

Safe use of ladders and stepladders

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Introduction

A third of all reported fall-from-height incidents 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 Rotherham M.B.C employees:

- 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.



HSE believes that misuse of ladders at work can be partly explained by the way they are used in the home.

As with all work equipment, users need adequate Information and training to be able to use ladders and stepladders safely. Adequate supervision is needed so that safe practices continue to be used.

This guidance does not apply to fixed ladders (on buildings, plant or vehicles), other types of fixed access (step irons etc), specialist rescue ladders, roof ladders, step stools, warehouse steps/mobile stairs, or temporary or permanent stairs.

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When is a ladder the most suitable access equipment?

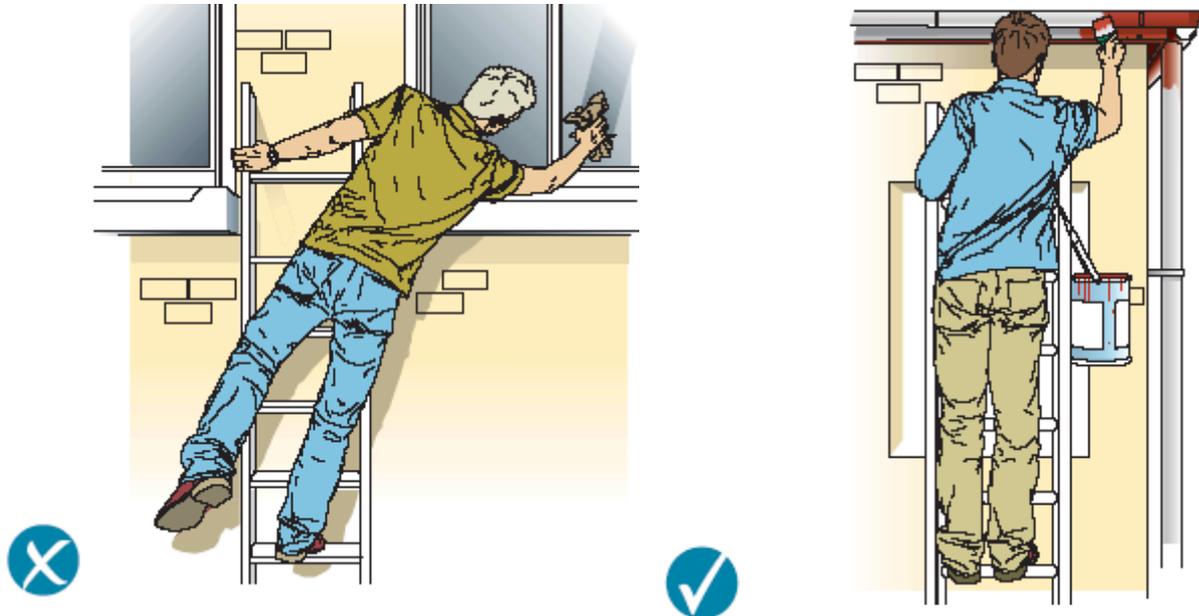


Figure 1a

Incorrect - overreaching and not maintaining three points of contact

Figure 1b *Correct - contact user maintaining three points of contact*

This selection process has to take into account the hierarchy of controls:

- firstly to avoid work at height where possible;
- then to prevent falls from height; and, failing that,
- to reduce the consequences of a fall.

Where work at height is necessary you need to justify whether a ladder or stepladder is the most suitable access equipment compared to other access equipment options. You do this by using risk assessment and the hierarchy of controls.

When considering whether it could be appropriate to use a ladder or stepladder, you need to consider the following factors.

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Is it a suitable activity?

This refers to the type of work and its duration. 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 a worker 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 a risk assessment will have to justify whether it is safe or not.

On a ladder or stepladder **do not**:

- overload it - the person and anything they are taking up should not exceed the highest load stated on the ladder;
- overreach - keep your belt buckle (navel) inside the stiles and both feet on the same rung throughout the task(see Figures 1a and 1b).

When working on **stepladders** you should avoid work that imposes a side loading, such as side-on drilling through solid materials (eg bricks or concrete), by having the steps facing the work activity (see Figures 2a and 2b).

