
7. Ladders

Ladders are primarily a means of access and egress. Many falls take place when people are working from ladders. In addition, when using a ladder:

- the working width and movement is limited
- the time involved in moving and setting up ladders is often underestimated when planning work
- the working position on ladders is often uncomfortable (the need to stretch sideways, work above shoulder height and stand on narrow rungs for a long time) and may cause musculoskeletal disorders.

For these reasons, you should consider whether an elevating work platform or scaffolding would be safer and more efficient.

7.1 Portable ladders

Extension or single ladders should generally only be used as a means of access to or egress from a work area. They should only be used as a working platform for light work of short duration that can be carried out safely on the ladder.

Selecting ladders

If ladders are used they must be selected to suit the task to be undertaken. In doing this, you should consider the duration of the task, the physical surroundings of where the task is to be undertaken and the prevailing weather conditions.

Ladders should have a load rating of at least 120 kg and be manufactured for industrial use.

Positioning ladders

Any ladder used at a workplace must be set up on a solid and stable surface, and set up so as to prevent the ladder from slipping. Single and extension ladders can be prevented from slipping by:

- placing ladders at a slope of 4:1, and setting up stepladders in the fully opened position
- securing ladders at the top or bottom, or if necessary, at both ends (see Figure 27).

Figure 27

Some effective ways of securing a ladder.

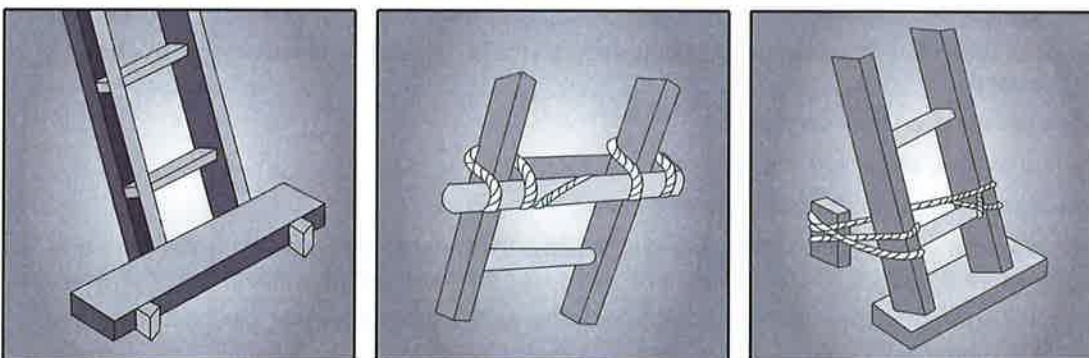
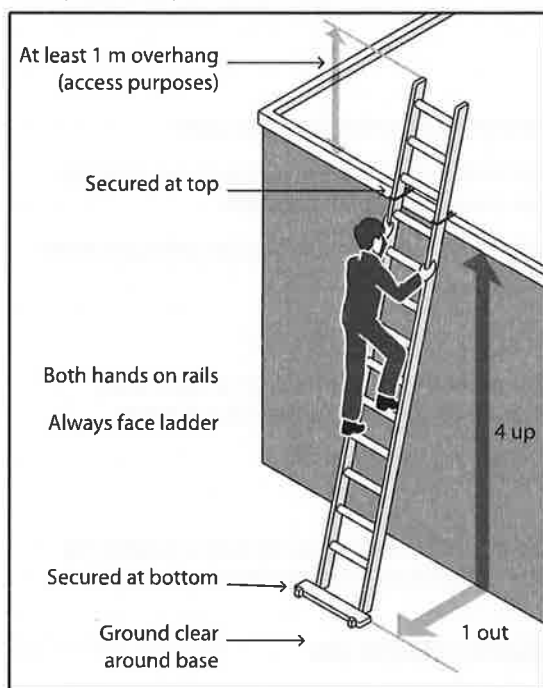


Figure 28

Example of acceptable ladder use.



Access or egress

Where fixed or extension ladders are used for access or egress, you should check that:

- there is a firm, stable work platform, free from obstructions, to step onto from the ladder
- the ladder extends at least one metre above the stepping-off point on the working platform
- fall protection is provided at the stepping-off point where people access the working platform.

