April 2020

Safe Use of Ladders and other Access Equipment

Occupational Health and Safety Service
HSD012P (rev 6)

UNIVERSITY OF CAMBRIDGE

CONTENTS

This guidance has been produced to help meet the requirements of the relevant statutory instruments, the Work at Height Regulations 2005 and the Health and Safety at Work Act.

LADDER: "*A portable framework of wood, metal, rope etc., in the form of two long parallel members connected by several parallel rungs or steps fixed to them at right angles, for climbing up or down".*
Collins English Dictionary 5th edition.

Revision History

Date	Revision	Summary of changes
April 2020	6	Insertion of new ladder standard chart. Insertion of frequency requirements for ladder inspections. Other minor word changes throughout the document.

1. GENERAL INTRODUCTION

1.1 Along with slips, trips and falls on the flat, falls from height are amongst the most frequently occurring types of accident. Nearly half of all deaths in the construction industry are in this category. Understandably, the Health and Safety Executive (HSE) are concerned about this high incidence, and the Work at Height Regulations came into force on the 6th April 2005 following a lengthy consultation period.

1.2 Analysis of such accidents in construction revealed that more than half of such accidents occur because ladders or steps are not securely placed or fixed and most happen when the work is of less than 30 minutes duration.

1.3 Other causes of accidents associated with ladders in particular were found to include climbing while carrying loads, over-reaching and over-balancing. The growth in DIY and the increase in home-based ladder accidents is hardly coincidence. The Royal Society for the Prevention of Accidents (RoSPA) has a good database of accident records in the home.

1.4 Accidents in agriculture, in particular around farm buildings and in falls from vehicles, is another area where falls from height is a significant issue.

1.5 A ladder is primarily a means of gaining access to a workplace. However, it can become a working place in its own right. Therefore, it is essential to choose not only the right ladder for the job but also to consider if some other form of height-gaining equipment might be more appropriate. A properly erected tower scaffold of lightweight aluminium is often a safer and more effective alternative.

1.6 Various types of ladders and steps, towers and trestles are used around the University, in offices, libraries and laboratories as well as for fieldwork, grounds and building maintenance. In most cases basic instruction and training is enough to ensure the equipment is used safely. If training is needed, please consult the Occupational Health and Safety Service website where suitable training is available.

1.7 All ladders, steps, trestles and towers are ‘work equipment’ as defined in the Provision and Use of Work Equipment Regulations (PUWER), which states that all equipment supplied must be safe, fit for purpose and regularly inspected by a competent person. Risk assessments must therefore be carried out in compliance with the Management of Health and Safety at Work Regulations (MHSWR).

1.8 The Work at Height hierarchy is to avoid work at height if possible; if not, then to use appropriate equipment to prevent falls and then to minimise the consequences of any fall by the use of control measures.

2. DEFINITIONS OF HEIGHT, LADDERS AND OTHER ACCESS EQUIPMENT

2.1 A place is “at height” if a person could be injured falling from it, even if it is at, or below, ground level (WAHR 2005).

2.2. Ladders can be made of wood, fibreglass or metal. They may be extendable and are commonly used for tasks requiring simple access, including accessing roofs, ascending trees or descending into drains and excavations.

2.3 Step ladders are short range, free-standing access equipment made of wood, metal or fibreglass. Step stools are metal, spring loaded step ups (sometimes known as kick stools).

2.4 Free-standing access towers are usually made of aluminium tubes (BS 1139) which clip together, along with outrigger legs for additional support. These items should be assembled in accordance with the manufacturer’s instructions. Some units may have lockable wheels for ease of movement on site. These towers MUST NEVER be moved with someone on the tower.

2.5 Trestle scaffolds (BS EN 131) are intended for light work of short duration. They consist of two or more trestles (either folding or telescopic) and supporting boards or staging to form a working platform. In addition, there is a huge range of self-assembly, lightweight aluminium trestles, bandstands and pulpit type access equipment now on the market.

2.6 Mobile Extending Working Platforms (MEWP), sometimes called cherry pickers (BS 7171), are specifically designed for safe access to height and can be used to get into awkward places. Often these are self-propelled and can come complete with trained operatives. Use of these rigs must comply with the Lifting Operations and Lifting Equipment Regulations (LOLER).

2.7 Scaffolding and system scaffolding is best left to scaffolding contractors who are familiar with current legislation and have competent operatives.

STANDARDS THAT APPLY TO LADDERS

BS EN 131 (the UK’s version of EN 131), the single British & European product standard covering all types of portable ladders (step, extending and combination), has been substantially revised. The changes will help to improve the safety of ladders and make buying the right ladder much simpler.

