

AERIAL PLATFORM OPERATOR SAFETY TRAINING



Introduction

Accident Profile

Scottsdale, Ariz.— A garbage truck sideswiped a boom lift aerial work platform while a worker was repairing a traffic signal. The collision threw the man from the personnel basket and killed him. When the operator fell from the basket, he hit his head on the bottom of the platform several times.

According to reports, orange cones were in place around the intersection where the accident occurred.



This was not a freak accident. In fact, it is fairly common. Although the worker was in fact wearing a safety harness and was tied off to the machine, his lanyard was too long or tied off too high. The impact of the truck hitting the machine caused the boom to flex, ejecting the worker out of the machine, swinging him underneath the platform where the boom continued to bounce causing his head to hit the underside multiple times, resulting in severe head trauma. What could have prevented this accident?

Why Aerial Lift Operator Safety Training?

1. Training can reduce the risk of accidents and injuries to you and those you work with.
2. Training can also reduce operating cost of your company by avoiding damage to property and product.
3. The Federal Occupational Safety and Health Act, OSHA, requires all operators to be trained and authorized to operate an aerial lift.

Other Accidents

An Assortment of Aerial Platform Accidents

Employee Killed in Fall When Scissor Lift Overturns

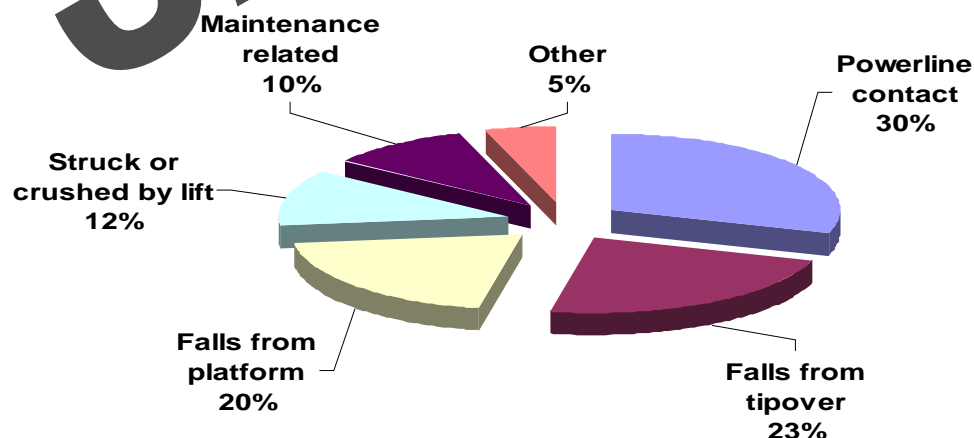
Employee #1 was installing a sprinkler system in the auditorium of a movie theater under construction. He was using a self-propelled scissor lift that he was driving with the lift raised to its maximum height of 20 ft. He apparently **drove the scissor lift off an approximately 4 in. high ledge**. It overturned and Employee #1 fell approximately 25 feet. He was killed.

Employee Killed When Thrown From Lift Basket

Employee #1 was using a Reach All 5120 aerial lift to which a 336 lb pipe had been attached to the side of the basket. The pipe was being raised when the boom collapsed. Employee #1 was thrown approximately 80 ft and was killed. **He was not tied-off** at the time of the accident.

Run Over By Aerial Lift Truck

A power line worker was standing behind an aerial lift truck. The truck engine was running to run the power take off. The **vehicle started to roll backwards**, apparently knocking the employee over and catching him with the differential and leaf spring bolts. The vehicle dragged the employee about 15 meters. He sustained severe trauma to his chest and head and died of his injuries.



TRAINING RESPONSIBILITIES

Only trained and authorized personnel must be permitted to operate the work platform. Before using the work platform, the operator must:

- (a) Read and understand the manufacturer's operating instructions and safety rules, and be trained by a qualified person on the contents of the manufacturer's instructions and safety rules.
- (b) Read and understand all decals, warnings, and instructions on the work platform.
- (c) On a daily basis, before the work platform is used, it must be given a thorough inspection.

The following standards are taken directly out of the ANSI/SIA 92.5 – 1992 for Boom Supported Elevating Work Platforms:

Training on delivery

Manufacturer's operating instructions and required training on the proper use and operation of the aerial platform shall be provided upon each delivery by sale, lease, or rental.

Operator training

Whenever a user directs or authorizes an individual to operate an aerial platform, he shall ensure that the individual has been trained in accordance with the manufacturer's operating and maintenance manual, the user's work instructions and requirements listed in section 8 of this standard before operating the aerial platform.

Model training

The user shall be responsible for the operator being trained on the model of the aerial platform that he will be operating. Such training shall be in an area free of obstructions, under the direction of a qualified person for a time sufficient to determine that the trainee display proficiency in knowledge and actual operation of the aerial platform. Only properly trained and authorized personnel shall be permitted to operate the aerial platform.

Before operation

Before authorizing an operator to operate an aerial platform, the user shall ensure that the operator has:

- a) Been instructed by a qualified person in the intended purpose and function of each control.
- b) Read and understood the manufacturer's operating instruction(s) and users safety rules, or been trained by a qualified person on the contents of the manufacturer's operating instruction(s) and users safety rules.
- c) Understood by reading or by having a qualified person explain all decals, warnings, and instructions displayed on the aerial platform.
- d) Determine that the purpose for which the aerial platform is to be used is within the scope of the intended applications defined by the manufacturer.
- e) Been provided with approved fall protection devices and other safety gear for all personnel in the platform.

INSPECTIONS

Annual Inspection: The owner of an aerial platform shall cause an annual inspection to be performed on the aerial platform no later than thirteen (13) months from the date of the prior annual inspection.

