

Aerial/Scissor Lift Safety Procedure

Overview

Aerial lifts are commonly used in construction, inspection, athletic events and repair services to lift University employees to an elevated work position. Proper operation and use of aerial lifts can make completion of tasks at elevation, safer and more efficient. However, unsafe use, operation and aerial lift work practices can result in serious injury. This program has been developed due to the hazards associated with improper use and the university's concern for the safety of individuals in and around this type of equipment. In addition, this program outlines general, operating, maintenance, inspection and training requirements governing safe aerial lift use at the University.

Policy

Departments using aerial lifts must ensure that supervisors and operators comply with all aspects of this safety program. All university employees must successfully complete a training program, and receive certification prior to the operation of any aerial lift. Contractors operating aerial lifts on university projects are expected to meet or exceed the requirements found in this program, and comply with all applicable statues and regulations governing the use of powered industrial trucks as listed in next section of this document.

Requirements

Several OSHA regulations and ANSI standards apply to aerial lifts and include provisions for design, operator training, and safe operating practices, these include:

- 29 CFR 1910.67 (Vehicle Mounted Elevating and Rotating Work Platforms)
- 29 CFR 1926.453 (Aerial Lifts)
- 29 CFR 1926.451 & .452 (Scaffolds)
- 29 CFR 1926.20 (General Safety and Health Provisions)
- 29 CFR 1926.21 (Safety Training and Education)
- Section 5 of the OSHA Act, commonly referred to as the "General Duty Clause."
- American National Standards Institute (ANSI), A92.3, Manually Propelled

Elevating Aerial Platforms

- ANSI, A92.6, Self-Propelled Elevating Work Platforms
- ANSI, A92.2, Vehicle Mounted Elevating and Rotating Aerial Devices
- ANSI, A92.5, Boom-Supported Elevating Work Platforms

Purpose

This program has been developed to reduce the risk of physical injury or property damage in areas where aerial lifts are in operation. It also brings the university into compliance with federal, state, and local law.

Scope

This program applies to the operation of all aerial lifts operated by university employee. Please see Appendix B – Examples of Aerial Lifts for specific examples. Please list below the types of lifts used by the department.

Aerial Lift Procedures

Pre-use Inspection

- Prior to the operation of any aerial lift the Pre-Use Inspection Checklist found in Appendix A must be completed. This applies at the beginning of every work period, and whenever a new equipment operator takes control of the aerial lift.
- Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) must be reported.

General Safe Work Practices

- Operators shall not wear any loose clothing or any accessory that can catch in moving parts.
- Before machine is started, the operator must walk completely around the machine to ensure everyone and everything is clear of the machine.
- Articulating boom and extendable boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
- Modifications and additions that may affect the capacity or safe operation of an aerial/scissor lift are strictly prohibited without the manufacturer's written approval. Capacity, operation, and maintenance instruction markings will be changed as necessary if the manufacturer approves a modification.
- The insulated portion (if applicable) of an aerial / scissor lift shall not be altered in any manner that might reduce its insulating value.
- Any signs, plates, or decals which are missing or illegible must be replaced.
- If the aerial / scissor lift becomes disabled, a "out of service" tag or equivalent shall be attached to the controls inside the platform in a conspicuous location.
- Aerial/scissor lift devices with noted, reported deficiencies shall not be operated until repairs are made and equipment is authorized for use.
- Operators must report all accidents, regardless of fault and severity, to their Supervisor.

Safe Work Practices Before Operation

- Consideration shall be given to the amount of wind. Follow the manufacturer's instruction regarding operation in windy conditions. As a general rule aerial lifts shall not be operated in winds exceeding 25mph although this can vary depending on the model of equipment
- At 25mph wind speeds or anticipated gusts, lifts will be grounded.
- If at any time, video personnel/staff feels unsafe in lifts, they may make decision to ground the lifts and cease with videotaping games or practices...no questions asked.