So, the British Standards, BS 2037 and BS 1129 (often referred to as Class 1 and Class 3 ladders) have now been amended to remove conflicting products.
The chart below explains the new standards and what standards they have replaced.

Please note that the old domestic grade 3 or EN 131 Non-Professional Ladders are not usually acceptable in the workplace unless specific risk assessments are undertaken.

3 SELECTION OF LADDERS AND ACCESS EQUIPMENT

3.1 When selecting a ladder, or any other work equipment, due regard must be given to the intended use, prevailing conditions and the person(s) that might be making use of it. A risk assessment of the work **must** be carried out and a safe system of work devised demonstrating that the use of more suitable equipment is not justified by the low risk and short duration of the specific task.

3.2 Jobs involving heavy items or work such as demolitions or tree cutting should not be done from ladders. A thorough risk assessment will identify when a portable tower or mobile platform is more appropriate.

3.3 Particular care should be taken if the equipment is to be used where chemical contamination could occur or where the environment is particularly hostile; for example, metal ladders used in chemical work or if radiochemical contamination might occur.

3.4 For very high access, a risk assessment must be undertaken to determine whether a ladder is the most appropriate way of tackling the job. Alternatives must be considered along with the possible use of fall arrest equipment. Please note that if fall arrest equipment is to be used then an emergency rescue plan needs to be devised and practised before the work commences.

3.5 Wooden or fibreglass ladders (non-conducting) must be used if there is any likelihood of electric shock. Moving mobile towers around, or their component parts, can present a risk if carried near to overhead power supplies.

3.6 Advice on the appropriate ladder for the job can be obtained from the manufacturer who has an obligation to supply this information under the Provision and Use of Work Equipment Regulations (PUWER).
HSE Leaflet L22 (Safe Use of Work Equipment) also gives useful information.

4 INSPECTION AND CONTROL OF ACCESS EQUIPMENT

4.1 Ladder inspections are a legal requirement and must be undertaken by a competent person. Anyone attending the University of Cambridge Safety Office 'Safe Use of Ladders and Step Ladders' training course would be classed as competent to carry out such inspections.

4.2 All ladders should be tagged/identified and a record of individual ladder inspections should be kept. The frequency of ladder inspections is as follows:

Internal Ladders	Every 12 months
External Ladders	Every 6 months
Construction Site Ladders	Every 3 months

4.3 Having evidence of the legal inspections does not take away the requirement for user inspections every time the ladders are used. You may well have no idea what that equipment was used for previously, or what it might have had done to it, prior to you wanting to use it. This should apply to any access equipment you use as you may be putting your life at risk. See checklist on page 6.

4.4 Any defects must be reported and the item removed from service WITH an appropriate sticker or label stating why it must not be used. All ladders should carry their own ID. If the ladder is beyond repair, it may be necessary to cut it in half before disposal to prevent others from using it by mistake.

4.5 The Work at Height Regulations (WAHR) and the Management of Health and Safety at Work Regulations (MHSWR) require a risk assessment and a safe system of work. In addition, the Provision and Use of Work Equipment Regulations (PUWER) stipulate that equipment must be fit for purpose and must be regularly inspected by a competent person. Management and control are essential.

4.6 Owners (departments, contractors or owners of hired items) of any portable access equipment used in the University must ensure these items have a regular inspection by

a competent nominated person. This person is required to keep a register of such inspections.

4.7 To avoid vandalism, or damage caused by weathering, suitable secure storage should be provided for access equipment when not in use. Storage should be away from traffic, if possible, to prevent accidental damage to the ladder from being hit by a vehicle.

4.8 If the access equipment is required to be left in situ overnight, security measures must be taken to prevent unauthorised use. The equipment must be thoroughly checked before use the following day.

4.9 Never leave a ladder in situ whilst you are not present i.e. break times etc., especially if accessible by the public.

4.10 Painted wooden ladders must be treated as suspect. Painting hides defects such as rot and cracks. Thoroughly check such ladders before use and if in any doubt dispose of the ladder and replace with a new one.

CHECKING A LADDER, OR STEPS, AND TESTING FOR SOUNDNESS

'Any equipment used in the workplace must be safe and fit for purpose'.

1. On wooden ladders, check stiles for tightness, splits, cracks, rot and warping. On metal or fibreglass ladders, check for distortion, denting or corrosion. (Stiles are the long parallel uprights to which the rungs or steps attach.)

2. Check that all hardware, wires, ropes, hinges and other fittings are in good condition and secure. All ladders should display the relevant BS number and rating along with their own ID number for management control.

