

Aerial Platform Lift Operator Safety Training

Risk Management Department

Training Topics

1. Introduction
2. Hazards
3. Controls
4. Training
5. Responsibilities
6. Work Standards



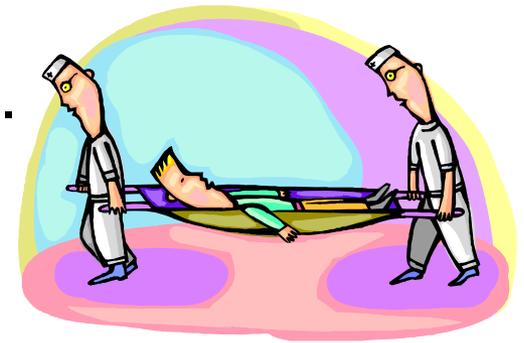


1. Introduction

Aerial Lifts are devices/equipment designed to lift workers and tools to an elevated worksite. They include scissor lifts, aerial man-lifts, and bucket trucks.

Aerial Lift Deaths from Boom Lifts

- Half of the falls from boom lifts involved being ejected from the bucket after being struck by vehicles, cranes, or crane loads or by falling when a lift suddenly jerked.
- Two-thirds of the deaths from collapses and tip-overs of boom lifts occurred when the bucket cable or boom bucket fell.
- Almost one-third were due to tip-overs.
- Over one-third of the electrocutions involved an overhead power line contacting the bucket.
- In most of the caught in/between deaths, a worker was caught between the bucket edge and objects such as roof joists or beams when repositioning the bucket.



- This *is not* an approved aerial lift!

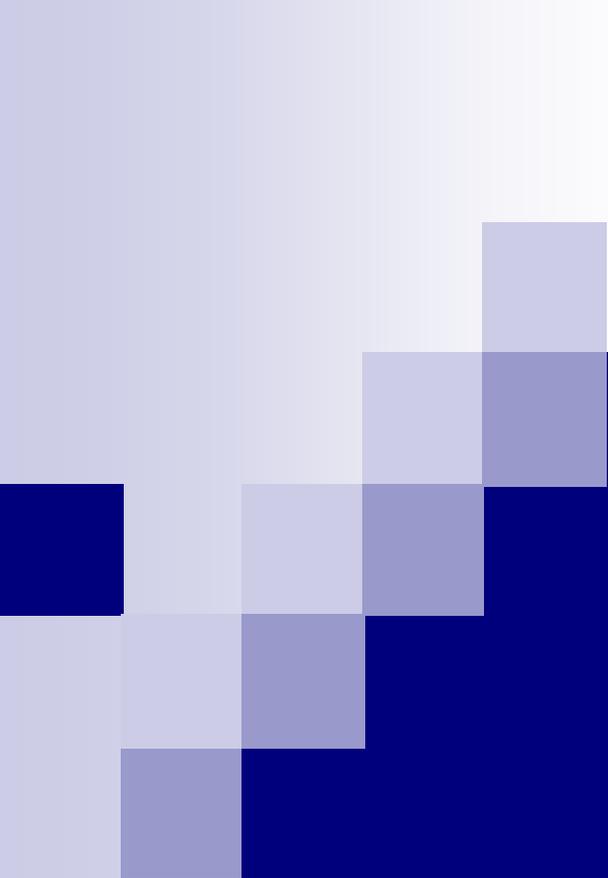


- Neither is this!



These are approved aerial lifts





2. Hazards

Aerial Lift Hazards

When the following conditions occur during aerial lift operations, property damage, personal injury, or death can be a result.



Aerial Lift Hazards

- A fall from an elevated level.
- Falling objects or items falling out of lifts.
- Exceeding the load capacity of the lift, which may result in tip-over or structural failure.
- Electrical hazards (e.g., overhead power lines, extension cords, bridge crane bus bars).
- Entanglement hazards (situations that may cause the lift to be caught on or snagged against other objects).