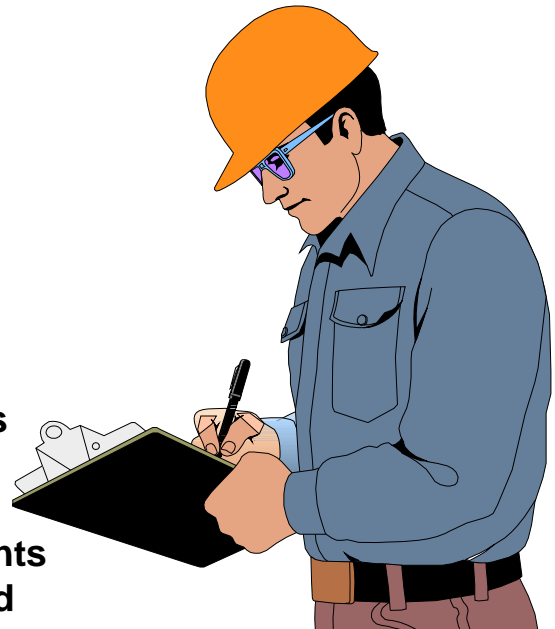
Frequent Inspection: The owner of an aerial platform shall cause a frequent inspection to be performed on the aerial platform:

a) That has been in service for three (3) months or 150 hours, whichever comes first. **b)** Before putting into service a machine that has been out of service for a period longer than three months of time.

Daily Inspection: Prior to putting a machine to work each day, an inspection shall be made. This shall be a visual as well as a functional inspection.

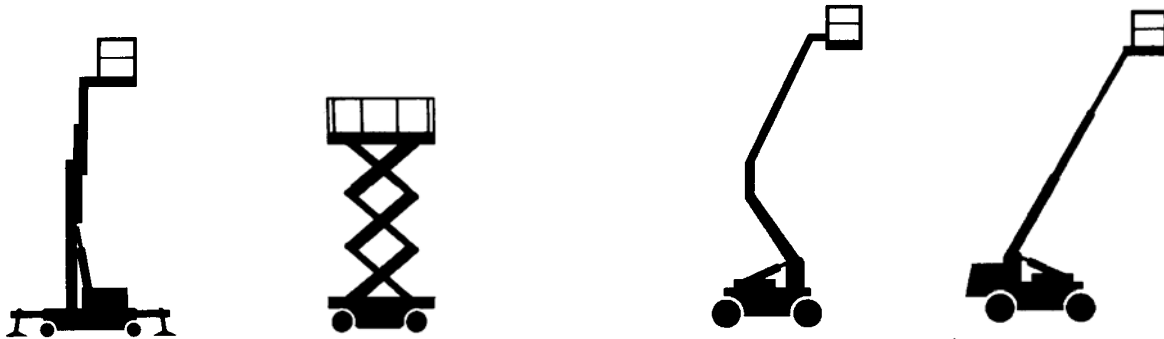
PERFORM THE FOLLOWING INSPECTION PRIOR TO OPERATION

- ▣ Decals legible and in place
- ▣ Engine fluids at correct levels
- ▣ Electrical components & wiring
- ▣ Hydraulic hoses, fitting, cylinders
- ▣ Fuel & hydraulic tanks
- ▣ Drive & turntable motors & drives
- ▣ Boom extension cables & wear pads
- ▣ Boom damage & dents
- ▣ Tires & wheels
- ▣ Engine & related components
- ▣ Limit switches, alarms, horns, beacons
- ▣ Nuts, bolts, & other fasteners
- ▣ Platform rail & entry gate
- ▣ Cracks in welds & structural components
- ▣ Compartment covers in place & latched
- ▣ Platform & ground control operations
- ▣ Auxiliary power function



Perform any additional test as prescribed by the manufacturer.

TYPES OF AERIAL PLATFORMS



Vertical Aerial Platforms Boom-Supported Aerial Platforms

There are three basic types of aerial platforms:

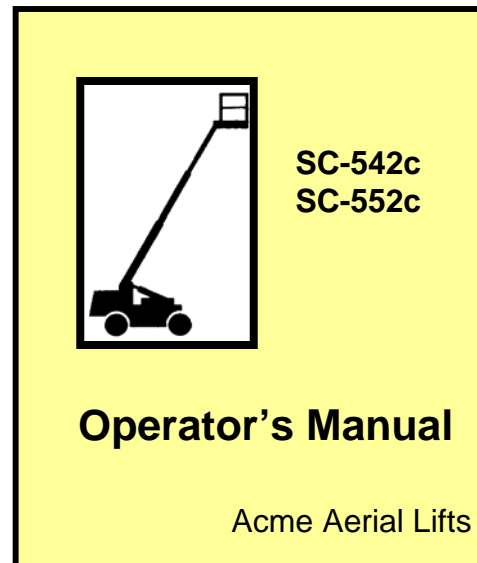
- The manual VERTICAL aerial platform
- The powered VERTICAL aerial platform
- The BOOM SUPPORTED aerial platform

This training covers these machines. This training does not cover truck-mounted aerial devices.

Know your equipment

It is the responsibility of the operator to read and understand the operator's manual and any manufacturer's manual(s) before operating the machine.

The operator's manual should be on the machine at all times and available to anyone who operates it or does maintenance work on it.



PRE-OPERATION INSPECTION

RATED LOAD

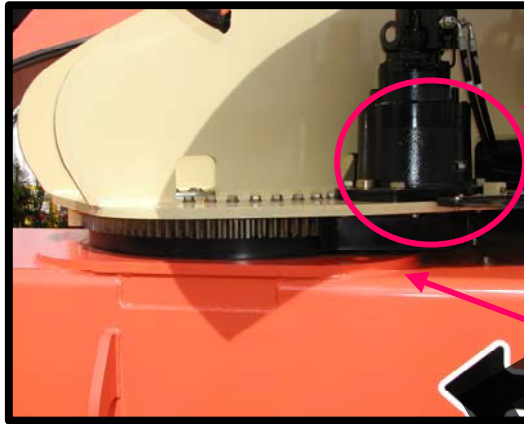


TIRES, WHEELS AND STEERING



PRE-OPERATION INSPECTION

CHASSIS & TURNTABLE

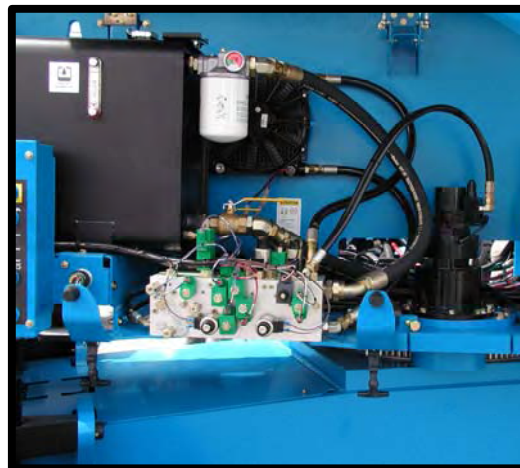


Check swing motor for loose bolts, damaged gears.

