you have questions on this topic, please contact Health, Safety, and Risk Management (HSRM) at (612) 626-6002. Website: <http://hsrm.umn.edu>

\*content referenced: OSHA Publications/Fact Sheet /Aerial Lift