Safe Use of Ladders

When a ladder is used, you should check that:

- the ladder is in good condition – the ladder should be inspected for faults, such as broken rungs, stiles and footing before it is used
- damaged ladders are removed from service
- the ladder is set up on firm, stable and level ground
- the ladder is the correct height for the task to avoid reaching or stretching
- the ladder is not too close or too far from the support structure – the distance between the ladder base and the supporting structure should be about one metre for every four metres of working ladder height (4:1 ratio)
- the ladder is secured against displacement (ie slipping or sliding) and/or there is another person holding the base of the ladder
- the ladder is not placed so that the weight of the ladder and any person using the ladder is supported by the rungs
- all the locking devices on the ladder are secure
- materials or tools are not carried while climbing the ladder – use a tool belt or side pouch
- only light duty work is undertaken while on the ladder, where three points of contact can be maintained and

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- tools can be operated safely with one hand
 - slip resistant base, rungs or steps are provided
 - slip resistant shoes are worn
 - ladders are not used without additional appropriate precautions:
 - in access areas or doorways – if necessary, erect a barrier or lock the door shut
 - on scaffolding or an elevating work platform to get extra height
 - next to power lines unless the worker is trained and authorised and the appropriate ladder is being used
 - in very wet or windy conditions
 - next to traffic areas, unless the working area is barricaded.

Figure 29

A step platform can provide a stable work surface.



When using ladders, it is not safe to:

- use metal or metal reinforced ladders when working on live electrical installations
- carry out work such as arc welding or oxy cutting
- work over other people
- allow anyone else to be on the ladder at the same time.

Except where additional and appropriate fall protection equipment is used in conjunction with the ladder, it is not safe to:

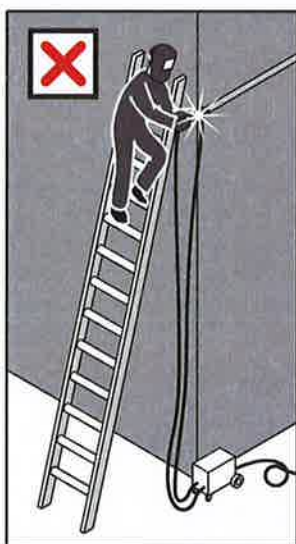
- use a stepladder near the edge of an open floor, penetration or beside any railing
- over-reach (the centre of the torso should be within the ladder stiles throughout the work)
- use any power or hand tool requiring two hands to operate, such as concrete cutting saws and circular saws
- use tools that require a high degree of leverage force which, if released, may cause the user to over-balance or fall from the ladder, such as pinch bars

- face away from the ladder when going up or down, or when working from it
- stand on a rung closer than 900 mm to the top of a single or extension ladder
- stand higher than the second tread below the top plate of any stepladder (with the exception of three-rung step ladders).

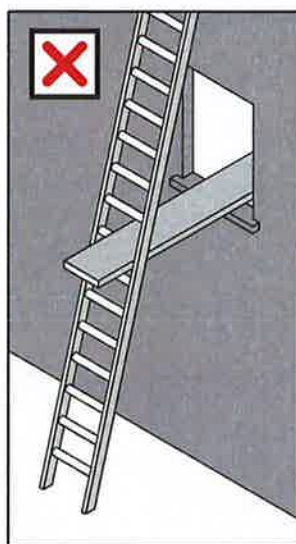
Guidance on the selection, safe use and care of portable ladders is set out in AS/NZS 1892 *Portable ladders series*. The manufacturer's recommendations on safe use should also be followed.

Figure 30

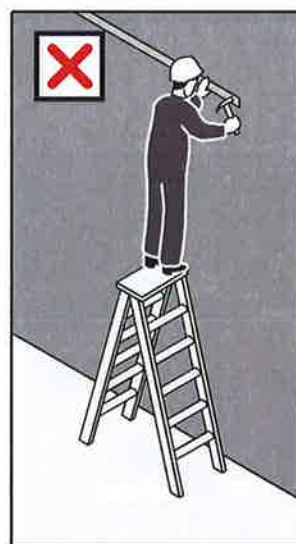
Examples of unsafe ladder use.