Aerial Lift Hazards



- Contact with stationary objects (e.g., walls, buildings, other vehicles, ceilings, floors, piping) that may result in an entrapment or crushing hazard.
- Uneven terrain that may cause the vehicle to tip, topple over or eject the operator. Some examples may include slopes, holes, drop-offs, bumps, debris, and utility vault covers.

Severe Weather:

- *Do not operate aerial lifts during: High winds or inclement weather such as rain, hail, snow, or lightning.*



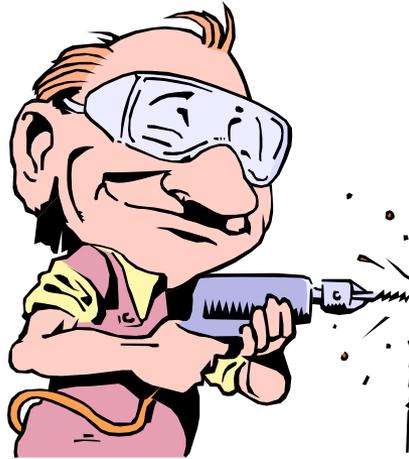
Aerial Lift Hazards

- Operation of an internal combustion engine vehicle indoors, which can cause asphyxiation or toxic exhaust-gas exposure must be approved and controlled by management.
- Unapproved use of equipment in unusual environments or the use of inadequate controls for operations or maintenance activities, which can cause a fire or explosion.



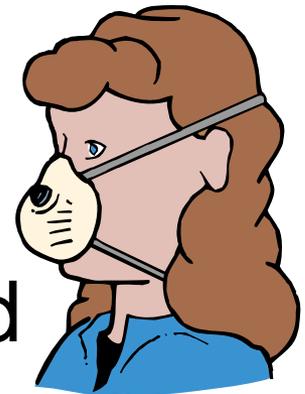
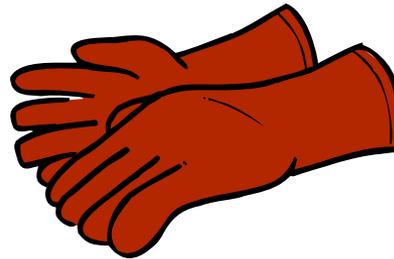
Other Hazards to Consider

- Flying particles
- Chemical splash
- Thermal burns
- Falling objects, including yourself
- Excessive noise
- Toxic fumes
- Hazardous energy



Types of Protection

- Eye & face - safety glasses, shields, goggles
- Hand - gloves
- Head - hard hat
- Hearing - ear plugs & muffs
- Respiratory - masks & respirators
- Foot - sturdy or steel-toed shoes
- Body – safety harness and lanyard



Lockout / Tagout to Control Energy Sources



**Danger Do Not
Operate**

When using an aerial lift near energy sources, install Lockout / Tagout devices to control the hazardous energy.

Identify Overhead Hazards

Consider those working, or walking below you!

Protect the area with barriers and warning devices.



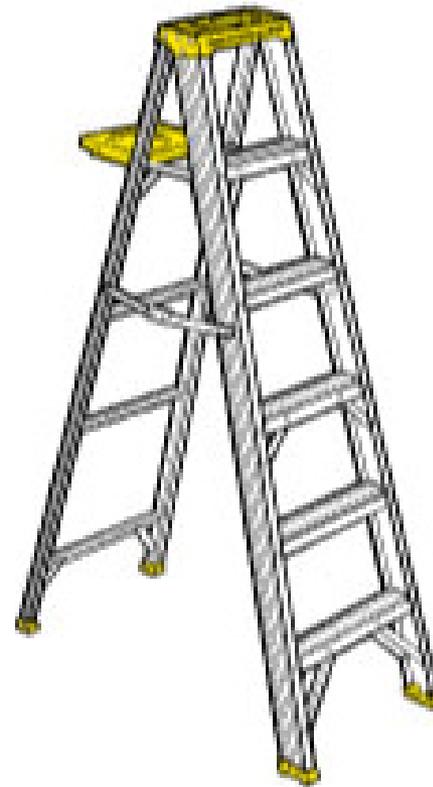
Protect from Falling Hazards

- Personal fall arrest equipment is required when operating articulating type aerial lift equipment. You must be trained on fall protection.
- Scissor lifts are exempt by OSHA to require personal fall arrest equipment, but it is highly advisable to protect yourself from fall and wear a safety harness and lanyard.
- *Personnel entering or exiting the aerial lift near unprotected leading edges above 4 feet in height must use a double lanyard fall protection system.*



