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THE UNIVERSITY OF TEXAS AT TYLER

Environmental Health & Safety

Aerial and Scissor Lift Safety

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This presentation is intended as a resource for providing training on OSHA's standards regarding aerial lift devices.

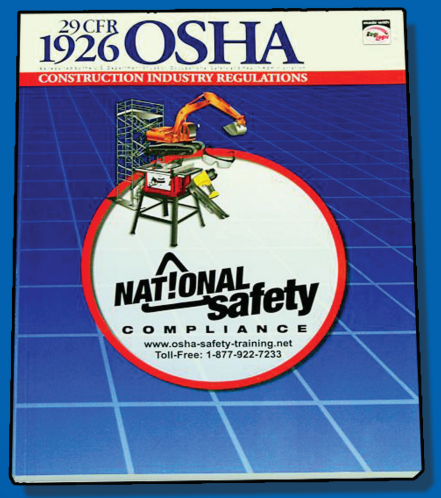
It is not a substitute for any of the provisions of the Occupational Safety and Health Act of 1970, or for any standards issued by the U.S.

Department of Labor's Occupational Safety and Health Administration (OSHA).

Definitions

- **Aerial device** - Any vehicle-mounted device, telescoping or articulating, or both, which is used to position personnel.
- **Aerial lift** - Any aerial device used to elevate personnel to job sites above ground including extensible boom platforms, aerial ladders, articulating boom platforms and vertical towers.
- **Scissor lift** -A mobile supported scaffold which canbe powered or unpowered, is portableand caster or wheel-mounted.

OSHA Standards



OSHA covers the use of aerial lifts in CFR 1926.453 and1926.454. OSHA classifies scissor lifts as mobile scaffolds and covers them under CFR 1926.451, 1926.452(w) and 1926.454. The use of fall protection is required when using both lift devices.

Types of Aerial Lifts

Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate employees to job-sites above ground:

Extensible Boom Platform

Uses a single arm to lift the platform to the desired height, often by hydraulics or, less frequently, pneumatic pressure. The length of the arm limits the reach of the boom lift. Some boom lifts can extend the reach by using telescoping sections within the arm

Aerial Ladder

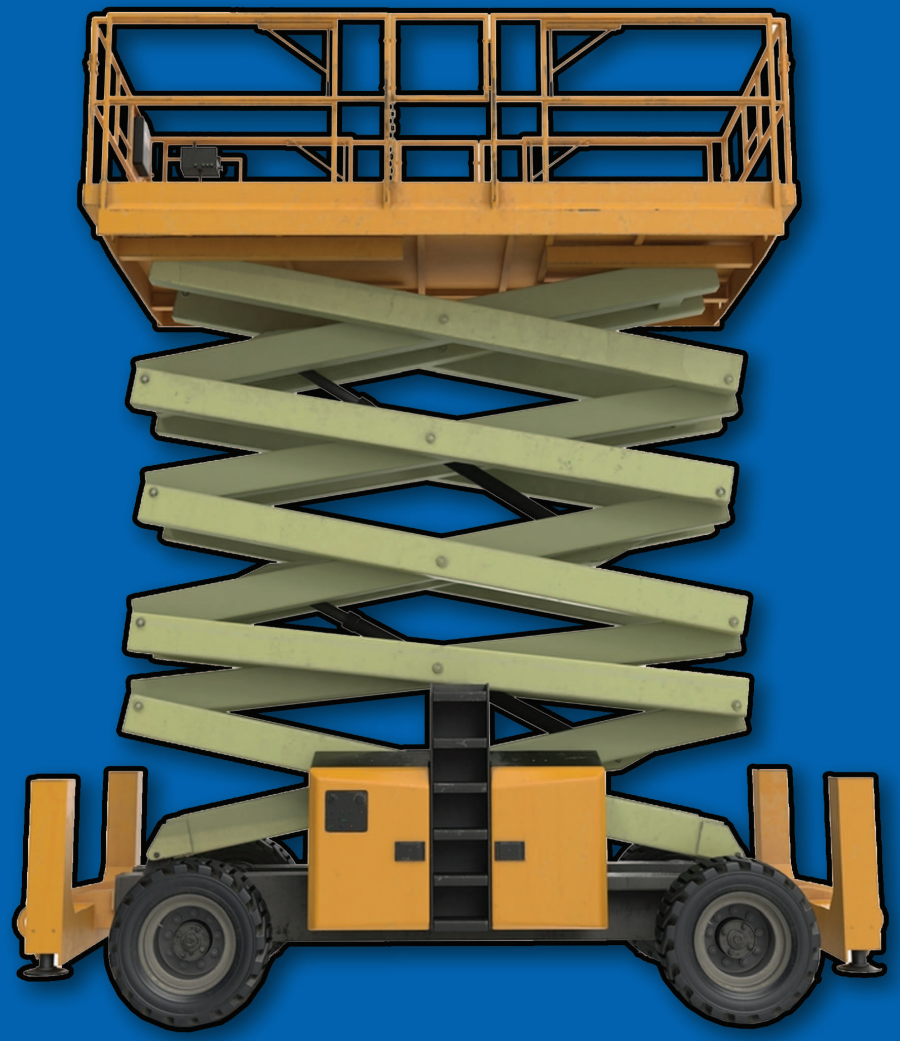
An aerial device consisting of a single-or multiple-section extensible ladder. Most often used by Fire Departments