- Guardrails must be installed and access gates or openings must be closed before raising the platform.
- Boom and platform load limits specified by the manufacturer shall not be exceeded.
- Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position (if equipped).
- Consideration shall be given to the protection of bystanders via barricading, having another employee keep bystanders at a safe distance or by other means.
- Aerial lifts shall not be operated from trucks, scaffolds, or similar equipment.
- ANSI and OSHA standards specify minimum safe distances that are to be maintained while working in an aerial lift, as indicated in the table below. If these distances cannot be achieved, do NOT use the equipment.

<50 KV	10 ft
50 - <199 KV	15 ft
200 – 349 KV	20 ft
350 – 499 KV	25 ft
500 – 749 KV	35 ft
750 – 1000 KV	45 ft

Safe Operation

- Attention shall be given towards the direction of travel, clearances above, below and on all sides.
- Employees shall not sit or climb on the guardrails of the aerial lift.
- Planks, ladders or other devices shall not be used on the work platform.
- An aerial lift shall not be moved when the boom is elevated in a working position with employees in the basket.
- Aerial lift shall not be placed against another object to steady the elevated platform.
- Aerial lift shall not be used as a crane or other lifting device.
- Aerial lift devices shall not be operated on grades, side slopes or ramps that exceed the manufacturer's recommendations.
- The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface.
- Speed of aerial lift devices shall be limited according to the conditions of the ground surface, congestion, visibility, slope, location of personnel and other factors that may cause hazards to other nearby personnel.
- Stunt driving and horseplay shall not be permitted.
- Booms and elevated platform devices shall not be positioned in an attempt to jack the wheels off the ground.
- The area surrounding the elevated platform shall be cleared of personnel and equipment prior to lowering the elevated platform.
- All equipment must be secured on the inside of the aerial lift
- Operators are to call for assistance if the platform or any part of the machine becomes entangled.

Safe Work Practices After Operation

- Safe shutdown shall be achieved by utilizing a suitable parking area, placing the platform in the stowed position, placing controls in neutral, idling engine for gradual cooling, turning off electrical power, and taking the necessary steps to prevent unauthorized use.
- Aerial lifts shall be shut off prior to fueling. Fueling must be completed in well ventilated areas free of flames, sparks or other hazards which may cause fires or explosions.

Changing and Charging Batteries

- Battery charging installations must be located in areas designated for that purpose
- Facilities must provide for: flushing and neutralizing spilled electrolyte, fire protection, protection of charging apparatus from damage by trucks, adequate ventilation for dispersal of fumes from gassing batteries.
- Precautions must be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- Employees charging and changing batteries shall be authorized to do the work, trained in the proper handling, and required to wear protective clothing, including face shields, long sleeves, rubber boots, aprons, and gloves.

Maintenance

- Any aerial lift not in safe operating condition must be removed from service. Authorized personnel must make all repairs.
- Repairs to the fuel and ignition systems of aerial lifts that involve fire hazards must be conducted only in locations designated for such repairs.
- Aerial lifts in need of repairs to the electrical system must have the battery disconnected before such repairs.

Responsibilities

Departments Utilizing Powered Industrial Trucks

- Must implement and administer the Aerial Lift Safety program.
- Review the Aerial Lift Safety program annually for compliance and effectiveness.
- Verify that all employees who operate or work near aerial lifts are properly trained.
- Maintain written records of operator training on each model of aerial lift and the name of the trainer.
- Maintain written records of all inspections performed by the aerial lift owner, including the date any problems found, the date when fixed, and the name of the person performing the repairs.
- Maintain written records of the name and purchaser of each aerial lift.
- Make recommendations for revisions if necessary.
- Establish expected operating conditions for aerial lift and send to OHS to review prior to operation.

Supervisors

- Coordinate employee training, and certify that all operators receive annual training including, but not limited to, the items listed in the training section of this document.
- Ensure that only trained and qualified individuals use aerial lifts.
- Verify employee compliance with the principles and practices outlined in the Aerial Lift Safety Program.
- Provide specific operational training for each aerial lift.
- Observe the operation of aerial lifts, and correct unsafe practices.

