



**LOUISVILLE.**  
**L A D D E R**

**STEP & EXTENSION LADDER  
SAFETY INSTRUCTIONS**

# STEP & EXTENSION LADDER SAFETY INSTRUCTIONS

## AN INTRODUCTION TO LADDER SAFETY

Each year, nearly 100 people are killed and 160,000 injured in ladder related incidents.

These tragedies can be avoided. The fact is, a ladder is one of the simplest most easy-to-use tools in existence. Common sense, combined with the application of the basic rules of ladder safety can prevent many ladder-related deaths and injuries.

The aim of this handbook is to teach you how to use a ladder properly and safely. You'll learn how to choose the right ladder for most jobs, how to spot a damaged ladder, how to properly set up a ladder, how to climb, and how to work safely while on a ladder. You'll also learn how to take care of and store your ladder to ensure that it provides years of service.

*LOUISVILLE LADDER'S NEW C.L.I.M.B. ACADEMY® IS A LADDER SAFETY PROGRAM DESIGNED TO TEACH SAFE LADDER PRACTICES. THE WORD C.L.I.M.B. MEANS:*

### **C: CHOOSE IT RIGHT. ALWAYS HAVE THE RIGHT LADDER FOR THE JOB.**

Ladders are manufactured for specific uses, which means, for example, a job that can be safely performed with a step ladder could become dangerous if an extension ladder is used instead.

You must evaluate the work environment and know what ladders are available before you can choose the right ladder for the job. Keep in mind all potential hazards. Does electricity pose a possible danger? Will the ladder be resting on an uneven surface? Is the area crowded with people and materials? Are there obstructions overhead?

In addition, you must keep in mind the physical requirements of the job. How much room will there be to position the ladder? How much weight (combining the user, tools, and materials) will be on the ladder? What length will the ladder need to be to safely perform the job? If conductivity is not important, then ladder weight may be a consideration when choosing a ladder. Aluminum ladders are the lightest, followed by fiberglass.

### **Types of Ladder**

Portable ladders are typically manufactured from aluminum or fiberglass. The portable-ladder classification includes self-supporting stepladders, single ladders, twin front ladders, extension trestle ladders, and extension ladders.



STEP



SINGLE



TWIN FRONT



EXTENSION TRESTLE



EXTENSION

You may have many, if not all, of these ladders at your workplace. You may also have ladders specially made for a specific purpose. Familiarize yourself with all of the ladders available to you. This will help you select the proper ladder for the job.

**Duty Rating**

A ladder's duty rating tells you its maximum weight capacity. There are five categories of duty ratings:

**Type IAA** – These ladders have a Load Capacity of 375 pounds. Type IAA ladders are recommended for extra heavy-duty use.

**Type IA** – These ladders have a Load Capacity of 300 pounds. Type IA ladders are recommended for extra heavy-duty use.

**Type I** – These ladders have a Load Capacity of

250 pounds. Type I ladders are manufactured for heavy-duty use.

**Type II** – These ladders have a Load Capacity of 225 pounds. Type II ladders are approved for medium-duty use.

**Type III** – These ladders have a Load Capacity of 200 pounds. Type III ladders are rated for light-duty use.



To figure out the total amount of weight a ladder will be supporting, add your weight plus the weight of your protective equipment, the weight of your tool belt and tools, plus the weight of the supplies you will be carrying up the ladder.



Never load a ladder with a weight in excess of its load capacity. Doing so could damage the ladder and cause injury.

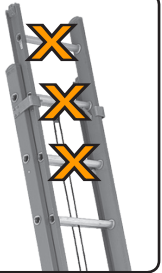
Use a towline to bring up tools and supplies.

Do not assume that a longer ladder has a higher load capacity. There is no relationship between length and load capacity. Before using any ladder, check its load capacity by looking at the sticker on the side of the ladder. If the sticker is missing, notify your supervisor.