Articulating Boom Platform

Operates in much the same way as the normal boom lift, except it consists of at least one joint in the arm. This joint allows the arm to be twice as long. Some are capable of rotating on an axis at the base or even on the second arm. The second arm can extend horizontally as well as vertically to reach over crowded and difficult areas. This lift provides great access to difficult areas.

Scissor Lifts

Scissor lifts are another common type of aerial working platform. The parts that elevate the platform contain crossing, interlocking members. When pressure is applied to the outside of the lowest set of supports through hydraulic, pneumatic or mechanical means, the crossing supports 'lengthen' to raise the platform.



Training Requirements

Training should include:

The nature of any lift hazards, electrical hazards, fall hazards and falling object hazards in the work area,
The correct procedures for dealing with electrical hazards and for erecting, maintaining and disassembling the fall protection systems and falling object protection systems being used,
The correct procedures for moving, operating, repairing, inspecting and maintaining the type of lift in question
Proper use of the lift, and proper handling of materials on the lift,
The maximum intended load and the load-carrying capacity of the lift used, and
Any additional requirements set by the manufacturer.

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- The correct procedures for dealing with electrical hazards and for erecting, maintaining and disassembling the fall protection systems and falling object protection systems being used,
- The correct procedures for moving, operating, repairing, inspecting and maintaining the type of lift in question.
- Proper use of the lift, and proper handling of materials on the lift,
- The maximum intended load and the load-carrying capacity of the lift used, and
- Any additional requirements set by the manufacturer.

Employees must be provided with an operator's manual and a maintenance manual for the lift being used.

- All operators must demonstrate that theyunderstand how to use the lift and must beretrained if they do not demonstrate theskill or understanding needed for safe operating procedures.

Training Requirements

Employees must be retrained when the following situations occur:

Changes in the worksite present a hazard which was not previously known to the employees,
Changes in the type of lift, fall protection, falling object protection or other equipment present a hazard which was not previously known to the employee, and
Where inadequacies in an affected employee's work involving lifts indicate that the employee has not retained the requisite proficiency.

Training Requirements

Training records should be maintained for at least four years. Required information includes:

- Names of employees trained, retrained and familiarized,
- Name of the trainer(s),
- Training covered,
- Date of training, and
- Written records of all inspections and repairs.

Selecting The Right Lift

When selecting a lift there are some important issues that must be considered.

- The type of work being performed,
- The terrain in which the lift will be utilized, and
- The number of employees and equipment needed.

Inspections

There are two main inspections that must be done when using an aerial lift device. A pre-start inspection of the lift must be performed before each use and an inspection of the surrounding work site in which the lift will be utilized.

Pre-Start Inspection

The manufacturer provides a list of items that should be inspected before use in the operator's manual. Some items to inspect include:

- Operating and Emergency Controls
- The Boom
- Guardrails
- Hydraulic System
- Outriggers
- Emergency Stop Buttons
- Tires
- Safety Guards and Sensors
- Emergency Descent System

Work Site Inspection

It is necessary to inspect the work site also. Items to inspect include:

- The surface on which the lift will be used,
- Hazards that might create dangerous driving conditions, and
- Weather conditions.