Fall Hazard

- Use a 3-point contact when mounting and dismounting aerial platform lifts.



3 Point Rule

2 hands

1 foot

or

2 feet

1 hand

**In contact with
the ladder at
all times.**

Use Caution During Loading and Unloading





3. Controlling the Hazards

Refer to Appendix F (page 19) for Operator Warnings and Instructions!

Controlling the Hazards

Always refer to the manufacturer's operating instructions.

- *Operators must be trained on the type of aerial lifts they are operating.*
- The operator is in direct control of the lift.
- Keep your eyes and mind on the task at all times during the lift operation.
- Operators must refer to the nameplate data for rated capacity of the lift.
- Never exceed the rated capacity.
- Personal fall arrest systems must be worn and connected to a designated anchorage point on the lift capable of withstanding 5,000 pound load. Never attach fall protection equipment to adjacent structures.

Controlling the Hazards

Maintenance

- Frequent, annual and/or periodic (depending on activity, severity of service and environment) maintenance inspections shall be performed by qualified personnel.
- Repairs may be made only by qualified personnel.
- Replacement parts shall be identical or equivalent to the original parts.

(Caution: when changing batteries on electric lifts, they must be of the same weight as the original batteries).

Controlling the Hazards

Maintenance

- Markings on the aerial lift shall not be removed, defaced, or altered.
- Missing or illegible markings shall be replaced promptly.
- Altering or disabling of safety devices, such as warning beepers, guards, or interlocks is prohibited, and modifications shall be done only with the permission of the manufacturer.

Controlling the Hazards

Documentation

- Maintenance records shall be retained for five years.
- Include written records of frequent, annual, and periodic inspections and repairs performed, including deficiencies found, corrective actions taken, and the persons performing the inspections/repairs.
- Inspection sheets shall be kept for two years.

DECAL LEGEND



!

Safety Alert symbol – alerts personnel to potential personal injury hazards.



DANGER

Indicates the presence of an imminently hazardous situation that could result in death or serious injury.



WARNING

Indicates the presence of a potentially hazardous situation that could result in death or serious injury.



CAUTION

Indicates the presence of a potentially hazardous situation that may cause minor or moderate injury.



NOTICE

Indicates operation or maintenance information.

Controlling the Hazards

Before Operations

If possible, the use of electric or LPG lifts should be used indoors. *Safety considerations from management must be made concerning the operation of lifts with internal combustion engines.*

Before operation, the operator shall:

- Perform a prestart inspection.
- Practice with the aerial lift (if unfamiliar with the lift) until comfortable/proficient with its operation.
- Read and understand the manufacturers' manuals.

Controlling the Hazards

Before Operations

- Understand all labels, warnings, and instructions on the lift.
- Ensure that all occupants of the platform wear appropriate personal safety equipment for the conditions under which the platform will be operated.
- Be instructed by a qualified person in the intended purpose and function of each of the controls.
- *Appoint a designated operator to work the controls when multiple operators are in the lift.*

Controlling the Hazards

Workplace Inspections

Operators shall inspect the workplace to mitigate hazards before AND during aerial lift use to determine if any unusual hazards exist in areas where lifts will be used.

- Slopes, ditches, bumps, and floor obstructions.
- Drop-offs, holes, or untamped earth fills, debris on floor.
- Overhead obstructions and high voltage hazards.
- Other hazardous locations and atmospheres.
- Wind and weather conditions.
- Presence of unauthorized persons or other hazardous conditions.



