Non-binding guide to good practice for the application of Directive 2001/45/EC of the European Parliament and of the Council concerning the minimum safety and health requirements for the use of work equipment by workers at work

HOW TO CHOOSE THE MOST APPROPRIATE WORK EQUIPMENT FOR PERFORMING TEMPORARY WORK AT A HEIGHT

European Commission
Directorate-General for Employment, Social Affairs and Equal Opportunities
Unit F.4

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FOREWORD

Falls from a height remain one of the main causes of fatal work accidents, especially in the construction industry, where there are still 1,300 deaths in Europe each year. Like their human, financial and economic impact, the human cost of these accidents is not acceptable: falls cause fatalities and a wide range of serious injuries including, in some cases, total loss of mobility (tetraplegia) and various types of impediment and partial disability. Such injuries limit workers' scope for reintegration into work and leading to a substantial loss of income. Such accidents can also have an adverse effect on the public image of the sectors concerned, making it more difficult to attract young people and retain older workers.

Europe must rise to the challenge of improving the quality of employment. First of all, in order to contend with demographic ageing, which will reduce the working population and create fiercer competition between sectors of activity to attract and retain workers. And secondly, because we must safeguard the quality of European products and services in order to remain competitive at world level.

Reducing the number of falls from a height is therefore essential and if we are to achieve it we must involve every one of the players, from all sectors, in particular construction, SMEs (the vast majority of firms in the construction sector) the self-employed, social partners, public authorities, insurance and social security funds, and labour inspection services.

The *Community strategy on health and safety at work 2002-2006*[1] called for increased efforts to achieve a continuing reduction in the number of accidents. The adoption by the European Parliament and the Council of Directive 2001/45/EC[2] concerning the use of work equipment for work at a height is a concrete and effective way of meeting this commitment.

Supported by the Council[3] and the European Parliament[4], the Community strategy on health and safety at work is based on three key actions: consolidating a culture of risk prevention, applying Community legislation effectively with the help of trained partners who are aware of what is at stake, and using the various tools available to promote genuine progress beyond mere compliance with standards.

This guide serves as a basis, especially for small and medium-sized enterprises, to help choose the most appropriate work equipment for performing temporary work at a height. It will help enterprises both to improve the safety of their workers and to control their production costs.

By putting together the 'best practices' identified by a large number of European experts, it also allows the players involved in the prevention of accidents to apply the Directive efficiently.

Nikolaus van der Pas
Director-General

1 Communication from the Commission: *Adapting to change in work and society: a new Community strategy on health and safety at work 2002-2006* [COM(2002) 118 final of 11 March 2002].

2 Directive 2001/45/EC of the European Parliament and of the Council of 27 June 2001 amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, OJ L 195, 19.07.2001, p. 46.

3 Council Resolution (2002/C 161/01) of 3 June 2002 on a new Community strategy on health and safety at work 2002-2006, OJ C 161, 05.07.2002, p. 1.

4 European Parliament resolution on the Communication from the Commission *Adapting to change in work and society: a new Community strategy on health and safety at work 2002-2006* [COM(2002) 118 final], PE 323.680 of 23 October 2003, p. 9.

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1. INTRODUCTION

Protecting workers[5] from the risks involved in using work equipment is of vital importance for safety and health. All work equipment is designed and manufactured in compliance with essential health and safety requirements. It can, when used, cause risks that the employer must evaluate and take account of beforehand, depending on the type of work, the particular conditions at the workplace and the expertise of the workers using the equipment. In this way, it is possible to avoid endangering workers' lives and health through the uncontrolled effects of using work equipment inappropriately or through external influences which could invalidate or lower the safety level inherent in the equipment as designed, manufactured and marketed.

It should be emphasised that compliance with the essential requirements applicable to work equipment and with the minimum provisions laid down in Directive 2001/45/EC[6] does not guarantee conformity with the applicable national legislation. In particular, Directive 2001/45/EC was adopted pursuant to Article 137 of the Treaty establishing the European Union, which allows Member States to maintain or introduce more stringent protective measures compatible with the Treaty.

This non-binding guide is aimed not only at all employers that regularly use work equipment for temporary working at heights, particularly where there is the risk of falling (e.g. the construction sector), but also at those in any other sectors who from time to time have to carry out temporary work operations at a height and who must therefore use equipment designed for this purpose. It can help employers and the self-employed to assess the risks associated with work at a height and to choose the most suitable equipment, so that the work can be carried out without danger to the safety or health of workers.

Finally, the improvement of safe, healthy and hygienic working conditions is an objective which may not be made subordinate to purely economic considerations. It is essential, in this respect, to comply with the minimum provisions laid down in Directive 2001/45/EC, which are intended to ensure better protection of health and safety when using work equipment provided for temporary work at a height.

Therefore, any employer planning to carry out work of this nature must choose work equipment providing adequate protection against the risks of falls from a height. Such accidents, together with other serious accidents, account for a large percentage of work accidents – especially fatal accidents – suffered by workers working at a height.

In general, collective measures designed to prevent falls from a height offer better protection than personal protective measures. The choice and use of work equipment adapted to each specific workplace must, above all, aim to prevent risks and tackle them at source, by replacing what is dangerous with what is less dangerous, and by adapting the work to the worker rather than the other way around.

5 The term 'workers' is used throughtout this Non-binding guide and where it is, it denotes both employees and self-employed persons. (see the Council Recommendation 2003/134/EC of 18 February 2003 concerning the improvement of the protection of the health and safety at work of self-employed persons – OJ L 53, 28.02.2000, and also Council directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites – OJ L 245, 26.08.1992)

6 Directive 2001/45/EC of the European Parliament and of the Council of 27 June 2001 amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, OJ L 195, 19.07.2001, p. 46.

2. PRESENTATION OF THE GUIDE TO GOOD PRACTICE

OBJECTIVES OF THE GUIDE

Given that work at a height exposes workers to the risk of falling, this guide presents various non-binding examples of good practice in connection with the practical application of European Parliament and Council Directive 2001/45/EC[7] (which amends Directive 89/655/EEC) concerning the minimum health and safety requirements for workers' use of work equipment provided for temporary work at a height, in particular scaffolds, ladders and ropes, which are the equipment most commonly used to perform such work, in combination with Framework Directive 89/391/EEC[8] and Directives 89/655/EEC[9], 95/63/EC[10], 89/656/EEC[11], 92/57/EEC[12] and 92/58/EEC[13].

This guide is chiefly designed to help employers, and in particular small and medium-sized enterprises, to select and use work equipment correctly on the basis of a risk assessment, and according to the type and duration of work and ergonomic constraints.

It contains many good practice exemples, which have either been selected from the guides existing in the EU Member States or been specially designed for this guide.

It lists the relevant European directives, European standards (EN) and a list of relevant national guides in this area.

CAUTION

The suggestions and recommendations in this guide are based on the experience of experts in the EU Member States.

You will very likely find a situation relevant to you in the guide.

However, since every workplace and every task is unique, these suggestions and recommendations do not absolve you from the obligation to undertake a thorough risk assessment before opting for a specific method.

You must also obtain details of the laws, regulations and standards applicable in the Member State where you work, and comply with them.

7 Directive 2001/45/EC of the European Parliament and of the Council of 27 June 2001 amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, OJ L 195, 19.07.2001, p. 46.

8 Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work, OJ L 183, 29.06.1989, p. 1.

9 Council Directive 89/655/EEC of 30 November 1989 concerning the minimum safety and health requirements for the use of work equipment by workers at work, OJ L 393, 30.12.1989, p. 13.

10 Council Directive 95/63/EC of 5 December 1995 amending Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, OJ L 335, 30.12.1995, p. 28.

11 Council Directive 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace, OJ L 393, 30.12.1989, p. 18.

12 Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites, OJ L 245, 26.08.1992, p. 6.

13 Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work, OJ L 245, 26.08.1992, p. 23.

3. KEY POINTS FOR PREVENTION

3.1 GENERAL PRINCIPLES OF PREVENTION FOR TEMPORARY WORK AT A HEIGHT

3.1.1 AVOID RISKS

PRINCIPLE

There is a direct link between differences in height in the workplace and the risk of falling (potential energy).

In the course of temporary work at a height, workers are generally exposed to this risk:

- while accessing the workplace or workstation (with or without equipment or materials);
- while working.

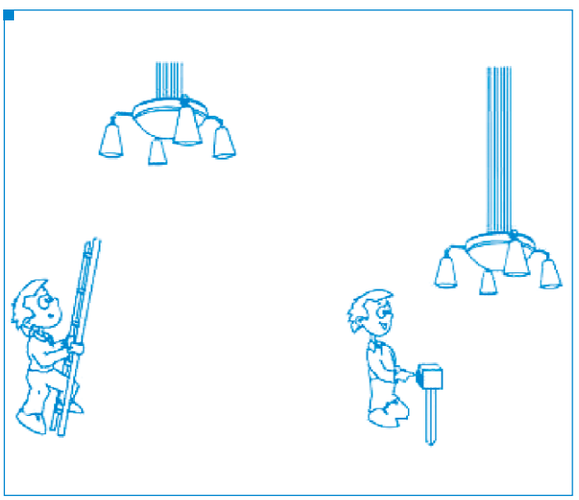
As the employer you are responsible for workers' health and safety, you should therefore ask yourself:

- Can the work be performed on the ground? (Example: lower a concert hall chandelier to repair it.)
- Can a work platform be set up in the vicinity of the work area to minimise the difference in height? (Example: use jacks to raise the work floor to the height of the work to be performed on a truck loading and unloading site.)

Before any operation requiring temporary work at a height, ask yourself:

- Can I avoid having to carry out work at a height?
- Can I avoid the risks of falls from height?

If not, you then have to assess the risks that cannot be avoided and take the measures necessary to protect the safety and health of workers at the workplace.



PRACTICAL EXAMPLES

For a painter required to strip and paint a very high industrial machine:

- Can parts of the machine be dismantled and treated on the ground?

For a roofer required to build a wooden structure:

- Can parts of the assembly work be done on the ground?

3.1.2 ASSESS THE RISKS

PRINCIPLE

If the height difference cannot be eliminated, the following factors should be precisely determined:

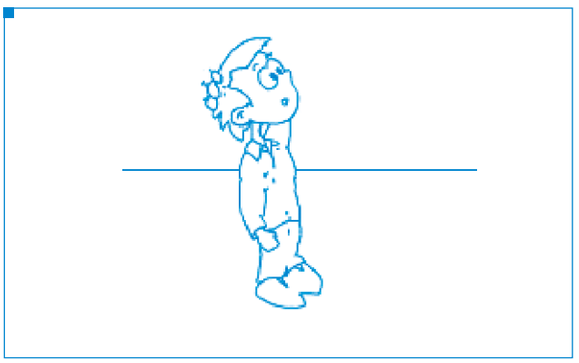
- What is the workplace like (place, machines, equipment, materials, environment, etc.)?
- What is the source of the risk (work height, working close to a void, other work performed nearby, etc.)?
- What is the worker's activity (task, duration, frequency, posture, etc.)?
- Who is the worker (competence, experience, age, physical aptitude, head for heights, etc.)?

PRACTICAL EXAMPLES

What is the workplace like?

Examples:

- Horizontal roof of an agricultural machinery maintenance shop – 2 000 m^2 – painted concrete surface.
- Building
- Trees



- Electricity pylon
- Building facade
- Bridge
- Theatre
- Shipyard
- Assembly shop

What is the source of the risk?

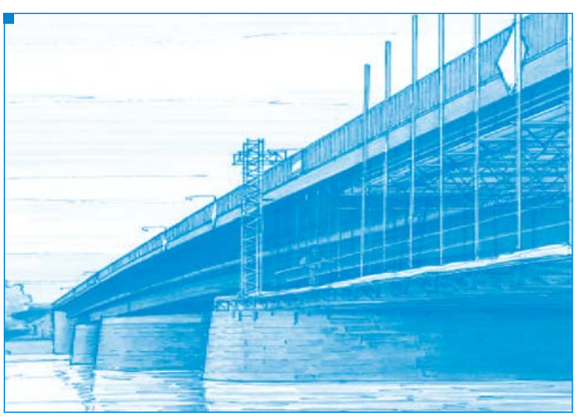
Examples:
- Difference in height
- Height

What is the worker's activity?

Examples:
- Encasing pillars, building walls, placing beams
- Sweeping leaves from a roof using a blowing device
- Repairing a power line
- Cleaning the windows of a building
- Repairing the metal structure of a bridge
- Maintaining theatre lighting
- Shipbuilding
- Aeroplane maintenance or assembly
- Accessing the roof via an outside ladder.

Who is the worker?

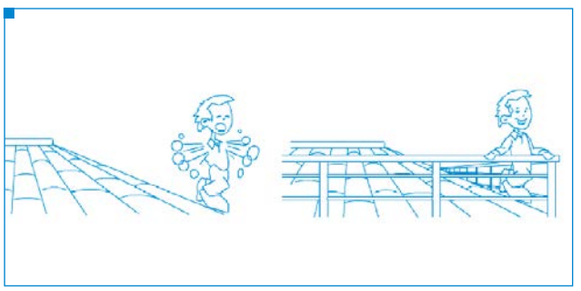
Examples:
- Temporary worker aged 22
- Worker in first job
- Mountain guide
- Person with specific physical problem (vertigo, etc.).



3.1.3 Combat these risks at source

Principle:

If working at height cannot be avoided, the potential fall height must be reduced by all possible means (see Article 6 of Framework Directive 89/391/EEC).



Practical examples

Repainting a steel structure 30 metres high:

Is there a risk of a fall?

Is it possible to prevent risk of falls?

If not, is it possible to install fall prevention devices (guard rail or barrier) as close as possible to the work areas?

Using fall devices such as harnesses and rope access and positioning techniques when cleaning glass atria and roofs:

Is it possible to organise the work so that the fall distance is always minimised? (Use of tensioners, choice of anchoring points, etc.)

3.1.4 Adapt the work to the individual

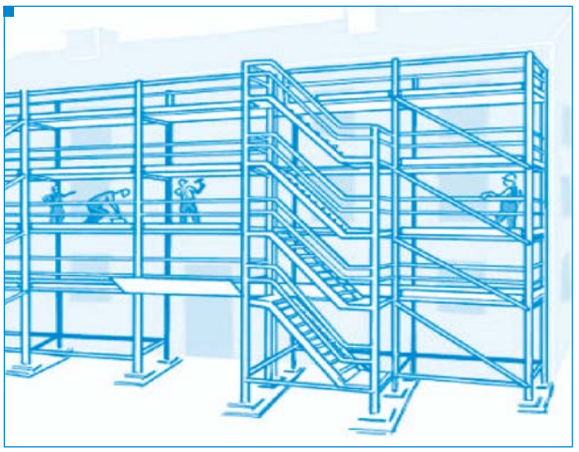
Principle

'*The employer shall adapt the work to the individual, especially as regards the design of work places, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reducing their effect on health.*' – Article 6(2)(d) of Directive 89/391/EEC (the 'Framework Directive') on the introduction of measures to encourage improvements in the safety and health of workers at work.

PRACTICAL EXAMPLES

If the work to be performed requires a considerable amount of travel up and down scaffolding:

Is it possible to install inside or outside ladders or stairs (or even a lift for workers) to prevent the substantial physical effort involved and the associated negative effects on health and safety?



If the work involves operating electrical or compressed air equipment from a cradle:

Is it possible to install a guidance system for pipes and cables so that the operator is not inconvenienced by or concerned with their movement or space requirements, thus avoiding the risks of moving the cradle?

Also, do not forget the risks related to the use of electricity and compressed air.

CAUTION:

In the case of work on or near electricity installations (power lines, substations, etc.), the additional risks associated with electricity need to be taken into account. For more information on these risks, see section 3.5 'Recommendations for work at a height in or near electricity installations'.

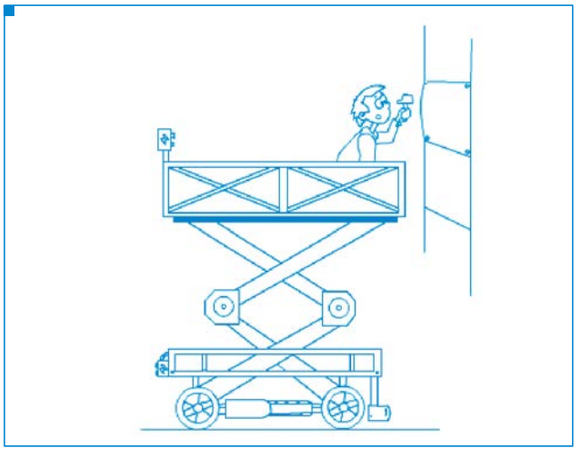
3.1.5 KEEP ABREAST OF TECHNICAL PROGRESS

PRINCIPLE

Work at a height benefits from constant research that leads to the regular development of new work equipment and products.

Keep abreast of these developments.

Very often, more sophisticated equipment makes for more efficient working.



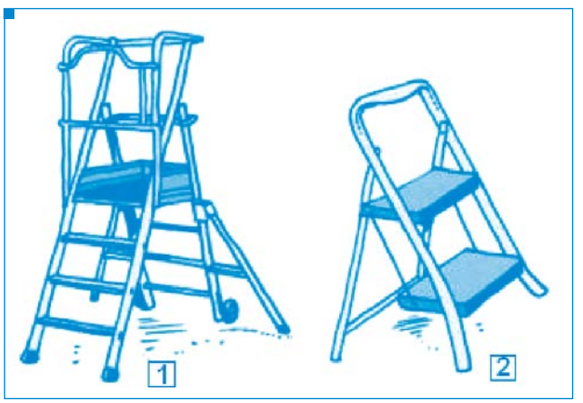
PRACTICAL EXAMPLES

When painting offices:

Is it possible to use individual podium steps (1 in the figure below) rather than stepladders (2 in the figure below)?

When changing light bulbs in a gymnasium or other premises where ceilings are high and not easily accessible for maintenance:

Is it possible to use a tower scaffold rather than an extension ladder?

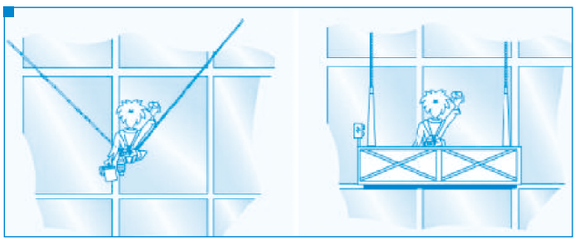


3.1.6 REPLACE THE DANGEROUS BY THE LESS DANGEROUS OR NON-DANGEROUS

PRINCIPLE

Generally speaking, it is usually possible to replace ladders or ropes by safer methods (scaffolding, platforms, etc.) to give workers maximum protection against the risk of falls.

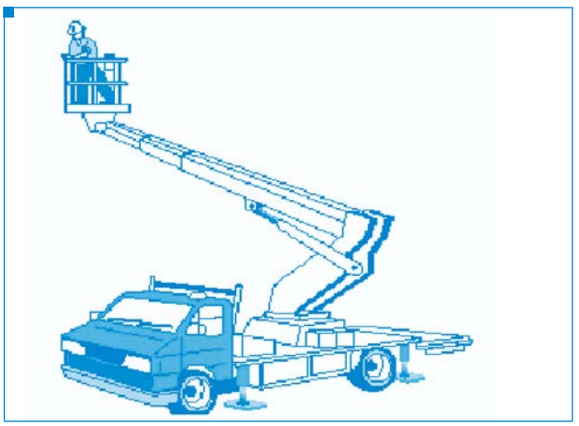
In most cases, the risk assessment will confirm this and show that there are less dangerous and also more efficient ways of performing work at a height.



PRACTICAL EXAMPLE

When hanging up decorative street lights for the festive season:

Is it possible to perform this work from a mobile elevated work platform (MEWP) rather than a ladder by organising the work beforehand (temporary closure of the street, using strings of lights, movement depending on distances to electric power lines, etc.)?



3.1.7 PLANNING A COHERENT OVERALL PREVENTION POLICY

PRINCIPLE

'The employer shall develop a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment' – Article 6(2)(g) of Directive 89/391/EEC (the 'Framework Directive') on the introduction of measures to encourage improvements in the safety and health of workers at work.

PRACTICAL EXAMPLE

Maintenance work on a dust extraction system close to and above a continuous production zone for wooden parts for fitted kitchens.

Every maintenance department will endeavour to plan its work without interfering with other nearby activities.

For this reason, it is important to choose the right:
- day (people present, production in progress, etc.),
- time (production rates at the time, light level, criticality of tasks, etc.),
- method (space occupied, movements required, transport needed, etc.),
- equipment (energy required, noise generated, etc.),
- workers (recognised skills, relations with other workers).

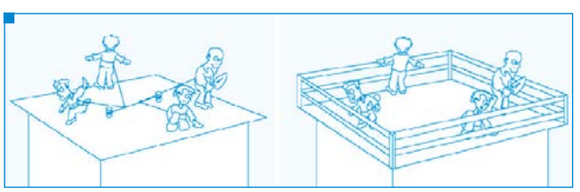
The correct choice should result simply from applying the principles of risk prevention.