Operators

- Read the Aerial Lift Safety Program.
- Complete the Daily Pre-Use Inspection Checklist before operating any aerial lift.
- At least annually review the procedures outlined in this document.
- Observe the operation of the aerial lift, and report unsafe practices to your supervisor.

Environmental, Health and Safety

- Annually review and update the Aerial Lift Safety Program as necessary.
- Provide orientation and initial training as requested by university departments and/or contractors.
- Provide the general safety training requirements for program.
- Monitor the effectiveness of program by receipt of copies of inspection checklists.
- Evaluate designated areas for aerial lift use.
- Define appropriate eyewash facilities for battery changing/charging areas.
- Observe the operation of aerial lifts, and report unsafe practices to the appropriate supervisor.

Training Requirements

- Employees who are authorized to operate aerial lifts must receive training prior to engaging in their duties, and at least every three (3) years thereafter. The training is to ensure that the Aerial Lift Safety Program is understood.
- The supervisor will also ensure that authorized aerial lift operators have acquired the necessary practical skills required for safe operation.
- Training is offered by Environmental, Health and Safety and the department in possession of the lift. The department will perform an operational training with each employee to determine if operators have the knowledge, training, and skills necessary to use the aerial lift. Operational training will consist of a combination of general safety instruction, practical/operational training (demonstrations performed by the trainer, and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.
- All operational training must be conducted under close supervision.

Initial Training

- Receive instruction on the intended purpose and function of each control.
- Prior to operating any Aerial Lift the trainee will read and understand the manufacturer's operating instruction(s) and aerial lift procedures, or receive training by a qualified person on the contents of the manufacturer's operating instruction(s) and users safety rules.

- Be informed of the Aerial Lift operating limitations and restrictions as defined by the manufacturer.
- Understand by reading or having a qualified person explain all decals, warnings, and instructions displayed on the Aerial Lift.
- During operational training, trainees may operate an aerial lift only under the direct supervision of authorized trainers, and where such operation does not endanger the trainee or other employees.
- All training and evaluation must be completed before an operator is permitted to use an aerial lift without continual and close supervision.

Annual Training – must include at least the following

- Review of the Aerial Lift Inspection & Maintenance Record
- Updated information on new equipment.
- Review of university written program.




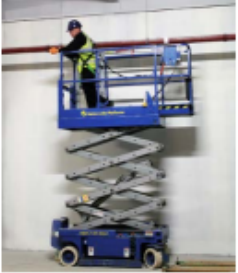

Training Records

- Each department must maintain a record of all individual training, including:
 - Subject of training.
 - Date of training.
 - Name of individual trained.
 - Name of supervisor or Occupational Health and Safety person providing the training.
 - Training records must maintained by the department for a minimum of 3 years.

Program Evaluation

- The aerial lift program shall be evaluated on an annual basis utilizing the protocols set forth by Occupational Health and Safety. The evaluation team will consist of a department representative and a designee from Environmental, Health and Safety. Environmental, Health and Safety will define the scope of the evaluation. The final report will be developed by the department representative and EHS utilizing the information received during the evaluation. The deficiencies determined in the report will be documented and corrective action plans will be developed.

Example of Aerial Lifts

	<p>Vehicle Mounted Aerial Lift / Bucket Truck The lift platform is an integral part of an over the road vehicle.</p>
	<p>Articulating Boom Aerial Lift This aerial lift has at least 2 hinged sections which are used to increase mobility.</p>
	<p>Man Lift / Cherry Picker This piece of equipment lifts personnel vertically, but not horizontally.</p>
	<p>Scissor Lift This piece of equipment lifts personnel vertically, but not horizontally.</p>
	<p>Extendable / Telescoping Aerial Lift This aerial lift has a boom that extends horizontally and vertically.</p>

Appendix A

Aerial/Scissor Lift Hands-On Operator Training Evaluation Form

<u>Trainee Name:</u>	<u>Work Unit:</u>
<u>Evaluator Name:</u>	<u>Department:</u>
<u>Equipment Manufacturer:</u>	<u>Date:</u>
<u>Model:</u>	

NOTE: Hands-On Operator Training must be completed for each type of aerial lift utilized.

