

Prevention of falls in construction

Selection and safe use of portable ladders

June 2013

Background

Falls from ladders in the construction industry have resulted in a significant number of serious and fatal injuries, even when working at relatively low heights. You can eliminate or significantly reduce the risk of these incidents occurring by properly planning fall protection and providing the necessary supervision.

While ladders are often considered to be the first option when working at heights, they should only be used if safer alternatives such as scaffolding, elevated work platforms (EWP) or order pickers (commonly known as chariots) have been assessed first and are not reasonably practicable for the task.

The following information will help you determine whether a ladder is the right tool for the job, what you should look for when purchasing or selecting a ladder and how to safely use and maintain a ladder.

Is a ladder the right tool for the job?

Portable ladders are one of the least stable but most commonly used tools for working at heights. Unlike passive fall prevention devices (eg scaffolding, EWPs or guardrails), portable ladders typically require users to be more vigilant about the risk of falling when working at heights.

Before choosing to use a ladder, you must identify whether a ladder offers the highest level of protection that is reasonably practicable. This is performed by following the hierarchy of control for prevention of falls (below).

Starting at Level 1, determine if these controls are reasonably practicable, if not move on to Level 2 and so on down the hierarchy until you determine the highest level of control that is reasonably practicable for the task.

Employers must consult with employees when making decisions about risk controls.

Hierarchy of control measures for prevention of falls	
Level 1	Work from the ground or on a solid platform (eg use long handled tools, tool extension poles or relocate the task to the ground).
Level 2	Use a passive fall prevention device (eg EWP, scaffolding or guardrailing).
Level 3	Use a work positioning system (eg industrial rope access system or travel restraint system).
Level 4	Use a fall arrest system (eg industrial safety net, catch platform or safety harness system other than a travel restraint system).
Level 5	If the above measures are not reasonably practicable for the task, it may be appropriate to use a ladder, provided it is fit for purpose, appropriate for the duration of the task and set up in the correct manner.

Highest level of protection

Lowest level of protection

Level 5 - Risk control measures

Although not specifically listed in the hierarchy of control, WorkSafe considers order pickers, step platforms and ladders to be 'Level 5' risk control measures.

An order picker typically provides a higher level of fall protection than a step platform or ladder due to its robust and rigid design, and increased stability. Order pickers are generally only manoeuvrable on wheels. It is possible that some order pickers could be considered 'Level 2' risk control measures; however, this would be up to the manufacturer to confirm. To achieve 'Level 2' classification order pickers would, as a minimum, need

to comply with the stability requirements for minor scaffolds from AS/NZ 1576 –Scaffolding.

While step platforms and ladders are generally foldable and easily transportable, they provide less fall protection than order pickers. However, depending on the specific task and how it is carried out, they should provide an improved level of fall protection over traditional step or single ladders as they include a small working platform and a partial handrail.

New and practical alternatives to ladders are often introduced into the market. Ask your equipment supplier about new products and keep up to date with the latest information on preventing falls from height.

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Order picker (chariot, order picking work platform)



Step platform (platform stepladder, platform steps)



Ladders (stepladders, straight ladders, extension ladders)



Level 5 - Risk control measures

Things to consider before choosing to use a ladder

Before choosing to use a ladder, use the following checklist to determine if a ladder is fit for purpose. If you answer yes to any of the questions below, you may not be able to perform the task on a ladder.

The user

- Is the person who will undertake the work new to the task, still in training, or not trained at all?

The environment

- Is the weather wet or windy? If so, does the work need to be done now?
- Are the surfaces the ladder will rest on unstable or slippery?
- Are there any objects nearby (such as protruding reinforcing bars) that create an additional hazard?
- Is anything likely to hit the ladder when it's set up (such as ropes, cables, mobile plant, other workers, pedestrians or traffic)?
- Will the work be performed near a slab edge or penetration, or on a balcony that could increase the fall height? If so, the ladder should be placed far enough from the edge that the employee will not fall over the edge or handrail if the ladder topples.
- Is there anything else stopping the ladder from being set up safely and in the correct manner?

The task

- Will the job involve heavy, awkward or bulky loads to be handled while climbing the ladder or doing the task (eg installing air conditioners, solar panels, or plasterboard sheets)?
- Does the task require power tools or other equipment designed to be operated with two hands (eg hammer drills, circular saws or nail guns)?
- Will the job involve the use of tools such as stillsons, torque wrenches or pinchbars that require a high degree of leverage, thereby increasing the risk of a person overbalancing and falling?

- Does the task involve the use of tools that may recoil, such as nail guns?
- Will the task require working on a ladder for more than a couple of hours, thereby introducing a fatigue hazard?
- Will the task require someone to work outside of the ladder stiles and possibly over-reach?
- Does the person have to face away from the ladder when going up or down and/or while working on it?
- Is it anticipated that more than one person may use the same ladder at once?
- Will the user be unable to maintain 'three points of contact' whilst going up, down or working from the ladder? (refer to 'Using ladders safely' for further information)
- Does the task require personal protective equipment that may introduce additional risks (eg wearing a welding mask that restricts vision)?