Check turntable base and chassis for objects left there.

ELECTRICAL COMPONENTS

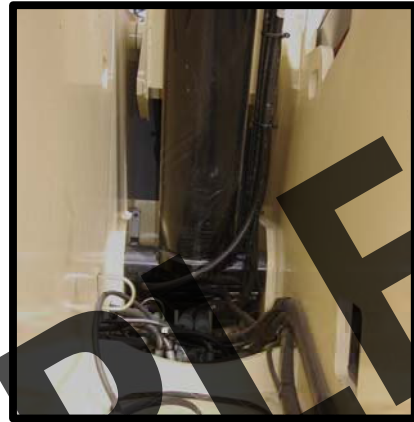
Check for damaged or loose electrical wiring and components.



PRE-OPERATION INSPECTION

BOOM LIFT CYLINDER

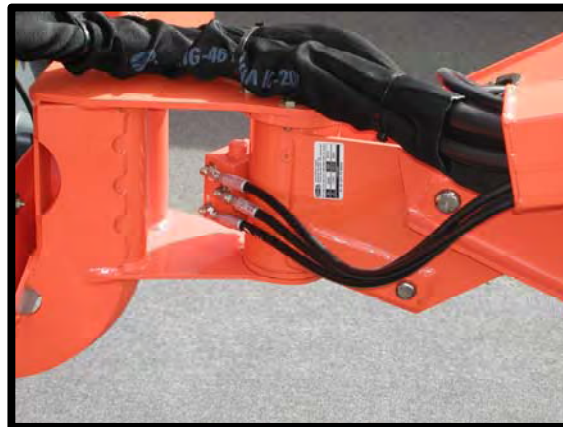
Check the boom lift cylinders for hydraulic leaks and other damage.



PLATFORM HINGES

Check hinge for smooth operation.

Check hoses for chaffing and other damage.



PRE-OPERATION INSPECTION

PLATFORM CONTROLS



PLATFORM STRUCTURE



Check for broken welds, damaged rails and frame, loose or missing bolts.

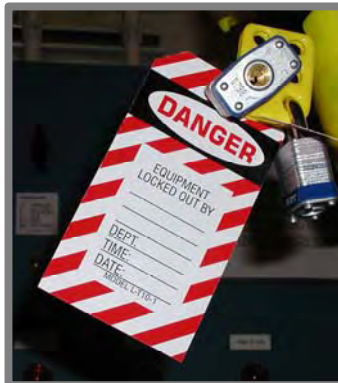
PRE-OPERATION INSPECTION

INSPECT THE BOOM



Inspect for dents and other damage.

LOCKOUT - TAGOUT



Machines which have deficiencies need to have all controls tagged and the machine taken out of service.

PRE-OPERATION INSPECTION

FUNCTIONAL TEST

PRIOR TO PUTTING THE MACHINE INTO SERVICE,
ENSURE ALL THE FUNCTIONS ARE PROPERLY WORKING.

At the ground controls:

- Activate Emergency Stop
- Activate each boom function
- Test auxiliary controls

At the platform controls:

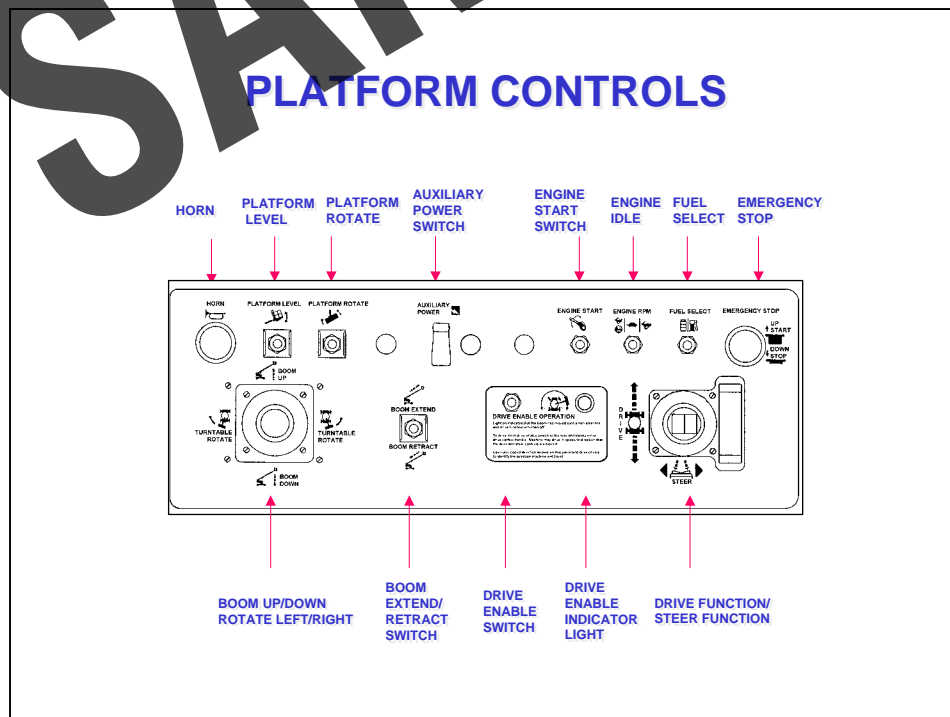
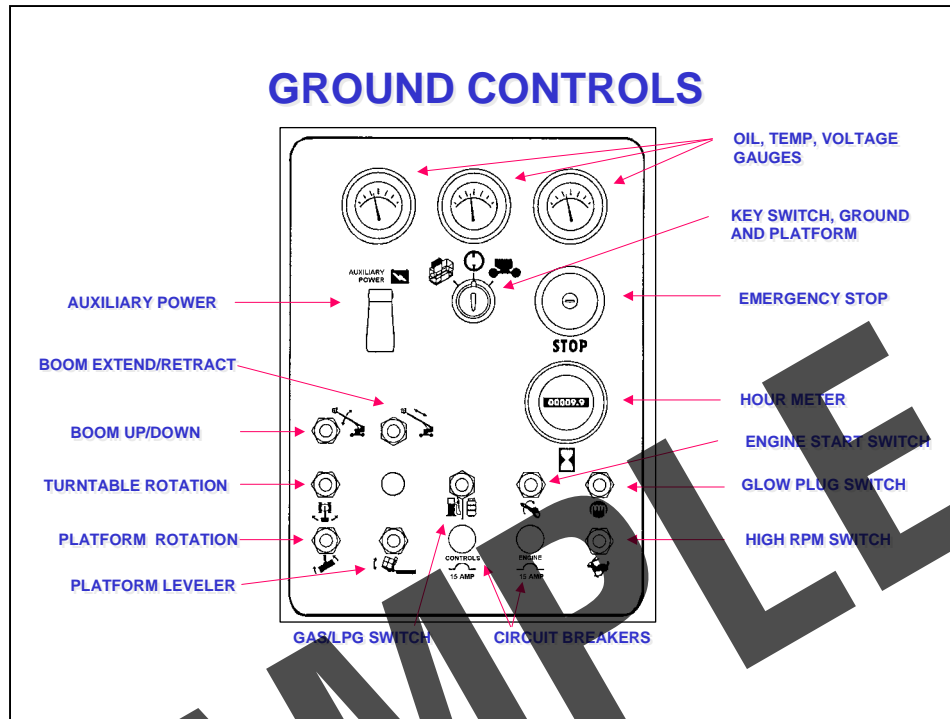
- Activate Emergency Stop
- Test horn
- Test foot switch
- Test boom and platform functions
- Test steering functions
- Test the drive and braking
- Test the drive enable system
- Test drive speed limits
- Test auxiliary controls