3.1.8 GIVE COLLECTIVE MEASURES PRIORITY

PRINCIPLE

While it often seems simpler to ask each worker to protect himself individually (harness, etc.), it should be borne in mind that it is more effective to provide a collective protection system (guard rail, platform, net, etc.). On the basis of the general principles of prevention [Article 6, paragraph 2, (h) of Framework Directive 89/391/EEC], '*the employer shall give collective protective measures priority over individual protective measures*'. Similarly it is possible to replace individual access equipment (leaders) with collective equipment (scaffolding, platforms, etc.) to give workers maximum protection against the risk of falls.

In most cases, the risk assessment will confirm this.



PRACTICAL EXAMPLE

It is preferable to provide two window cleaners with a mobile elevated work platform (MEWP) or a cradle rather than asking them to work suspended and secured by personal protective equipment.

3.1.9 GIVE APPROPRIATE INSTRUCTIONS TO WORKERS

PRINCIPLE

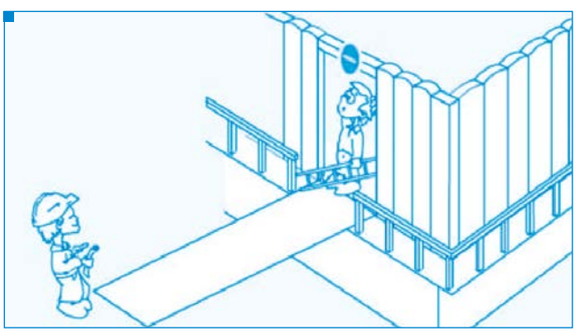
Providing instructions for workers required to work at a height is essential for the effectiveness of preventive measures.

Whether it be work instructions, precautions to be taken or prohibitions, it is important to give each worker the relevant information.

PRACTICAL EXAMPLE

In the case of cleaning work on conveyor belts in an extraction plant, it is important to ask the following questions:

- Has the worker received the right instructions for accessing the upper areas of the conveyor belts?
- From his workstation, can the worker see conveyor line blockages and signs indicating emergency stoppages?
- Does the worker know that he must not approach a moving belt?



3.2 HOW TO ASSESS RISKS?

FIVE STEPS TO RISK ASSESSMENT

What is a risk assessment?

Article 6 of Framework Directive 89/391/EEC requires the employer 'within the context of his responsibilities, to take the measures necessary for the safety and health protection of workers, including prevention of occupational risks and provision of information and training, as well as provision of the necessary organisation and means'. He must apply these measures on the basis of the following general principles of prevention (among others):

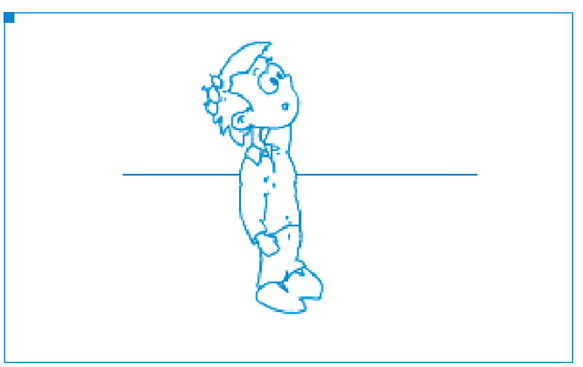
- avoiding risks,
- evaluating the risks which cannot be avoided.

Risk assessment consists in carefully examining the situations in which workers are exposed to different risks at their workstation or during their work.

It must lead to the definition of measures to prevent the risks to health and safety.

It is important to establish whether there are risks, and whether adequate precautions have been taken to eliminate or minimise them.

Finally, Article 10 of Framework Directive 89/391/EEC obliges employers to take appropriate measures 'so that workers and/or their representatives in the undertaking and/or establishment receive, in accordance with national laws and/or practices which may take account of, in particular, the size of the undertaking and/or establishment, all the necessary information concerning safety and health risks and protective and preventive measures in respect of both the undertaking in general and each type of workstation and/or job'.



STEP 1:

Identify risks

Look for risks that could result in injury under the conditions in your workplace.

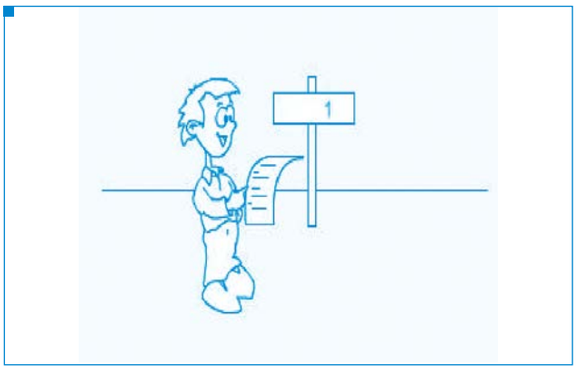
Non-exhaustive list of risks or dangerous situations:

- slipping/tripping (e.g. poorly maintained floors or stairs)
- fire (e.g. flammable materials)

- chemicals (e.g. battery acid)
- moving parts of machinery (e.g. blades)
- work at a height (e.g. on mezzanines)
- projection of materials (e.g. from plastic moulding)
- pressure systems (e.g. steam boilers)
- vehicles (e.g. fork-lift trucks)
- electricity (e.g. wiring)
- dust (e.g. from grinding)
- fumes (e.g. from welding)
- manual handling of loads
- noise
- lighting
- temperature.

Ask workers or their representatives for their opinions.

Manufacturers' instructions can also help spot risks. So can accident and sickness records.



STEP 2:

Who might get injured?

There is no need to list individuals by name.

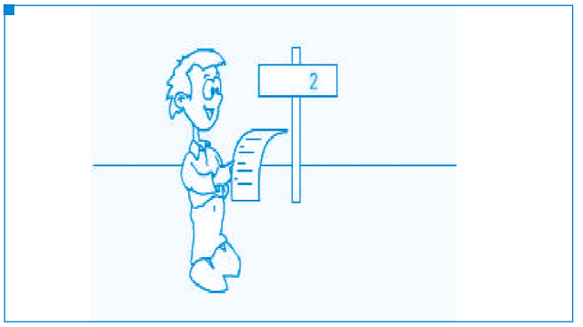
Identify groups of people doing similar work, e.g.:

- office staff
- maintenance workers
- contractors
- workers from other firms sharing your workplace
- workers
- cleaners
- members of the public.

Pay particular attention to specific groups of workers, such as:

- disabled workers
- young workers
- new and expectant mothers
- inexperienced staff, trainees
- lone workers
- self-employed workers
- any worker who might be considered vulnerable
- workers who do not understand the local language.

You also have to take account of third parties likely to be present at workplaces occasionally (e.g. visitors).



STEP 3:

Is it necessary to do more to control risks?

For the risks listed in the risk assessment, do the precautions already taken:

- meet the rules laid down by a legal requirement?
- comply with a recognised professional standard?
- represent good practice?
- eliminate risks?
- minimise risks?

Have you provided:

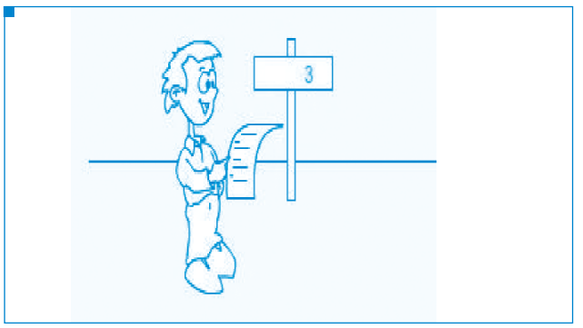
- sufficient information and training?
- appropriate systems or procedures?

If so, then the risks are adequately controlled, but you need to indicate the precautions you have in place (you may refer to procedures, company rules, etc.).

Where the risk is not adequately controlled, indicate what more you need to do ('action list').

To control risks, apply the principles below, if possible in the following order:

- choose a less risky option;
- prevent access to the risk source;
- organise work to reduce exposure to the risk;
- give priority to use collective protection measures;
- issue personal protective equipment (PPE).



STEP 4:

Record your findings

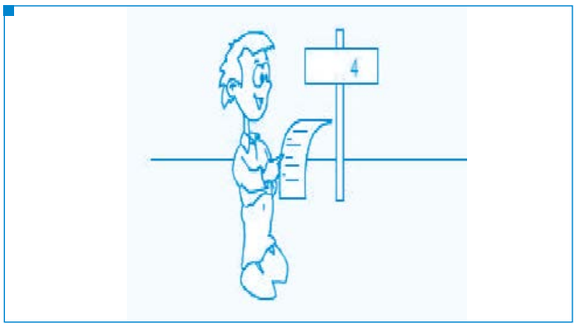
The risk assessment must be appropriate.

You need to be able to show that:

- a proper check was carried out;
- you thought about who might be affected;

- you addressed all the risks, taking into account the number of workers potentially involved;
- the precautions taken are adequate, and the residual risk is minimal.

You must inform workers about the findings.



STEP 5:

Review and result

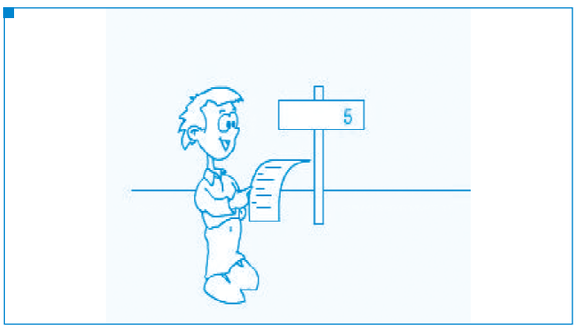
Set a date for review and evaluation.

On review, check that the precautions taken for each risk still adequately control the risk. If not, indicate the action needed. Note the outcome. If necessary, complete a new page for your risk assessment.

Changes in your workplace, e.g.:
- new machines,
- new substances,
- new procedures,
- presence of workers from other firms or self-employed workers,

may introduce significant new risks.

Look out for them and follow the five steps above.



3.3 CHOOSING WORK EQUIPMENT: EXAMPLES

GENERAL PROVISIONS (DIRECTIVE 2001/45/EC)

Scaffolds, ladders and ropes, which are covered by the provisions concerning the use of work equipment (see Annex of Directive 2001/45/EC), are the equipment most commonly used in performing temporary work at a height, and the safety and health of workers engaged in this type of work therefore depends to a significant extent on their correct use. The manner in which such equipment can be most safely used by workers must therefore be specified. Adequate specific training of the workers is required.

If temporary work at a height cannot be carried out safely and under appropriate ergonomic conditions from a suitable surface, the work equipment most suitable to ensure and maintain safe working conditions must be selected. Collective protection measures must be given priority over personal protection measures. The dimensions of the work equipment must be appropriate to the nature of the work to be performed and to the foreseeable stresses, and must allow passage without danger.

The most appropriate means of access to temporary workplaces at a height must be selected according to the frequency of passage, the height to be negotiated and the duration of use. The choice made must permit evacuation in the event of imminent danger. Passage in either direction between a means of access and platforms, decks or gangways must not give rise to any additional risks of falling.

Ladders may be used as workstations for work at a height only under circumstances in which the use of other safer work equipment is not justified because of the low level of risk and either the short duration of use or existing features of the site that the employer cannot alter.

Rope access and positioning techniques may be used only under circumstances where the risk assessment indicates that the work can be performed safely and where the use of other safer work equipment is not justified.

Taking the risk assessment into account and depending in particular on the duration of the job and the ergonomic constraints, a seat with appropriate accessories must be provided.

Depending on the type of work equipment selected on the basis of the above considerations, the appropriate measures for minimising the risks to workers inherent in this type of equipment must be determined. If necessary, safeguards to prevent falls must be installed. These must be of a suitable configuration and sufficient strength to prevent or arrest falls from a height and, as far as possible, to preclude injury to workers. Collective safeguards to prevent falls may be interrupted only at points of ladder or stairway access.

When the performance of a particular task requires a collective safeguard to prevent falls to be temporarily removed, effective compensatory safety measures must be taken. The task may not be performed until such measures have been taken. Once the particular task has been finished, either definitively or temporarily, the collective safeguards must be reinstalled.

Temporary work at a height may be carried out only when the weather conditions do not jeopardise the safety and health of workers.

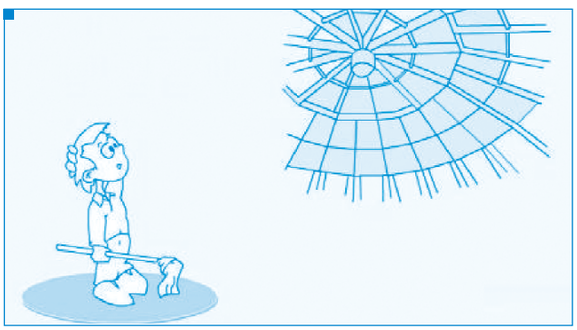
Access for maintenance operations must be taken into account when designing new buildings.

How to clean glass atria and roofs from the inside?

Possible methods include:

- permanently installed means of access;
- tower scaffolding;
- mobile elevated work platform (MEWP) – scissor lift or with a telescopic vertical lift;
- MEWP with boom,
- ladder (in exceptional situations only!);
- rope access and positioning techniques.

These are illustrated below.



Example 1: Cleaning glass atria and other roofs from the inside using permanently installed means of access

Technical characteristics:

- Maximum technical safety;
- Their construction suits cleaning requirements;
- Optimum working conditions (no need to think about how to gain access).

Risks:

None from the viewpoint of occupational safety, provided the means of access are designed and used properly.

Example 2: Cleaning glass atria and roofs from the inside using a tower scaffold

Technical characteristics:

- Safe workstation due to lateral protection, guaranteeing safe access;
- Flat working surface, possible to use cleaning instrument extensions.

Risks:

- Need for flat non-slippery ground without obstacles;
- Need to adapt to different building heights. The load-bearing elements inside buildings may be a hindrance;
- Workers are obliged to descend from the scaffolding whenever it is moved;
- Need for more scaffolding ballasting or an increase in the base area if the maximum height is used;
- Need for locking devices to prevent the scaffolding from moving.

Example 3: Cleaning glass atria and roofs from the inside using a mobile elevated work platform (MEWP) – scissor or a vertical telescopic lift

Technical characteristics:

- Simplicity of operation;
- Can be used in cramped, cluttered locations due to its lightness and small space requirement;
- Can generally fit through a standard door;
- Mechanical lifting of the worker and his tools;
- Easily adapts to the height of buildings.

Risks:

- Tedious erection process, not without risks;
- Limited height of MEWPs with telescopic lift;
- Small radius of action;
- Need for workers to leave the platform when it has to be moved;
- Need to avoid any unexpected and uncontrolled movement of the platform.

Example 4: Cleaning glass atria and roofs from the inside using a mobile elevated work platform (MEWP) with boom

Technical characteristics:

- Safe working platform for the worker;
- Possible to access nearly all locations in all positions of the MEWP;
- Large radius of action from a given place;
- Can pass through doors (models fitted with tyres);
- Precise adjustment of the workstation;
- Can be used to cover large areas.

Risks:

- The floors and foundations must be able to withstand a heavy load;
- Subsequent additions to buildings may reduce the work area;
- Need to avoid any unexpected and uncontrolled movement of the platform.

Example 5: Cleaning atria and other similar glass structures from the inside using a ladder

CAUTION:

In general this method should be avoided, and should only be used in exceptional situations.

Ladders may be used only where it is impossible to carry out the work with any other type of equipment, e.g. fixed-position or tower scaffold or mobile elevated work platform (MEWP).

Risks:

- High risk of accidents with serious falls;
- Unergonomic working position with heavy burden on the legs;
- Virtually essential to use one hand to ensure safety;
- Need for a large bearing surface relative to the surface covered by the work to be performed;
- There must be no obstacles on the ground where the ladder is resting;
- Very frequent movement of the ladder, obliging the worker to climb down and back up again. As a consequence, a small work area is covered, and there is a risk of musculoskeletal injuries as a result of bad posture;
- No room on the ladder for cleaning equipment or tools.

Example 6: Cleaning glass atria and roofs from the inside using a suspended seat (rope access and positioning techniques)

Technical characteristics:

If no other work equipment can be used:

- Suspended work seats can be used where it is impossible to carry out the work from fixed-position or tower scaffold or mobile elevated work platforms.

Other conditions:

- Limited duration of use;
- Need for the worker to be trained, competent and physically fit.

Risks:

- Minimum roof slope needed to reach the workplace;
- Need for appropriate anchoring points in the roof construction or elsewhere, capable of withstanding the dynamic stress caused should the worker fall;
- Need for two independent suspension arrangements: one working line (for positioning and support) and one for safety (emergency system);
- Need to upgrade the worker's technical aptitudes by special training in working at a height using rope positioning techniques and in particular in emergency procedures;
- Where there are one or more workers working in different workplaces at the same time, it is necessary to establish, on the basis of the risk assessment, how many workers are needed to ensure safety.

3.4 Recommendations for working at a height

Training workers

As a general rule, workers required to carry out temporary work at a height involving the use of equipment designed for this purpose must receive adequate training specific to the tasks they are going to perform, and in particular training for emergencies.

Workers normally need sufficient professional and technical training and expertise, experience related to the planned work, an understanding of potential risks and relevant rescue procedures, and an ability to detect technical defects or omissions in the work carried out and evaluate their health and safety repercussions.

Training should be provided in accordance with national rules.

Personal training records should be kept for each worker, showing the training received and the experience acquired.

Employers must maintain the level of competence of their workers by providing training courses at regular intervals. In some cases, complete retraining may be necessary, especially in the use of equipment involving new technology and/or to take account of new risks or risks that have changed.

Coordination

Where more than one undertaking is working on the same site, coordination must be established (see Article 6(4) of Directive 89/391/EEC and Article 3 of Directive 92/57/EEC).

Assessing the risks and putting in place the appropriate measures to eliminate or minimise the risks related to simultaneous or successive work is essential for temporary work at a height.

Special attention to this point is advised where construction work is taking place:

- near overhead power lines or electrical installations;
- near an industrial activity (e.g. workshop or factory in operation);
- in a very busy place (e.g. street, large store, etc.);
- at several superimposed levels (e.g. on two levels of the same scaffolding);
- where access and exit are difficult.

Using coordination facilities:

The coordination needed to eliminate or minimise the risks related to simultaneous or successive work must:

- be entrusted to a qualified person;
- be taken into consideration at the work planning stage;
- involve all the workers concerned, even if they belong to different firms;
- give rise to effective communication through plans, dossiers, meetings, visits, appropriate instructions, etc.;
- evolve throughout the work.

SIGNAGE

The mere signing of risks is not a preventive measure as such. It is the last step to be taken when a risk cannot be eliminated or minimised.

It merely draws attention to a persistent risk, combined with other protection measures and contributing to their efficiency.

Workers must be urged to adopt safe working practices and exercise caution.

As regards the equipment itself, special attention should be paid to the following very important points:

Manufacturer's signs:

- Fixed signs on devices and equipment that have not been assembled on site or which have been pre-assembled;
- Indications relating to maximum permitted load;
- Pictograms indicating safety procedures, for instance the use of personal protective equipment against the risks of falling.

Use of equipment:

As regards the use of equipment, it is also necessary to place signs on scaffolding during installation, erection, dismantling and alteration:

- During erection and dismantling, it is necessary to check that parts which are not ready for use are marked as such (see section 4.3.5 of the Annex to Directive 2001/45/EC);
- When using authorised scaffolding, it is essential to check that the manufacturer's instructions are on the equipment and to comply with them, especially instructions relating to the type of scaffolding, the maximum permissible load, etc.

Signing of the presence of scaffolding and other equipment:

The objective here is to signal the presence of scaffolding or sections of it that are not yet ready for use, during erection, dismantling or alteration, in order to prevent risks that might be caused by access to this danger zone.

To this end, Directive 92/58/EEC[14], which lays down minimum requirements for the provision of safety and/or health signs at work, provides for signboards (Annex II) to warn of 'Overhead load', 'Obstacles' or 'Drop' and signs (Annex V) to mark obstacles and dangerous locations.

RESCUE PROCEDURES

Workers can suffer injuries or fall ill at work.

Emergency situations can also occur at the workplace.

So what arrangements must be put in place to deal with accidents, incidents or imminent danger?

- Do emergency procedures exist, for example for the evacuation of workers from temporary workstations at a height in the event of fire?
- Do the passages between means of access and platforms, floors or gangways allow quick evacuation of workers in the event of imminent danger?
- Do workers on the site know the procedures to be followed?
- Is there a means of raising the alarm, and how does it work?
- Is it possible to contact the emergency services from the site?
- Is there adequate first aid provision?
- Is there a worker appointed to take charge of first aid?
- Do workers on the site know the first aid arrangements?

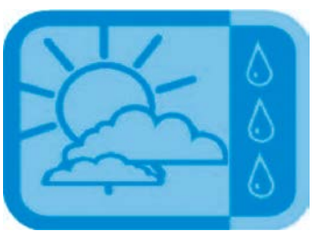
14 Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work, OJ L 245, 26.08.1992, p. 23.

WEATHER CONDITIONS

Work at a height is of course very much influenced by weather conditions, especially when it takes place outside.