The ladder

- Does the ladder show any signs of damage or faults (eg missing, cracked, broken, loose, worn or warped parts) or repairs that are not in accordance with the manufacturer's specifications?
- Could the combined weight of the person and the tools or materials required to do the job exceed the ladder capacity, thereby increasing the risk of a fall?
- Is the ladder too short to allow the person to stand on a rung at least 900mm from the top or on/below the second highest tread?
- Do you need to straddle the ladder to reach the task, thereby reducing stability?
- Will the job involve work near electricity such as powerlines, neon signs or live-wires? If so, is a metal ladder the only ladder available to work on in this situation? Such work should only be performed with a fibreglass ladder and 'no go zone' requirements should always be maintained.

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Working on ladders above and below two metres

Above two metres

When working in construction, if there is a risk of a person falling more than two metres, by law you must:

- follow the prescribed hierarchy of control when selecting fall control measures
- prepare and follow a safe work method statement (SWMS) as this work is defined as high risk construction work.

Two metres and below

Although you are not required to apply the hierarchy of control or prepare an SWMS* for work at heights of two metres or less, such falls may still result in serious or fatal injuries.

By law, employers must, so far as is reasonably practicable, provide and maintain for employees a working environment that is safe and without risks to health. This includes identifying hazards and implementing appropriate risk control measures.

The hierarchy of control may be of assistance to help ensure any fall control selected is the highest order of control that is reasonably practicable.

* An SWMS may be required for work on ladders at heights of two metres or below if other high risk construction work is performed on ladders or if there are adjacent hazards (eg working on or near live electrical installations, working near mobile plant or over water).

Using ladders safely

If no higher order means of control is reasonably practicable and you intend to use a ladder that is fit for the purpose, the following information outlines the necessary steps to ensure a ladder is used safely.

Training

Provide employees with adequate information and training to use ladders safely. Employees should only use a ladder if they:

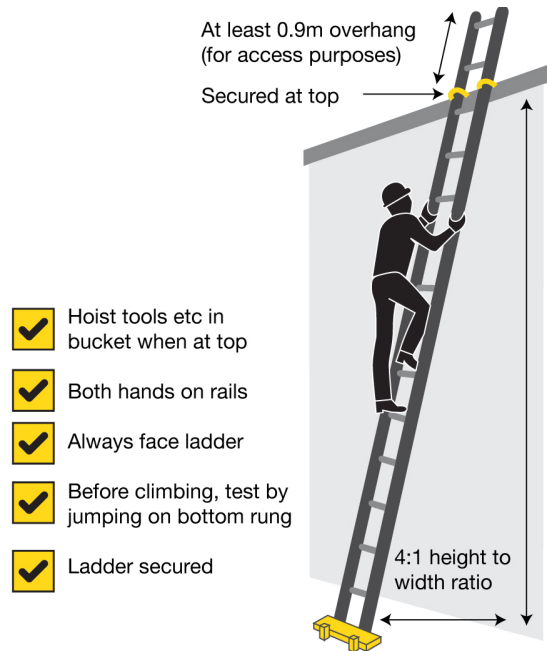
- are trained and instructed in how to set up, use and maintain a ladder
- are adequately supervised to ensure safe practices are followed (especially inexperienced and young workers).

Setting up a ladder safely

Before setting up a ladder, check for visible damage or defects. A ladder must be used on a solid and stable surface to prevent it from slipping or toppling over. Slipping or toppling can be prevented by:

- ensuring the ladder has non-slip feet
- placing single and extension ladders at a slope of four to one, and setting up stepladders in the fully opened position with the spreaders locked

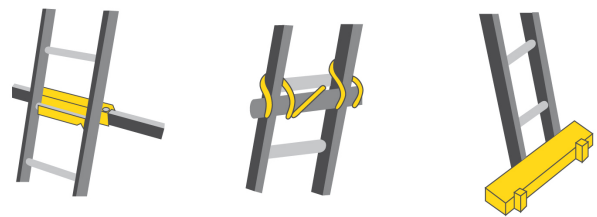
- securing single and extension ladders at both the top and bottom (stepladders may require a second person to 'foot' the ladder for added stability)



Example of correctly set-up straight ladder

- setting up the ladder in places where there is no chance of it being hit or knocked
- making sure the area surrounding the base of the ladder is clear of any hazards.

Never set-up a ladder on scaffolding, an EWP or stacked materials to gain additional height.



Some effective ways of securing the top and bottom rungs of straight ladders

Safe use of ladders

When using a ladder:

- always maintain 'three points of contact' while going up, down or working from a ladder:
 - when going up or down, always have two feet and one hand, or one foot and two hands on the ladder
 - when working from a ladder, have two feet and one other point of contact with the ladder, such as a hand or thighs leaning against the ladder

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- always have two hands free when climbing up and down (eg a tool belt can be used to free hands)
- do not over-reach. Over-reaching can lead to the ladder tipping sideways. Work with your belt buckle within the ladder stiles
- do not use tools that require a high degree of leverage, such as stillsons or pinch bars (may result in overbalancing or falling)
- do not use equipment or tools primarily designed to be used with two hands (eg hammer drills, circular saws, nail guns)
- make sure that no one works underneath the ladder
- do not allow anyone else to be on the ladder at the same time
- face the ladder when going up or down or when working from it
- always stand on a rung that is at least 900mm from the top of a single or extension ladder and on or below the second tread below the top plate of any stepladder
- never straddle a ladder.

