

# Tree Climbing Safety



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# Tree Climbing

Tree climbing/rope access permits skilled workers to safely and efficiently access elevated portions of trees that may not be otherwise accessible to conduct required work



# Tree Climbing

Tree climbing is physical and potentially hazardous

- Requires skilled, well-trained workers:
  - Understand and conform with OSHA and ANSI Z133.1
  - Ability to work safely and effectively in the tree
    - Industry safety practices
  - Inspect all equipment, the tree and site before climbing
  - Proper plan all work before tree entry and as work progresses
  - Conduct all work according to technically correct standards and practices



# Tree Climbing Safety

Too often, unqualified individuals use ropes to climb  
or

Experienced workers not trained or ignore safety practices

- Significantly increases risk to worker and public
- Results in injuries and sometimes fatalities
- Damages trees



# Tree Climbing Accidents

## Most common fall causes:

- Disconnect fall protection
- Cut fall protection
- No use of fall protection
- Failure of tie-in point



# Tree Climbing Safety

**Always follow safety requirements:**

- **Applicable laws and regulations (OSHA)**
- **ANSI Z133.1 standards**
- **Manufacturer's tool and equipment instructions**



# Inspection of Gear

Safety depends on proper equipment in good working condition -  
Personal Protective Equipment (PPE)

- Protective Clothing
- Head Protection
- Eye Protection
- Hearing Protection
- Leg Protection/Chaps
- Boots
- Gloves



# Inspection of Gear

## Fall protection equipment:

Inspect all equipment according to manufacturer's instructions

- By eye and feel





# Equipment Inspection

## “Field Modification”

- Modifications in structure, attachments or use not permitted  
Unless
- Certified in writing by the manufacturer or nationally recognized testing laboratory, to be in conformity with ANSI A92.2-1969 and as safe as before modification



# Rope Inspection

Fall protection and secures logs and equipment

- Synthetic fiber
- Minimum breaking strength of 5,400 lbs
- Minimum diameter of  $\frac{1}{2}$ " , but not less than  $\frac{7}{16}$ "
  - Manufactured for tree climbing



# Rope Inspection

Inspect for damage, defects and excessive wear:

- Retire if  $> 25\%$  braided &  $> 10\%$  3-strand
  - Cuts
  - Abrasion
  - Pulls
  - Glossy/glazed – 2X damage observed



# Rope Inspection

## Retire if observed

- Discoloration- brittle/stiff
- Inconsistent diameter – flat or bumps
- Inconsistent texture/stiffness – dirt embedded.



# Rope Inspection

- Rope ends finished to prevent unraveling
- Stored and transport to prevent damage
  - Sharp tools
  - Chemicals



# Arborist Saddle/Harness Inspection

- Must be specifically designed for tree climbing
- Inspect for damage, defects and excessive wear:
  - Retire if significant damage
    - Cuts in material
    - Stitching broken
    - Metal cracked or damaged
    - Grommets damaged/missing.



# Carabiner Inspection

- Self-closing and self-locking
- 5,000 lbs (22.24kN) minimum tensile strength
- At least 2 consecutive motions to prepare gate to open
- Inspect for damage, defects and excessive wear:
  - Retire if significant damage
    - Missing or altered parts
    - Nicks, cracks or breaks
    - Deformation/bends
    - Excessive wear
    - Corrosion or pits
    - Function
      - Opens and closes easily
      - Safety lock operates.



# Snap Inspection

- Self-closing and self-locking
- 5,000 lbs (22.24kN) minimum tensile strength
- Inspect for damage, defects and excessive wear:
  - Retire if significant damage
    - Missing or altered parts
    - Nicks, cracks or breaks
    - Deformation/bends
    - Excessive wear
    - Corrosion or pits
  - Function
    - Opens and closes easily
    - Safety lock operates.





# Work Position Lanyard Inspection

- Meets all standards for rope, snaps and carabiners
- Inspect for damage, defects and excessive wear:
  - Retire if significant damage
    - Rope inspection process and standards
    - Snap/carabiner inspection process and standards.



# Prusik Loops & Split Tails

Must meet minimum strength standard as climbing lines

Inspect for damage, defects and excessive wear:

- Retire if significant damage
- Rope inspection process and standards.



# Climbing Safety

## Always use fall protection

- When  $> 6$  feet off ground, secure fall protection
- Guide: do not lift feet off ground without fall protection



# Climbing Safety

**Never use fall protection equipment for other purposes**

- Lowering wood
- Pulling loads
- Permitted to raise and lower tools



# Climbing Safety

**Second person with emergency procedures training shall be present**

- **Above 12 feet off ground**
- **Within voice or visual range**



# Climbing Safety

## 3-point contact while climbing

- Feet, rope, hands
- Hands and feet should be on separate limbs, if possible



# Climbing Safety

## 3-point support while working

- Feet, rope, hands
- Maintain weight on rope(s)
- Maintain stability and control
  - Especially while cutting



# Climbing Safety

## Avoid long falls or uncontrolled swings

- Do not permit slack in climbing line to loop below feet
  - Permits  $> 5'$  fall
- Do not permit climbing line  $> 45$  degree angle





# Climbing Safety

Final tie-in as high and central as safe and practical

- Secure lanyard or redirects if extended to avoid swing
- Minimize uncontrolled swing if slip



# Climbing Safety

## Select strong, properly structured tie-in points

- Rope around primary stem, not lateral branch
- Support stem is at least 4 inches diameter
- Ensure no structural defects at tie-in point



# Climbing Safety

## Tie-in Selection

- Wide crotch for easy rope movement
- Avoid tie-in that permits swing into hazards (example = power lines)



# Climbing Safety

## Figure 8 at the end of the climbing line

- When at heights  $> \frac{1}{2}$  length of climbing line
- When using Blakes, tautline or other open climbing hitch



# Climbing Safety

## Split-tails

- Terminated with eye-splice or knot
- Remain secure under loading and unloading
- If without captive eye
  - Cinch in place to prevent carabiner opening or side-load



# Climbing Safety

**Always maintain at least 1 tie-in point at all times**

- **Always secure a second tie-in before disconnect primary fall protection**



# Climbing Safety

**Always maintain at least 2 tie-in points when cutting**

- **Required to possess at least 1 extra means to secure while working**
- **Tie-ins at separate locations**



# Climbing Safety

False crotch may be used if natural crotch not available/suitable

- Ensure false crotch secure
- Use proper knots, secured
- Only use climbing ropes/straps





# Climbing Safety

## Chain saw

- Must use chain saw lanyard
  - Long enough for saw to position below feet
- Operator stable and secure when cutting
- Chain brake on when not cutting
- 2 tie-in points whenever cutting, in case one is accidentally cut



# Climbing Safety

## Rigging rope confusion

- Potential to confuse with fall protection lines
- Rigging ropes clearly marked or different color.



**Use only qualified personnel**  
**Always conduct all inspections**  
**Consistently apply correct practices**



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