**ANSI Requires a duty rating sticker be placed on the side of every ladder.**

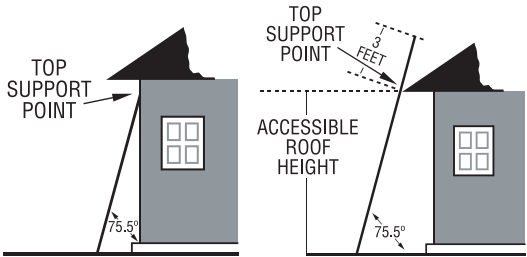


**Determining the right ladder length**  
To help ensure safety when using a ladder, do not use a ladder that is too long or too short. If you would need to stand on or above the first step below the top cap of a step ladder, or the third rung from the top of an extension ladder, it's too short. Your ladder is too long if ceiling height prohibits proper ladder set-up or more than 3 feet extends above upper support point.



Ladder labels are required by ANSI standards to list the highest standing level (see sample labels on p. 6).

Use these charts to determine the right ladder length for your job:



| STEP LADDER HEIGHT SELECTION GUIDE |                                | EXTENSION LADDER LENGTH SELECTION GUIDE  |                  |                     |                             |
|------------------------------------|--------------------------------|--|------------------|---------------------|-----------------------------|
| STEPLADDER SIZE                    | APPROX. HIGHEST STANDING LEVEL | LADDER SIZE  | MAX. EXT. LENGTH | *HT. TO TOP SUPPORT | **ACCESSIBLE ROOF HT. RANGE |
| 4'                                 | 1' 11"                         | 16'  | 13'              | 7 ½' – 12 ½'        | 4 ½' – 9 ½'                 |
| 5'                                 | 2' 10"                         | 20'  | 17'              | 9 ½' – 16 ½'        | 6 ½' – 13 ½'                |
| 6'                                 | 3' 9"                          | 24'  | 21'              | 11 ½' – 20'         | 8 ½' – 17'                  |
| 7'                                 | 4' 9"                          | 28'  | 25'              | 13 ½' – 24'         | 10 ½' – 21'                 |
| 8'                                 | 5' 8"                          | 32'  | 29'              | 15 ½' – 28'         | 12 ½' – 25'                 |
| 10'                                | 7' 7"                          | 36'  | 32'              | 17' – 31'           | 14' – 28'                   |
| 12'                                | 9' 6"                          | 40'  | 35'              | 19' – 33 ½'         | 16' – 30 ½'                 |
| 14'                                | 11' 5"                         | 44'  | 39'              | 21' – 33 ½'         | 18' – 34 ½'                 |
| 16'                                | 13' 4"                         | 48'  | 43'              | 23' – 41 ½'         | 20' – 38 ½'                 |
| 18'                                | 15' 3"                         | 60' <sup>(1)</sup>   | 48'              | 23' – 46 ½'         | 20' – 43 ½'                 |
| 20'                                | 17' 2"                         | * When set up at the proper 75.5° angle • <sup>(1)</sup> Three-section extension<br>** Allows for 3 feet extension above support point |                  |                     |                             |

According to the extension ladder length selection guide above, in order to access a roof 25 feet from the ground, the minimum ladder length required would be 32 feet.

Never over-extend an extension ladder. See the following chart for ANSI (American National Standards Institute) requirements. For minimum overlap requirements between each ladder section (base and each fly section).

| LADDER SIZE (FT.)   | OVERLAP (FT.)* |               |
|---|----------------|---------------|
|   | TYPE I & IA    | TYPE II & III |
| UP TO AND INCLUDING 32'   | 3'             | 3'            |
| OVER 32', UP TO AND INCLUDING 36'   | 4'             | 4'            |
| OVER 36', UP TO AND INCLUDING 48'   | 5'             | 5'            |
| OVER 48'  | 6'             | —             |
| * The tolerance on the overlap is ±2" for two-section ladders and ±3" for extension ladders other than two-section. |                |               |

Remember, you must never stand on or above the third rung from the top of an extension ladder, or the first step below the top cap of a stepladder.