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. Otherwise a more suitable type of access equipment should be used.

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Figure 2a **Incorrect** - steps side-on to work activity

Figure 2b **Correct** - steps facing work activity

You should also avoid holding items when climbing (for example by using tool belts):

- on a **ladder** where you must carry something you must have one free hand to grip the ladder;
- on a **stepladder** where you cannot maintain a handhold (eg 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 the user's feet are fully supported; and
 - whether you can tie the stepladder .

Selecting/buying safe ladders and stability devices

When buying a new ladder, think about the worst type of surface conditions you come across (eg smooth, wet floor tiles). Manufacturers should be able to indicate the types of surfaces their products are intended to be used on when they are unsecured (untied).

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Only buy the ladder and associated stability devices that suppliers/manufacturers can confirm will be stable enough to be used unsecured in your worst-case scenario, otherwise you will need to take additional measures to secure it.

HSE and DTI recommend Class 12,3 'Industrial' or EN1314 ladders or stepladders for use at work. Make sure the ladder is a suitable size for the work

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

This covers the specific place where you are going to set up and use it. As a guide, only use a ladder or stepladder:

- on firm ground or spread the load (eg 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 16o – but the rungs still need to be levelled (see Figure 3);
 - back slope 6o (see Figure 3);

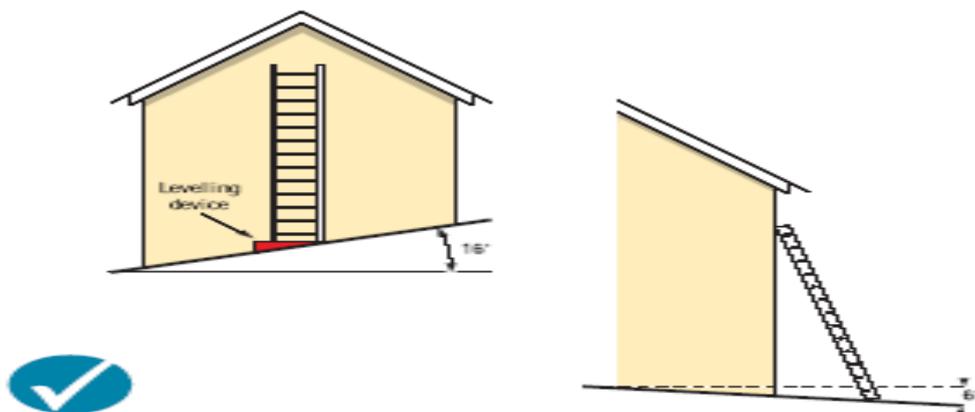


Figure 3 *Ladder showing maximum angles at 16o on a side slope and 6o on a back slope*

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;

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- where it has been secured.

The options for securing a ladder are as follows:

- tie the ladder to a suitable point, making sure both stiles are tied, see figures 4, 5, 6 and 7;
- 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, eg against a wall;
- if none of the above can be achieved, foot the ladder.

Footing is the last resort and should be avoided, where reasonably practicable, by the use of other access equipment.

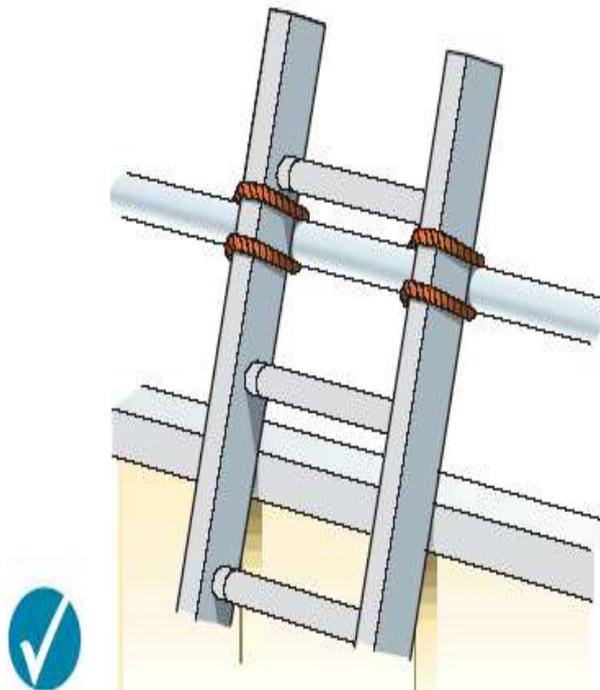


Figure 4 **Ladder tied at top stiles (correct for working on, not for access)**

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Figure 5 *Tying part way down*

