



SAFE USE OF LADDERS AND STEPLADDERS

A third of all reported fall-from-height incidents in the UK involve ladders and stepladders, on average this accounts for **14 deaths** and **1200 major injuries** to workers each year. Many of these injuries are caused by inappropriate or incorrect use of the equipment. This guidance is to help you:

- know when to use a ladder;
- decide how to go about selecting the right sort of ladder for the particular job;
- understand how to use it;
- know how to look after it; and
- take sensible safety precautions.

When is a ladder the most suitable access equipment?

As a guide, **only** use a ladder or stepladder:

- in one position for a maximum of 30 minutes;
- for 'light work' - they are not suitable for strenuous or heavy work. If a task involves you carrying more than 10 kg (a bucket of something) up the ladder or steps it will need to be justified by a detailed manual handling assessment;
- where a handhold is available on the ladder or stepladder;
- where you can maintain three points of contact (hands and feet) at the working position;

On a **ladder** where you cannot maintain a handhold, other than for a brief period of time, other measures will be needed to prevent a fall or reduce the consequences of one. On **stepladders** where a handhold is not practicable you will need to consider whether it is safe to work or not.

Is it a safe place to use a ladder or stepladder?

As a guide, **only** use a ladder or stepladder:

- on firm ground or spread the load (e.g. use a board);
- on level ground - for **stepladders** refer to the manufacturer's instructions, for **ladders** the maximum safe ground slopes on a suitable surface (unless the manufacturer states otherwise) are as follows:
 - side slope 16° – but the rungs still need to be levelled
 - back slope 6° .
- on clean, solid surfaces (paving slabs, floors etc). These need to be clean (no oil, moss or leaf litter) and free of loose material (sand, packaging materials etc) so the feet can grip. Shiny floor surfaces can be slippery even without contamination;

Never stand ladders or stepladders on moveable objects, such as pallets, bricks, lift trucks, tower scaffolds, vans, stacks of paper or boxes etc. If the ladder or stepladder won't reach, you need to use a more suitable type of access equipment.

You should **only** use ladders or stepladders:

- where they will not be struck by vehicles, by protecting them with suitable barriers or cones;
- where they will not be pushed over by other hazards such as doors or windows, by securing doors (not fire exits) and windows where possible. If this is impractical, have a person standing guard at a doorway, or inform building occupants not to open windows until they are told it is safe to do so;

- where pedestrians are prevented from walking under them or near them, by using barriers, cones or, as a last resort, a person standing guard at the base.

Safety in use - ladders

On a ladder **do not**:

- overload it – you and anything you are carrying should not exceed the highest load stated on the ladder;
- overreach - keep your navel inside the stiles and both feet on the same rung throughout the task (see Figures 1a and 1b).
- rest ladders against weak upper surfaces e.g. glazing or plastic gutters. Use effective spreader bars instead (see Figure 2)
- don't use the top three rungs (see Figure 2);
- move the ladder while someone is using it;
- slide down the stiles.



Figure 1a Incorrect - overreaching and not maintaining three points of contact

Figure 1b Correct - user maintaining three points of contact

Figure 2 Stand-off device and working maximum height on a ladder

Do:

- make sure the ladder rungs are level. This can be judged by the naked eye. Ladders can be levelled using specially designed devices but not by using bits of brick or whatever else is at hand;
- check that the weather is suitable - do not ladders in strong or gusting winds;
- wear sensible footwear. Shoes should not have the soles hanging off, have long or dangling laces, or be thick with mud or other slippery contaminants. High heels are also unsuitable!
- check that you are fit. Certain medical conditions or medication, or a fear of heights, could mean that you shouldn't be working at height;
- extend a ladder while standing on the rungs;
- know how to tie a ladder properly.

You should also avoid holding items when climbing (for example by using tool belts). If you must carry something you must still have one free hand to grip the ladder. Remember the THREE POINTS OF CONTACT RULE – 2 hands and 1 foot or 2 feet and 1 hand **MUST BE** on the ladder at all times when climbing and descending.

Ladders must be erected at an angle of 75°. To judge the angle use the angle indicator marked on the stiles of some ladders or the 1 in 4 rule (1 unit out for every 4 units up, as shown in Figure 3);

Ladders used for access to another level must be tied and should extend at least 1 metre above the landing point to provide a secure handhold (see Figure 4).

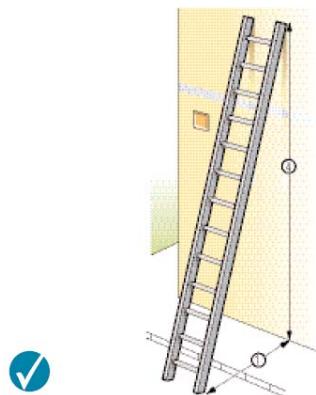


Figure 3 Ladder showing correct 1 in 4 angle NB
Method of securing is not shown.