3. Check rungs for signs of undue wear. They should be clean and tight.

4. No rungs should be missing. Reinforcing bars should be present and undamaged.

5. Check that the feet of timber ladders are not split or frayed and that the rubber feet on aluminium and fibreglass ladders are fitted and not worn.

6. Check that step ladders and extending ladders can be worked smoothly, that any bearings are lubricated, and that all fittings are secure, especially locking devices. Hinges must not be loose; nor should any rivets on aluminium ladders be missing.

Note: The legal requirements for the construction, maintenance and use of ladders can be found in the Construction, Design and Management (CDM) Regulations 2015.

Never load test ladders. Non-destructive testing can be carried out as follows:

- Try to pull the stiles apart or push them together at the ends of the ladder.
- Attempt to rotate any round rungs.
- Any movable parts should be checked for ease of movement and visible signs of wear.
- Tap wooden rungs with a mallet – faulty rungs give a dull hollow sound.

5. CORRECT USE OF LADDERS AND OTHER ACCESS EQUIPMENT

5.1 The need to use access equipment of significant height requires a risk assessment and a safe system of work. Training must be given to staff unfamiliar with the equipment.

5.2 Any item of access equipment needs firm level ground of sufficient strength and composition to support the load. Sometimes with the free-standing towers some alterations to leg length can be made to cope with any discrepancy between levels, but then it is essential that the outrigger supports must be used to provide extra stability. This may be useful when working in raked lecture theatres for example.

TOWERS

5.3 NEVER move a tower scaffold with people on it. Towers should be secured top and bottom, if practicable, and assembled correctly in accordance with the manufacturer's specification. Some manufacturers provide initial training after purchase.

5.4 NEVER throw things down (or up) from any tower, trestle or ladder. Ensure that kick boards are fitted to towers to prevent tools being kicked off onto any passers-by. Objects falling from height is an element of the Work at Height Regulations and must be controlled.

LADDERS

5.5 Ladders must be seated on a firm level surface and should never be packed up on other material to gain extra height, although a leaning ladder can be levelled using wedges. For example, ladders should never be put onto desks, tables or chairs. Ladders must always be supported on the stiles and never balanced on the rungs, and planks should not be put onto ladder rungs to create a working platform.

5.6 Footing alone is not adequate, nor effective, for ladders over 5 metres high. If there is no other reasonably practicable mode of access then you must secure the top and bottom of the ladder so that it cannot move. Consider carefully whether a ladder is really the right tool for the job in this case during risk assessment.

5.7 Note any labels indicating the front (face) of the ladder and ensure the ladder is the right way up. Check the angle of the feet.

5.8 Ladders used as a means of access to a roof or as a working platform should rise at least 1.1 metres above the level of the highest rung being used to provide a handhold. The loading height can be used only when additional secure handholds are provided.

5.9 Roof ladders, or cat ladders, must only be used in accordance with manufacturers' instructions.

5.10 Tops of ladders must be supported on a firm surface. Plastic guttering may move during the work and render the ladder unstable. Ladder stays or spreader arms for working over windows and voids should be used.

5.11 Don't lean out or 'bounce' a ladder.

5.12 When moving large ladders or other awkward items of access equipment, the task must be risk assessed and carried out in compliance with the Manual Handling Operations Regulations.

5.13 Only one person should be up a ladder at any time. Someone else can foot the ladder for added security.

5.14 Work requiring the use of two hands should not be done from a ladder unless there is another form of support (safety harness), although short excursions are allowed. Both hands should be used when climbing. Tools should be raised in a bag once you have reached your position. The bandstand or pulpit type mini tower is more suitable for any work requiring the use of both hands. The use of a tool belt is recommended for carrying small hand tools up the ladder to the point of use.

STEPS

5.15 Check that all restraining cords on step ladders and trestles are fully extended, are not frayed or worn and that they are the same length.

5.16 Steps must face the work. Placing the steps sideways on increases the risk of overbalancing. Likewise, do not lean sideways when up on steps nor use the topmost rung or stage.

5.17 Steps must have all four feet firmly on the ground; otherwise, distortion occurs and possible equipment failure.

5.18 Step stools and library platforms that have spring loaded feet must be regularly serviced. Otherwise, they may fail to bottom if the springs have jammed and the steps can then move during use.

OTHERS

5.19 Ensure that the base of any access equipment is protected from accidental impact from pedestrians or vehicles by the use of barriers or cones.

5.20 Take account of the weather, as changes in light or wind and conditions such as rain can seriously alter the risk assessment of the job to be completed.

5.21 Always wear appropriate footwear. This means that shoes are physically attached to the foot by a strap or lace. Slippers, sandals, flip flops or bare feet are not adequate; likewise, wet or muddy boots increase the risk of an accident.