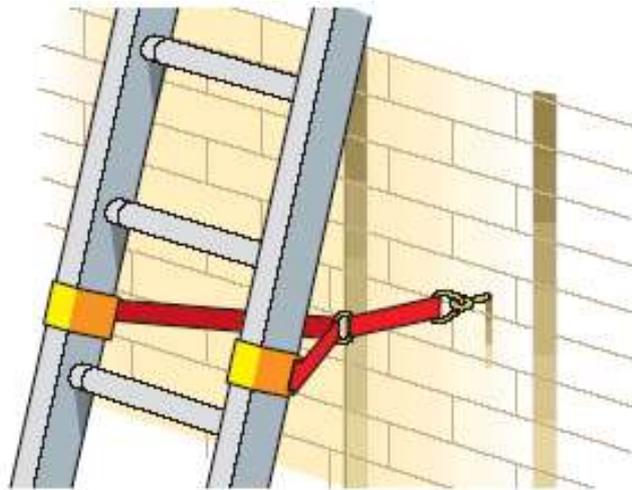


Figure 6 *Tying near the base*

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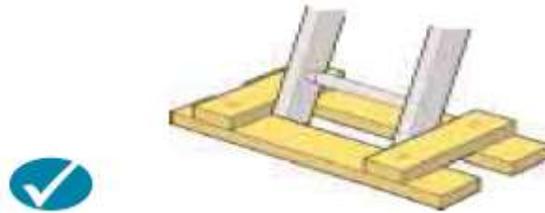


Figure 7 *Securing at the base*

Ladders used for access to another level should be tied (see Figure 8). Stepladders should not be used for access to another level unless they have been designed for this.



Figure 8 *Access ladders should be tied and extend at least 1 m above the landing point to provide a secure handhold*

Consider tying a **stepladder** where possible and advantageous to the task (eg side-on working or where two free hands are needed).

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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 workers not to open windows until they are told 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;
- where ladders can be put up at the correct angle of 75o.

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 10);

- where the restraint devices on stepladders can be fully opened. Any locking devices must also be engaged.