Controlling the Hazards

Workplace Inspections

- Inadequate support.
Is the structure capable of withstanding the load of the lift, plus the weight of the employee's, plus any material?

- Surface Condition:
Shall the surface be protected prior to driving the lift onto the surface; such gymnasium floors?

Plywood or other protective materials recommended for protection.



Controlling the Hazards

Prestart Inspection

The aerial lift shall be inspected for defects prior to each shift's operation. The prestart inspection shall be performed and documented by the operator on each shift and will include items in accordance with manufacturer's recommendations for each specific aerial lift.

(See handout for the appropriate inspection form).



Controlling the Hazards

Prestart Inspection

- Operating and emergency controls.
- Safety devices.
- Personal protective devices.
- Hydraulic, air, pneumatic, fuel and electrical systems for wear, leakage, excessive dirt, moisture or any other condition which may impair the use of these systems.
- Fiberglass and other insulating components for visible damage or contamination.
- Missing or illegible placards, warnings, operational, instructional, and control markings.
- Visual inspection of all mechanical fastenings.

Controlling the Hazards

Prestart Inspection

- Cables and wiring harnesses.
- Loose or missing parts.
- Wheels and tires.
- Operating manuals, and their placement in weather proof containers on the lift or in the cab of the truck.
- Outriggers, stabilizers, and other structures.
- Guardrail systems.
- Other items specified by the manufacturer.

The aerial lift shall not be operated if the prestart inspection indicates that repair is necessary.

Controlling the Hazards

Operation

- When operating the lift, the operator shall follow the Operator Warnings and Instructions as specified in your handout.
- The lower controls of aerial lifts shall not be used for continuous operation with personnel in the platform.
- Fixed or overhanging loads are prohibited.
- The platform may not be steadied by positioning it or attaching it to other objects or structures.
- Keep hands and fingers inside the lift while traveling including going up and down.

Controlling the Hazards

Operation Near Power Lines

- Operators shall maintain safe distances from electrical power lines and apparatus in accordance with governmental regulations and the *Minimum Safe Approach Distance (MSAD) chart provided in your handout.*
- Do not operate an aerial lift in hazardous locations or areas where potentially flammable or explosive gases or particles may be present.
- Do not attach cords, hoses, or welding cables to the lift. *Do not use the lift as a welding ground.*



Controlling the Hazards

Operation on Slopes and Grades

- Aerial lifts may be equipped with tilt or other motion/capacity warning devices. These alarms must be operational. The limit switch shall not be altered or disabled.

Operators shall not depend upon the tilt alarm as a level indicator.

Controlling the Hazards

Operation When Elevated

- *Traveling 50 feet or more in a scissors lift shall be done with the platform in the lowered or stowed position. Traveling in the elevated condition must be done on level surfaces, clear of obstructions, and in slow speed (0.5 mph).*

Extensible or articulating booms shall be retracted or folded before traveling.



Controlling the Hazard

Gasoline and Diesel Fueling

- Wear appropriate PPE
- Refuel when the engine is cool
- Refuel in designated areas only
- Never expose fuel to smoke, sparks, or flames
- Be aware of fire extinguishers and know how to use them
- Park lift in “unattended mode”
- Use the correct fuel
- Clean up spills immediately and report major spills
- Do not overfill the container



Controlling the Hazard

Liquid Petroleum Fueling

- Do not refuel in confined areas where LP gas could collect if a leak is present.
- Wear appropriate PPE, use safety glasses, face shield, and thermal gloves to protect from frostbite.
- Park the lift in a level area away from other traffic.
- Turn off service valve and allow the lift to run out of fuel to avoid spray of pressurized LP.
- Turn off key and try to restart engine.
- Remove spent tank and properly position full tank with pressure relief valve pointing up and away from the operator.
- Secure LP tank with bracket restraints.
- Open service valve slowly.
- If you suspect a leak, check with a soapy solution.