Perform any additional test as prescribed by the manufacturer.



PRE-OPERATION INSPECTION



DRIVING THE AERIAL PLATFORM

Wear all the protective clothing and personal safety devices issued to you or called for by job conditions.

You and other workers may need:

- **Safety harnesses and lanyards connected to an anchorage point**
- **Hard hats**
- **Safety shoes**
- **Safety glasses, goggles, or face shield**
- **Heavy gloves**
- **Hearing protection**
- **Wet weather gear**
- **Respirator or filter mask**

Safe Operating Guidelines:

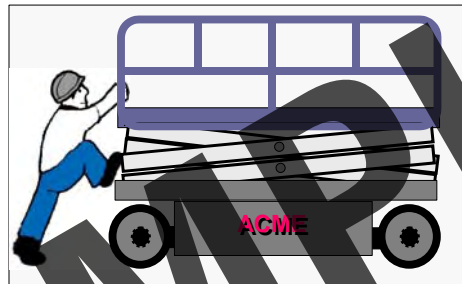
- **Always look in the direction of travel.**
- **Assure the path of travel is firm and level.**
- **Maintain safe distance from obstacles, debris, drop-offs, holes, depressions, ramps or other hazards for safe elevated travel.**
- **Maintain a safe distance from overhead obstacles.**
- **Limit speed according to conditions.**
- **Use caution when operating near slope, personnel, or other vehicles that could create a collision.**
- **Never participate in stunt driving or horseplay.**
- **Operator should maintain a firm footing on the platform.**
- **Steering is not self-centering and must be manually returned to center line.**
- **Travel only with boom in stowed position with the platform behind the drive wheels.**
- **Do not raise, lower, extend or rotate boom when traveling.**

SAFE OPERATION

SAFE OPERATION

MOUNTING THE MACHINE

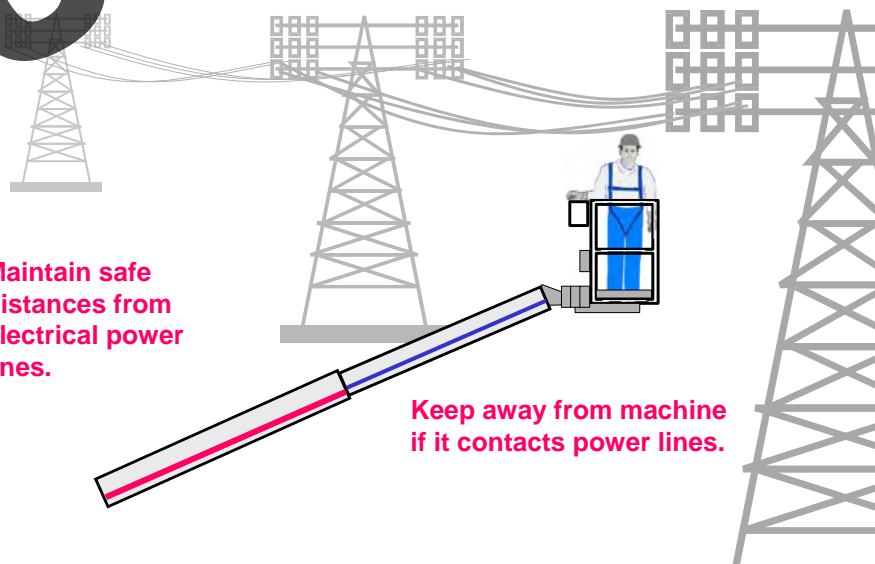
- Always use "three point contact"
- Clean shoes
- Never use controls as handles
- Never climb onto a moving machine
- Never climb an elevated machine
- Secure gates & chains before moving



ELECTROCUTION HAZARDS

Maintain safe distances from electrical power lines.

Keep away from machine if it contacts power lines.