That is why the following measures are recommended:

- Choose and install your work equipment on the basis of the risks that could be caused or aggravated by changes in the weather (e.g. overturning due to wind, slipping and falls due to moisture or frost, electricity risk due to storms or the proximity of power lines or electrical installations, deformation due to heat, etc.).
- From the design stage, consider improvements in working conditions to cope with weather conditions (e.g. protection of accesses and workstations against wind, rain, cold and sun, electrical insulation and/or earthing of equipment, etc.).
- Before the start of each day, check the weather forecast and do not hesitate to suspend work at height when the expected weather is likely to jeopardise the safety and health of workers (see section 4.1.6 of the Annex to Directive 2001/45/EC).



TEMPORARY WORKERS

The employer must take measures to inform and train all workers, including temporary workers, regarding health and safety risks, as well as measures and activities to prevent and protect against accidents and occupational diseases.

If, in your country, work at a height is authorised for temporary workers, remember that they may be highly vulnerable to the risk of falling if they have not been properly trained and informed about the risks they are exposed to.

It is therefore suggested that, for each job, a close relationship be established with the temporary work firm in order to:

- prepare a data sheet concerning the workstation, summarising the hazards and risks of the job, the precautions to be taken, the personal protective equipment that the temporary worker should wear, and the medical monitoring required for the type of work;
- take the time to welcome temporary workers and provide information and training (workstation, work method, safety instructions, internal organisation, measures to be taken in the event of an accident, company rules, etc.);
- provide for effective monitoring of such workers and their tasks (support, supervision, evaluation).

MEDICAL FITNESS FOR WORK AT A HEIGHT

Performing work at a height without the necessary physical and mental aptitudes may endanger both the worker and those who provide help in an emergency.

Measures to monitor the health of workers in line with the safety and health risks must be introduced in accordance with national legislation and/or practices. This means that any worker who so wishes must be able to have health checkups at regular intervals. See Article 14 of Framework Directive 89/391/EEC:

'1. To ensure that workers receive health surveillance appropriate to the health and safety risks they incur at work, measures shall be introduced in accordance with national law and/or practices.

2. The measures referred to in paragraph 1 shall be such that each worker, if he so wishes, may receive health surveillance at regular intervals.

3. Health surveillance may be provided as part of a national health system.'

3.5 Recommendations for work at a height in or near electricity installations

Many operations and tasks on workplaces at a height are carried out in or near electrical installations: power lines, transformer and distribution stations, radio and television transmitters, etc.

Since many tasks are carried out while the installations are live, the employer must take into account the additional electrical risk when assessing the risks associated with work at a height.

The employer should first contact the responsible authorities to find out about the safety measures needed to protect against electric shocks and other risks (flashovers, static electricity, stored charges), since in these situations the risk of an electrical accident is ever present.

The employer must also comply with the regulations, standards (in particular EN 50110-1) and other statutory obligations having a direct bearing on work on electrical installations and machinery.

A site visit must be made before work starts to determine whether the work is to be carried out in or near electrical installations.

For all work on or near live parts, the following must always be used:
- insulating safety equipment;
- insulating personal protective equipment *(e.g. hard hat with insulating chin strap, protective shoes with insulating soles, protective goggles for protection against flashovers);*
- insulated tools;
- other insulating equipment.

If weather conditions endanger safety (thick fog, wind, rain or snow), work must be halted or not started.

3.5.1 Non-electrical work in the vicinity of electrical installations

Much non-electrical work at a height, e.g. assembly, transport and pruning work, painting, scaffolding assembly, work with construction engines or lifting gear, has to be carried out in the vicinity of electrical installations,such as close to power lines, transformer or distribution stations, radio or television transmitters.

In such cases, the employer responsible for the work must, after visiting the construction site or workplace, take this additional electrical risk into account in his assessment of the risks associated with work at a height, and take appropriate additional safety measures.

To do this, the employer must first contact the network operator and the responsible authorities, in accordance with national regulations or practices, and inform them of the planned work so that they can agree on measures for the electrical risks to be taken into account, in addition to the risk of falling from a height.

The following safety measures, *listed in decreasing order of importance*, have proved effective:
- *Eliminating the hazard by disconnecting or isolating the electrical installation or power line;*
- *Moving the power line before work starts, particularly if it is to be operational again when construction work ends;*
- *Erecting barriers to prevent access to the live installations;*
- *Adapting work equipment and procedures to the situation;*
- *The technical solution of earthing metal tools should also be considered.*

An electrical danger is present when a worker's body, tools, equipment or machinery breaches the safety clearance applicable to the voltage (outer boundary of approach zone in EN 50110-1).

The safety clearances must therefore always be respected. This is particularly important when handling or transporting long conductive parts, when moving loads on site (tower cranes, mobile cranes, etc.), when using mobile access towers, etc.

With some machines it is possible to fence off the areas in which they are moved and to prevent access.

For one-off operations in a man basket, for which not all safety measures can be taken, electric cable detectors are available which warn the worker of the presence of cables and can, in some cases, halt the dangerous movement.

3.5.2 Work on electrical installations

Work on electrical installations includes all activities for manufacturing, erecting, modifying and repairing electrical installations or operating equipment.

All these electrical tasks may be carried out only by skilled electrical workers, or under their direction and supervision. The skilled electrical workers entrusted with carrying out the work must be capable of assessing the work to be carried out, identifying potential hazards and taking the necessary precautions.

The employer must first inform the network operator and the responsible authorities of the planned work on electrical installations, in accordance with national regulations or practices. Work should be coordinated with the network operator.

For this type of work as well, the responsible employer must assess the potential hazards and establish safety measures. He should distinguish between work that must be carried out directly on the active parts, which may be live during uninterrupted operation, and work carried out in the vicinity of such parts. In the latter case, the measures in Section 3.5.1 apply.

Work on active parts must be carried out only after first ensuring that they are dead. This is to be achieved by:
1. disconnecting,
2. securing against reconnection,
3. checking that parts are dead,
4. earthing and short-circuiting,
5. covering or screening off live adjacent parts.

It is possible to change the order of these five steps or even leave some out, provided there are good reasons for doing so (EN 50110-1).

Insulated man baskets and platforms are to be preferred over ladders and pole climbers for work at a height.

However, the risk of electrical accidents (electric shocks) and the risk of falling from a height as a result of an electric shock are always present.

3.5.3 WORK ON LIVE ACTIVE PARTS

Under certain conditions (e.g. if it is not possible to ensure that the active parts are dead), it may be necessary for certain tasks to carry out work on live parts.

This work is special work, for which the employer must ensure that:

- work on live active parts is carried out only in accordance with tried and tested safe working methods;
- work is carried out only by skilled electrical workers trained for this type of work, who have mastered the implementation of safety measures;
- appropriate equipment and tools for the working process and voltage are used;
- special technical, organisational and individual safety measures are taken to ensure protection against electrical hazards.

4. EQUIPMENT FOR TEMPORARY WORKING AT HEIGHTS

4.1 INDEPENDENT SCAFFOLDING

4.1.1 RISK ASSESSMENT AND CHOICE

SPECIFIC PROVISIONS REGARDING THE USE OF SCAFFOLDING (DIRECTIVE 2001/45/EC)

'*When a note of the calculations for the scaffolding selected is not available or the note does not cover the structural arrangements contemplated, strength and stability calculations must be carried out unless the scaffolding is assembled in conformity with a generally recognised standard configuration*'. (Section 4.3.1 of the Annex to Directive 2001/45/EC).

'*Depending on the complexity of the scaffolding chosen, an assembly, use and dismantling plan must be drawn up by a competent person. This may be in the form of a standard plan, supplemented by items relating to specific details of the scaffolding in question*'. (Section 4.3.2 of the Annex to Directive 2001/45/EC).

'*The bearing components of scaffolding must be prevented from slipping, whether by attachment to the bearing surface, provision of an anti-slip device or any other means of equivalent effectiveness, and the load-bearing surface must have a sufficient capacity. It must be ensured that the scaffolding is stable. Wheeled scaffolding must be prevented by appropriate devices from moving accidentally during work at a height*'. (Section 4.3.3 of the Annex to Directive 2001/45/EC).

'*The dimensions, form and layout of scaffolding decks must be appropriate to the nature of the work to be performed and suitable for the loads to be carried and permit work and passage in safety. Scaffolding decks must be assembled in such a way that their components cannot move in normal use. There must be no dangerous gap between the deck components and the vertical collective safeguards to prevent falls*'. (Section 4.3.4 of the Annex to Directive 2001/45/EC).

'*When parts of a scaffolding are not ready for use, for example during assembly, dismantling or alteration, they must be marked with general warning signs in accordance with the national provisions transposing Directive 92/58/EEC and be suitably delimited by physical means preventing access to the danger zone*'. (Section 4.3.5 of the Annex to Directive 2001/45/EC).

'*Scaffolding may be assembled, dismantled or significantly altered only under the supervision of a competent person and by workers who must have received appropriate and specific training in the operations envisaged, addressing specific risks, in accordance with Article 7 of the Directive 89/655/EEC and more particularly in:*

(a) understanding of the plan for the assembly, dismantling or alteration of the scaffolding concerned;

(b) safety during the assembly, dismantling or alteration of the scaffolding concerned;

(c) measures to prevent the risk of persons or objects falling;

(d) safety measures in the event of changing weather conditions which could adversely affect the safety of the scaffolding concerned;

(e) permissible loads;

(f) any other risks which the abovementioned assembly, dismantling or alteration operations may entail.

The person supervising and the workers concerned must have available the assembly and dismantling plan referred to in section 4.3.2 of the annex to Directive 2001/45/EC, including any instructions it may contain'. (Section 4.3.6 of the Annex to Directive 2001/45/EC).

SPECIFIC PROVISIONS CONCERNING THE MINIMUM SAFETY AND HEALTH REQUIREMENTS AT TEMPORARY OR MOBILE CONSTRUCTION SITES (DIRECTIVE 92/57/EEC)

Another point to be borne in mind is the provision in Annex 4 (part B, section II, paragraph 6.3) to Directive 92/57/EEC requiring employers to have scaffolding inspected by a competent person before it is put into service, and subsequently at periodic intervals and after any modification, period of use, exposure to bad weather or seismic tremors, or any other circumstance which may have affected its strength or stability.

ASSESSING THE CONTEXT

Scaffolding is the most suitable type of work equipment for access to and working at heights.

In other words, it provides a safe workstation for all work to be performed at a height, as well as safe access.

Scaffolds consist of construction elements or modules available from manufacturers and/or suppliers.

They can be either fixed or mobile.

Before choosing scaffolding, you need to clearly specify your needs, for example:

- For which type of work is the scaffold going to be used?
- Which types of work are going to take place simultaneously on the scaffold?
- What is the total height required?
- What are the geometric features to be taken into account?

- What are the additional loads, both static and dynamic?
- How will workers access the various levels with loads?
- What type of anchoring can be used?
- Must the scaffolding be compatible with other structures or equipment (goods lifts, winches, etc.)?
- What are the possible means of attachment and levelling?

After choosing the scaffolding, and if the calculation sheet for it is not available or does not cover the planned structural configurations, a strength and stability calculation must be carried out, except where the scaffolding is assembled in accordance with a generally recognised standard configuration.

CAUTION:

Special care must be taken in the case of arc-welding or other operations entailing a risk of electrocution. Additional measures must be taken in order to avoid this risk to workers.

For work on scaffolding near overhead power lines or electricity installations, minimum safety distances must also be respected and measures must be taken to protect workers against possible risks of electrocution as a result of direct contact or electrostatic charge due to the electromagnetic field. For more information, see section 3.5 'Recommendations for work at a height in or near electricity installations'.

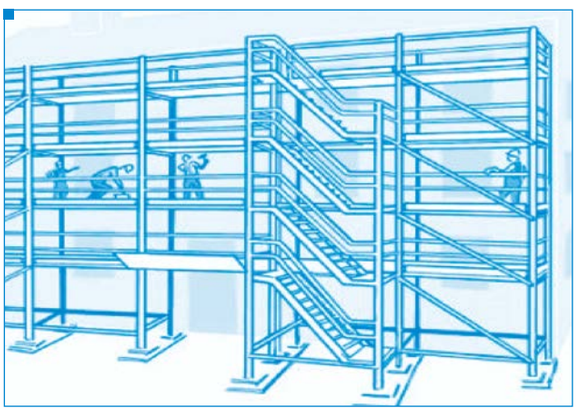
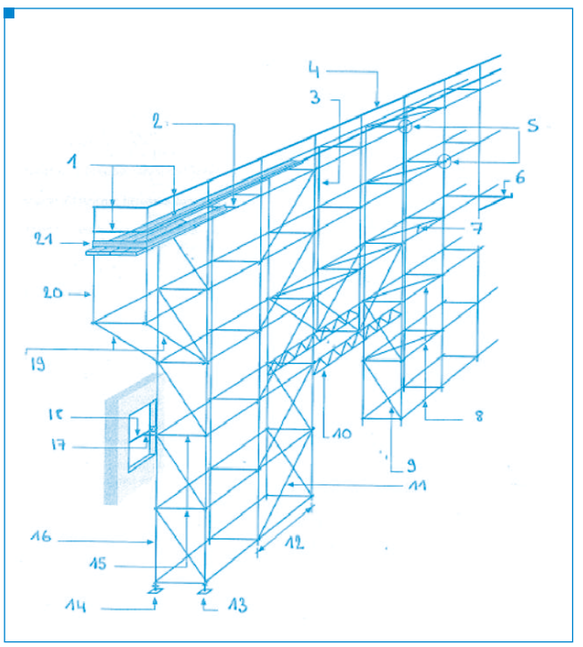


DIAGRAM OF A CONVENTIONAL INDEPENDENT SCAFFOLD

1. Double handrail
2. Intermediate transom
3. Standard
4. Guard rail
5. Node point
6. Cantilever stage bracket (hop-up)
7. Plan bracing
8. Lift height
9. Cross/ledger bracing
10. Unit beam/ladder beam
11. Facade bracing/sway bracing
12. Bay length
13. Baseplate
14. Basejack
15. Transom
16. Standard
17. Tie tube
18. Reveal tie
19. Knee brace
20. Puncheon
21. Working platform (decking).



4.1.2 INSTALLATION

PREPARING THE GROUND

Before installing scaffolding, it is essential to prepare the ground on which it will stand.

Among other things, it is necessary to ensure that the ground is stable enough to prevent the scaffolding collapsing.

For this purpose, it is necessary to:

- check the stability of the ground to ensure that there is no fragility or open excavations nearby;
- compact the ground or build foundations if necessary, depending on the foreseeable loads and the nature of the ground;
- check whether activities in the surrounding area represent specific risks which might affect the scaffolding's stability;
- check and divert rainwater, avoiding erosion of the ground;
- in the case of sloping foundations (footpaths, roadways) use base plates which prevent slipping and/or permit adequate rotation to ensure that the capacity

of the standards is adequate to sustain the calculated load.

The base of the scaffolding should never be allowed to rest on hollow building materials (bricks, concrete blocks) or wooden parts subjected to bending forces if their strength has not been calculated.

Preparing for the arrival and receipt of scaffolding parts

In order to prepare for the arrival and receipt of scaffolding parts:

- Prepare the equipment storage area, including signs.
- Organise unloading and storage to ensure satisfactory preservation of the elements (load-bearing capacity, functionality, etc.) and reduce the risks related to this operation (falling objects, falls by workers, impacts, manual handling of loads, etc.).
- Check the condition of each scaffolding element before it is used, and replace any that are defective.
- Check the quality of the walls or other surfaces that will be used for anchoring the scaffolding.
- Check the quality of welds, the geometry of the parts and any rusty areas.
- Check the condition of metal or wooden boards, footings or other elements that are of fundamental importance for scaffolding stability.
- Protect parts from contamination and bad weather (if this has not already been done).

Installing scaffolding near an electric power line

The installation of scaffolding near an electric power line and/or an electricity installation (substation, distribution centre, etc.) necessitates certain preventive measures, based on the risk assessment.

These precautions must be indicated in the documentation on the risk assessment and may include one or more of the following measures:

- rerouting the lines
- having the power turned off
- installing barriers or insulation between scaffold and lines.

Earthing is also recommended:

- for scaffolds located near overhead lines or an electricity installation as mentioned above
- for scaffolds on the roofs of high-rise buildings.

Caution:

In the case of work in or near electricity installations (power lines, substations, etc.), the additional electricity risks need to be taken into account. For more information on these risks, see section 3.5 'Recommendations for work at a height in or near electricity installations'.

Transporting and storing loads on scaffolding

Scaffolding boards have weight limits that must not be exceeded.

The weight of pallets of construction materials such as concrete blocks and bricks may exceed the nominal loads and forces recommended by scaffolding manufacturers.

Transport:

Transport systems for materials associated with and/or attached to scaffolding must be assembled and used in accordance with manufacturers' recommendations, so as to avoid overloading and hence exceeding their load-bearing capacity. Such systems must take account of access to scaffolding and there should be no obstructions, so that workers can be evacuated in an emergency.

Storage:

A loading bay is required where pallets of heavy materials have to be lifted onto a scaffold.

Properly constructed loading bays can prevent the scaffolds from being overloaded and hence exceeding their load-bearing capacity.

The manufacturer's instructions for the erection of loading bays should be consulted.

Protection:

Loading bays with unguarded openings or edges must not be used; guard rails must be installed before use.

CAUTION:

Storing all the material required for a job on a scaffold or in a loading bay (in order to reduce movements and save time) is a practice to be avoided at all cost.

4.1.3 ASSEMBLY, USE AND DISMANTLING

GENERAL

'*Depending on the complexity of the scaffolding chosen, an assembly, use and dismantling plan must be drawn up by a competent person. This may be in the form of a standard plan, supplemented by items relating to specific details of the scaffolding in question*'. (Section 4.3.2 of the Annex to Directive 2001/45/EC).

The size, shape and layout of scaffolding flooring must be appropriate for the type of work to be performed and suitable for the loads to be borne, and allow safe work and movement. The scaffolding flooring must be assembled in such a way that its components cannot move in the context of normal use. There should be no dangerous gaps between the flooring components and vertical fixtures for collective protection against falling.

'*When parts of a scaffolding are not ready for use, for example during assembly, dismantling or alteration, they must be marked with general warning signs in accordance with the national provisions transposing Directive 92/58/EEC and be suitably delimited by physical means preventing access to the danger zone*'. (Section 4.3.5 of the Annex to Directive 2001/45/EC)

'*Scaffolds may be assembled, dismantled or significantly altered only under the supervision of a competent person and by workers who have received appropriate and specific training in the operations envisaged, addressing the specific risks in accordance with Article 7 of Directive 89/655/EEC, and more particularly in:*

(a) understanding of the plan for the assembly, dismantling or alteration of the scaffolding concerned;

(b) safety during the assembly, dismantling or alteration of the scaffolding concerned;

(c) measures to prevent the risk of persons or objects falling;

(d) safety measures in the event of changing weather conditions which could adversely affect the safety of the scaffolding concerned;

(e) permissible loads;

(f) any other risks which the above-mentioned assembly, dismantling or alteration operations may entail.

The person supervising and the workers concerned must have available the assembly and dismantling plan referred to in 4.3.2 of the Annex to Directive 2001/45/EC, including any instructions it may contain'. (Section 4.3.6 of the Annex to Directive 2001/45/EC).

Employers responsible for the assembly and/or use of scaffolds must adopt a safe system of work when erecting, altering or dismantling them.

This will generally involve using fall arrestor equipment.

Scaffolding systems must be erected following the manufacturer's instructions, as some systems may require more attachments than independent scaffolding.

Scaffolding assembly

When assembling scaffolding, the manufacturer's manual and instructions must be followed.

In addition, the following provides a non-exhaustive list of good practices to be followed:

- posts and standards must be vertical over their entire height;
- joints, stringers and cross-members must be assembled as stipulated in the manufacturer's manual, complying with instructions for assembly and use, and ensuring that the tightening torque is complied with;
- joints must be positioned in such a way that their bolts are subjected to no forces other than those due to their tightening;
- the intersection of two scaffolds meeting at the corner of a building must be secured against falls, and possible interactions between the two scaffolds checked;
- the loads exerted on a scaffold (dead load, impact load and wind load) are usually substantial and must therefore be allowed for when choosing the scaffolding.

Safe way to erect a scaffold

During assembly:

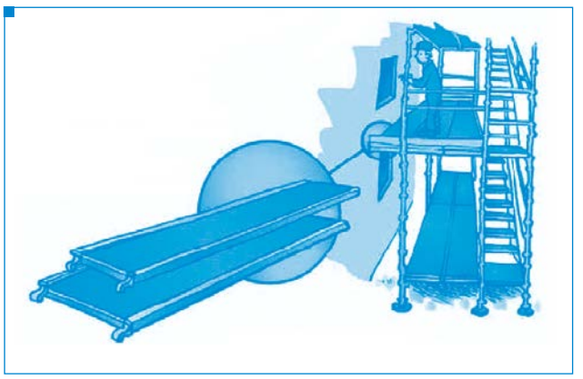
- workers should use collective protection equipment;
- before gaining access to the upper floor, the worker performing assembly should put in place a guard rail from the protected lower floor;
- scaffolding that allows this method of placing guard rails should be used;
- access to each upper level, during assembly, should be via ladders or stairways set up as the work progresses;
- where the scaffold does not provide intrinsic safety (e.g. guard rails and toe-boards), individual protective measures to prevent falls should be used (e.g.:safety harness).