Controlling the Hazard

LP Precautions

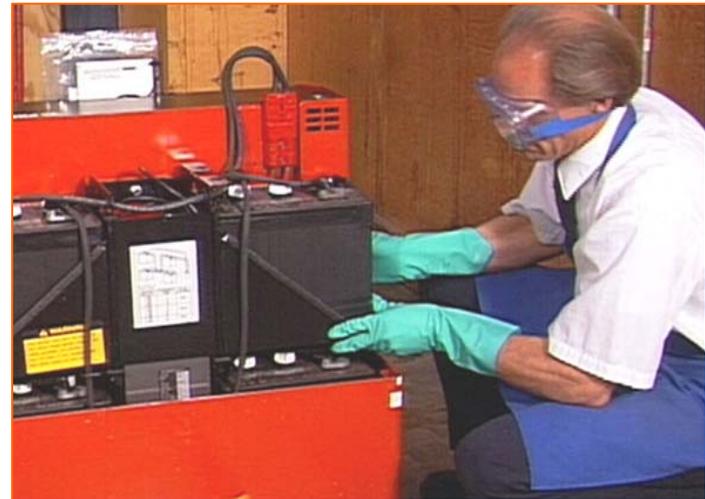
- Do not leave an LP lift near high heat sources, stairways, or exits.
- When parking LP lifts for a long period of time, turn the service valve off.
- Properly store LP cylinders by securing them to prevent tip over.
- Do not drop, roll, or strike the LP *cylinders*.



Controlling the Hazard

Batteries

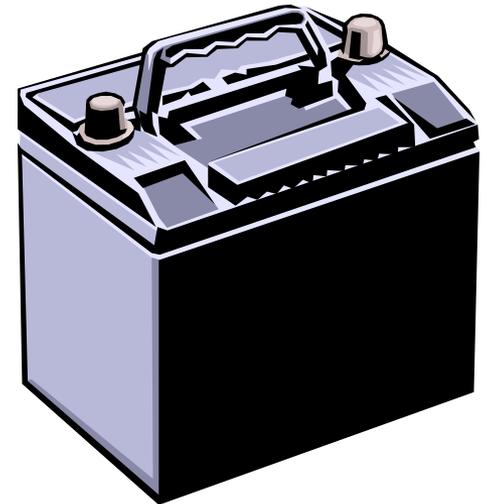
- *When replacing batteries, ensure the weight is the same as factory-issued batteries. They are used as counterweights.*
- Inspect battery connectors for damage
- No smoking in battery-charging area
- Immediately clean up electrolyte spills
- PPE includes face mask or goggles, acid-resistant gloves, and an apron