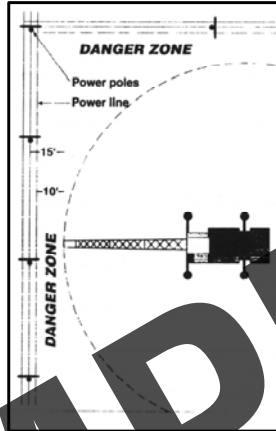


SAFE OPERATION

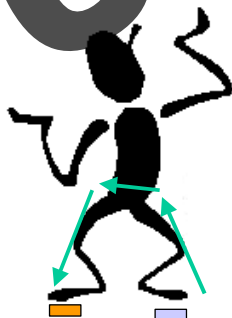
POWERLINE CONTACT

Required Clearances

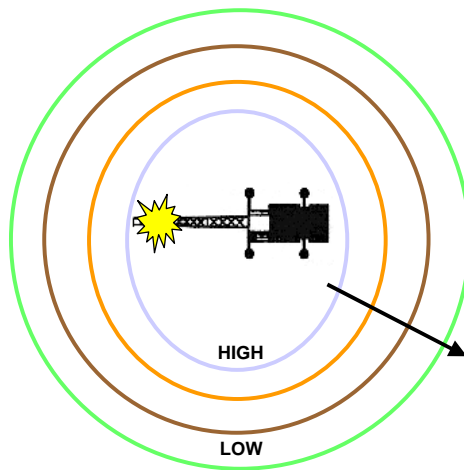
50kV	10 ft
50 to 200kV	15 ft
200 to 350kV	20 ft



POWERLINE CONTACT



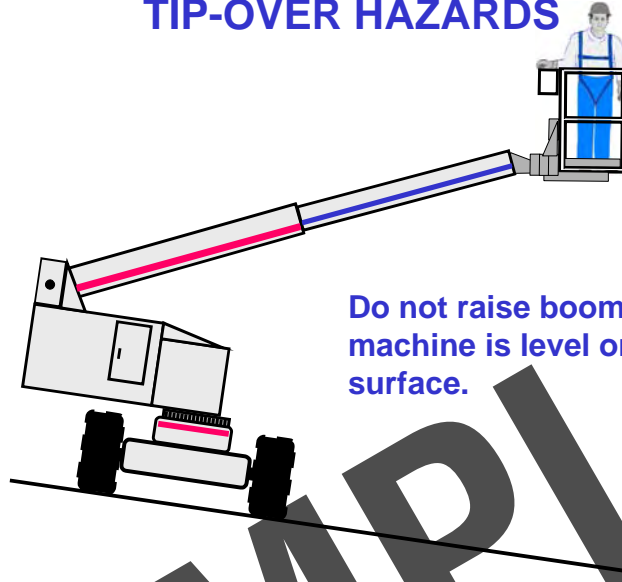
VOLTAGE PATH



GROUND IS ENERGIZED OUT FROM THE VEHICLE

SAFE OPERATION

TIP-OVER HAZARDS

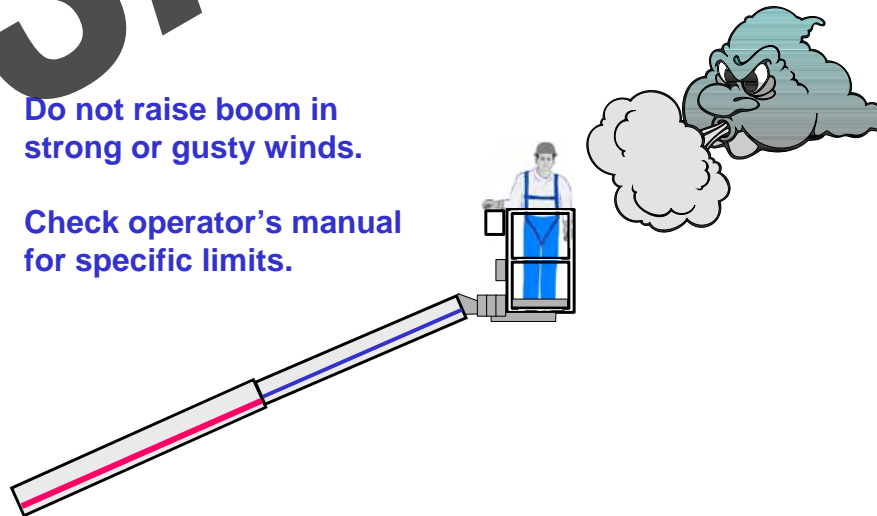


Do not raise boom unless the machine is level or on a level surface.

TIP-OVER HAZARDS

Do not raise boom in strong or gusty winds.

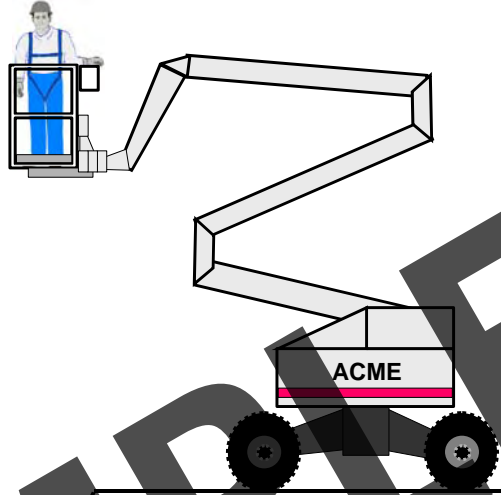
Check operator's manual for specific limits.



SAFE OPERATION

TIP-OVER HAZARDS

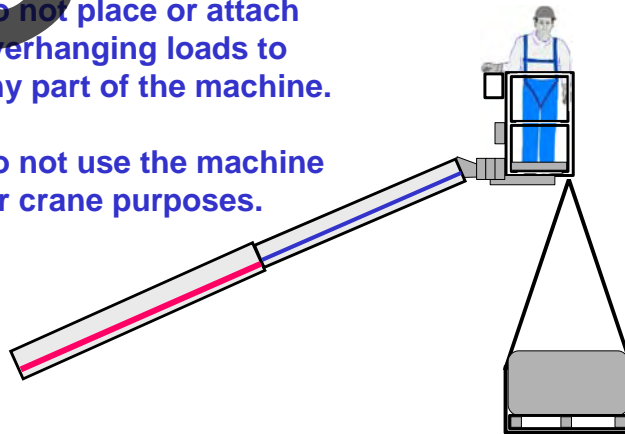
Use extreme care and slow speeds when driving the machine over unstable and rough surfaces.