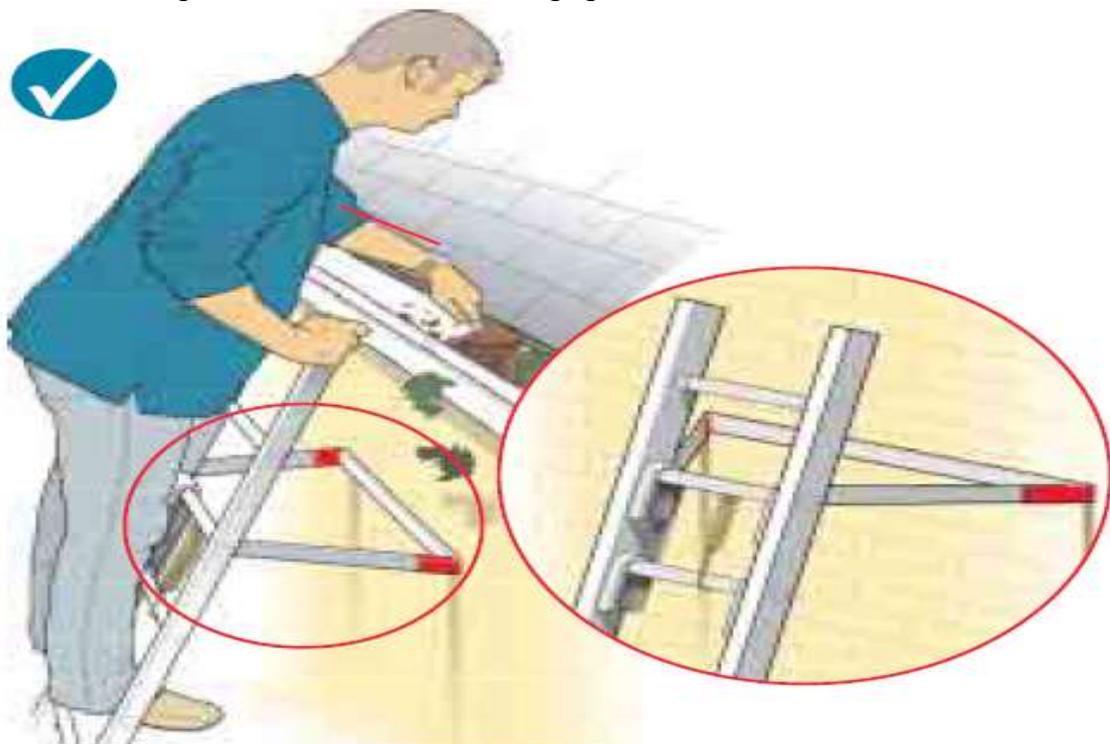


Figure 9 *Stand-off device and working maximum height on a ladder*

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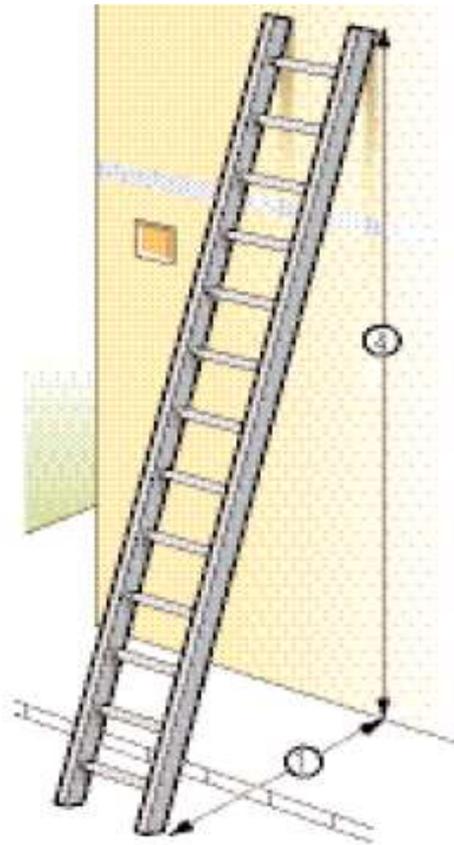


Figure 10 *Ladder showing correct 1 in 4 angle (means of securing omitted for clarity)*

Is the ladder or stepladder safe to be used?

Establish the ladder or stepladder is in a safe condition before using it. As a guide, only use ladders or stepladders that:

have no visible defects. They should have a pre-use check each working day;

have a current detailed visual inspection. These should be done in accordance with the manufacturer's instructions. Ladders that are part of a scaffold system still have to be inspected every seven days;

are suitable for work use. Use Class 12,3 or EN 1314 ladders or stepladders at work because domestic (Class 32,3) ones are not normally suitable for use at work;

have been maintained and stored in accordance with the manufacturer's instructions.

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What are pre-use checks and detailed visual inspections?

Both are looking for obvious visual defects, they only differ in detail. Both can be done in-house (pre-use checks should be part of a user’s training).

Detailed visual

inspections should be recorded. Ladder stability devices and other accessories should be pre-use checked and inspected in accordance with the manufacturer’s instructions. Ladder and stepladder feet must be part of the pre-use check.

Ladder feet are essential for preventing the base of the ladder slipping.

Missing stepladder feet cause it to wobble.

The feet should be:

in good repair (not loose, missing, splitting, excessively worn, secure etc); and

clean – the feet should be in contact with the ground.

Ladder feet should also be checked when moving from soft/dirty ground (eg dug soil, loose sand/stone, a dirty workshop) to a smooth, solid surface (eg paving slabs), to

ensure the foot material and not the dirt (eg soil, embedded stones or swarf) is making contact with the ground.