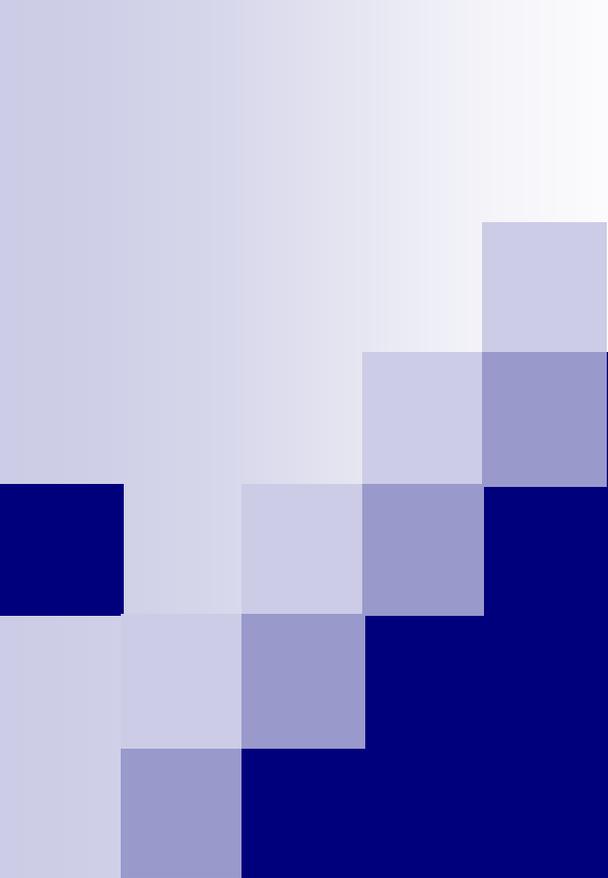


Controlling the Hazard

Battery Care

- Use required personal protective equipment when servicing or inspecting battery
- Have an approved 15-minute eye wash within 10 feet of the battery filling area
- Add approved water only – never add acid
- Keep electrolyte level above separator plates
- Keep battery top clean and dry
- Keep flame and metal away from battery top
- Keep vent caps tightly in place
- Do not use battery with specific gravity below 1.120
- Cool battery before charging or operating if battery is above 115 degrees Fahrenheit
- Charge only in ventilated area and at proper voltage and amp hour
- Keep battery compartment open during charge





4. Training

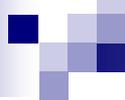
Training

- Only those workers who have received instructions regarding the inspection, application, and operation of an aerial lift, including recognition and avoidance of hazards, shall operate that aerial lift.
- The operator shall be retrained if management notes any performance deficiencies, or every three years for aerial man-lifts or five years for scissor lifts or bucket trucks, whichever comes first.
- Records of operators' training shall be kept on file.





5. Responsibilities



Responsibilities

- Operator
- Owner / User
- Work Supervisors
- Safety Team

Responsibilities

Operator

Before operation the operator shall:

- Ensure that their training is current.
- Read and understand the manufacturers' manuals.
- Understand all labels, warnings, and instructions on the lift.
- Ensure all occupants of the platform wear appropriate personal safety equipment for the conditions under which the platform will be operated.
- Have been instructed by a qualified person in the intended purpose and function of each of the controls.

Responsibilities

Operator

Before operation the operator shall:

- Ensure that manufacturers' machine manuals are in the weatherproof containers located on the lifts or in the mobile unit.
- Be retrained, if necessary, based on the owner's or user's observation and evaluation of the operator or every three years.
- Perform written prestart inspections before use of the lift each day or shift, and perform a visual and functional test.

Responsibilities

Operator

Before operation the operator shall:

- Conduct workplace inspections before and during aerial lift use.
- Observe operator warnings and instructions to be used before and during each movement of the platform.
- Shut down lift operations in case of any suspected malfunction, or if a hazardous potentially unsafe condition exists.

Responsibilities

Owner/User

The Owner/User shall ensure that:

- Aerial lift safety programs are developed, documented, and utilized as required.
- Manufacturers' manuals, such as the manual of responsibilities, operations, and maintenance manuals, are available and stored in the weatherproof containers on the lifts or in the mobile units.
- Frequent, annual, and/or periodic maintenance inspections shall be performed on a timely basis.

Responsibilities

Owner/User

The Owner/User shall ensure that:

- Inspection items listed in the maintenance manuals shall be tested, evaluated, and, if applicable, corrected by qualified personnel before the unit is returned to service.
- There is distribution of and compliance with all safety bulletins received from manufacturers.
- Assistance shall be rendered to operators who have questions concerning lifts.

Responsibilities

Owner/User

The Owner/User shall ensure that:

- Modifications of the aerial lift equipment shall be made only by the manufacturer or with their prior written permission.
- The location of the intended operation has the hazards listed and safety measures discussed with, selected, and passed on to the operator before use of the lift..

Responsibilities

Work Supervisors

The Work Supervisors shall:

- Ensure that the aerial lift is used only for intended applications as defined in the operating manual and that recognized safety practices are followed.
- Select operators based on their experience and physical qualifications.
- Ensure that operators' training is current.
- Monitor the performance of lift operators to ensure that they comply with safety rules.
- Monitor daily written prestart inspections.