TIP-OVER HAZARDS

Do not place or attach overhanging loads to any part of the machine.

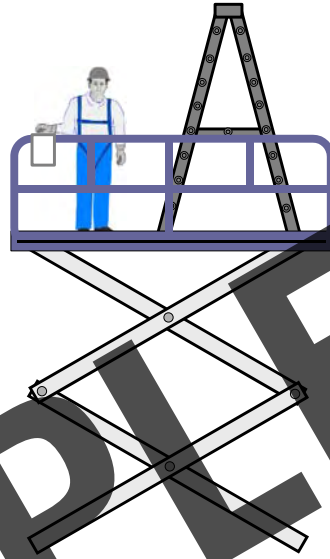
Do not use the machine for crane purposes.



SAFE OPERATION

TIP-OVER HAZARDS

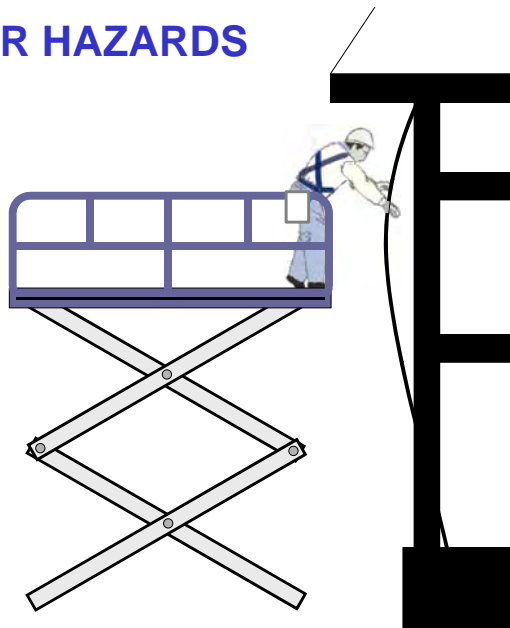
Do not place ladders or scaffolds in platform or against any part of the machine.



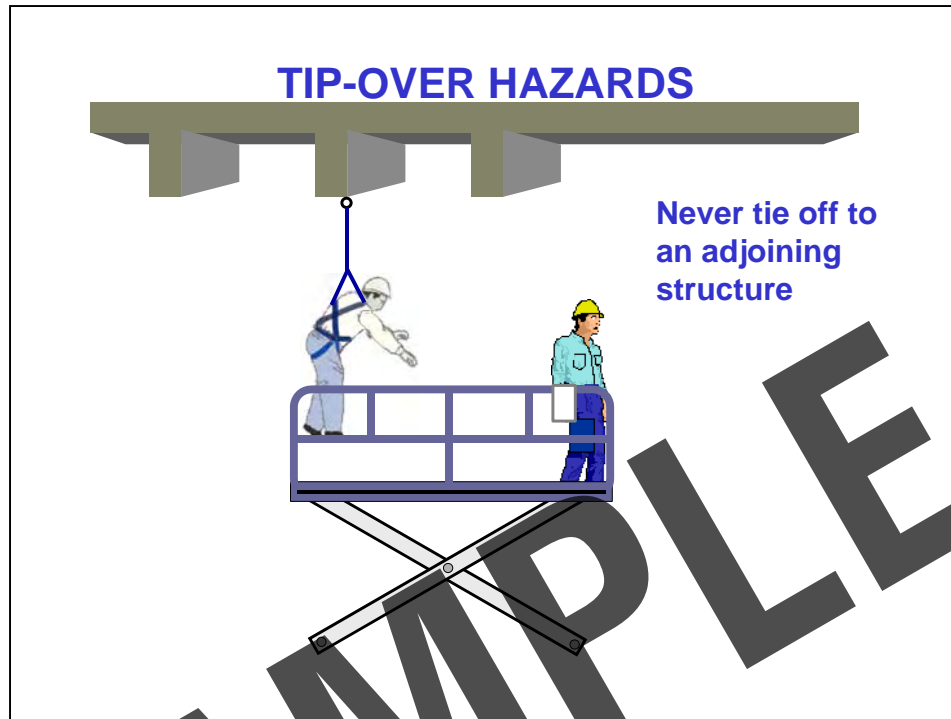
TIP-OVER HAZARDS

Do not push or pull any object outside of the platform.

Check the operator's manual for maximum side forces.



SAFE OPERATION

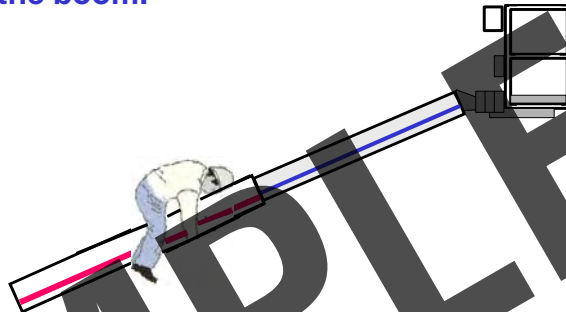


SAFE OPERATION

FALL HAZARDS

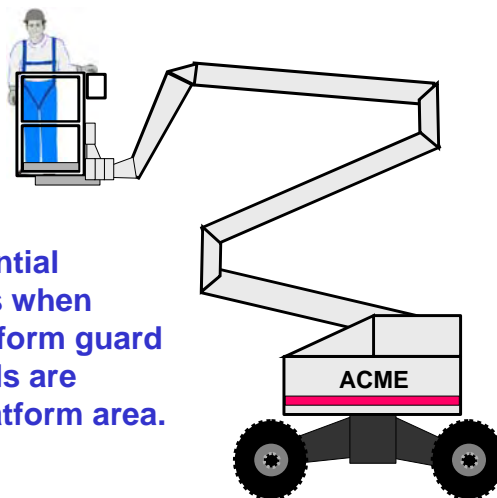
Do not climb down from the platform when raised.