5.22 Whenever access equipment is used as a working platform for overhead work or access to a roof, wearing a hard hat is recommended. Indeed, in most building or construction work this is mandatory.

5.23 Objects falling from a height can create a high risk for anyone passing by or working underneath. Prevention of the likelihood of items falling down and/or complete segregation of the immediate area underneath are essential. (Regulation 10/11 of WAHR)

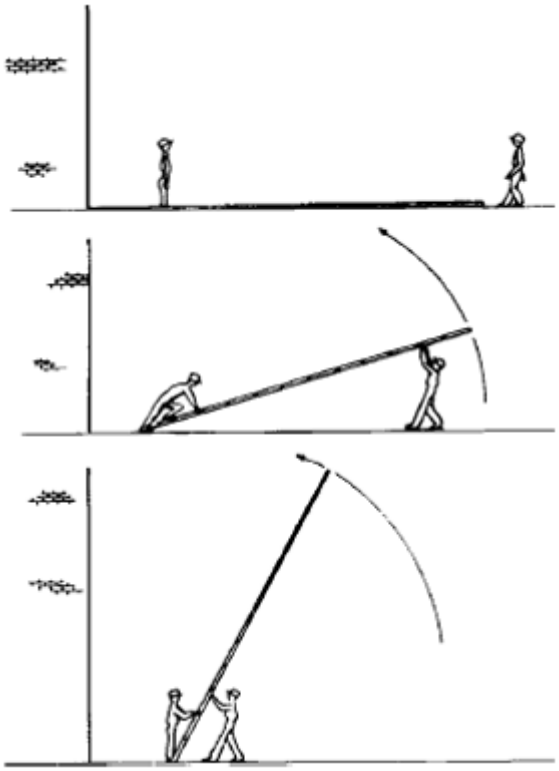
ERECTING AND LOWERING LADDERS

The procedure for erecting a ladder, when the ladder is flat on the ground, is as follows.

One person stands on the bottom rung, while the other takes position at the head of the ladder and takes hold of the top rung, raising the ladder off the ground.

Then, rung by rung, that person moves towards the foot of the ladder, lifting as they go. The person at the foot grasps the lower rungs as soon as possible and draws the ladder towards them, steadying it at the same time.

The sequence is reversed when lowering.



Short ladders may be raised by one person placing the foot of the ladder against a wall or fixture and pushing the ladder upwards, starting at the top, walking, under-running and raising the ladder as they go.

EXTENSION LADDERS

Extension ladders are raised one section at a time and slotted into position. The minimum recommended overlap on extension ladders is as follows:

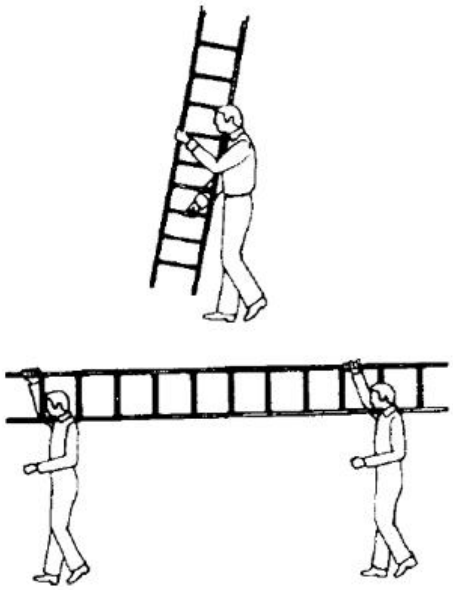
Closed length	Approx. number of rungs	Overlap of rungs
Under 5m	Under 3	2
5 – 6 m	3 – 23	3
Over 6 m	Over 23	4

Latching hooks must be properly engaged.

Ordinary ladders must never be lashed, tied or spliced together to try and make an extension ladder.

CARRYING A LADDER

A short ladder may be carried comfortably by having it vertical against the shoulder and holding one of the lower rungs, using the other hand to hold the stile. Longer ladders should be carried horizontally by two people. Care should be taken when negotiating corners and obstacles.



6. SUMMARY

Working with ladders and other access equipment can be a hazardous operation, but the risks can be minimised by raising awareness, having competent staff and using the precautions identified in this guidance note.

This Code of Practice will be reviewed on a regular basis to take account of changing working practices, technical and scientific knowledge and changes to legislation.

Ladders are not banned by the HSE.