Responsibilities

Work Supervisors

The Work Supervisors shall ensure that:

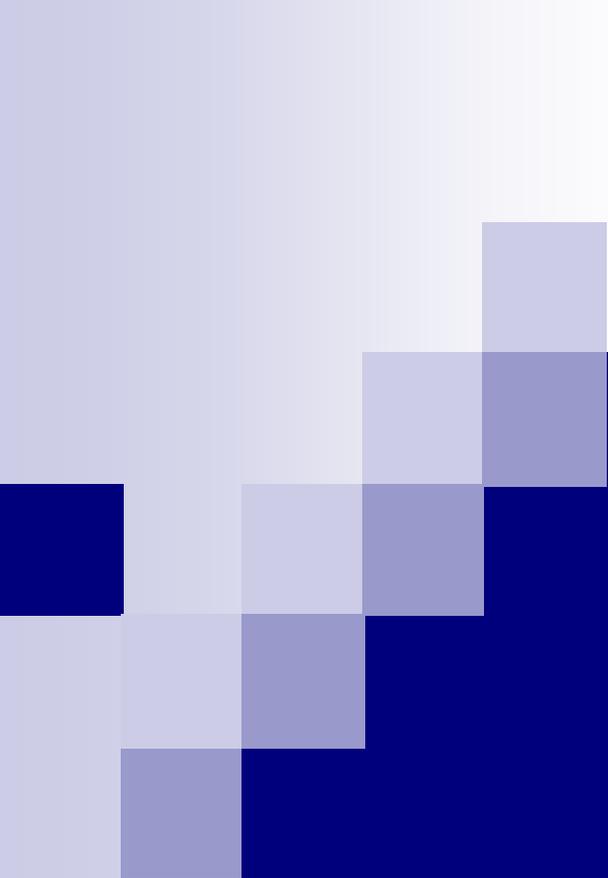
- Unauthorized persons do not operate the lifts.
- Lifts are equipped with required safety equipment (e.g., overrides, back-up beepers, anchorage points for personal fall arrest systems).
- Lifts are maintained and that qualified personnel perform frequent, annual, and periodic inspections.
- Lifts are not operated if they are out of compliance with their applicable maintenance schedules.

Responsibilities

Safety Team

The Safety Team shall:

- Determine, in conjunction with the supervisor, the safety measures to be taken if the lift will be used in a location that has unusual hazards.
- Review and approve indoor work that involves lifts with internal combustion engines.
- Make recommendations for alternatively powered lifts.
- Stay current with regulations governing the operation of lifts and transmit changes to the appropriate parties.