**Choosing the Ladder Material**

Your choice of ladders is also influenced by the environment of your work site. For example, you must use a clean, dry fiberglass ladder if you are working near sources of electricity. That’s because metal ladders can easily conduct electricity to you, causing serious injury or death. Don’t forget that sweat, oil, paint, caulk, and grease can conduct electricity. Make certain your ladder is free of these substances and any other dirt or debris.

**L: LOOK FOR DAMAGED OR MISSING PARTS**

Always check for damage before using any ladder. Do not use a damaged ladder. Conduct your inspection before you leave for the job site.

- 1. Begin at the bottom, making sure the feet are not broken or malfunctioning and that the slip-resistant pads are secure.
- 2. Inspect the ladder for cracks, bends, and splits on side rails, rungs, and steps.
- 3. Check all rung/step-to-side rail connections, as well as hardware, fittings, and accessories. Make sure both rung locks are in working order.
- 4. Test the rope and pulley for smooth operation. Replace the rope if frayed or partially cut.
- 5. All pivotal connections and the rung-locks should be well-lubricated.
- 6. All bolts and rivets should be secure. Never use a ladder if any bolts or rivets are missing or if the joints between the steps (or rungs) and the side rails are not tight.
- 7. Make sure the ladder (particularly the steps and rungs) is free of foreign materials such as oil and grease.
- 8. If you’re using a stepladder, make sure the spreader braces are not bent, are secure and working properly.

Use a ladder-inspection chart as a guide for evaluating the safety of a ladder. Remember to inspect the ladder before you travel to the job site, because once you’re there you’ll be tempted to use the ladder regardless of its condition.

Always mark unsafe ladders by using a damaged-ladder tag (see sample illustration).

Be sure to store damaged ladders away from usable ladders. Have them repaired as soon as possible. Destroy unrepairable ladders immediately.

**TRANSPORTING A LADDER**

Accidents can happen while transporting the ladder to the job site. A ladder is long and awkward, and can cause injuries and property damage during transport. When possible, two people should carry an extension ladder. If you carry it yourself, keep the front end of the ladder slightly higher than the back end.

**Never move or reposition an extension ladder without completely retracting the fly section. Failure to do so can cause serious injury or death.**

Secure both ends of a ladder when transporting it on a vehicle. Use care when placing ladders onto or removing from ladder racks.

**DANGER**

**DAMAGED LADDER  
DO NOT USE**

INSPECTED BY \_\_\_\_\_

DATE        /       /

☐ Destroy & Dispose

☐ Repair \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**I: IMPLEMENT A SAFE SETUP ROUTINE**

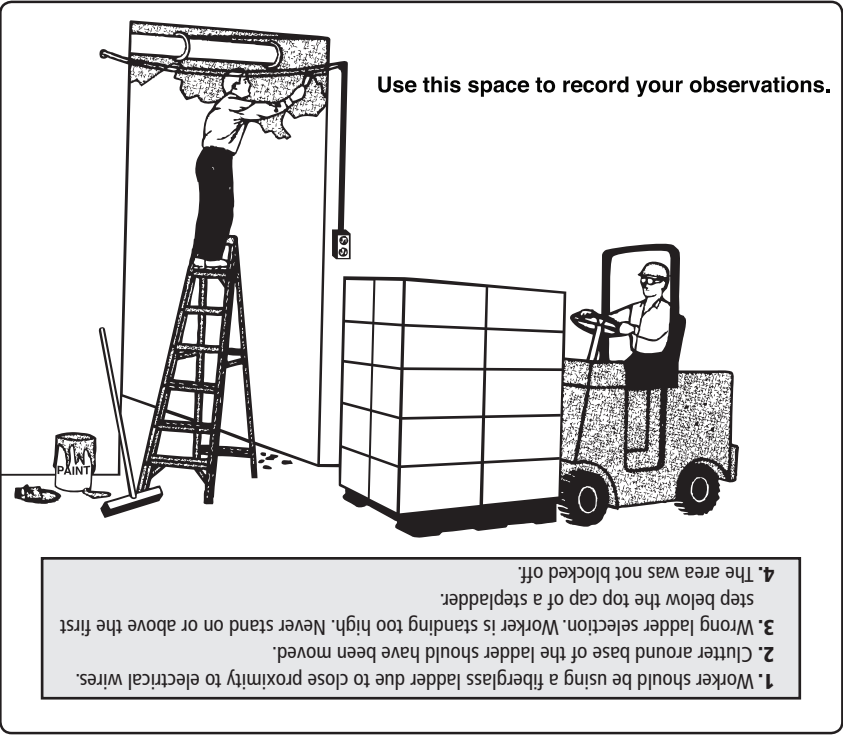
A major cause of falls from ladders is improper set-up. Many accidents can be avoided with common sense and good work practices. Using proper set-up techniques will give your ladder maximum stability and help ensure your safety.