Do not climb on the boom.



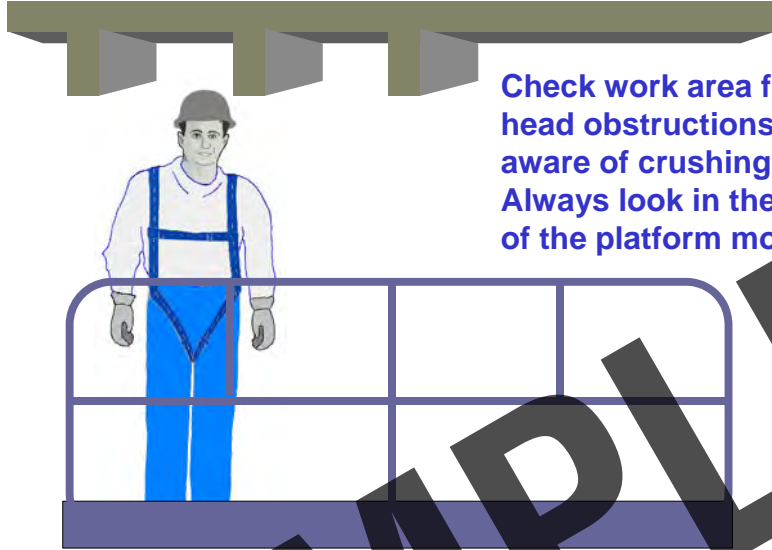
COLLISION HAZARDS

Be aware of potential crushing hazards when grasping the platform guard rail or when hands are outside of the platform area.



SAFE OPERATION

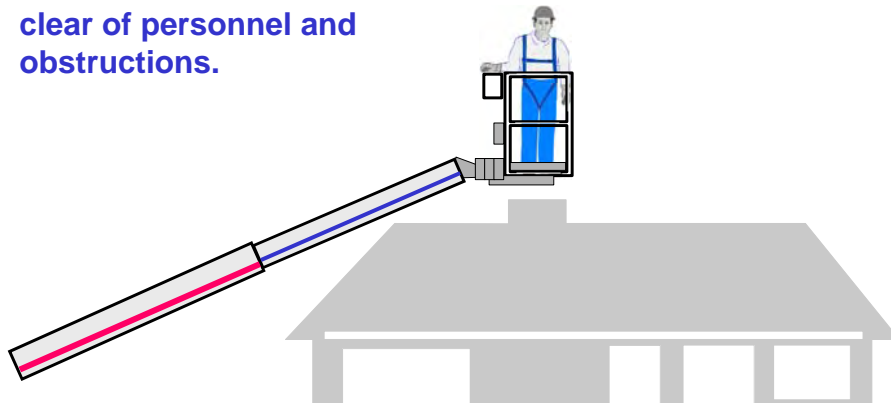
COLLISION HAZARDS



Check work area for overhead obstructions. Be aware of crushing hazards. Always look in the direction of the platform movement.

COLLISION HAZARDS

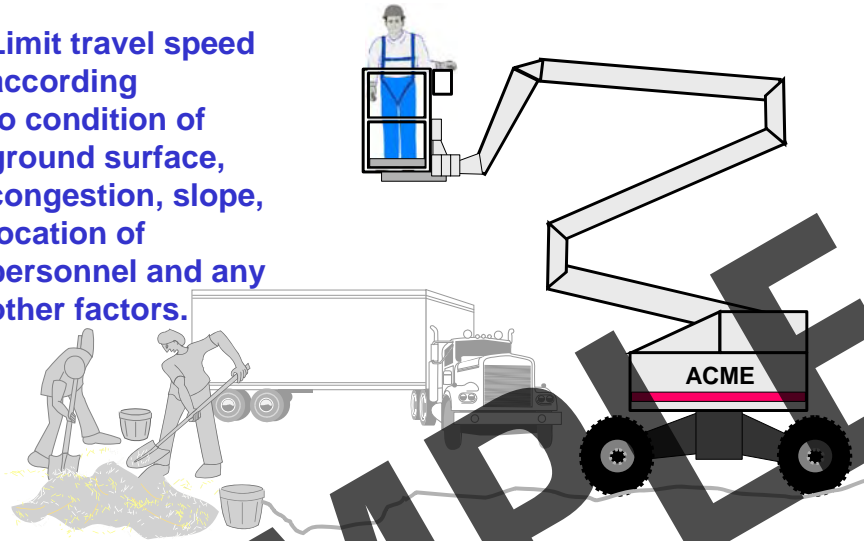
Do not lower the boom unless the area below is clear of personnel and obstructions.



SAFE OPERATION

COLLISION HAZARDS

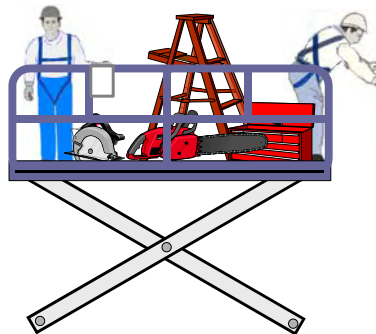
Limit travel speed according to condition of ground surface, congestion, slope, location of personnel and any other factors.