APPENDIX 1 USE OF LADDERS CHECKLIST

1. Have you selected the correct type of equipment for the job to be undertaken?
2. If a ladder is selected – Is it long enough? (4-1 rule)
3. Is the ladder clean i.e. clear of mud or grease?
4. Have you checked the ladder for defects? (See checklist on page 6)
5. Is the ground under the ladder firm, level and free from obstacles?
6. Can the ladder rest against a solid surface?
7. Is the ladder the correct way up and the right way round?
8. Have you secured the ladder properly?
9. On step ladders and trestles, are any restraining cords fully extended?
10. Are you wearing suitable footwear and do you need a hard hat?
11. How are you going to get tools up and down so that you have both hands free?
12. If you have to use both hands for the job, are there any restraints or harnesses available?
13. Is there someone available to foot the ladder or help to pass tools?
14. Are the weather and light suitable for working from a ladder?

APPENDIX 2 MANAGEMENT OF ACCESS EQUIPMENT ACTION PLAN

1. Are you fit for the job?

2. Assess whether using a ladder is the most appropriate tool for that particular job.
   Is it safe and fit for purpose?
   Can you substitute?
   Should you substitute?
   Can a ladder be secured properly?

3. Where are all YOUR ladders and steps?
   Check and log them.
   Identify them with numbers and permitted usage.
   How are they stored?
   Are they secure?

4. Can you (or a delegated person) monitor and manage ladder use?
   Authorise in writing and record.
   Generate a policy and procedure.

5. Institute a system of regular inspections and keep records of purchases, use, repairs and inspection dates.

6. Pass on relevant information to your team.
   Tool box talks on safety first.
   Right tool for the job.
   4-1 rule with ladders.
   Securing ladders.
   Do you need help?

7. Risk assess your (or your team's) ability to work safely at height.

8. What is your emergency plan? If an accident does happen, know what to do and write it down so that others know too. If safety harnesses are being used, there must be a plan of what to do in the event of a restrained fall, as the safety threshold for anyone hanging in a harness is about 20 minutes.

APPENDIX 3 REFERENCES AND CURRENT LEGISLATION

REFERENCES

Construction Site Safety. CITB. GE 700.
HSE Guidance note. HSG 150. Health and Safety in Construction.
HSE L22. Safe Use of Work Equipment. The Provision and Use of Work Equipment Regulations. Fourth Addition 2014.
HSE L23. Manual Handling Operations Regulations. Fourth Addition 2016.
Electrical Contractors' Association. Practical Alternatives to Using Step Ladders.
HSE Guidance. Working at Height: A Brief Guide. INDG 401.
Prefabricated Access Suppliers' and Manufacturers' Association (PASMA).

BRITISH STANDARDS

BS EN 131. Specifications for ladders.
BS 1129. Specification for portable timber ladders, steps, trestles and lightweight stagings.
BS 2037. Specification for portable aluminium ladders, steps, trestles & lightweight stagings.
BS 1139-3. Access Towers.
BS 7377. Step Stools.
BS 7171. Mobile Elevating Work Platforms (MEWPs).

LEGISLATION

Health and Safety at Work Act 1974.
Construction, Design and Management (CDM) Regulations 2015.
Manual Handling Operations Regulations 1992.
Provision and Use of Work Equipment Regulations 1998.
The Electricity at Work Regulations 1989.
The Management of Health and Safety at Work Regulations 1999.
The Workplace (Health, Safety and Welfare) Regulations 1992.
Lifting Operations and Lifting Equipment Regulations 1998.
The Work at Height Regulations 2005.

APPENDIX 4 ACCESS EQUIPMENT INSPECTION SHEET AND LOG

Item Description	Tag No.	Location	Inspection Date	Inspected by: Name	Condition of Equipment: Other Comments

APPENDIX 5 LADDERS AND STEPS CHECKLIST

		Yes	No
What equipment is it?			
Where is it kept/location/secure?			
Does it have a departmental tag/ID?			
Does it have an EN or BS class number?			
Is it Class 3/Domestic grade?			
Does it have a rating plate?			
Metal Ladders and Steps			
Is there any damage?			
Are the stiles straight?			
Are the rungs tight and complete/no cracks/wear?			
Are any wedges or tie rods tight?			
Are the ropes or struts in good condition?			
Are the feet in place and in good condition?			
Are any hinges in good condition?			
Locking systems in place and working?			
Are the moving parts in good order?			
Timber Ladders – Are they in good condition?			
Any splits/rot/warping?			
Is the ladder painted?			
Rungs tight?			
Hinges and screws in place and tight?			
Any fibreglass ladders or steps in use?			
Any step stools?			
Do the springs work properly?			
Are they regularly checked?			
Management			
Staff training?			
Ladder register?			
Basic guidance on ladder use issued?			

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