Minimising the gap between building and scaffold

The scaffold should be erected as close as practicable to the building.

Where practicable, the gap between the scaffold and the building should be closed by using cantilever platform brackets at platform level.

If such brackets cannot be used, collective protection equipment on both sides of the scaffold is recommended.



Anchoring a scaffolding

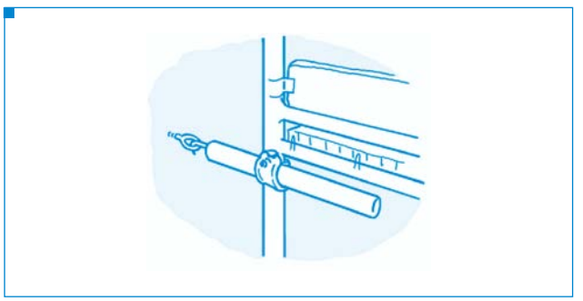
The scaffold anchoring points must be in the facade or in the surface in front of which the scaffolding is set up.

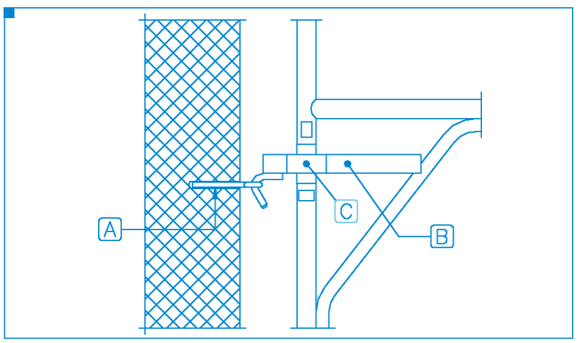
The anchoring points to which the anchors are attached are usually:

- expansion bolts;
- a tie;
- a cast in tie.

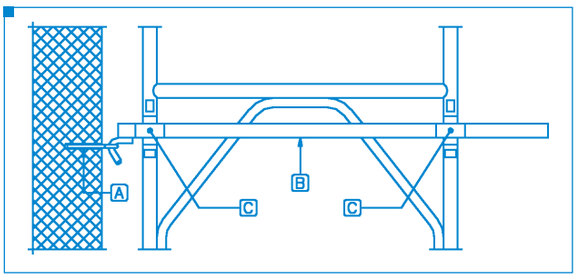
Guard rails, support bars, rainwater downpipes, roof gutters, etc. should never be used as anchoring points, as they may not be sufficiently secure.

Expansion bolts

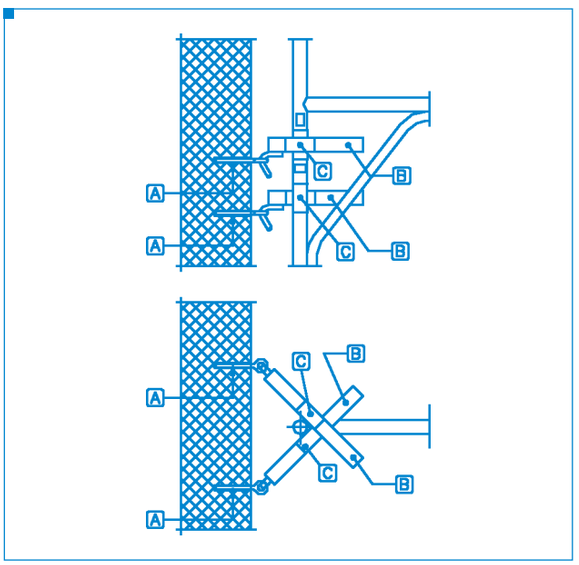




A. Tie
B. Tie tube
C. Coupler

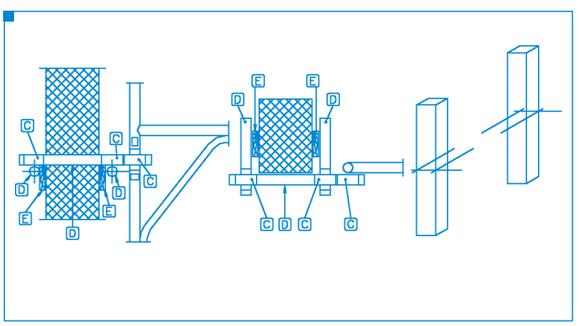


A. Tie
B. Tie tube
C. Coupler

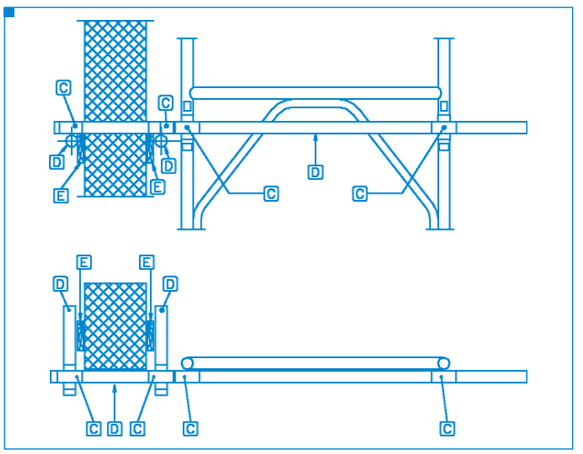


A. Tie
B. Tie tube
C. Coupler

TIE

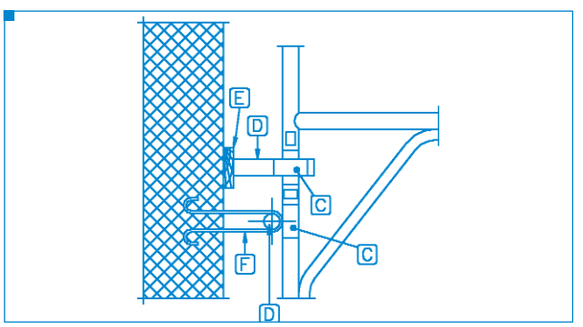


C. Coupler
D. Butt tube
E. Packing or wedge

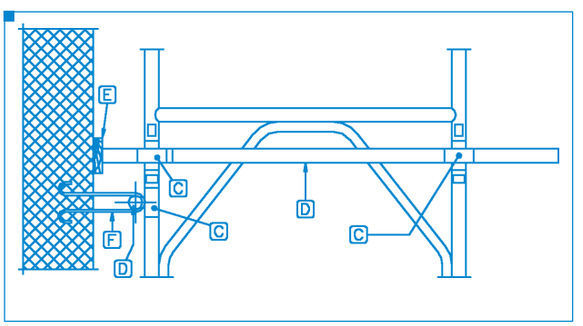


C. Coupler
D. Butt tube
E. Packing or wedge

CAST-IN TIE



C. Coupler
D. Butt tube
E. Packing or wedge
F. Cast-in tie



C. Coupler
D. Butt tube
E. Packing or wedge
F. Cast-in tie

Bracing

Bracing is required to steady the scaffold and prevent it from swaying.

Swaying can cause instability welds to crack and standards to overstress.

The instructions of the scaffolding manufacturer should be consulted to identify the points where wind bracing is required.

Bracing should extend without breaks to the bottom of the scaffolding.

The scaffolding must be braced in accordance with the manufacturer's recommendations.

Sheeting

To prevent objects falling or being dropped onto the public highway, and also to improve workers' comfort (rain, cold, wind, etc.), scaffolds may be enclosed with sheeting.

Sheeting may consist, for example, of wire netting, corrugated sheets, nets, plastic elements or wooden panels.

It should be fixed securely to prevent materials from passing through it.

It should be inspected regularly, particularly after strong winds.

Sheeting will significantly increase the wind loading on a scaffold and on the ties and tie couplers, so, when it is used, checks should be carried out on all scaffolding elements, in particular the general structure, anchor bolts, wind bracing and foundations.

4.1.4 Access

Obtaining access to scaffolding

A safe means of access to the scaffold must be provided.

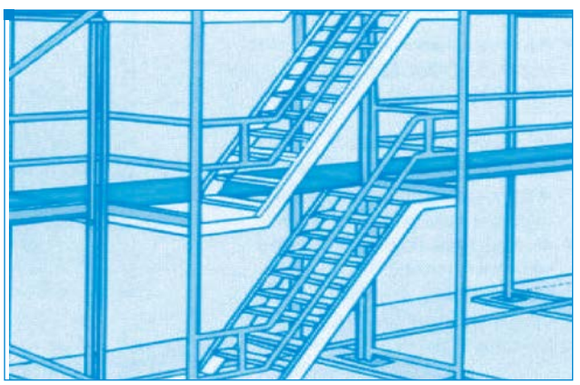
A sufficient number of access points must also be provided so that workers can easily access their place of work.

The following may be used:

- gangways
- stairways (installed in accordance with the manufacturer's instructions)
- landings
- ladders (to be installed on the shortest side of rectangular scaffolds, within the base area)
- ramps, etc.

Access to platforms must be designed or arranged so that it is possible to evacuate a worker safely in the event of an accident. Access should be through a hatch with a hinged cover or through a stair tower.

If an elevator or another means of lifting is used to access the scaffold, it must be designed to carry workers and not just materials.



4.1.5 Protection

Using toe-boards

Toe-boards help prevent materials from falling.

They also help prevent persons falling between the guard rail and platform.

- Toe-boards and end toe-boards must be fixed to all work platforms.
- Toe-boards must be of a sufficient height and must be securely fixed to the standards.

Preventing falling objects

The risk assessment will identify the most appropriate measures to prevent objects from falling.

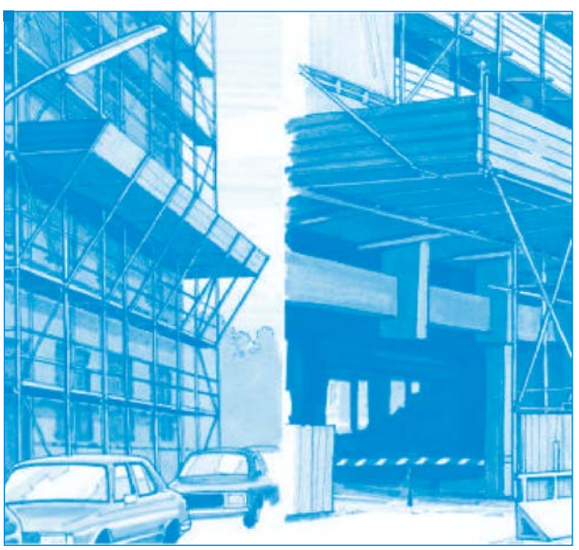
Awnings are often the most suitable way of protecting pedestrian traffic areas and access points to the structure.

Awnings normally consist of an inclined support extending from the building and covered in decking.

The loads exerted on a scaffold by an awning (dead load, impact load and wind load) are usually substantial and must therefore be allowed for when choosing the scaffolding.

Measures must be taken to prevent materials falling from working platforms.

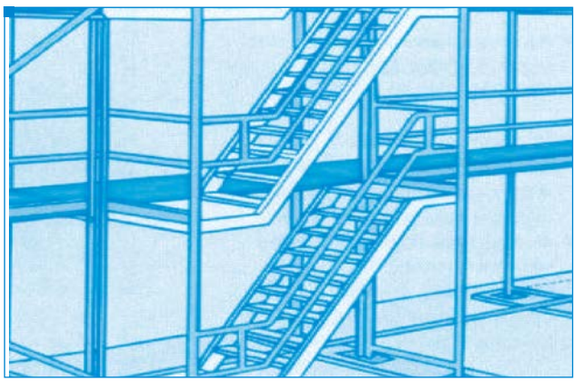
Areas located above entrances to the site or above where persons are working represent an additional risk and are most in need of protection.



4.1.6 Use

Using scaffolding

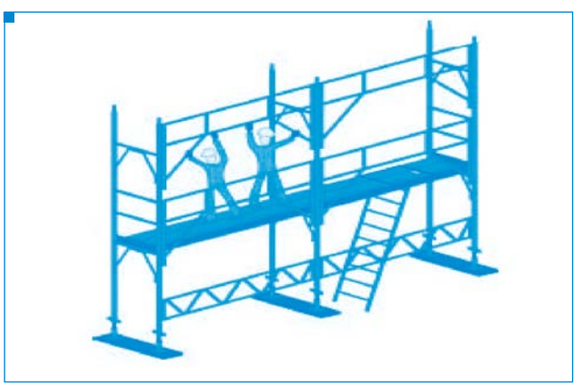
- Use the access points provided;
- No jumping across gaps;
- No standing or climbing on longitudinal braces or guard rails;
- Do not install makeshift ladders or improvised devices for access.



Working safely on scaffolding

The following must be avoided:

- working on scaffolding during storms or strong winds;
- overloading the scaffolding standards or platforms (comply with the manufacturer's recommendations);
- leaning materials or equipment against the guard rails;
- subjecting the scaffolding to forces which it is not capable of withstanding (comply with the manufacturer's instructions);
- altering the structure of the scaffolding without taking the necessary precautions (recalculation, verification of anchorage points, etc.), taking account of the manufacturer's instructions and recommendations, and if necessary consulting the manufacturer beforehand.



Checking the decking

The decking or work surface must enable workers to perform their jobs on scaffolding in complete safety.

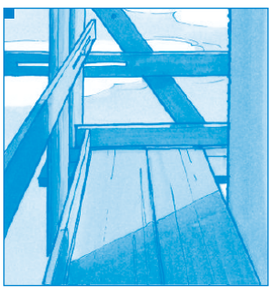
Decking may consist of timber boards or prefabricated decking units.

In poor weather conditions (rain, snow, ice), the characteristics of the decking used (wood, aluminium, steel) must be taken into consideration.

Platforms (boards and decking) must be maintained in good condition.

Where a platform has not been fully boarded or has lost boards, work must be suspended and not restarted until the missing boards are replaced.

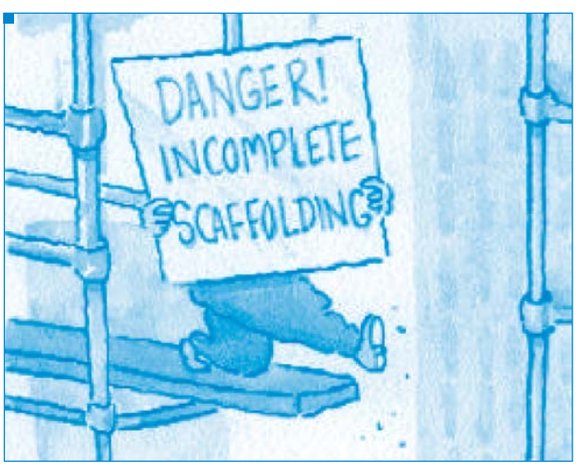
Working platforms must be wide enough and sufficiently boarded to allow safe passage of persons along them.



Prior to use

Prior to use, check that:

- an assembly, operation and dismantling plan has been prepared, in line with the complexity of the scaffolding chosen, and assembly has been supervised by a competent person and by workers who have received adequate training;
- the worker in charge of scaffolding assembly and the user, where they are different people or different companies (where assembly is subcontracted), should both be satisfied that the scaffolding will provide a safe work platform and safely withstand the loads exerted during its use;
- the areas of the scaffold which have been handed over are clearly identified;
- the maximum capacity of the loading bays and work platforms is known;
- the entire area of the scaffold is inspected before it is taken into use (an inspection check-list may be used);
- an inspection report is drawn up and a copy retained on site;
- the responsibilities for maintaining, altering and inspecting the scaffold are clearly laid down.



4.1.7 Inspection

Checking scaffolding prior to use (Part 1)

Before using scaffolding, check that:

- it is appropriate for the planned job or jobs;
- it allows safe access to the place where the work will be performed;
- it has firm and stable bases;
- its standards are properly assembled and braced against the wind;
- the work platform is not too high in comparison with the width of the base;
- the scaffolding is sufficiently anchored;
- the anchor bolts are sufficiently solid;
- the accesses comply with the necessary conditions for use;
- all the guard rails are in place and effective;
- the scaffolding is correctly signposted.

Checking scaffolding prior to use (Part 2)

Is there an assembly, operation and dismantling plan drawn up by a competent person?

Are scaffolds erected, modified and dismantled by competent workers?

Are all standards provided with base plates (and, where necessary, timber sole plates)?

Are all standards, ledgers, braces and struts in position?

Is the scaffold secured to the building or structure in enough places to prevent collapse?

Are there double guard rails and toe-boards or other suitable protection at every edge, to prevent falling?

Are there toe-boards to prevent materials falling from scaffolds?

Are work platforms fully boarded and are the boards installed so as to prevent falling over, stumbling or slipping?

Are there effective barriers or warning notices (signposting) in place to stop workers using an incomplete scaffold, e.g. where work platforms are not fully boarded?

4.2 Other types of scaffolding

4.2.1 Tower scaffold

Choosing tower scaffold

Some scaffolds are designed to be moved; in other words they are not fixed.

These types of scaffolds may be chosen only after undertaking a risk assessment taking account of:

- the work to be performed;
- the location of the work equipment (mobile scaffold);
- the maximum load;
- the height at which work is to be carried out;
- dimensional constraints;
- the external work environment (electric power lines, other work in progress, etc.);

Assembling and installing tower scaffold

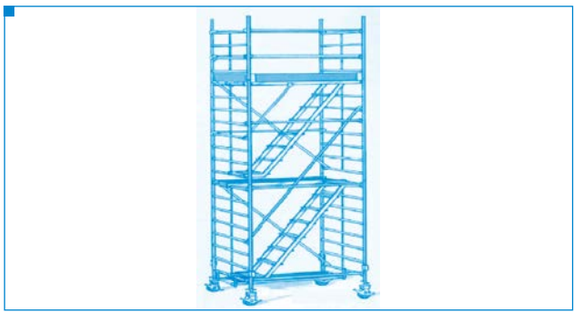
Ensure that:

- there is a plan for scaffolding assembly, operation and dismantling consistent with the manufacturer's instructions, taking account of the specific conditions in the workplace;
- the person who assembles and dismantles the scaffolding has the requisite expertise;
- the person who examines the scaffolding before it is put into operation has carefully verified (in particular) that all the pins and keys have been installed, and that the wind bracing instructions are complied with;
- the ground is horizontal or sloping only very slightly;
- means of preventing unforeseen and uncontrolled movement are put in place to avoid additional risks to workers working on or near the scaffold.

Access to tower scaffold

Safe and practical access from the inside must be provided for workers, for example:

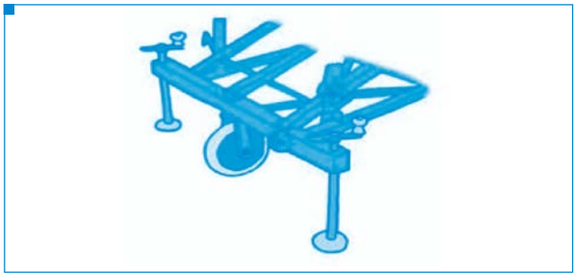
- ladders should preferably be slanting or, if vertical, fitted with hoops;
- access hatches to different levels should be offset.



Moving and using tower scaffold

The movement and use of tower scaffold (instructions, methods, equipment, coordination, duration, workers, etc.) must be organised in such a way that:

- the scaffolding is moved without any workers on the boards;
- the ground travelled is free of obstacles or irregularities;
- the wheels can be properly locked during work so that no unforeseen or unintentional movement can occur;



- the scaffolding is always well away from overhead power lines or other installations that could entail a risk of electrocution;
- guard rails are never used to raise the work floor.

SUPPLYING MATERIAL TO TOWER SCAFFOLD

The method used to supply work materials to a tower scaffold must not risk destabilising the scaffold.

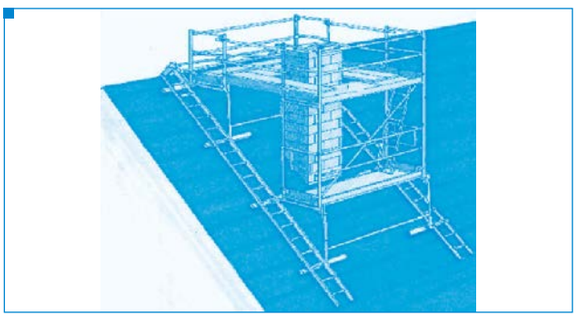
Supply systems must not destabilise the mobile scaffold, with particular attention to the risk of fitting lifting devices (e.g. pulleys) at the outer edge of the work platform of a tower scaffold.

4.2.2 SCAFFOLDING FOR SPECIFIC WORKS

SCAFFOLDING FOR CHIMNEYS

If, following the risk assessment, scaffolding is chosen for work on a chimney:

- keep the manufacturer's erection and operating instructions available on site and comply with them;
- check that the roof structure is capable of withstanding the stresses described in the erection and operating instructions;
- check that workers performing on a roof from scaffolding are using PPE against falls (harnesses);
- install edge protection devices all along the flooring;
- check the need for anchoring the scaffolding.

