

FIREFIGHTER'S HANDBOOK

FIREFIGHTING & EMERGENCY RESPONSE

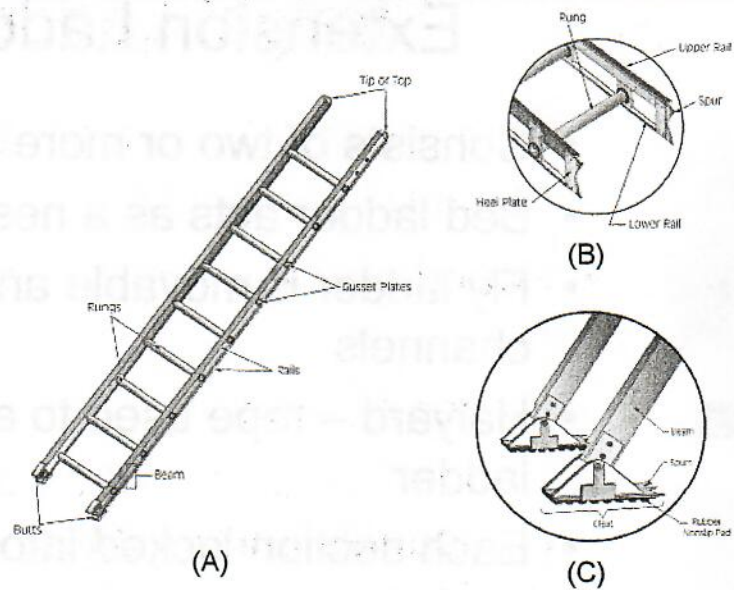


Figure 14-1 (A) Straight ladder terminology. (B) Steel spurs on a ladder of truss construction. (C) Swivel shoes with pads and spikes.

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Straight Ladder

- Also referred to as wall ladder
- Fixed length ladder
- Found in lengths between 12 and 20 feet
- Generally light
- Departments without ladder companies carry ladders on pumping engines



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Extension Ladder

- Consists of two or more ladders
- Bed ladder acts as a nest
- Fly ladder is movable and slides in channels
- Halyard – rope used to extend ladder
- Each section locked into place



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Roof or Hook Ladder

- A straight wall ladder with set of retractable hooks at the tip end
- Used on a sloped roof
- Can be used as a standard straight wall ladder
- Not designed to be used as a hanging ladder



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Folding Ladder

- Known by many names
- Available in lengths from 8 to 16 feet
- Provide access to attic spaces
- Very portable
- Used to remove occupants from elevator car



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A-Frame Combination Ladder

- 
- Combination ladder used in various configurations
 - Acts as a mini-extension ladder
 - When fully articulated and extended, can be a full fixed straight ladder
 - Can become a step ladder
 - Used in tight places

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Ladder Selection

- 
- Once target is identified, ask these questions:
 - What length of ladder is necessary?
 - What will be done with the ladder?
 - Will ladder be used at several locations?
 - Is a straight or extension ladder needed?
 - Some additional considerations:
 - Ground condition
 - Accessibility of location
 - Available personnel

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Butt Section

- If ground slopes, raising a ladder might be impossible
- 75 degrees is the proper climbing angle
- Placed directly under the target
- Butt should be carried in the direction of the target



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Safety

- 
- Equated with common sense
 - Use gloves
 - Use correct ladder
 - Overhead wires must be considered "live"
 - When moving on a ladder, firefighter should keep three limbs in contact

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Overhead Obstructions

- Carry injury potential:
 - Tree limbs, structural overhangs
 - Television and telephone wires
 - Overhead electrical lines

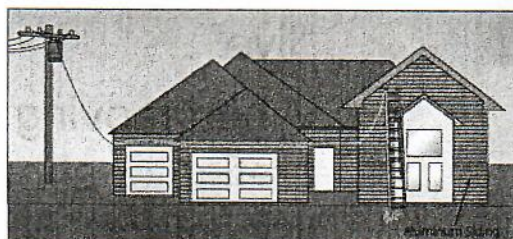


Figure 14-20 A ladder can make an electrical connection to ground.

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Ground Considerations

- Ladder must be stable, ground must be level
- Cannot create a dangerous lateral lean

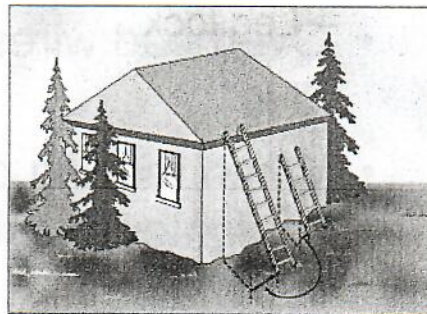


Figure 14-22 Uneven ground effect is magnified as the ladder increases in height.

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Working Off a Ladder

- Firefighter secured to ladder
 - Ladder belts
 - Safety harness
 - Leg lock



Figure 14-25 Leg lock.

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Carrying Ladders

- Several techniques used for carrying ladders:
 - Suitcase carry
 - Shoulder carry
 - Flat carry
- Single firefighter can carry a small ladder individually
- Many types of techniques used when dealing with a victim on a ladder



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Raising Ladders

- 
- Several considerations must be weighed:
 - Heel of ladder must be a calculated distance from building
 - Ideally, climbing angle should be about 75 degrees
 - Number of firefighters needed to raise a ladder will vary
 - Most situations call for two firefighters

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Rung and Beam Raises

- Two methods of raising a ladder:
 - Two-person rung raise
 - Two-person beam raise
- Raising an extension ladder:
 - Fly extension raise
 - Three-person raise
- Four-person ladder raise safer than three-person raise
 - One firefighter should never bring down a ladder



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Leg Lock

- Used to secure firefighter to ladder
- Both hands are needed to perform a task
- Ladder belt is not available
- Second alternate leg lock known as hyper-extended leg lock



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Carrying Tools

- 
- When carrying tools, security is sacrificed
 - Tools should be passed up to another firefighter first
 - Tools can be hung on an upper rung and climbed to
 - Tools can ride up the rails of an aerial ladder

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Aerial Ladder

- 
- Apparatus-mounted ladder capable of reaching heights of 100 feet
 - Various sections slide out from one another to produce greater reach
 - Ladder's reach achieved through use of cables and pulleys

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