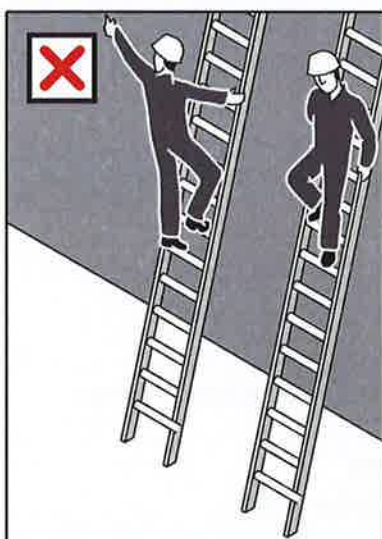
Performing hot work from ladder.



Ladder set up incorrectly.



Standing on top of stepladder.



Facing away from the ladder to descend; over-reaching.

7.2 Fixed ladders

Fixed ladders should be installed in accordance with AS 1657 *Fixed Platforms, Walkways, Stairways and Ladders – Design, Construction and Installation*.

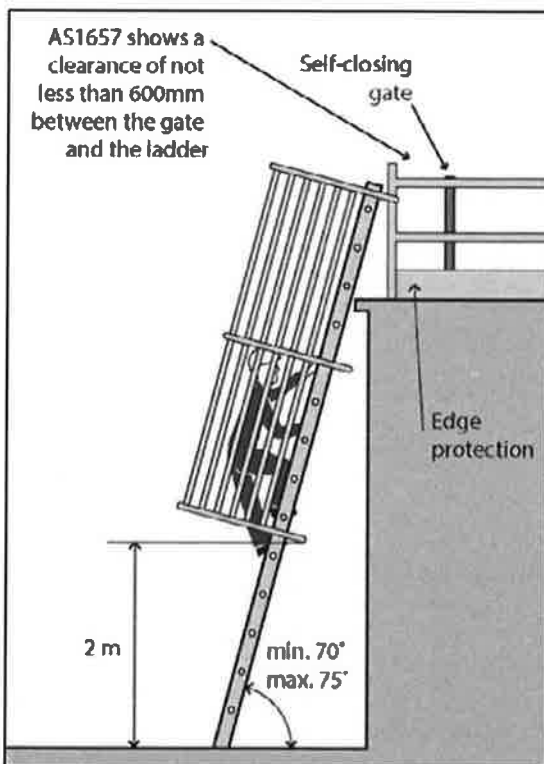
Ladder cages in fixed ladders do not stop a fall but simply funnel a fall and, in some cases, more injuries can occur from striking the protective backguards on the way down. The cages may also hinder rescues. Therefore, fixed ladders with angles exceeding 75 degrees to the horizontal should be fitted with a permanent or temporary fall-arrest system (anchorage lines or rails).

The angle of slope should not be less than 70 degrees to the horizontal and not greater than 75 degrees to the horizontal. **In no case should the ladder overhang the person climbing the ladder.** If the angle is more than 75 degrees, a safe system of work to prevent falls should be provided such as a permanent fall-arrest system or a full body harness with double arm lanyard.

A specifically designed rescue procedure should be developed for use in ladder cage situations. Training in rescue procedures should occur before using the fixed ladder.

Figure 31

Example of a fixed ladder fitted with a ladder cage.



7.3 Ladder maintenance

Ladders should be regularly inspected by a competent person in accordance with the manufacturer's recommendations. Ladders with any of the following faults must be replaced or repaired:

- fibreglass stiles cracked, chipped or severely faded with fibres exposed
- timber stiles warped, splintered, cracked or bruised
- metal stiles twisted, bent, kinked, crushed or with cracked welds or damaged feet
- rungs, steps, treads or top plates that are missing, worn, damaged or loose
- tie rods missing, broken or loose
- ropes, braces, or brackets that are missing, broken or worn
- timber members that are covered with opaque paint or other treatment that could disguise faults in the timber
- missing, loose, bent or worn fasteners, ie rivets, bolts and pins
- worn or damaged feet, including non-slip material.