(Additional inspections may be required by the lift manufacturer.)

Safety Procedures

Most lifts are equipped with various safety features. Never remove or use these features for any reason other than specified by the manufacturer. Lifts should never be modified without written permission from the manufacturer or other equivalent entity. If modified, the lift must be at least as safe as before it was modified.

Safety Procedures

Only authorized persons should operate an aerial lift.

Belting off to an adjacent pole, structure or equipment while working from a lift is not permitted.

Safety Procedures

Employees should always stand firmly on the floor of the lift. They should not sit or climb on the basket or guardrailsor use planks, ladders or other items to attain a higher work position.

Safety Procedures

The operator should know the total load of the lift including tools, supplies and other employees. The weight of the load should be within the manufacturer's suggested maximum safe working load.
Make sure the load is balanced.

Safety Procedures

- Lifts should never be used as a crane unless the manufacture has designed it to lift loads in such a manner.
- Hard hats should be worn by employees at all times.
- Before moving the lift all employees should be made aware of the move.
- The operator should always refer to the lift's operator manual for any other safety procedures specific to the lift.

Specific Safety Procedures for Aerial Lifts

- Brakes must be set and if the lift has outriggers they must be positioned on pads or a solid surface.
- Wheel chocks must be installed before using an aerial lift on an incline, provided they can be installed safely.
- An aerial truck should not be moved when the boom is elevated in a working position with men in the basket unless the lift is specifically designed for such operation.

Specific Safety Procedures for Aerial Lifts

- Aerial work platforms must have both platform and lower controls.
- Platform controls must be in or beside the platform within easy reach of the operator.
- Lower controls should be able to override the platform controls but should not be used unless permission has been obtained from the employees in the lift or in case of emergency.
- Before moving an aerial lift for travel, the boom(s) must be properly cradled and outriggers must be in stowed position.

Specific Safety Procedures for Aerial Lifts

- If transferring from the lift platform to an adjacent structure is necessary, 100% tie off is required. To perform the transfer, two lanyards are required. One must be anchored to the platform and the other to the structure.
- The platform must be within one foot of the structure.
- Another employee on the ground should guide the operator when transporting the lift from one area to another on the work site. The operator must make sure that the boom is never over an employee that is working on the ground.

Fall Protection

Fall protection is required for all employees that perform work on a lift if they are going to be elevated to a height of 10 feet above a lower level.

If the lift is used according to manufacturer's guidelines and all safety precautions are being followed, the chance of any fall is minimal.

All scissor lifts require fall protection and guardrails that are properly designed, maintained and meet OSHA requirements meet that requirement. If the guardrail does not meet OSHA standards, or if an employee leaves the safety of the work platform, then a personal fall arrest system utilizing a body harness is required.

Fall Protection

All aerial lifts require fall protection. Guardrails and buckets provide some fall protection but due to the "catapulting" characteristics of lifts it is necessary to have additional fall protection.

A full body harness should be worn and a lanyard attached to the boom or basket when working from an aerial lift. The length of the lanyard must conform to the lift manufacturer's guidelines.

Fall Protection

Most lifts contain a restraining point which is designed to attach to a personal fall arrest system or restraining device. If no anchor point is available, it is up to the site supervisor to determine the best point to tie-off.

Tie-off to an adjacent structure is not allowed due to the possibility of being pulled out when the lift is moved.

Fall Protection

Your employer and the manufacturer of the lift in use will provide more precise fall protection rules and guidelines.

Manufacturer's guidelines must always be followed.

Shutdown Procedures

Certain steps must be taken to ensure the safety of all employees and the lift in use.

- Lift should be lowered and safely resting on it's supports.
- Secure lift to it's supports to ensure that it does not move while being transported.
- Raise the outriggers.
- Shut off the power supply to the lift and outriggers.
- Remove pads used for outriggers and wheel chocks.
- Remove key from the ignition to prevent any unauthorized use of the lift.
- Check the operator's manual for any additional procedures.

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Questions?

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