A second person or a physical barrier (eg witches hats) may be necessary to ensure the ladder is not knocked by passing traffic or pedestrians. A second person may be required for assisting with the raising or lowering of plant or materials.



Never straddle or stand above the second tread below the top plate.

Ladder maintenance

Ladders should be regularly inspected and maintained by a competent person to make sure they are safe to use. Ladders with any of the following faults should be replaced or repaired before use:

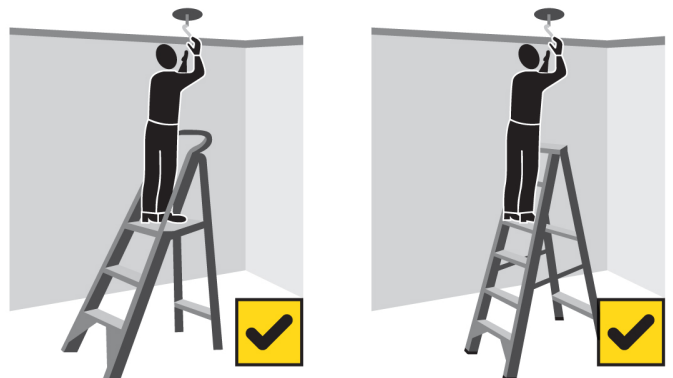
- rungs, steps, treads or top plates that are damaged, missing, or loose
- stiles/stringers that are damaged (warped, bent, crushed, cracked welds, damaged feet)
- tie rods that are missing, broken or loose
- ropes, braces or brackets that are missing, broken or worn
- timber ladders covered with opaque paint or other treatment that could disguise a fault in the timber.

Ladder repairs should be done in accordance with the manufacturer's recommendations. Ladders should not be painted because this could obscure essential safety information.

Acceptable uses

Provided a ladder is fit for the purpose, appropriate for the duration of the task and set up in the correct manner, it may be appropriate for light duty and short duration tasks where higher order controls are not reasonably practicable. You could use a ladder:

- as a means of access (eg getting to and from scaffolding or the roof of a small building or structure)
- when installing lightweight items or fixtures (eg fitting off a light fixture on a 3m high ceiling)
- when inspecting, assessing or undertaking minor maintenance on items or fixtures (eg servicing air-conditioning units, touching up paint work defects)
- while using lightweight, low torque or clutched power tools that are designed to be operated single handed (eg cordless drill).



Platform stepladder and a ladder used for work near a ceiling

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Purchasing ladders

Before purchasing a ladder, consult with employees, service personnel and any health and safety representatives (HSRs), and think about the task it will be used for to ensure you choose the right ladder.

When purchasing or hiring ladders for use in the construction industry the ladder should:

- comply with *AS/NZS 1892 – Portable Ladders*
- have a minimum 120kg safe working load rating
- be marked 'industrial grade' and of robust construction
- be a suitable type (eg non-conductive for electrical work)
- be a suitable size for the task.

Note: Trestle ladders do not conform to the requirements of AS 1892 and should never be used as a ladder.

Innovative industry solutions

Some contractors and builders have introduced unique initiatives to reduce the use of ladders on their sites, and to increase safety when ladders are used.



A variety of long handled tools can be sourced to avoid work at heights, ask your supplier (left - auto feed screw driver with extension barrel, right - plasterboard sander with vacuum extraction)

Reducing the use of ladders by:

- using long-handled tools to work from the ground. Care must be taken to ensure this does not introduce new risks such as hazardous manual handling.
- providing all employees with alternatives to ladders on site, such as modular scaffolding systems or order pickers
- introducing a ladder 'permit to use' system on sites to encourage employees to reduce unnecessary use of ladders where safer alternatives are reasonably practicable.

Increasing safety when using ladders by:

- backfilling around slabs and covering the earth with levelled crushed rock to provide a stable foundation to work off
- utilising ready-to-fit systems to quickly secure the top of a straight or extension ladder
- providing extended height railing around balcony zones and exposed edges.

Further information

Contact the WorkSafe Victoria Advisory Service on **1800 136 089** or go to **worksafe.vic.gov.au**

Related WorkSafe publications

Compliance Code: Prevention of falls in general construction
Compliance Code: Prevention of falls in housing construction

Other publications

Australian Standard, AS/NZS 1892 - Portable Ladders

Disclaimer: The information presented in this Guidance Note is intended for general use only. It should not be viewed as a definitive guide to the law or standard industry practice in this area. Whilst every effort has been made to ensure the accuracy and completeness of the Guidance Note, the advice contained herein may not apply in every circumstance. You should always check any applicable legislation and make your own judgement about what action you may need to take to ensure you have complied with the law. Accordingly, the Victorian WorkCover Authority cannot be held responsible and extends no warranties as to the suitability of the information for any particular purpose, or actions taken by third parties as a result of information contained in the Guidance Note.

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