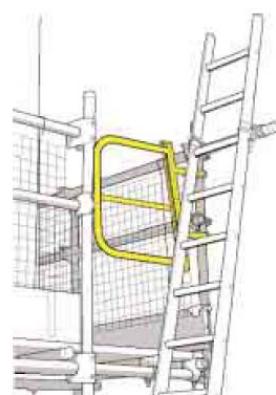


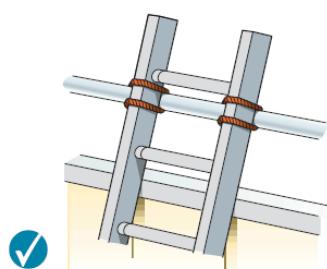
Figure 4 Access ladders tied and extending above
the landing point

Securing a ladder

To prevent the ladder slipping away from the wall, or slipping sideways, you must secure it. The options for securing a **ladder** are:

- tie the ladder to a suitable point, making sure both stiles are tied, see Figure 5;
- where this is not practical, use a safe, unsecured ladder or a ladder supplemented with an effective ladder stability device;
- if this is not possible, then securely wedge the ladder e.g. against a wall;
- if none of the above can be achieved, foot the ladder. Footing is the last resort and other methods of securing the ladder should be used in preference.

If you do have to foot a ladder, be aware that this will not stop a ladder slipping sideways at the top. Individuals footing ladders should apply weight downwards on the ladder by standing on a rung, or by pushing against the ladder stiles (although this is less effective).



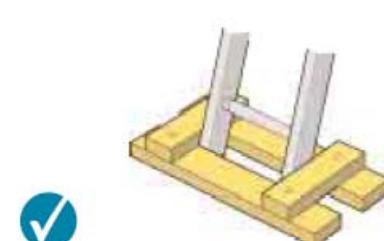
Ladder tied at the top stiles (correct for working on,
but not for access)



Tying part way down



Tying near the base



Securing at the base

Figure 5 Methods of securing ladders

Safety in use – stepladders

On a stepladder **do not**:

- overload it – you and anything you are carrying should not exceed the highest load stated on the stepladder;
- use it in locations where the restraint devices cannot be fully opened. Any locking devices must also be engaged;
- use the top two steps of a stepladder, unless a suitable handrail is available on the stepladder (see Figure 6a);
- don't use the top three steps of swing-back or double-sided stepladders, where a step forms the very top of the stepladder (see Figure 6b).



Figure 6a Correct – two clear rungs. Don't work any higher up this type of stepladder.

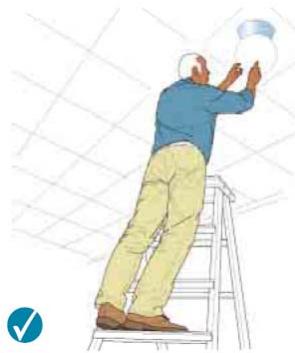


Figure 6b Correct - 3 clear rungs. Don't work any higher up this type of stepladder.

When using stepladders, avoid work that imposes a side loading, such as side-on drilling through solid materials (e.g. bricks or concrete), by having the steps facing the work activity (see Figures 7a and 7b). Where side-on loadings cannot be avoided you should prevent the steps from tipping over, for example by tying the steps to a suitable point, or you should use a more suitable type of access equipment.



Figure 7a Incorrect - steps side-on to work activity



Figure 7b Correct - steps facing work activity

Where you cannot maintain a handhold (e.g. putting a box on a shelf), the use of a stepladder will have to be justified by taking into account:

- the height of the task;
- a safe handhold still being available on the stepladder;
- whether it is light work ;
- whether it avoids side loading;
- whether it avoids overreaching
- whether your feet are fully supported; and
- whether you can tie the stepladder.

Consider tying a **stepladder** where possible and helpful to the task (e.g. side-on working or where two free hands are needed). Stepladders should not be used for access to another level unless they have been designed for this.

Is the ladder or stepladder safe to be used?

You must check that the ladder or stepladder is in a safe condition before using it (a daily pre-use check). As a guide, **only** use ladders or stepladders that:

- have no visible defects.
- have a current detailed visual inspection (look for an inspection label).
- are suitable for work use. Use Class 1 or EN 131 ladders or stepladders at work because domestic (Class 3) ones are not normally suitable for use at work;
- have been maintained and stored in accordance with the manufacturer's instructions.

Also, you must always use a non-conductive ladder or steps for any necessary live electrical work.

Pre-use checks

Look for obvious visual defects before using a ladder or stepladder. Check that:

- all the ladder feet are fitted;
- the feet are in good repair (not loose, missing, splitting, excessively worn, secure etc);
- the feet are clean - the feet should be in contact with the ground. Ladder feet should also be checked when moving from soft/dirty ground (e.g. dug soil, loose sand/stone, a dirty workshop) to a smooth, solid surface (e.g. paving slabs), to ensure the foot material and not the dirt (e.g. soil, embedded stones or swarf) is making contact with the ground;
- all the screws, bolts and hinges are secure;
- on a stepladder, that the "spreaders" on the ladder can be locked into place.
- There are no other obvious signs of damage such as cracks.

If you find a problem, DO NOT USE the ladder. It should be repaired (if practicable) or destroyed.

Storage

When storing ladders and stepladders, store them in a well ventilated area to prevent sagging and warping. Store straight ladders in flat racks or on wall brackets, don't hang them from the rungs. Store step ladders in the closed, vertical position.

The information in this Safety Note is based on the following sources of advice:

- HSE leaflet HeightSafe, available for download at <http://www.hse.gov.uk/pubs/heightsafeleaflet.pdf>
- HSE Safe Use of Ladders and Stepladders – an Employers Guide INDG 402
- HSE Toolbox talk on leaning ladder and stepladder safety INDG 403
- American web site from Maine Department of Labor
<http://www.ipsitech.org/dol/laddersafety/intro.htm>