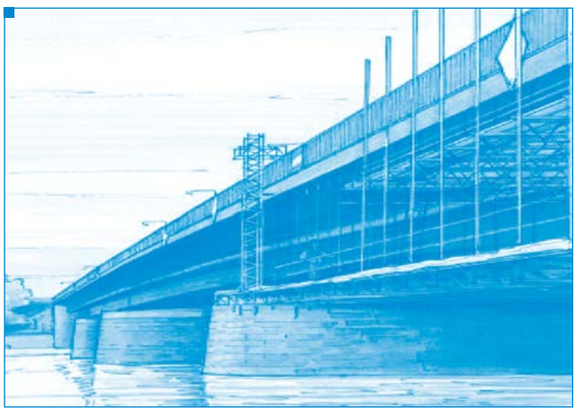


FIXED SUSPENDED SCAFFOLDING

This type of scaffolding is used on bridges and ships, e.g. for construction or maintenance of external parts.

Where such scaffolding is used:

- Assemble the scaffolding in accordance with the manufacturer's rules and an assembly plan drawn up by a competent person.
- Ensure its stability.
- Check that tarpaulins and nets can withstand the stresses exerted.
- Use only non-flammable materials for suspension.
- Prevent the risk of the scaffold swaying in all directions.
- Assemble the flooring in such a way that the surface is level; install edge protection devices in all cases.
- Provide and signpost safe access routes to workplaces on suspended scaffolding, to avoid the risks of falling from a height.
- Once installed, check the scaffolding regularly, especially the parts and components that are critical for workers' health and safety.



4.3 LADDERS

4.3.1 CHOICE AND RISK ASSESSMENT

SPECIFIC PROVISIONS REGARDING THE USE OF LADDERS (DIRECTIVE 2001/45/EC)

'Ladders must be so positioned as to ensure their stability during use. Portable ladders must rest on a stable, strong, suitably-sized, immobile footing so that the rungs remain horizontal. Suspended ladders must be attached in a secure manner and, with the exception of rope ladders, so that they cannot be displaced and so that swinging is prevented.' (Section 4.2.1 of the Annex to Directive 2001/45/EC)

'The feet of portable ladders must be prevented from slipping during use by securing the stiles at or near their upper or lower ends, by any anti-slip device or by any other arrangement of equivalent effectiveness. Ladders used for access must be long enough to protrude sufficiently beyond the access platform, unless other measures have been taken to ensure a firm handhold. Interlocking ladders and extension ladders must be used so that the different sections are prevented from moving relative to

one another. Mobile ladders must be prevented from moving before they are stepped on'. (Section 4.2.2 of the Annex to Directive 2001/45/EC).

'Ladders must be used in such a way that a secure handhold and secure support are available to workers at all times. In particular, if a load has to be carried by hand on a ladder, it must not preclude the maintenance of a safe handhold'. (Section 4.2.3 of the Annex to Directive 2001/45/EC).

CAUTION:

Ladders may be used as workstations for work at a height only where the use of other, safer work equipment is not justified because of the low level of risk, and either the short duration of use or existing features on site that the employer cannot alter.

CONSIDER THE DISADVANTAGES OF WORKING ON A LADDER

The ladder is a piece of equipment much used for work at a height.

However:

- when using a ladder, the working width is rather limited;
- the time involved moving and setting up ladders is often underestimated when planning work;
- the working position on a ladder is often uncomfortable (ergonomic issues include the need to stretch sideways, work above shoulder height and stand on narrow rungs for a long time), which can cause musculoskeletal disorders.

For all these reasons, when planning work and undertaking risk assessment, check whether it is not safer and more efficient to use another type of work equipment, for example tower scaffold, fixed scaffold or lift.

WHETHER TO USE LADDERS OR ANOTHER TYPE OF EQUIPMENT?

Ladders are used:

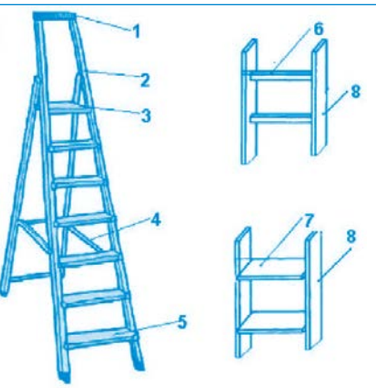
- as a means of access to bridge height differences;
- as workplaces for short jobs.

Following a risk assessment, the use of ladders, should be limited to situations where the use of safer systems is not justified for the following reasons:

- minimal risk;
- short period of use;
- technical conditions on the construction site which the employer cannot change.

DIAGRAM OF A LADDER

1. Hand grip
2. Extension
3. Platform
4. Anti-splay device
5. Step
6. Rung
7. Step
8. Stile



OPTING FOR A LADDER

To establish whether it is possible to use a ladder, the following questions should be asked:

- Is there a safer working method or equipment?
- Are the ladders in sound condition?
- Will they rest against a solid surface and not on fragile or unstable materials?
- Will they be secured to prevent them slipping sideways or outwards?

- Will they extend for a sufficient height above their landing place? If not, are there other hand-holds available?
- Will they be positioned so that workers will not have to overreach?

CHOOSING A LADDER TYPE

The types of ladders most frequently used are stepladders and extension ladders.

The type of ladder should be chosen after a risk assessment taking into account factors such as:

- the height and circumstances in which the work is to be performed;
- the working load to be allowed for;
- ergonomic constraints during use;
- the presence of electric power lines or other installations liable to cause risks of electrocution by contact or through induction of an electromagnetic field (static charges). For more information on electricity risks, see section 3.5 'Recommendations for work at a height in or near electricity installations'.

The advantages and disadvantages of the various types of ladder should also be considered.

4.3.2 POSITION

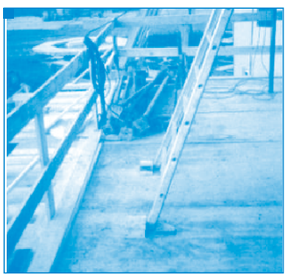
CHOOSING THE LADDER LOCATION

Before setting up a ladder, make sure that the location is firm and stable.

Ensure that there is sufficient free space around the ladder to enable workers to climb up and down in complete safety, without any risk of tripping.

If you have to place a ladder in a passageway, on the public highway, etc., take appropriate measures such as fencing, markings, signs or locking any doorway.

In some cases, a second person should stand guard and/or hold the foot of the ladder so that work can be carried out in complete safety.



ADAPTING TO THE GROUND

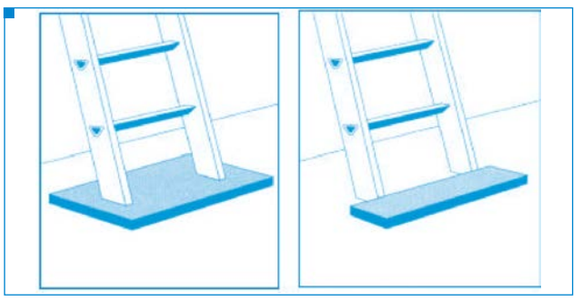
The floor or ground on which the ladder is placed should be firm, stable, flat and non-slippery.

If a ladder is placed on sandy ground, fine gravel, etc., use a base plate that is sufficiently solid to withstand the load of the ladder feet.

The ladder must never rest on a single stile.

It is strongly recommended that a single ladder or a manually or mechanically operated extension ladder should not be used on slippery surfaces.

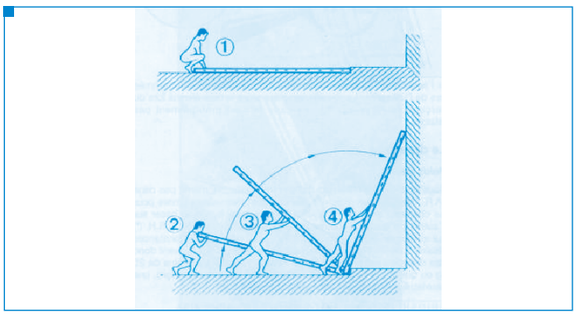
It is better to choose a stepladder to avoid the risk of slipping.



HOW SHOULD A SINGLE WORKER LIFT A LADDER?

1. Place the ladder flat on the ground and make sure that its feet are properly secured so as not to slide away during lifting.

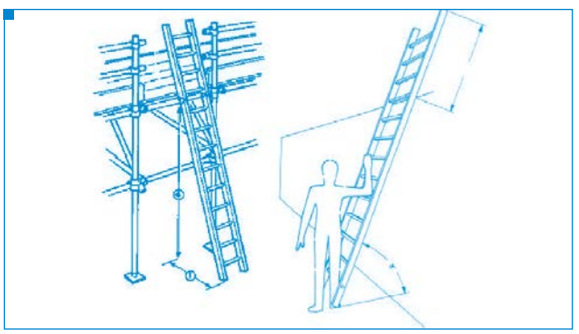
2. Raise the upper part of the ladder.
3. Continue to raise the ladder above your head.
4. Move forward slowly below the ladder, pushing one rung after another upward to raise it vertically.



Correct slope of a ladder

The slope of a ladder should be between 1 in 3 and 1 in 4.

This corresponds to an angle of approximately 75° (the most appropriate angle of inclination is between 70° and 75°).

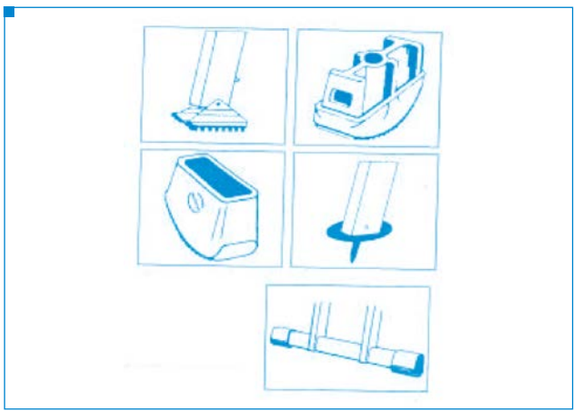


4.3.3 Stabilisation

Protecting the bottom of the ladder against slipping

Protection should be provided for the lower part of the ladder to prevent the risk of slipping. This protection may take the form of:

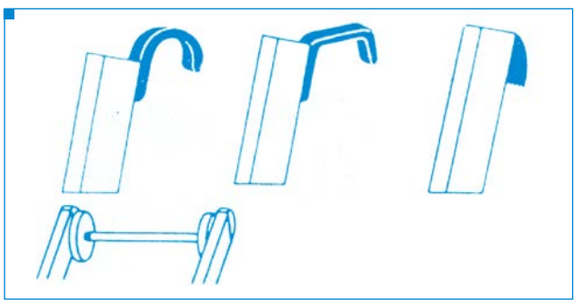
- a movable base with rubber suction cups or covers;
- external rubber feet for the stiles;
- internal rubber feet for the stiles;
- a foot with steel tip;
- a stabiliser (enlarging the base);
- any another element capable of ensuring satisfactory stability of the ladder and preventing it from slipping during use.



Preventing the upper part of the ladder from slipping

If the upper part of the ladder cannot be tied into place consider:

- rubber pads
- hooks
- rubber facade rollers.



Protecting the top of the ladder against slipping when working on poles

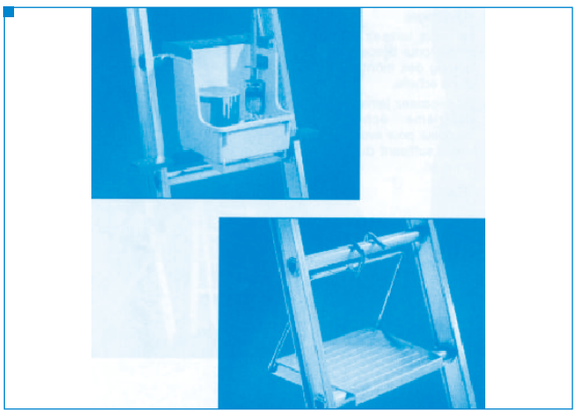
To achieve greater stability when working on poles, it is preferable to use projecting supports.

4.3.4 Use

Working on a ladder

The employer should ensure that workers, when working on a ladder:

- wear suitable boots, cleaned of mud, etc.;
- hold small tools in a belt or in a bag worn over the shoulder;
- carry heavy tools and materials in a bag, taking care not to overload the ladder and observing the manufacturer's instructions;
- pay attention to what is going on below them;
- never climb a ladder two rungs at a time;
- comply with the maximum authorised working load;
- never use a ladder as scaffolding or as a gangway.



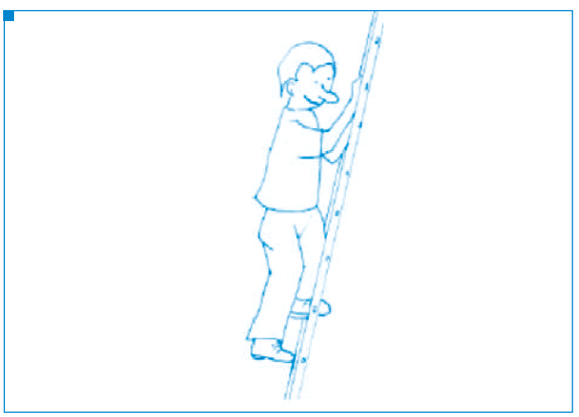
Climbing up or down a ladder

The employer should train and inform workers and ensure that they:

- always face the ladder;
- use both hands;
- hold onto the rungs and not the stiles;
- always have three contact points (1 hand + 2 feet or 2 hands + 1 foot);
- watch out for slippery support surfaces (floors, walls, etc.) and ladder rungs (water, oil, ice);
- never slide down the stiles of a ladder.

In order to minimise the risk of falling from a height, workers should :

- keep one hand free for safety and work with the other;
- never reach beyond an arm's length when stretching a hand out to the side (the ladder should be moved if necessary);
- never go beyond the fourth highest rung, so as to have adequate support during work;
- not allow anyone to stand under the ladder, not even a helper;
- take extra precautions when a ladder has to be set up in front of a door or passageway (lock the door or block off the passageway);
- always indicate their presence in an appropriate manner.



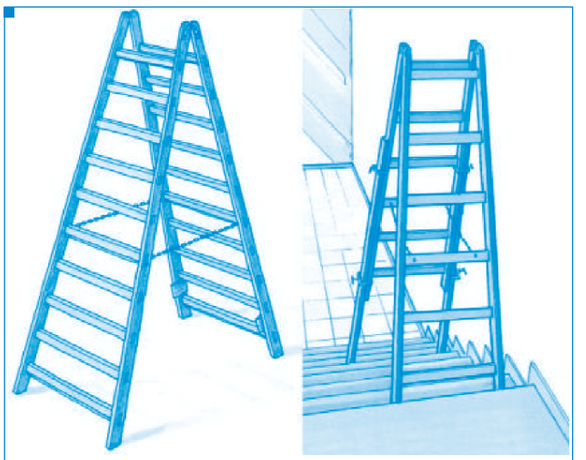
Using a stepladder

When using a stepladder:

- Provide workers with clear instructions on how to use a stepladder.
- Only stepladders fitted with robust locking devices should be used.
- Before each use, check that the stepladder is in sound condition (damaged stepladders should not be used).
- Position the stepladder correctly with the locking devices, and secure it so that it cannot slide or tilt.
- In order to use this type of ladder on stairs or a sloping surface, use sliding extensions and fix them to at least two points on each side.
- Erect the stepladder properly and do not climb onto the last step unless there is a safety bridge or a securing device.
- In places where there is traffic, secure by means of barriers.
- Always indicate the presence of workers in an appropriate manner.

Caution:

- do not move from a stepladder to another workstation or walkway;
- stepladders must not be used as single ladders.



Using an extension stepladder

The employer must provide workers with clear instructions for the use of this type of ladder.

Before each use, check that the ladder is in sound condition. Do not use damaged ladders.

Install the ladder securely, and fasten it so that it cannot slip or rock.

Do not climb on this type of ladder unless the locking device is properly extended.

Do not extend the ladder above the height stipulated by the manufacturer or national legislation.

When it is extended, do not climb on the top four rungs.

Do not move from this type of ladder to other workstations or walkways.

In places where there is traffic, install appropriate signs and secure the work area with barriers.

USING TELESCOPIC LADDERS

Erect, dismantle and use a telescopic ladder in accordance with the manufacturer's instructions.

Place it only on firm ground. Lighten the loads on the wheels and axles by means of supporting bars or the telescopic arm.

Comply with safety distances from overhead power lines, and take appropriate measures to prevent risks of electrocution.

Place and move a telescopic ladder in accordance with the manufacturer's instructions.

Climb a telescopic ladder only when it is placed in complete safety and the locking system is in position.

Protect workers against falls.

Indicate the workplace and the worker's presence in an appropriate manner.

USING FIXED LADDERS WITH SAFETY HOOPS

If, after assessing the risks, fixed ladders with safety hoops are to be used, check that:

- these ladders are corrosion-resistant;
- an appropriate protective device is installed near the access routes to workplaces at a height (hooped ladders, bars) so that workers can climb up and down safely and avoid additional risks of falling from a height;
- protective rails are installed above the highest workplace;
- ladders have rest landings at specified intervals;
- the workers concerned use appropriate personal protective equipment, e.g. safety harnesses.

When workers move from a hooped ladder to other equipment such as sliding formwork or uprights, the crossing point should be secured.

USING A FIXED LADDER ON INCLINED ROOFS

When a fixed ladder is used as a walkway, protective measures are necessary so as to ensure that workers can climb up and down safely.

Roof ladders used by chimney sweeps should be firmly secured to the roof.

4.3.5 INSPECTION AND MAINTENANCE

Checking, maintenance and repair of ladders

In order to ensure safety and comply with the manufacturer's essential safety requirements, ladders must be checked before every use.

All repairs must be entrusted to a specialist or preferably the manufacturer.

Checks must be carried out by a competent person to verify in particular:
- the attachment of the rungs to the stiles (tight, rigid assembly);
- the sound condition and attachment of fittings;
- the sound condition of welds;
- the absence of cracks and knots;
- damage to the rungs due to attachment of the locking system;
- the condition and attachment of any pull rope;
- the condition of anti-splay devices;
- the presence of splinters;
- the condition of anti-slip devices in both the upper and lower parts of the ladder;
- stability (detached rungs);
- the condition of devices to prevent slipping during work on balconies and other projecting surfaces;
- the condition of extension attachments on an extension stepladder;
- earthing arrangements in the case of work near or under the influence of electrical installations (risk of electrocution);
- the condition of the stabilising system of a telescopic ladder, taking into account the risks for associated cradles or platforms;
- the condition of protective devices for fixed ladders with safety hoops, including rails and rest areas.

Also:
- metal parts should be protected against corrosion;
- metal ladders not made of aluminium or stainless steel should be treated with a rustproof paint or other product.

Wooden ladders must not be painted, because the paint would make it impossible to see any cracks or other defects in the wood.

They should nevertheless be protected against woodworm, rot, mould, etc.

All surfaces of wooden parts should therefore be treated with a protective coating that is neither opaque nor impermeable (e.g. linseed oil).

4.4 INDIVIDUAL MOBILE PLATFORMS

LIGHTWEIGHT INDIVIDUAL MOBILE PLATFORMS (PODIUM STEPS)

If the risk assessment identifies frequent working at a low height in different places, thus with a risk of falling, platforms provided with guard rails, baseboards and handrails must be used.

Lightweight individual mobile platforms are more ergonomic and safer than single ladders or stepladders. They are often used in storage premises and warehouses.

During work the wheels must be locked in order to prevent accidental movement.

In addition:
- the condition of the platform and the ground must be checked before use, to prevent unforeseen slipping or movements;
- damaged individual mobile platforms should never be used;
- an individual mobile platform should not be used by more than one person at once;
- only platforms suited to the working conditions should be used.

CHOOSING AND USING AN INDIVIDUAL MOBILE PLATFORM

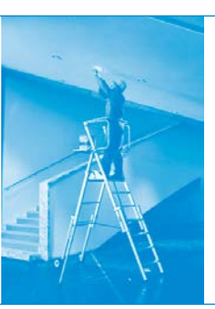
Such equipment must be used rather than ladders wherever possible:
- for work at low heights;
- if the ground is horizontal or flat;
- for work inside buildings or offices (for which it is particularly suitable).

If the ground is loose, soft or sloping, the stability of the platform must be ensured by placing plates under the feet.

Where the guard rails are removed for transport, they must be replaced before further use.

It is important to ensure that the stabilisers are all properly positioned before starting work.

Workers should avoid leaning over too far during work and should leave the platform before moving it.



4.5 CANTILEVERED PLATFORMS

WORK AT LOW HEIGHTS

If the risk assessment concludes that, for work at low heights, it is advisable to use cantilevered work platforms:

- use only steel or wooden supporting elements;
- always install supporting elements on a strong solid surface;
- assemble the work platform in such a way that the protection device is located on parts freely accessible to the workers and operates properly;
- comply with the manufacturer's instructions regarding loads and strength;
- determine the spacing between work platform supporting elements, and the strength and width of the flooring, according to the projected stresses;
- assemble flooring in such a way as to prevent risks of swaying and slipping;
- provide dense flooring in areas where there is a risk of shock;
- ensure flooring balance through at least three support areas;
- provide easy access if equipment is to be stored;
- provide access to the work platform via a stairway (rather than a single ladder);
- install edge protection devices with stair rails, intermediate standards and baseboards.