**Preparing to Use a Ladder**

Your first step is to rid the area of hazards.

- Look above for any overhead wires or obstructions.
- Clear any clutter from the area around the base of the ladder.
- Block off the area around the ladder so people and equipment won't knock you off the ladder.
- If you're working close to a corner, put up a sign to warn people of your presence.
- If there's a door nearby, lock it, block it off, or station someone to watch it for you.

**Point out as many unsafe conditions as you can in the environment below.**



Use this space to record your observations.

1. Worker should be using a fiberglass ladder due to close proximity to electrical wires.
2. Clutter around base of the ladder should have been moved.
3. Wrong ladder selection. Worker is standing too high. Never stand on or above the first step below the top cap of a stepladder.
4. The area was not blocked off.

**Angle of Inclination**

Extension and single ladders should be erected at a pitch of approximately 75.5° from the horizontal support surface for optimum resistance to slide out of the ladder, and balance of the climber. To create the 75.5° angle, the ladder should be one foot away from the wall for every four feet of the ladder's length to the support point. This is known as the "one-quarter rule".

## Raising extension ladders



- 1** When setting up an extension ladder, first position it flat on the ground with the bottom of the ladder touching the base of the building and the base section on top.



- 2** Lift the ladder by "walking" it up with your hands, one rung at a time.



- 3** Pull the base of the ladder slightly away from the building. Lift the fly section and engage the rung locks.

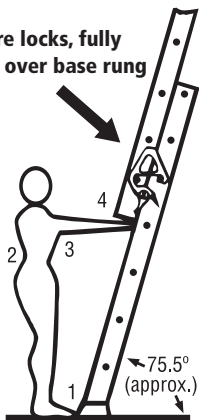
- 4** Bring the base of the ladder away from the building until it's at the proper 75.5° angle. The base of the ladder should be one foot away from the building for every four feet of the ladder's length to the support point. This puts the ladder in its strongest position.

Make sure the ladder shoes are correctly positioned.

Make certain the rung locks are fully engaged over the base rung.



**Secure locks, fully  
hook over base rung**



**Use this diagram as an additional reference to  
ensure proper ladder set-up angle.**

1. Place toes against bottom of ladder side rails.
2. Stand erect.
3. Extend arms straight out in front.
4. Palms of hands should touch top of rung at shoulder level.

## **Stepladders and other self-supporting ladders**



Position stepladders and other self-supporting ladders so that all four legs are on solid, level ground. Lock the spreaders in the fully open position.



Never use a self-supporting ladder as a single ladder.

## **Ladder Footing**

Ladders are safest when placed on a firm, level surface free of foreign materials such as ice, sawdust, sand, oil, etc. Ladder levelers should be used on single and extension ladders when used on uneven ground.