<u>Step</u>	<u>Evaluation</u>	<u>N/A</u>	<u>Pass</u>	<u>Fail</u>
1. Pre-use equipment inspection	Including but not limited to: safety devices, air/hydraulic/fuel system for leaks, cable/wiring harnesses for damage, loose/missing parts, tires and wheels, placards/warnings/and control markings, outriggers/stabilizers and other structures, guardrail system, other items as specified in owner's manual.			
2. Inspect Worksite	Including but not limited to: drop-offs or holes, slopes, bumps and floor obstructions, debris, overhead obstructions and electrical hazards, inadequate surface and support to withstand all load forces, wind and weather conditions, presence of bystanders, other unsafe conditions.			
3. Function test of lower control station.	Done to determine if there are any malfunctions.			
4. Utilize fall protection equipment	Face the machine. Maintain 3 point contact with ladder/hand rails (two hands, one foot OR two feet, one hand).			
5. Function test of bucket / platform / basket control station.	Done to determine if there are any malfunctions.			
6. Drive and creep / inch forward and reverse.	Move approximately 10 feet in a driving mode. Creep approximately 5 feet. Verify unit balance and stability.			

<u>Step</u>	<u>Evaluation</u>	<u>N/A</u>	<u>Pass</u>	<u>Fail</u>
7. Turn vehicle 360 degrees right and left.	Minimum disturbance of aerial lift platform. Verify unit balance and stability.			
8. Boom up & down, in & out.	Fully extend, fully raise. Minimum disturbance of aerial platform. Verify unit balance and stability.			
9. Rotate/swing boom 360 degrees in each direction.	Minimum disturbance of aerial platform. Verify unit balance and stability.			
10. Tilt platform in each direction.	Minimum disturbance of aerial platform. Verify unit balance and stability.			
11. Turn off machine using emergency stop function.	Locate and use emergency stop function.			
12. Park and shutdown aerial lift.	Minimum disturbance of aerial platform. Verify unit balance and stability.			
13. Dismount safely. Face the machine when dismounting.	Maintain 3 point contact with ladder/handrails (two hands, one foot OR two feet, one hand)			
14. Deploy/setup and store outriggers.	Follow manufacturer's guidance. Refer to owner's manual.			
15. Comments	<i>Must be included for all "Failed" tasks. If task is failed the evaluator must explain what was done incorrectly and have the trainee repeat the task until it is completed correctly.</i>			
Trainee Signature				
Evaluator Signature				

Appendix B

PRE-USE: AERIAL / SCISSOR LIFT INSPECTION CHECKLIST

Equipment Make/Model: _____

Serial Number: _____

- Owner's manual legible and stored inside the container located on the platform.
- All decals legible and in place.
- Fluid levels checked. (Hydraulic oil, engine oil, coolant, etc)
- Structural and other critical components present and all associated fasteners and pins in place.
- Battery packs in place, properly connected and not leaking.
- Compartment covers in place.

Check the following components or areas for damage, modifications, and improperly installed or missing parts:

- Electrical components, wiring, and electrical cables
- Hydraulic power unit, reservoir, hoses, fittings, cylinders, and manifolds
- Drive and turntable motors and torque hubs
- Boom wear pads
- Tire and wheels
- Limit switches, warning alarms, and horn
- Nuts, bolts, and other fasteners
- Gauges
- Beacon and lights
- Fall Protection Devices (railing, gates, toe boards, anchor/connecting points, etc)

Check entire machine for:

- Cracks in welds or structural components
- Dents or damage to machine

Equipment operation:

- Test all controls for proper operation

Comments: _____

Month: _____ **Year:** _____