Do my ladder-users know how to use them safely?

These are common issues about setting up and using ladders under the direct control of the user. Users should also be aware of the limitations covered in the other headings.

People should only use a ladder, stepladder or stability device if:

they are competent - users should be trained and instructed to use the equipment safely;

the ladder or stepladder is long enough -

for ladders:

- don’t use the top three rungs (see Figure 9);
- ladders used for access should project at least 1 m above the landing point and be tied; alternatively a safe and secure handhold should be available (see Figure 8);

for stepladders:

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- don't use the top two steps of a stepladder, unless a suitable handrail is available on the stepladder (See Figure 11);
- 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 12);

■ the ladder or stepladder rungs or steps 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;

■ the weather is suitable - do not use them in strong or gusting winds (follow the manufacturer's safe working practices);



Figure 11 *Correct - two clear rungs. Don't work any higher up this type of stepladder*

they are wearing robust, sensible footwear (eg safety shoes/boots or trainers). Shoes should not have the soles hanging off, have long or dangling laces, or be thick with mud or other slippery contaminants;

■ they know how to prevent members of the public and other workers from using them;

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- they are fit - certain medical conditions or medication, alcohol or drug abuse could stop them from using ladders. If you are in any doubt, speak to an occupational health professional;
- they know how to tie a ladder or stepladder property.

On a ladder or stepladder, don't:

- move them while standing on the rungs/steps;
- support them by the rungs or steps at the base;
- slide down the stiles;
- stand them on moveable objects, such as pallets, bricks, lift trucks, tower scaffolds, excavator buckets, vans, or mobile elevating work platforms;
- extend a ladder while standing on the rungs.

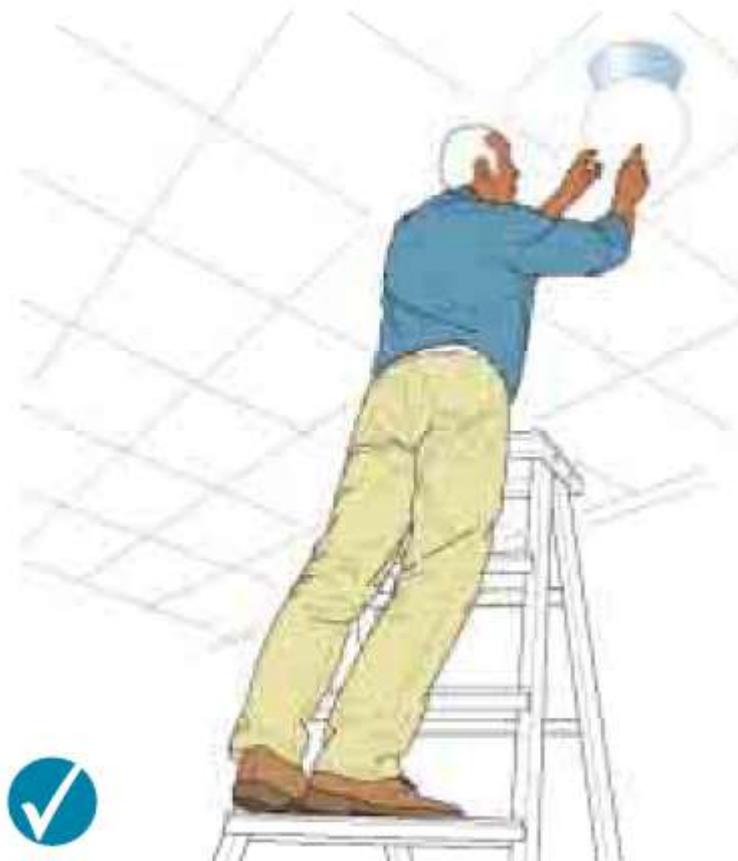


Figure 12 **Correct - three clear steps. Don't work any higher up this type of stepladder**

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Also See **HS71 Working at Height Regs 2005**
 HS 72 The Safe Use of Access Equipment
 HS74 A toolbox talk on leaning ladders and stepladder
safety

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