SAFE OPERATION

DON'T EXCEED THE MACHINE CAPACITY

- Know the rated load of the machine
- Maximum load includes:
 - Personnel
 - Materials
 - Tools
- Distribute the load evenly



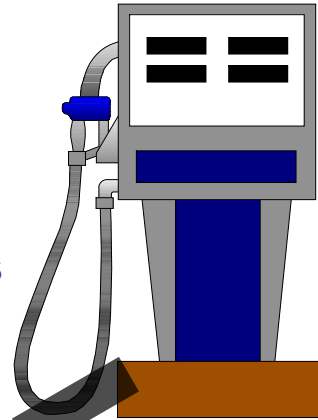
REFUELING

General Safety Rules

- Follow company policies
- Observe safety rules
- Be authorized and trained to refuel

Refueling Gasoline and Diesel Machines

- Start the shift with a full tank
- Refuel only when the engine is cool
- Refuel in designated areas only
- No smoking, sparks, or flame during refueling
- Know where the fire extinguishers are and how to use them
- Turn off machine
- Use the correct type of fuel
- Clean up spills
- Do not top-off the fuel tank



Liquid Propane Characteristics

- LP is heavier than air
- LP is extremely flammable
- LP is extremely cold
- LP is odorless in its natural state



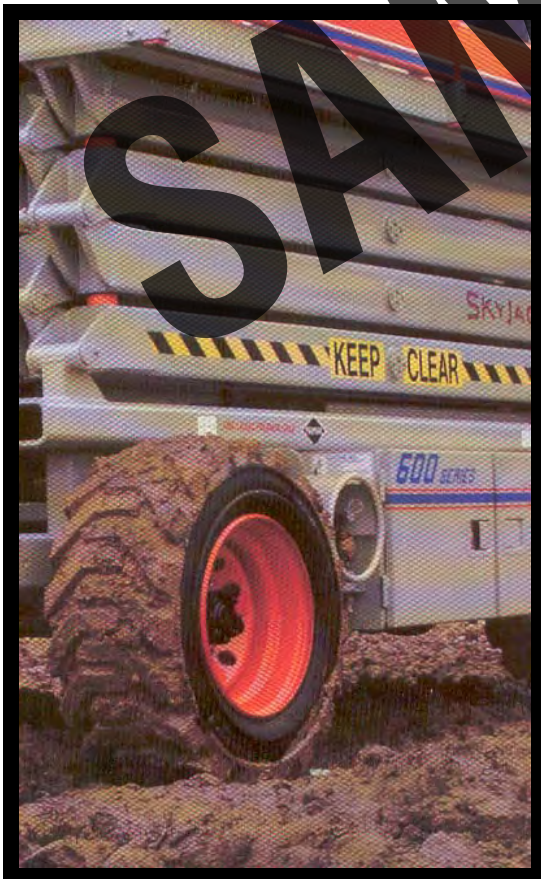
Liquid Propane Fueling Guidelines

- Do not refuel near confined area, elevator shafts or open pits
- Do not park the forklift or store fuel tank near:
 - High heat sources
 - Stairways
 - Exits
 - Areas for safe egress
- Turn off service valve if machine is parked for long periods of time
- Do not roll, drag, or strike LP tanks
- Turn off service valves on all empty containers

REFUELING

Replacing LP tanks

- Must be trained and authorized and follow company policy
- Wear protective clothing
- Replace tanks in designated areas
- Park the aerial platform and:
 - Turn off service valve
 - Let fuel run out of supply line
 - Attempt to restart engine
- Disconnect the fuel line and remove the LP tank
- Check new tank for damage
- Tank must be compatible and fit within the confines of the vehicle
- Place tank in proper position
- Secure the tank with bracket restraints
- Open the service valve slowly. Too fast will cause back pressure check valve to close
- Check for leaks with soapy solution



BATTERY CARE

Battery Size and its Effects

- Vehicle lifting capacity is directly affected the battery size
- Battery size effects vehicle stability
- Charge life
- Work cycle duration

What is an Industrial Battery?

- Six or more cells connected in series
- Each cell contains a group of positive and negative plates
- Cells are submerged in solution of sulfuric acid and water known as electrolyte
- Each cell when fully charged equals 2.14 volts
- The battery voltage equals the number of cells times two

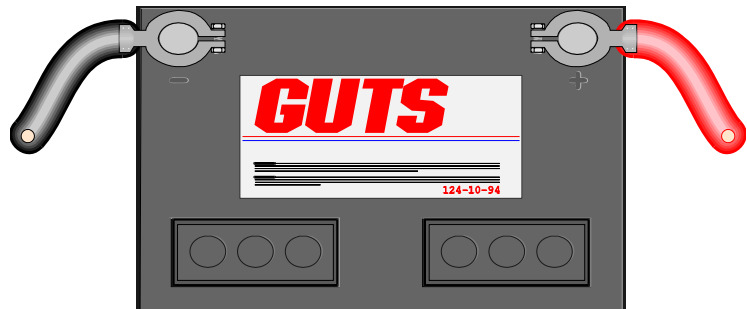
Battery Hazards

- Weight
- Acid
- Explosive fumes
- Electrical

If any body part becomes exposed to electrolyte, immediately flush the affected part at the nearest eye wash station for 15 minutes. Then seek medical attention.

General Safety Rules

- Follow company policy
- Observe safety rules
- Be trained and authorized



Changing Batteries

- Change in designated areas only
- Use proper equipment when changing batteries
- Cover top of exposed terminals with plywood
- Use a hoist with enough capacity to lift the battery
- Wear protective equipment, face shield, safety glasses, rubber gloves and apron

BATTERY CARE

Changing Batteries, cont.

- Clear route for removal of battery
- Install fully charged battery into the forklift
- Secure battery with restraint system and latch hood

Charging Batteries

- Park the forklift in the “unattended” mode
- Open battery compartment fully. This allows hydrogen gas to escape
- Connect battery to the compatible charger.
- Check cable and connectors for damage
- Charge battery per manufacturer’s instructions
- When complete, **turn off charger first**. If not done, a spark could be produced which may ignite the hydrogen gas released during the charging process.

Watering Batteries

- Always add water after charging
- Add water to a battery before charging **only if the separator plate is uncovered**. Then, only add enough water to cover plate.
- Use distilled or approved tap water
- Never attempt to add acid

BATTERY CARE

Insuring Maximum Battery Life

- Discharge to battery manufacturer's recommended level: usually 80%
- Battery life is typically 1,500 to 2,000 cycles
- A cycle is one complete discharge and one complete charge
- Avoid quick, opportunity charges
- Follow the 8-8-8 rule, run 8 hours, charge 8 hours, cool 8 hours
- Do not overcharge a battery. Overcharging can:
 - Creates high temperature
 - Causes boil over
- Undercharging a battery can:
 - Cause the plates to become brittle
 - Shortens battery life

SAMPLE