## **Top Support**

The top of an extension ladder should be placed with the two rails supported equally unless it is equipped with a single support attachment (i.e. pole grips, or extension ladder with ProTop™). When it is necessary to support the top of the ladder at a window opening, a stand-off accessory (i.e. fixed or adjustable stabilizer) should be attached across the back of the ladder, which extends across the window, to provide firm support against the building walls or window frames.

## **Side Loading**

Portable ladders are not designed for excessive side loading. Secure the ladder as described in the next section, keep it close to the work, and do not overreach.



## Securing the Ladder

The forces you apply while working on the ladder, and other forces caused by wind or other factors, can overcome the stability of the ladder and cause you to fall, resulting in serious injury or death.

Prevent an extension ladder from sideways movement and slide out by tying it off at the top and bottom. Make certain the structure you tie it to is strong enough to hold the ladder. Tie adjacent rungs of the fly and base sections together at the overlap or engage the Quicklatch® if your ladder has one. For maximum safety, have someone hold the ladder.

If you're climbing onto the roof, remember to extend the top of the ladder three feet beyond the roof line.

## **M: MOVE SAFELY AS YOU ASCEND AND DESCEND THE LADDER, USING THREE POINTS OF CONTACT AT ALL TIMES.**

Proper use of a ladder will contribute significantly to your safety.

Factors contributing to falls include haste, sudden movement, lack of attention during use, ladder condition (worn or damaged), the user's age or physical condition, or both, and the user's footwear.

The likelihood of a fall is not a function of the user's weight or size. However, improper climbing posture creating user clumsiness on the ladder may cause falls. Be sure to follow these guidelines for safety while climbing.

- Wear slip resistant shoes that are heavily soled to prevent foot fatigue.
- Clean your shoes to give them maximum traction.
- Keep your hands free when climbing. Heavier or awkward items should be raised by alternative means, such as pulling them up on a towline, placing them in your tool belt, or having them handed up to you.
- Always keep three parts of your body in contact with the ladder when climbing, holding on with either two hands and a foot or two feet and a hand.
- Always face the ladder as you climb, work or descend.
- Keep your belt buckle positioned between the rails and do not overreach or lean while working.
- Climb slowly and surely.
- If you're climbing onto a roof, do not step over the top of the ladder. Step sideways onto the roof.
- Avoid sudden movements during climbing and use. Be careful and deliberate in your actions.
- Do not try to move a ladder while on it.



## **AVOIDING HAZARDS**

- Read and follow all instruction labels on ladder. Failure to do so may cause serious injury or death.
- Completely retract the fly section of an extension ladder before moving or repositioning it.
- Do not use anything, such as boards or boxes, to give a ladder extra height.
- Only one person at a time should climb a ladder unless it is designed to support two people.
- Never use a ladder on scaffolding.
- Do not lean an extension ladder against boxes or any other unstable surface.
- Do not connect two ladders to each other.
- Do not use a ladder if you are fatigued, drowsy, dizzy, or have any physical condition which impairs your judgement or limits your ability to work safely.
- Never climb a ladder when under the influence of any drugs or alcohol.
- Never use a ladder for anything other than its stated purpose.
- Always face ladder when climbing and working.
- Never leave a ladder set-up unattended.
- Never allow children to climb a ladder.

## **CARING FOR A LADDER**

Properly caring for a ladder helps maximize its life span.

- Regularly clean and lubricate the ladder's moving parts. Clean the rungs and steps.
- Store an extension ladder by hanging it horizontally. Make sure it is supported every six feet.
- Keep ladders away from extreme heat or cold.
- Do not use a ladder as a storage shelf.
- When transporting a ladder on a vehicle, secure both ends. This will help prevent damage to the ladder.
- Keep dirt, dust, grease, grime, paint, caulk, carbon based substances, and other foreign matter off all ladders, particularly non-conductive ladders, as these substances can provide a path for electrical currents to travel over the surface of the ladder and endanger the user.

## **B: BE A SAFETY EXPERT – NOT A STATISTIC**

If you have any questions or comments, please contact Louisville Ladder at 1-800-666-2811.