4.6 ROPE ACCESS AND POSITIONING TECHNIQUES

4.6.1 RISK ASSESSMENT AND CHOICE

SPECIFIC PROVISIONS REGARDING THE USE OF ROPE ACCESS AND POSITIONING TECHNIQUES (DIRECTIVE 2001/45/EC)

'Rope access and positioning techniques may be used only under circumstances where the risk assessment indicates that the work can be performed safely and where the use of other, safer work equipment is not justified.

Taking the risk assessment into account and depending in particular on the duration of the job and the ergonomic constraints, provision must be made for a seat with appropriate accessories'. (Section 4.1.3 of the Annex to Directive 2001/45/EC).

'The use of rope access and positioning techniques must comply with the following conditions:

(a) the system must comprise at least two separately anchored ropes, one as a means of access, descent and support (work rope) and the other as backup (security rope);

(b) workers must be provided with and use an appropriate harness and be connected by it to the security rope;

(c) the work rope must be equipped with safe means of ascent and descent and have a self-locking system to prevent the user falling should he lose control of his movements. The security rope must be equipped with a mobile fall prevention system which follows the movements of the worker;

(d) the tools and other accessories to be used by a worker must be secured to the worker's harness or seat or by some other appropriate means;

(e) the work must be properly planned and supervised, so that a worker can be rescued immediately in an emergency;

(f) in accordance with Article 7 of the Directive 89/655/EEC, the workers concerned must receive adequate training specific to the operations envisaged, in particular rescue procedures.' (Section 4.4 of the Annex to Directive 2001/45/EC).

'In exceptional circumstances where, in view of the assessment of risks, the use of a second rope would make the work more dangerous, the use of a single rope may be permitted, provided that appropriate measures have been taken to ensure safety in accordance with national legislation and/or practice'. (Last paragraph of the Annex, section 4.4 to Directive 2001/45/EC).

SCOPE OF APPLICATION

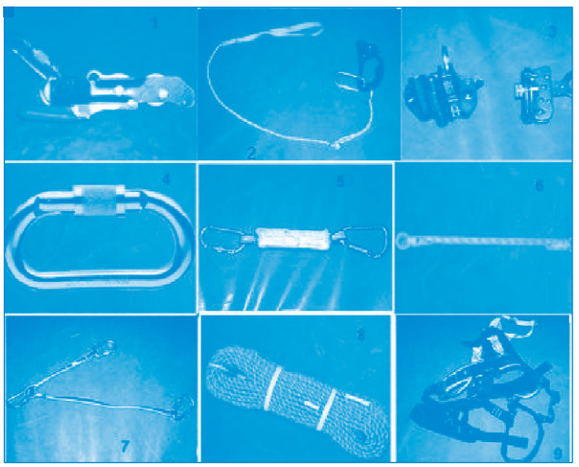
The information given here constitutes recommendations and guidance on the use of rope access methods for work at a height.

It is applicable to the use of ropes for access to workplaces at a height, such as buildings, other structures or natural features.

It applies to situations where ropes are used as the primary means of access, exit or support and as the primary means of protection against a fall.

DIAGRAM

1. Self-locking descending device
2. Ascender
3. Buck-up device
4. Connector
5. Energy absorber
6. Anchor lanyard / anchor sling
7. Y anchor cable
8. Working rope / security rope
9. Safety harness



OPTING TO USE ROPES

Before opting for rope access, a risk assessment should be performed to clearly establish the requirements relating to all aspects of the work.

'Rope access and positioning techniques may be used only under circumstances where the risk assessment indicates that the work in question can be performed safely and where the use of other, safer equipment is not justified'. (Section 4.1.3 of the Annex to Directive 2001/45/EC).

Such equipment may be chosen:

- where it is not physically possible to set up and use scaffolding;
- where it is not physically possible to set up and use a safe work platform;
- where it is not physically possible to set up and use another type of equipment for work at a height;
- where the nature of the site or duration of the work makes it impossible to provide and use the types of equipment mentioned above;

and provided that the following conditions are complied with:

a) the system must comprise at least two separately anchored ropes, one as a means of access, descent and support (work rope) and the other as backup (security rope);
b) workers must be provided with and use an appropriate harness and be connected by it to the security rope;
c) the work rope must be equipped with safe means of ascent and descent and have a self-locking system to prevent the user falling should he lose control of his movements. The security rope must be equipped with a mobile fall prevention system which follows the movements of the worker;
d) the tools and other accessories to be used by a worker must be secured to the worker's harness or seat or by some other appropriate means;
e) the work must be properly planned and supervised, so that a worker can be rescued immediately in an emergency;
f) the workers concerned must receive adequate training specific to the operations required, in particular rescue procedures.

Given the special nature of this work equipment, the employer should ensure that the workers concerned are adequately informed and trained.

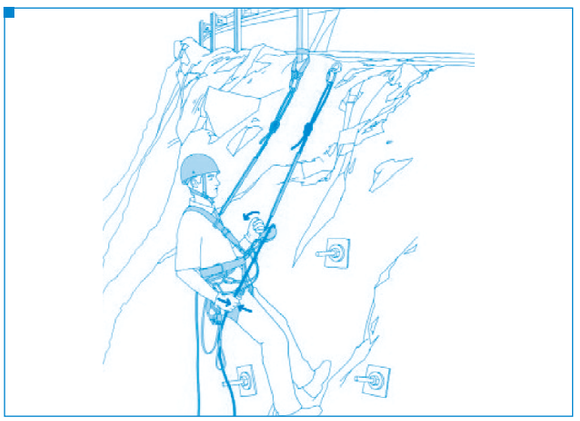
Statutory requirements apply, and employers are advised to take account of the capabilities of workers from the point of view of health and safety.

4.6.2 USING ROPES

WORKING PROCEDURES

Work procedures must include:

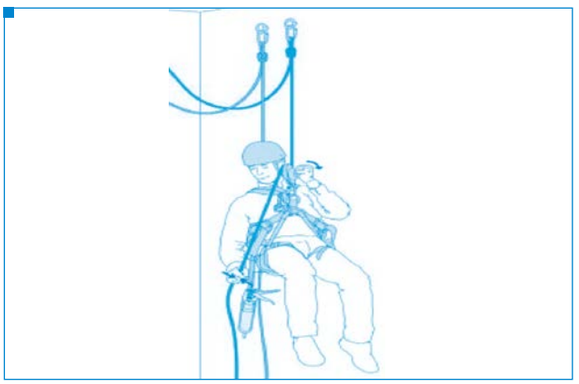
- pre-work inspection (especially at the start of each day);
- identification of danger zones;
- appropriate precautions to prevent damage to suspension equipment (e.g. rollers);
- provision for descent directly below the anchor to minimise the pendulum effect.



Working with rope access and positioning techniques

It shoud be ensured that:

- supervisors and workers are competent, and the working methods used are the most appropriate and take account of the latest known improvements in equipment and techniques;
- workers have the required physical aptitudes and suited to the tasks;
- workers work in teams of not less than two;
- workers are trained and competent in their assigned tasks;
- workers are provided with clothing and equipment appropriate to their work;
- workers are provided with a rescue and evacuation plan so that they can help a workmate who is in difficulty;
- an efficient communication system is put in place.



How to use ropes

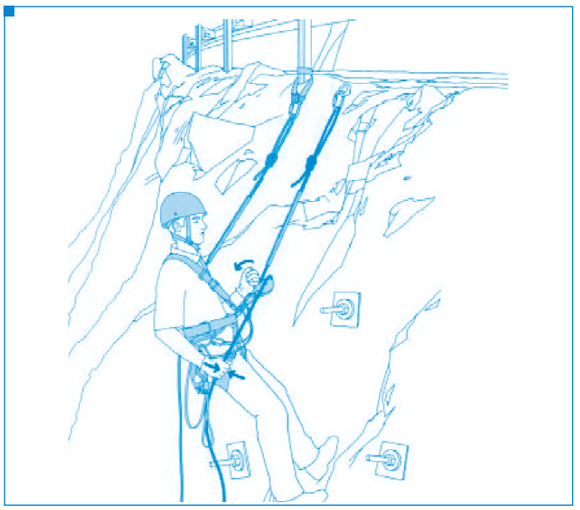
When using rope access, check that:

- the working zone is suitably marked;
- an appropriate harness is used (safety harness);
- the safety line is strong enough to withstand foreseeable forces, even in abnormal situations, e.g. rescue;
- equipment is suited to its application, properly maintained and stored in acceptable conditions;
- ascent and descent devices are capable of automatically stopping or slowing down rope movement to allow controlled descent.

How to use anchors

It should be ensured that:

- anchors are reliable;
- anchors are of a strength that is at least equal to that of the ropes attached to them (where there are no suitable anchors to which ropes can be attached directly, anchor slings should be used);
- where it is necessary to calculate forces, this is be done by a competent worker;
- the work plan covers the most complex anchor system to be used and that the workers are trained and competent to set up this type of anchor system.



Using double protection

The principle of double protection is important.

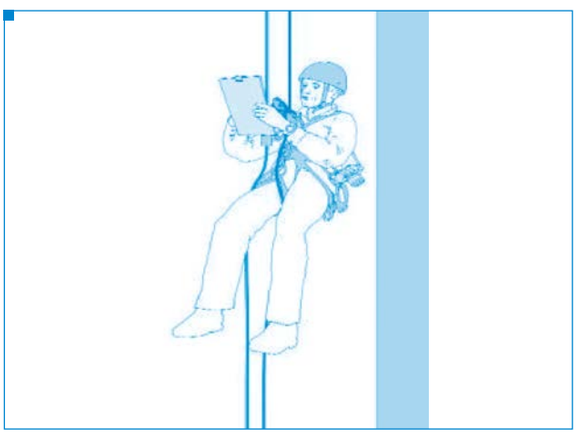
In rope access and where a worker is being moved or suspended, at least two independently anchored ropes must be used:

- one primarily as a means of access, exit and support (work rope);
- the other for additional safety (security rope).

How to use tools and work equipment

When using tools and other work equipment while working with ropes:

- workers shuld be trained in the correct use of those tools and work equipment;
- tools should be suitable for use whilist carrying out rope access work;
- appropriate protection of the rope should be provided in order to avoid damage caused by tools, chemical substances, fire, etc;
- appropriate steps should be taken to prevent tools from being dropped;
- all electrical equipment should be suitable for the environment in which it is used and that any risks of electrocution have been taken into account;
- small tools should be fastened to the workers' harnesses;
- Care should be taken to avoid entanglement of power leads with working rope and security rope;
- larger tools should be connected to a separate suspension system secured to an independent anchor;
- an effective communications system between workers should be provided;
- precautions should be taken to prevent equipment or materials falling into areas where they are likely to endanger other persons;
- exclusion zone should be established at the base of the rope access area.



4.6.3 Selection, inspection, maintenance and storage of rope access equipment

Selection

When selecting equipment and before use, the following checks are recommended:

- that the equipment conforms with standards relevant to the intended use;
- that the components are compatible with each other;
- that the product information supplied by the manufacturer (manufacturer's instructions for use) is understood by the workers;
- that information is provided on inspection, maintenance and storage.

Inspection

The employer must refer to the manufacturer's instructions regarding the inspection of ropes and accessories.

It is essential that all rope access equipment is given a pre-use visual and tactile inspection, by a competent person, before each use to ensure that it is in a safe condition and operates correctly.

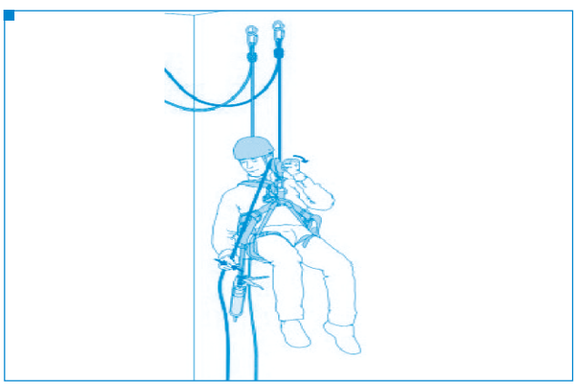
Advice should be obtained from the manufacturer on how to do this and this advice should be strictly followed.

Formal inspection procedures should be put in place to ensure that rope access equipment is given a detailed inspection by a competent person before first use and at intervals not exceeding six months, and after circumstances liable to jeopardise safety have occurred.

Where rope access equipment is used in arduous conditions, it is recommended that interim inspections are carried out over and above the pre-use checks, and detailed inspections at intervals determined by risk assessments are carried out at the beginning and during the work.

Both the detailed and interim inspections should be recorded.

Any item of rope access equipment showing any defect should be withdrawn from service.

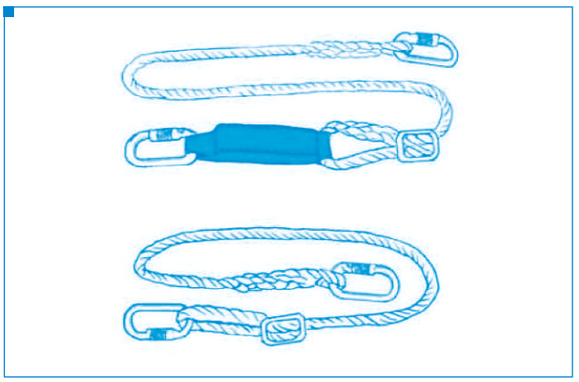


Textiles

Special attention should be given to textiles:

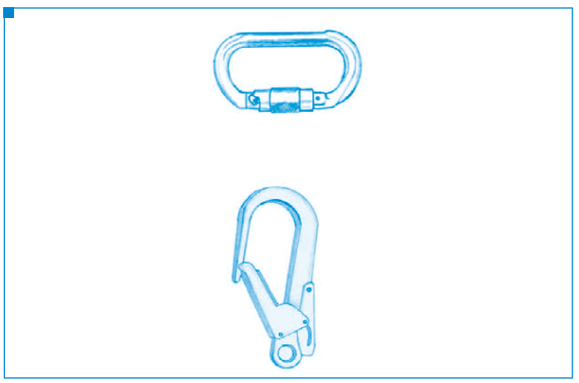
- contact with chemicals should be avoided, since chemical deterioration is difficult to detect: check for chemical damage, e.g. swelling or distortions, fibres appearing powdery or changes in colour;
- textiles should be checked for other damage such as abrasion and cuts;
- if in contact with rust, textiles should be washed;
- textile items that have endured a severe shock should be replaced (significant impact force);
- textiles should be washed at temperatures under 50° C with a pure soap or mild detergent with a pH range of 5.5 to 8.5 after which they should be thoroughly rinsed in cold clean water. Higher temperatures may cause textile characteristics to change.

Textile items should be allowed to dry naturally away from sunlight and other heat sources;
- exposure to UV light should be minimised. (UV light accelerates ageing and correspondingly reduces the strength of textile materials).



Metals

Special attention should be given to metal components:
- checks should be made for wear, cracks, deformation, corrosion or other damage;
- checks should be made for chemical contamination as some chemical products can cause excessive corrosion;
- metal components should be kept clean, and lubricated where necessary;
- metal components should only be cleaned by immersing in clean hot water, which may contain detergent or soap, for a few minutes;
- metal components used in a marine environment should be cleaned by prolonged immersion in clean cold water.



Helmets

Special attention should be given to helmets:
- the shells of helmets should be checked for cracks, deformation, heavy abrasion, scoring or other damage;
- chin straps and cradles should be checked including any fastening or adjustment.

Maintenance

Procedures should be established for the maintenance of rope access equipment and how this is to be recorded. Records listing all the items of rope access equipment issued should be kept. Records should include the lifespan and obsolescence date where provided by the manufacturer.

Sometimes disinfection may be necessary (e.g. after use in sewers). Equipment suppliers' advice may be important. Equipment should also be rinsed in clean cold water and allowed to dry naturally;

Equipment should not be altered without the manufacturer's prior approval.

Storage

After any necessary cleaning and drying, equipment should be stored unpacked in a cool, dry, dark place in a chemically neutral environment away from excessive heat or heat sources, high humidity, sharp edges, corrosive or other possible causes of damage. Equipment should not be stored wet.

4.7 Other equipment for working at a height

4.7.1 General

Various other items of equipment are available on the market to minimise the risks related to working at a height.

This equipment is not mentioned in the Annex to Directive 2001/45/EC.

Nevertheless, given that such equipment is used increasingly frequently, a few examples are presented here, purely as an illustration, together with some suggestions for safe use.

However, before choosing or using such equipment, the employer is required to carry out a risk assessment in accordance with Framework Directive 89/391/EEC.

Although there is no individual directive on the use of such equipment, the European Commission draws atten-

tion to the fact that directives other than the Framework Directive could also be applicable, in particular Directive 89/655/EEC on the use of work equipment by workers at work and Directive 95/63/EC on the use by workers at work with mobile equipment and work equipment for lifting loads.

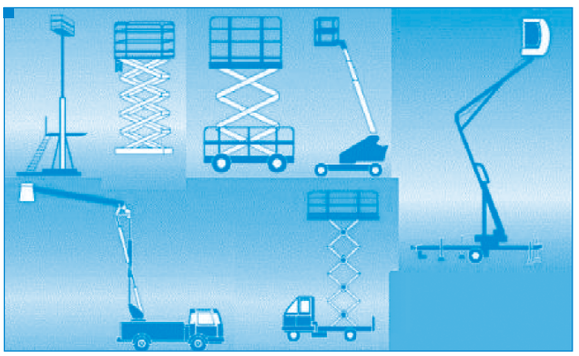
4.7.2 Mobile elevated work platforms (MEWPs)

When and how to choose a mobile elevated work platform (MEWP)

Whenever possible on the basis of the risk assessment, such equipment should be preferred to ladders or ropes.

Before choosing a MEWP platform, the following questions have to be considered:

- What is the necessary lifting height?
- What is the height difference between the place of work and the surface supporting the device?
- What are the characteristics of the supporting surface (nature, condition, slope and cant, obstacles, strength, etc.)?
- How many workers are required on board?
- What are the weights and sizes of parts and equipment to be lifted or taken on board?
- Are there any electrical installations — power lines, transformer and distribution station, radio and television transmitters or other electrical equipment — near or within the range of movement of the platform when in operation?



How to use a mobile elevated work platform (MEWP)

It is of prime importance to comply with the conditions of use specified by the manufacturer and observe the essential requirements for health and safety at work, in particular:

- the limits set to ensure the stability of the work equipment;
- the maximum wind speed.

When using a MEWP at a fixed location, it must be wedged and intermediate support plates used for the stabilisers (depending on the solidity of the ground).

It is important to check out the route before moving equipment, in particular to assess sloping and uneven surfaces: the slope must be compatible with the platform design.

When operating a boom type MEWP, workers must always be attached to a safety line (PPE) so as to prevent falls.

Following the risk assessment, also:

- Assemble and use the MEWP safely in accordance with the instructions provided by the manufacturer, and make sure that there is no risk of compressing or shearing structures in the working range of the platform.
- Wedge the MEWP if it is used at a fixed location.
- In such cases (and if the ground strength so requires), use intermediate support plates for the stabilisers.
- Check the route before moving a MEWP (for obstacles, irregularities, etc.).
- Where there is road traffic, secure the location underneath the work platform if there is a risk of collision with vehicles. Also use appropriate signs.
- Comply strictly with the recommendations in the operating instructions concerning the stability of the MEWP and the maximum wind speed.
- Observe a safety distance from overhead power lines and other electricity installations to avoid the risk of electrocution.
- Organise work so that in the event of an accident or emergency a second worker can always use the emergency controls.

INSTALLING, ASSEMBLING, MAINTAINING AND CHECKING A MOBILE ELEVATED WORK PLATFORM (MEWP) AND ITS CRADLE

This work equipment is extremely complex, requiring installation, assembly, maintenance and checks to be carried out by specially trained and highly competent workers.

Testing, checking of fitness for use, and routine maintenance and inspections are subjects that are too complex to be dealt with in a few words in a guide such as this. It is recommended that they be carried out at an approved workshop or by the supplier or manufacturer.

In all cases, the regulations and standards applicable in the country of use must be complied with.

Useful documents to help with the choice of Lifting cradles, Mobile elevating work platforms, Lifting platforms and Safety requirements for lifting tables are the following standards:

EN 1088:1999 Safety requirements on suspended access equipment – Design calculations, stability criteria, construction – Tests

EN 280:2001 Mobile elevating work platforms – Design calculations, stability criteria, construction – Safety, examinations and tests

EN 1495:1997 Lifting platforms – Mast climbing work platforms

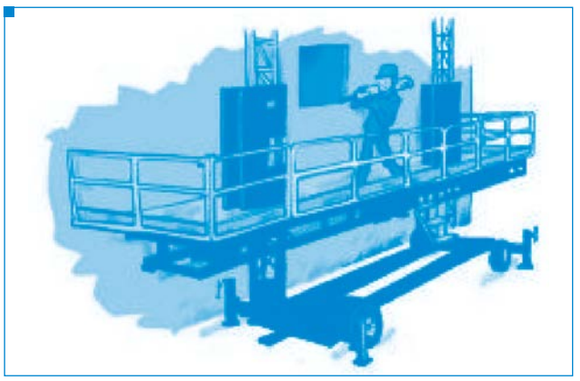
EN 1570:1998 Safety requirements for lifting tables

4.7.3 MAST CLIMBERS

CHOOSING MAST CLIMBERS

Mast climbers can be adjusted to the specific height needed, ensuring proper ergonomic working conditions. Mast climbers may be used for bricklaying, replacement of windows, etc.