6. Standards

Regulations for Industry

■ OSHA Industry Standards

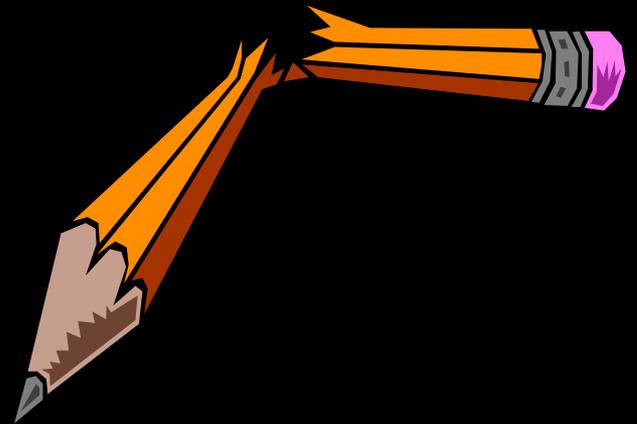
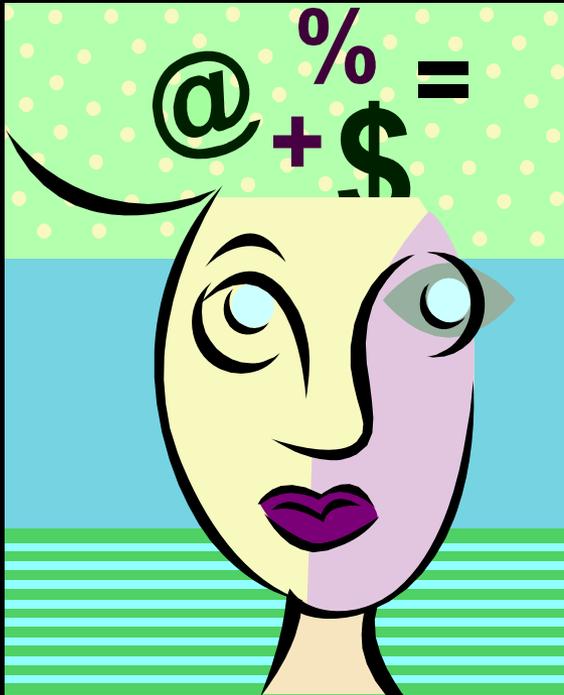
- 29 CFR 1910 Subpart F “Powered Platforms, Manlifts, and Vehicle Mounted Work Platforms”
- 1910.67 Vehicle-mounted elevating and rotating work platforms.
- Shall be designed and constructed in conformance with the applicable requirements of ANSI A92.2, A92.3, A92.5, & A92.6.
- General requirements. Aerial devices used to elevate personnel to jobsites above ground: Extendable boom platforms, aerial ladders, articulating boom platforms, vertical towers, and a combination of any of the above.

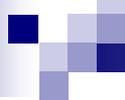
Regulations for Construction

- OSHA Construction Standards
 - 29 CFR 1926, Subpart L, “Scaffolds,”
 - 1926.453, Aerial Lifts
 - Format the same as OSHA Industrial standard

See Appendix A: Definitions

It's Test Time!



- 
1. Operators may rely on the tilt alarm as a level indicator. True or False (circle one)
 2. Hazardous distances to consider when operating an aerial lift include:
 - a) 6 feet above the work platform
 - b) approved distance from power lines
 - c) area immediately below the lift
 - d) all of the above
 3. Workers on the ground associated with the aerial lift operation shall wear appropriate head protection? True or False (circle one)
 4. The following may be used to achieve additional work height:
 - a) railings
 - b) ladders
 - c) planks
 - d) none of the above

- 
5. Aerial lifts with internal combustion engines operating inside a building are permitted if approved by management. True or False (circle one)

 6. Aerial lift batteries must:
 - a) weigh the same as the factory-issued batteries.
 - b) be the same brand as the original batteries.
 - c) be the same color as the original batteries.
 - d) be recharged before every use.

 7. The platform may be steadied by positioning it against another object.
True or False (circle one)

 8. Operators may attach fixed or overhanging loads if:
 - a) the load does not exceed the rated capacity of the lift.
 - b) the lift has not exceeded ten feet in height.
 - c) warning devices are placed below the lift.
 - d) none of the above.

- 
9. Scissors lifts may travel in an elevated condition if traveling less than 50 feet.
True or False (circle one)
10. When entering an aerial lift from an unprotected location, operators shall:
- a) enter the lift quickly.
 - b) ensure the lift is stable before entering.
 - c) use a double lanyard system for fall protection when approaching the lift.
 - d) connect a lanyard to the lift before entering.
11. Materials shall be carried on the platform as specified in the manufactures' recommendations for load capacity. True or False (circle one)
12. When multiple employees are occupying an elevated lift:
- a) anyone can operate the lift, if approved.
 - b) a designated operator must be in control.
 - c) the senior employee must operate the lift.
 - d) the lift must be operated from the ground controls.

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13. During inclement weather, aerial lifts may be operated if approved by the manufacturer. True or False (circle one)
14. The Minimum Safe Approach distance to energized power lines, 300 to 50 KV is:
- a) 15 feet
 - b) 30 feet
 - c) 100 feet
 - d) 10 feet
15. Operators must be approved for the make and model of aerial lifts they are operating. True or False (circle one)

Operate the Lift Safely – Thanks!