The platform must be accompanied by a declaration of conformity (or a certificate if the equipment is hired or bought as second-hand equipment). Always follow the instructions provided by the supplier.



WHAT TO CHECK BEFORE USING A MAST CLIMBER

Before using a mast climber:

- make sure that it has been installed and checked by a competent person;
- make sure that nothing has changed since that check (surroundings, anchoring, securing, cables, incidents, etc.);
- check that weather conditions, in particular wind speed and intensity, are suitable for it to be used;
- determine the load-bearing capacity and the maximum material loads authorised by the manufacturer;
- each day, examine all the key elements (anchorage, platform, clamps, cables, lashing, safety gear, etc.).

USING A MAST CLIMBER

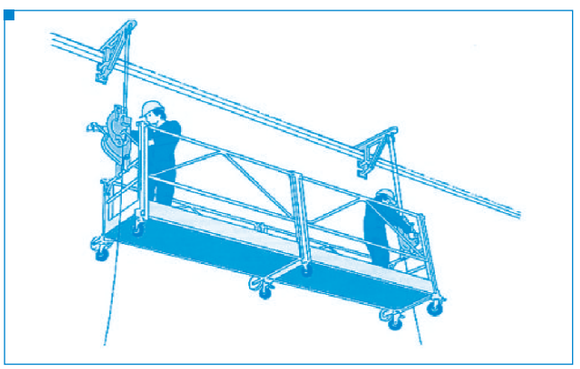
During use:

- raise or lower the platform slowly, keeping the floor more or less horizontal;
- be aware of any risk of breakage (open windows, etc.) when raising or lowering the platform;
- distribute loads as evenly as possible without exceeding the limits indicated by the platform manufacturer.

4.7.4 SUSPENDED PLATFORMS (CRADLES)

If, according to the risk assessment, the only possibility is to use a suspended platform, it should be remembered that this equipment, as it is suspended, may prove dangerous.

A suspended platform accompanied by a declaration of conformity (or a certificate if the equipment is hired) must therefore be chosen.



Moreover, preference should be given, where worker access at the base of the structure makes this possible, to platforms that travel along cables.

WHAT ELSE SHOULD BE CHECKED BEFORE USING A POWERED SUSPENDED SCAFFOLD OR MAST CLIMBER

Before using a powered suspended platform, make sure that there is:

- an automatic safety device (connected to the safety cable independently of the suspension element);
- a device to halt descent (in case the suspended platform becomes caught);
- a device to limit tension on the cable (if the suspended platform becomes caught during raising);
- travel limit switches (both upper and lower);
- a device that enables the suspended platform to be moved vertically and stops movements automatically if the difference in level is excessive.

Check that:

- the electrical installation is correct and measures against the risk of electrocution have been taken. For more information on these risks, see section 3.5 'Recommendations for work at a height in or near electricity installations';
- control devices are correctly set.

Also make sure that each of the winches can be controlled:

- simultaneously;
- by controls that immediately stop any movement if no one is at them;
- by controls that can be locked in stop position and are fitted with an emergency stop.

USING SUSPENDED WORK PLATFORMS

After assessing the risks of work at a height, suspended platforms may be used if no other safer work equipment can be used.

Suspended platforms, which require the use of cables, allow access to workplaces at a height and positioning relative to such workplaces.

If such equipment is chosen:

- only those workers who are duly trained and have received written instructions should be allowed to use it;
- on assembly, ensure that suspended platforms are stable and the operating instructions are followed;
- rails should be installed all around the platforms or cradles to prevent falls;
- two cables should be used for each attachment point: a load-bearing cable and a safety cable;
- lifting should be synchronised, keeping the work platform horizontal and the cables vertical;
- an automatic device should stop hoisting in the event of slanting;
- personal protective equipment (PPE) against falling from a height should be used;
- the functions and condition of suspended platforms should be checked before starting work (especially PPE or other additional measures to eliminate or minimise any risk of falling).

4.7.5 SUSPENDED CRADLES

MAINTENANCE AND CLEANING OF FACADES

One possible method for facade maintenance and cleaning is to use a suspended cradle.

A suspended cradle must in all cases be firmly attached to the building.

Also:

- Ensure that the cradle is working properly before each use.
- Authorise only duly trained workers to use a cradle; they must comply with the instructions for use.
- Install anti-fall protection systems on paths and points of access to the cradle.
- Require workers in non-guided cradles to wear a safety harness.
- The employer should obtain information on weather conditions (wind, temperature, ice, risk of frost, rain, etc.) and inform workers accordingly.

5. AUXILIARY AND ADDITIONAL PROTECTIVE EQUIPMENT

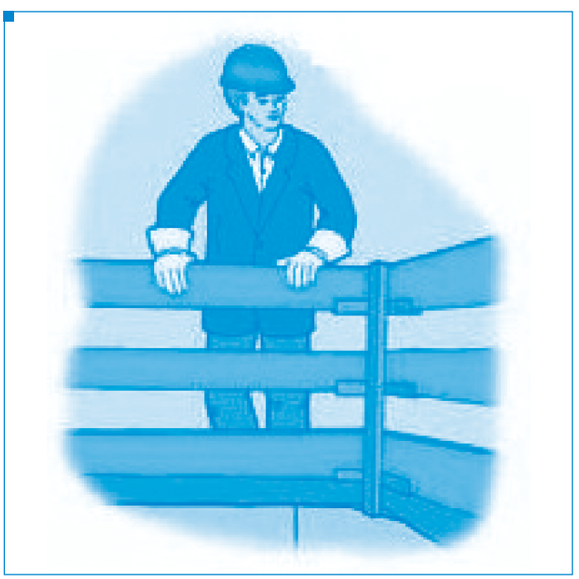
5.1 RAILINGS AND BARRIERS

USING GUARD RAILS

Guard rails are a direct collective protection measure, preventing workers from falling by protecting all edges.

Collective protection of this type should be preferred to other equipment, in order to avoid any risk of falling.

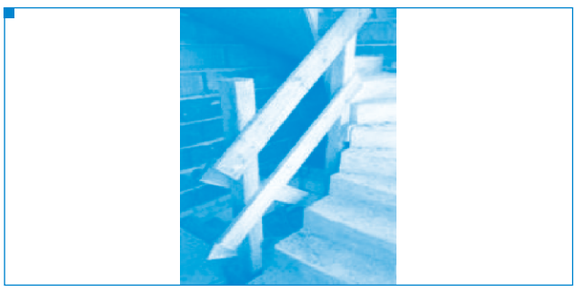
Guard rail systems can be:
- in three separate parts, consisting of a rigid and resistant top and middle rail and a rigid baseboard, or
- integral systems consisting of protective screens, solid planks or three-part lateral protection systems with safety nets, guards and equivalent or similar.



EDGE PROTECTION

When there is a risk of falling, lateral protection devices or fixed barriers to prevent workers from falling must be installed on:
- stairways without stair rails, landings, openings left in walls;
- workplaces and traffic lanes;
- openings left in floors, ceilings and roofs.

Lateral protection should be installed in the immediate vicinity of places where workers could fall. It should consist of stair rails, intermediate uprights and possibly baseboards.



5.2 PROTECTION FOR WORKING ON INCLINED SURFACES

USING BOTTOM-OF-INCLINE PROTECTION SYSTEMS

On the basis of the risk assessment, these protection devices may be chosen to provide effective collective protection against the risk of falling from a height.

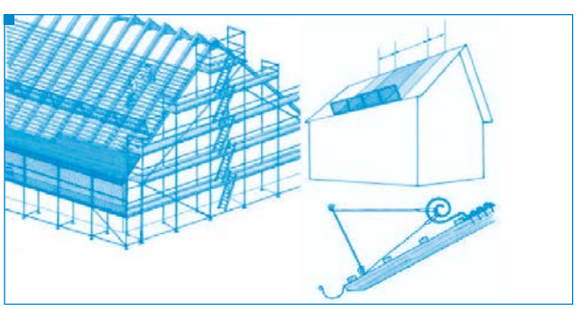
They can catch workers who skid or slide when working on inclined surfaces.

They take the form of closed protective partitions, equipped with nets, screens or solid plates.

For the use of edge protection devices on sloping roofs, the following aspects must be taken into account:
- the types of roof where the slope allows installation of such devices are limited;
- the surfaces with the greatest risk of slipping are determined by the slope of the roof or the inclined surface;
- the edge protection devices must extend beyond the work area to be secured.

Supporting elements:
- must be installed in accordance with the manufacturer's instructions for assembly and use, and
- should only be attached to one-piece rafters, and must be perpendicular to the roof gutters and sufficiently solid.

Personal protective equipment (PPE) must be used when installing edge protection devices.



5.3 Safety nets

Installing safety netting

Safety netting can be used following a risk assessment by the employer.

In this case:
- install safety netting from work equipment such as a safe work platform, complying with safety instructions, so that workers are not exposed to an additional risk of falling;
- consult, comply with and ensure compliance with instructions for use on the construction site;
- attach safety netting only to solid construction elements.

When attaching nets, the employer should make sure that the following are not exceeded:
- the permissible heights of fall within the protected workplace and at the sides;
- the distances between the net attachment points;
- the maximum net strain values.

Use only safety nets that are compliant and not damaged, and check them before every use in accordance with national legislation and practice.

Allow for deformation of the safety net by the stresses exerted, to ensure that any falling worker will not hit the ground.

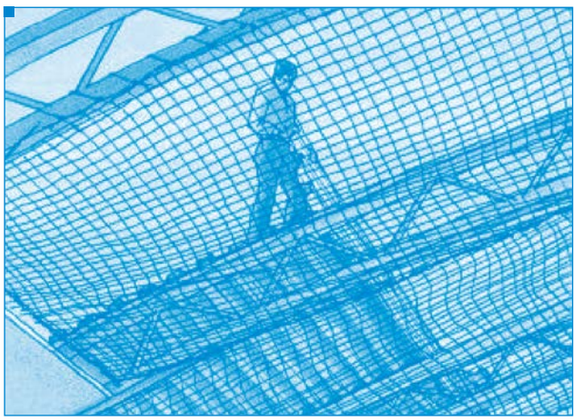
Check the manufacturer's instructions for additional recommendations for the safe installation and use of safety nets.

Using safety netting

Safety nets are used to catch workers who fall while working.

They can be used:
- under openings;
- under steep drops;
- under places with insecure footing.

Nets should be fitted as close as possible under the structure.



5.4 Personal protective equipment (PPE)

General provisions – Definition (Directive 89/656/EEC)

Personal protective equipment (PPE) means all equipment designed to be worn or held by the worker to protect him against one or more hazards likely to endanger his safety and health at work, and any addition or accessory designed to meet this objective.

The definition excludes:
a) ordinary working clothes and uniforms not specifically designed to protect the safety and health of the worker;
b) equipment used by emergency and rescue services;
c) personal protective equipment worn or used by the military, the police and other public order agencies;
d) personal protective equipment for means of road transport;
e) sports equipment;
f) self-defence or deterrent equipment;
g) portable devices for detecting and signalling risks and nuisances.

Personal protective equipment must be used when the risks cannot be avoided or sufficiently limited by technical means of collective protection or by measures, methods or procedures of work organisation.

Personal protective equipment must comply with the relevant Community provisions on design and manufacture with respect to safety and health.

All personal protective equipment must:
a) be appropriate for the risks involved, without itself leading to any increased risk;
b) correspond to existing conditions at the workplace;
c) take account of ergonomic requirements and the worker's state of health;
d) fit the wearer correctly after any necessary adjustment.

Where the presence of more than one risk makes it necessary for a worker to wear simultaneously more than one item of personal protective equipment, such equipment must be compatible and continue to be effective against the risk or risks in question.

The conditions of use of personal protective equipment, in particular the period for which it is worn, must be determined on the basis of the seriousness of the risk, the frequency of exposure to the risk, the characteristics of the workstation of each worker and the performance of the personal protective equipment.

Personal protective equipment is, in principle, intended for personal use.

If the circumstances require personal protective equipment to be worn by more than one person, appropriate measures must be taken to ensure that such use does not create any health or hygiene problem for the different users.

Adequate information on each item of personal protective equipment, as required under paragraphs 1 and 2 of Article 4 of Directive 89/656/EEC, must be provided and made available within the undertaking and/or establishment.

Personal protective equipment must be provided free of charge by the employer, who must ensure its good working order and satisfactory hygienic condition by means of the necessary maintenance, repair and replacements.

However, Member States may require, in accordance with their national practice, the worker to contribute towards the cost of certain personal protective equipment in circumstances where its use is not exclusive to the workplace.

The employer must first inform the worker of the risks against which the wearing of the personal protective equipment protects him.

The employer must arrange for training and, if appropriate, organise demonstrations in the wearing of personal protective equipment.

Personal protective equipment may be used only for the purposes specified, except in specific and exceptional circumstances.

It must be used in accordance with instructions.

Such instructions must be understandable to the workers.

With a view to the satisfactory application of Directive 89/656/EEC, the Commission adopted a report (89/C328/02) on the implementation of this Directive with a view to the choice and use of PPE (OJ C328 of 30 December 1989, p. 3).

Definition of personal protective equipment (PPE) against falls from a height

PPE against falls from a height comprises systems which:
- protect workers against the risk of falling (work restraint), and
- minimise the distance and consequences to workers who have fallen (fall arrest).

They also ensure safe rescue.

PPE against falls from a height is used only when the use of collective protection equipment is technically impossible.

In all cases, it is necessary to make sure that there is an appropriate anchoring system for the secure attachment of PPE against falls from a height.

PPE against falls from a height can be used:
- when work has to be performed near the edges of flat roofs;
- on pylons;
- during erection work;
- in conjunction with climbing apparatus (grabs).

Work for which PPE has to be worn should always be of short duration.

PPE also comes under Directive 89/686/EEC[15], which lays down the basic safety requirements that PPE must satisfy in order to ensure the health and safety of users. Annex II sets out basic health and safety requirements applicable to all PPE, with section 3.1.2 addressing the prevention of falls in particular.

When to use personal protective equipment

When there is a risk of falling and collective prevention measures cannot be applied:
- always use a waist safety belt;
- always use a fall prevention device or an energy absorber.

Use a blocking device only when the worker has to be held in the work position or protected against the risk of slipping.

Have the PPE checked regularly by competent and duly trained persons.

Before each use, carry out a visual inspection.

Attach the anchoring point only to a solid construction element, if possible above the user.

15 Council Directive 89/686/EEC of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment, OJ L 399, 30.12.1989, p. 18.

Anchoring devices must be installed by the site foreman.

Snap hooks must be fitted with a safety device so that they cannot open unintentionally.

Fastening devices (ropes/straps) must be taut; do not pull on them over sharp edges.

Keep hazardous substances such as flammable products, explosives, acids, alkaline solutions, cleaning products, volatile products and corrosive products out of reach.

After a fall, do not re-use PPE without first having it checked by competent persons in accordance with the instructions provided by the manufacturer.

Fall protection for work on pylons (Part 1)

Following the risk assessment, the employer must inform workers of the risks entailed by this type of work, provide them with suitable training and:

- provide them with personal protective equipment against falls;
- pay special attention to anchoring point attachments;
- set up installations allowing workers to gain safe access to high-level workstations while carrying tools and equipment (hoists, for example);
- provide for a rescue system and make sure that the necessary installations are in place.

Important in an emergency:

A worker who remains suspended from a harness may be exposed to serious health risks.

Fall protection for work on pylons (Part 2)

The employer must inform and train workers on the use of fall protection devices, in particular:

- the need to put on PPE against falls before climbing a pylon;
- the need to wear a safety harness to prevent falls, if possible;
- the use of devices to adjust rope length when the ropes have to be taut (on pylon arms, for example);
- the need to be especially careful when climbing or working on an inclined or slippery pylon;
- the need to have the hands free for climbing and hence not to carry tools or equipment with them if they would get in the way and make it impossible for them to climb the pylon in complete safety.

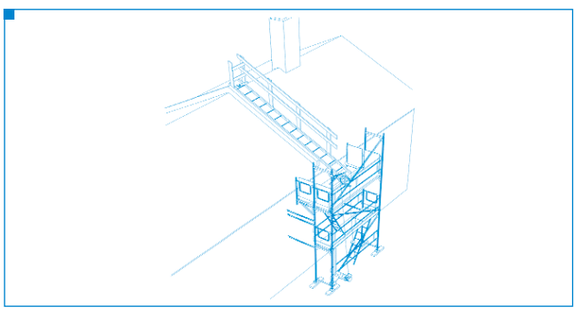
5.5 Equipment for working on fragile surfaces

Working on fragile surfaces

Roof coverings made of fragile materials include opening glass atria, roofs made of corrugated fibro-cement, glass roofs, etc. But remember, even non-fragile materials can become fragile over time due to aging and the effects of weathering.

For working on such roofs, the employer should inform and train workers to comply with the following protective measures:

- how to locate rafters, solid formwork, rigid supports under the roofing or corrosion-resistant screens;
- signage for gangways for moving about and working;
- fall prevention devices;
- erect nets, safety screens, rigid supports, etc.;
- provide edge protection devices, and built-up scaffolding if the authorised work height is exceeded.



ANNEXES

I. EUROPEAN LEGISLATION

EUROPEAN UNION DIRECTIVES

Directive 2001/45/EC of the European Parliament and of the Council of 27 June 2001 amending Council Directive 89/655/EEC of 27 June 2001 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (OJ L 195 of 19.07.2001, p. 46).

Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (OJ L 183 of 29.06.1989, p. 1).

Council Directive 89/655/EEC of 30 November 1989 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (89/655/EEC) (OJ L 393 of 30.12.1989, p. 13).

Council Directive 95/63/EC of 5 December 1995 amending Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC). (OJ L 335 of 30.12.1995, p. 28).

Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites (eighth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (OJ L 245 of 26.08.1992, p. 6).

Council Directive 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace (third individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (89/656/EEC) (OJ L 393 of 30.12.1989, p. 18).

Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work (ninth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (OJ L 245 of 26.08.1992, p. 23).

Commission Communication 89/C 328/02 for the implementation of Council Directive 89/656/EEC of 30 November 1989 (1), concerning the assessment of the safety aspects of personal protective equipment with a view to the choice and use thereof (89/C 328/02) (OJ C 328 of 30.12.1989, p. 3).

Council Directive 89/686/EEC of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment (OJ L 399 of 30.12.1989, p. 18).

DIRECTIVE 2001/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 27 June 2001

amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC)

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 137(2) thereof,

Having regard to the proposal from the Commission, submitted after consulting the Advisory Committee on Safety, Hygiene and Health Protection at Work [1],

Having regard to the opinion of the Economic and Social Committee [2],

After consulting the Committee of the Regions,

Acting in accordance with the procedure referred to in Article 251 of the Treaty [3],

Whereas:

(1) Article 137(2) of the Treaty provides that the Council may adopt, by means of Directives, minimum requirements for encouraging improvements, especially in the working environment, to ensure a better level of protection of the safety and health of workers.

(2) Pursuant to the said Article, such Directives must avoid imposing administrative, financial and legal constraints in a way which would hold back the creation and development of small and medium-sized enterprises.

(3) The improvement of occupational safety, hygiene and health is an objective which may not be subordinated to purely economic considerations.

(4) Compliance with the minimum requirements designed to ensure a better standard of health and safety in the use of work equipment provided for temporary work at a height is essential to ensure the health and safety of workers.

(5) The provisions adopted pursuant to Article 137(2) of the Treaty do not prevent any Member State from maintaining or introducing such more stringent measures for the protection of working conditions as are compatible with the Treaty.

(6) Work at a height may expose workers to particularly severe risks to their health and safety, notably to the risks of falls from a height and other serious occupational accidents, which account for a large proportion of all accidents, especially of fatal accidents.

(7) Self-employed persons and employers, where they themselves pursue an occupational activity and personally use work equipment intended for carrying out temporary work at a height, may affect employees' health and safety.

(8) Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites (eighth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) [4], imposes on these categories of persons the obligation to respect *inter alia* Article 4 and Annex I of Directive 89/655/EEC [5].

(9) Any employer who intends to have temporary work carried out at a height must select equipment affording adequate protection against the risks of falls from a height.

(10) In general collective protection measures to prevent falls offer better protection than personal protection measures. The selection and use of equipment appropriate to each specific site for preventing and eliminating risks should be accompanied by specific training and supplementary investigations where appropriate.

(11) Ladders, scaffolding and ropes are the equipment most commonly used in performing temporary work at a height and the safety and health of workers engaged in this type of work therefore depend to a significant extent on their correct use; the manner in which such equipment can most safely be used by workers must therefore be specified; adequate specific training of the workers is therefore required.

(12) This Directive is the most appropriate means of achieving the desired objectives and does not go beyond what is necessary for that purpose.

(13) This Directive is a practical contribution towards creating the social dimension of the internal market.

[1] OJ C 247 E, 31.8.1999, p. 23 and OJ C 62 E, 27.2.2001, p. 113.
[2] OJ C 138, 18.5.1999, p. 30.
[3] Opinion of the European Parliament of 21 September 2000 (OJ C 146, 17.5.2001, p. 78), Council Common Position of 23 March 2001 (OJ C 142, 15.5.2001, p. 16) and Decision of the European Parliament of 14 June 2001.
[4] OJ L 245, 26.8.1992, p. 6.
[5] OJ L 393, 30.12.1989, p. 1.

(14) Member States should be given the opportunity to make use of a transitional period to take account of the particular problems which SMEs have to face,

HAVE ADOPTED THIS DIRECTIVE:

Article 1

The text annexed to this Directive shall be added to Annex II to Directive 89/655/EEC.

Article 2

1. Member States shall adopt and publish the laws, regulations and administrative provisions necessary to comply with this Directive not later than 19 July 2004. They shall forthwith inform the Commission thereof.

Member States shall have the right, as regards the implementation of section 4 of the Annex, to make use of a transitional period of not more than two years from the date mentioned in the first subparagraph, in order to take account of the various situations which might arise from the practical implementation of this Directive in particular by small and medium-sized enterprises.

2. When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by the Member States.

3. Member States shall notify the Commission of the provisions of national law which they have already adopted or adopt in the field covered by this Directive.

Article 3

This Directive shall enter into force on the day of its publication in the *Official Journal of the European Communities*.

Article 4

This Directive is addressed to the Member States.

Done at Luxembourg, 27 June 2001.

For the European Parliament	*For the Council*
The President	*The President*
N. FONTAINE	A. BOURGEOIS

ANNEX

'4. **Provisions concerning the use of work equipment provided for temporary work at a height.**

4.1. *General provisions*

4.1.1. If, pursuant to Article 6 of Directive 89/391/EEC and Article 3 of this Directive, temporary work at a height cannot be carried out safely and under appropriate ergonomic conditions from a suitable surface, the work equipment most suitable to ensure and maintain safe working conditions must be selected. Collective protection measures must be given priority over personal protection measures. The dimensions of the work equipment must be appropriate to the nature of the work to be performed and to the foreseeable stresses and allow passage without danger.

The most appropriate means of access to temporary workplaces at a height must be selected according to the frequency of passage, the height to be negotiated and the duration of use. The choice made must permit evacuation in the event of imminent danger. Passage in either direction between a means of access and platforms, decks or gangways must not give rise to any additional risks of falling.

4.1.2. Ladders may be used as work stations for work at a height only under circumstances in which, given point 4.1.1, the use of other, safer work equipment is not justified because of the low level of risk and either the short duration of use or existing features on site that the employer cannot alter.

4.1.3. Rope access and positioning techniques may be used only under circumstances where the risk assessment indicates that the work can be performed safely and where the use of other, safer work equipment is not justified.

Taking the risk assessment into account and depending in particular on the duration of the job and the ergonomic constraints, provision must be made for a seat with appropriate accessories.

4.1.4. Depending on the type of work equipment selected on the basis of the foregoing, the appropriate measures for minimising the risks to workers inherent in this type of equipment must be determined. If necessary, provision must be made for the installation of safeguards to prevent falls. These must be of suitable configuration and sufficient strength to prevent or arrest falls from a height and, as far as possible, to preclude injury to workers. Collective safeguards to prevent falls may be interrupted only at points of ladder or stairway access.

4.1.5. When the performance of a particular task requires a collective safeguard to prevent falls to be temporarily removed, effective compensatory safety measures must be taken. The task may not be performed until such measures have been taken. Once the particular task has been finished, either definitively or temporarily, the collective safeguards to prevent falls must be reinstalled.

4.1.6. Temporary work at a height may be carried out only when the weather conditions do not jeopardise the safety and health of workers.

4.2. *Specific provisions regarding the use of ladders.*

4.2.1. Ladders must be so positioned as to ensure their stability during use. Portable ladders must rest on a stable, strong, suitably-sized, immobile footing so that the rungs remain horizontal. Suspended ladders must be attached in a secure manner and, with the exception of rope ladders, so that they cannot be displaced and so that swinging is prevented.

4.2.2. The feet of portable ladders must be prevented from slipping during use by securing the stiles at or near their upper or lower ends, by any anti-slip device or by any other arrangement of equivalent effectiveness. Ladders used for access must be long enough to protrude sufficiently beyond the access platform, unless other measures have been taken to ensure a firm handhold. Interlocking ladders and extension ladders must be used so that the different sections are prevented from moving relative to one another. Mobile ladders must be prevented from moving before they are stepped on.

4.2.3. Ladders must be used in such a way that a secure handhold and secure support are available to workers at all times. In particular, if a load has to be carried by hand on a ladder, it must not preclude the maintenance of a safe handhold.

4.3. *Specific provisions regarding the use of scaffolding*

4.3.1. When a note of the calculations for the scaffolding selected is not available or the note does not cover the structural arrangements contemplated, strength and stability calculations must be carried out unless the scaffolding is assembled in conformity with a generally recognised standard configuration.

4.3.2. Depending on the complexity of the scaffolding chosen, an assembly, use and dismantling plan must be drawn up by a competent person. This may be in the form of a standard plan, supplemented by items relating to specific details of the scaffolding in question.

4.3.3. The bearing components of scaffolding must be prevented from slipping, whether by attachment to the bearing surface, provision of an anti-slip device or any other means of equivalent effectiveness, and the load-bearing surface must have a sufficient capacity. It must be ensured that the scaffolding is stable. Wheeled scaffolding must be prevented by appropriate devices from moving accidentally during work at a height.

4.3.4. The dimensions, form and layout of scaffolding decks must be appropriate to the nature of the work to be performed and suitable for the loads to be carried and permit work and passage in safety. Scaffolding decks must be assembled in such a way that their components cannot move in normal use. There must be no dangerous gap between the deck components and the vertical collective safeguards to prevent falls.

4.3.5. When parts of a scaffolding are not ready for use, for example during assembly, dismantling or alteration, they must be marked with general warning signs in accordance with the national provisions transposing Directive 92/58/EEC and be suitably delimited by physical means preventing access to the danger zone.

4.3.6. Scaffolding may be assembled, dismantled or significantly altered only under the supervision of a competent person and by workers who must have received appropriate and specific training in the operations envisaged, addressing specific risks in accordance with Article 7, and more particularly in:

(a) understanding of the plan for the assembly, dismantling or alteration of the scaffolding concerned;

(b) safety during the assembly, dismantling or alteration of the scaffolding concerned;

(c) measures to prevent the risk of persons or objects falling;

(d) safety measures in the event of changing weather conditions which could adversely affect the safety of the scaffolding concerned;

(e) permissible loads;

(f) any other risks which the abovementioned assembly, dismantling or alteration operations may entail.

The person supervising and the workers concerned must have available the assembly and dismantling plan referred to in 4.3.2., including any instructions it may contain.

4.4. *Specific provisions regarding the use of rope access and positioning techniques*

The use of rope access and positioning techniques must comply with the following conditions:

(a) the system must comprise at least two separately anchored ropes, one as a means of access, descent and support (work rope) and the other as backup (security rope);

(b) workers must be provided with and use an appropriate harness and be connected by it to the security rope;

(c) the work rope must be equipped with safe means of ascent and descent and have a self-locking system to prevent the user falling should he lose control of his movements. The security rope must be equipped with a mobile fall prevention system which follows the movements of the worker;

(d) the tools and other accessories to be used by a worker must be secured to the worker's harness or seat or by some other appropriate means;

(e) the work must be properly planned and supervised, so that a worker can be rescued immediately in an emergency;

(f) in accordance with Article 7, the workers concerned must receive adequate training specific to the operations envisaged, in particular rescue procedures.

In exceptional circumstances where, in view of the assessment of risks, the use of a second rope would make the work more dangerous, the use of a single rope may be permitted, provided that appropriate measures have been taken to ensure safety in accordance with national legislation and/or practice.'

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DIRECTIVE

of 12 June 1989

on the introduction of measures to encourage improvements in the safety and health of workers at work

(89/391/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 118a thereof,

Having regard to the proposal from the Commission (1), drawn up after consultation with the Advisory Committee on Safety, Hygiene and Health Protection at Work,

In cooperation with the European Parliament (2),

Having regard to the opinion of the Economic and Social Committee (3),

Whereas Article 118a of the Treaty provides that the Council shall adopt, by means of Directives, minimum requirements for encouraging improvements, especially in the working environment, to guarantee a better level of protection of the safety and health of workers;

Whereas this Directive does not justify any reduction in levels of protection already achieved in individual Member States, the Member State being committed, under the Treaty, to encouraging improvements in conditions in this area and to harmonizing conditions while maintaining the improvements made;

Whereas it is known that workers can be exposed to the effects of dangerous environmental factors at the work place during the course of their working life;

(1) OJ No C 141, 30. 5. 1988, p. 1.
(2) OJ No C 326, 19. 12. 1988, p. 102, and OJ No C 158, 26. 6. 1989.
(3) OJ No C 175, 4. 7. 1988, p. 22.

Whereas, pursuant to Article 118a of the Treaty, such Directives must avoid imposing administrative, financial and legal constraints which would hold back the creation and development of small and medium-sized undertakings;

Whereas the communication from the Commission on its programme concerning safety, hygiene and health at work (4) provides for the adoption of Directives designed to guarantee the safety and health of workers;

Whereas the Council, in its resolution of 21 December 1987 on safety, hygiene and health at work (5), took note of the Commission's intention to submit to the Council in the near future a Directive on the organization of the safety and health of workers at the work place;

Whereas in February 1988 the European Parliament adopted four resolutions following the debate on the internal market and worker protection; whereas these resolutions specifically invited the Commission to draw up a framework Directive to serve as a basis for more specific Directives covering all the risks connected with safety and health at the work place;

Whereas Member States have a responsibility to encourage improvements in the safety and health of workers on their territory; whereas taking measures to protect the health and safety of workers at work also helps, in certain cases, to preserve the health and possibly the safety of persons residing with them;

(4) OJ No C 28, 3. 2. 1988, p. 3.
(5) OJ No C 28, 3. 2. 1988, p. 1.

Whereas Member States' legislative systems covering safety and health at the work place differ widely and need to be improved; whereas national provisions on the subject, which often include technical specifications and/or self-regulatory standards, may result in different levels of safety and health protection and allow competition at the expense of safety and health;

Whereas the incidence of accidents at work and occupational diseases is still too high; whereas preventive measures must be introduced or improved without delay in order to safeguard the safety and health of workers and ensure a higher degree of protection;

Whereas, in order to ensure an improved degree of protection, workers and/or their representatives must be informed of the risks to their safety and health and of the measures required to reduce or eliminate these risks; whereas they must also be in a position to contribute, by means of balanced participation in accordance with national laws and/or practices, to seeing that the necessary protective measures are taken;

Whereas information, dialogue and balanced participation on safety and health at work must be developed between employers and workers and/or their representatives by means of appropriate procedures and instruments, in accordance with national laws and/or practices;

Whereas the improvement of workers' safety, hygiene and health at work is an objective which should not be subordinated to purely economic considerations;

Whereas employers shall be obliged to keep themselves informed of the latest advances in technology and scientific findings concerning work-place design, account being taken of the inherent dangers in their undertaking, and to inform accordingly the workers' representatives exercising participation rights under this Directive, so as to be able to guarantee a better level of protection of workers' health and safety;

Whereas the provisions of this Directive apply, without prejudice to more stringent present or future Community provisions, to all risks, and in particular to those arising from the use at work of chemical, physical and biological agents covered by Directive 80/1107/EEC [1], as last amended by Directive 88/642/EEC [2];

Whereas, pursuant to Decision 74/325/EEC [3], the Advisory Committee on Safety, Hygiene and Health Protection at Work is consulted by the Commission on the drafting of proposals in this field;

Whereas a Committee composed of members nominated by the Member States needs to be set up to assist the Commission in making the technical adaptations to the individual Directives provided for in this Directive.

HAS ADOPTED THIS DIRECTIVE:

SECTION I

GENERAL PROVISIONS

Article 1

Object

1. The object of this Directive is to introduce measures to encourage improvements in the safety and health of workers at work.

2. To that end it contains general principles concerning the prevention of occupational risks, the protection of safety and health, the elimination of risk and accident factors, the informing, consultation, balanced participation in accordance with national laws and/or practices and training of workers and their representatives, as well as general guidelines for the implementation of the said principles.

3. This Directive shall be without prejudice to existing or future national and Community provisions which are more favourable to protection of the safety and health of workers at work.

Article 2

Scope

1. This Directive shall apply to all sectors of activity, both public and private (industrial, agricultural, commercial, administrative, service, educational, cultural, leisure, etc.).

2. This Directive shall not be applicable where characteristics peculiar to certain specific public service activities, such as the armed forces or the police, or to certain specific activities in the civil protection services inevitably conflict with it.

In that event, the safety and health of workers must be ensured as far as possible in the light of the objectives of this Directive.

(1) OJ No L 327, 3. 12. 1980, p. 8.
(2) OJ No L 356, 24. 12. 1988, p. 74.
(3) OJ No L 185, 9. 7. 1974, p. 15.

Article 3

Definitions

For the purposes of this Directive, the following terms shall have the following meanings:

(a) worker: any person employed by an employer, including trainees and apprentices but excluding domestic servants;

(b) employer: any natural or legal person who has an employment relationship with the worker and has responsibility for the undertaking and/or establishment;

(c) workers' representative with specific responsibility for the safety and health of workers: any person elected, chosen or designated in accordance with national laws and/or practices to represent workers where problems arise relating to the safety and health protection of workers at work;

(d) prevention: all the steps or measures taken or planned at all stages of work in the undertaking to prevent or reduce occupational risks.

Article 4

1. Member States shall take the necessary steps to ensure that employers, workers and workers' representatives are subject to the legal provisions necessary for the implementation of this Directive.

2. In particular, Member States shall ensure adequate controls and supervision.

SECTION II

EMPLOYERS' OBLIGATIONS

Article 5

General provision

1. The employer shall have a duty to ensure the safety and health of workers in every aspect related to the work.

2. Where, pursuant to Article 7 (3), an employer enlists competent external services or persons, this shall not discharge him from his responsibilities in this area.

3. The workers' obligations in the field of safety and health at work shall not affect the principle of the responsibility of the employer.

4. This Directive shall not restrict the option of Member States to provide for the exclusion or the limitation of employers' responsibility where occurrences are due to unusual and unforeseeable circumstances, beyond the employers' control, or to exceptional events, the consequences of which could not have been avoided despite the exercise of all due care.

Member States need not exercise the option referred to in the first subparagraph.

Article 6

General obligations on employers

1. Within the context of his responsibilities, the employer shall take the measures necessary for the safety and health protection of workers, including prevention of occupational risks and provision of information and training, as well as provision of the necessary organization and means.

The employer shall be alert to the need to adjust these measures to take account of changing circumstances and aim to improve existing situations.

2. The employer shall implement the measures referred to in the first subparagraph of paragraph 1 on the basis of the following general principles of prevention:

(a) avoiding risks;

(b) evaluating the risks which cannot be avoided:

(c) combating the risks at source;

(d) adapting the work to the individual, especially as regards the design of work places, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reducing their effect on health.

(e) adapting to technical progress;

(f) replacing the dangerous by the non-dangerous or the less dangerous;

(g) developing a coherent overall prevention policy which covers technology, organization of work, working conditions, social relationships and the influence of factors related to the working environment;

(h) giving collective protective measures priority over individual protective measures;

(i) giving appropriate instructions to the workers.

3. Without prejudice to the other provisions of this Directive, the employer shall, taking into account the nature of the activities of the enterprise and/or establishment:

(a) evaluate the risks to the safety and health of workers, *inter alia* in the choice of work equipment, the chemical substances or preparations used, and the fitting-out of work places.

Subsequent to this evaluation and as necessary, the preventive measures and the working and production methods implemented by the employer must:

— assure an improvement in the level of protection afforded to workers with regard to safety and health,

— be integrated into all the activities of the undertaking and/or establishment and at all hierarchical levels;

(b) where he entrusts tasks to a worker, take into consideration the worker's capabilities as regards health and safety;

(c) ensure that the planning and introduction of new technologies are the subject of consultation with the workers and/or their representatives, as regards the consequences of the choice of equipment, the working conditions and the working environment for the safety and health of workers;

(d) take appropriate steps to ensure that only workers who have received adequate instructions may have access to areas where there is serious and specific danger.

4. Without prejudice to the other provisions of this Directive, where several undertakings share a work place, the employers shall cooperate in implementing the safety, health and occupational hygiene provisions and, taking into account the nature of the activities, shall coordinate their actions in matters of the protection and prevention of occupational risks, and shall inform one another and their respective workers and/or workers' representatives of these risks.

5. Measures related to safety, hygiene and health at work may in no circumstances involve the workers in financial cost.

Article 7

Protective and preventive services

1. Without prejudice to the obligations referred to in Articles 5 and 6, the employer shall designate one or more workers to carry out activities related to the protection and prevention of occupational risks for the undertaking and/or establishment.

2. Designated workers may not be placed at any disadvantage because of their activities related to the protection and prevention of occupational risks.

Designated workers shall be allowed adequate time to enable them to fulfil their obligations arising from this Directive.

3. If such protective and preventive measures cannot be organized for lack of competent personnel in the undertaking and/or establishment, the employer shall enlist competent external services or persons.

4. Where the employer enlists such services or persons, he shall inform them of the factors known to affect, or suspected of affecting, the safety and health of the workers and they must have access to the information referred to in Article 10 (2).

5. In all cases:

— the workers designated must have the necessary capabilities and the necessary means,

— the external services or persons consulted must have the necessary aptitudes and the necessary personal and professional means, and

— the workers designated and the external services or persons consulted must be sufficient in number

to deal with the organization of protective and preventive measures, taking into account the size of the undertaking and/or establishment and/or the hazards to which the workers are exposed and their distribution throughout the entire undertaking and/or establishment.

6. The protection from, and prevention of, the health and safety risks which form the subject of this Article shall be the responsibility of one or more workers, of one service or of separate services whether from inside or outside the undertaking and/or establishment.

The worker(s) and/or agency(ies) must work together whenever necessary.

7. Member States may define, in the light of the nature of the activities and size of the undertakings, the categories of undertakings in which the employer, provided he is competent, may himself take responsibility for the measures referred to in paragraph 1.

8. Member States shall define the necessary capabilities and aptitudes referred to in paragraph 5.

They may determine the sufficient number referred to in paragraph 5.

Article 8

First aid, fire-fighting and evacuation of workers, serious and imminent danger

1. The employer shall:

— take the necessary measures for first aid, fire-fighting and evacuation of workers, adapted to the nature of the

activities and the size of the undertaking and/or establishment and taking into account other persons present,

— arrange any necessary contacts with external services, particularly as regards first aid, emergency medical care, rescue work and fire-fighting.

2. Pursuant to paragraph 1, the employer shall, *inter alia,* for first aid, fire-fighting and the evacuation of workers, designate the workers required to implement such measures.

The number of such workers, their training and the equipment available to them shall be adequate, taking account of the size and/or specific hazards of the undertaking and/or establishment.

3. The employer shall:

(a) as soon as possible, inform all workers who are, or may be, exposed to serious and imminent danger of the risk involved and of the steps taken or to be taken as regards protection;

(b) take action and give instructions to enable workers in the event of serious, imminent and unavoidable danger to stop work and/or immediately to leave the work place and proceed to a place of safety;

(c) save in exceptional cases for reasons duly substantiated, refrain from asking workers to resume work in a working situation where there is still a serious and imminent danger.

4. Workers who, in the event of serious, imminent and unavoidable danger, leave their workstation and/or a dangerous area may not be placed at any disadvantage because of their action and must be protected against any harmful and unjustified consequences, in accordance with national laws and/or practices.

5. The employer shall ensure that all workers are able, in the event of serious and imminent danger to their own safety and/or that of other persons, and where the immediate superior responsible cannot be contacted, to take the appropriate steps in the light of their knowledge and the technical means at their disposal, to avoid the consequences of such danger.

Their actions shall not place them at any disadvantage, unless they acted carelessly or there was negligence on their part.

Article 9

Various obligations on employers

1. The employer shall:

(a) be in possession of an assessment of the risks to safety and health at work, including those facing groups of workers exposed to particular risks;

(b) decide on the protective measures to be taken and, if necessary, the protective equipment to be used;

(c) keep a list of occupational accidents resulting in a worker being unfit for work for more than three working days;

(d) draw up, for the responsible authorities and in accordance with national laws and/or practices, reports on occupational accidents suffered by his workers.

2. Member States shall define, in the light of the nature of the activities and size of the undertakings, the obligations to be met by the different categories of undertakings in respect of the drawing-up of the documents provided for in paragraph 1 (a) and (b) and when preparing the documents provided for in paragraph 1 (c) and (d).

Article 10

Worker information

1. The employer shall take appropriate measures so that workers and/or their representatives in the undertaking and/or establishment receive, in accordance with national laws and/or practices which may take account, *inter alia,* of the size of the undertaking and/or establishment, all the necessary information concerning:

(a) the safety and health risks and protective and preventive measures and activities in respect of both the undertaking and/or establishment in general and each type of workstation and/or job;

(b) the measures taken pursuant to Article 8 (2).

2. The employer shall take appropriate measures so that employers of workers from any outside undertakings and/or establishments engaged in work in his undertaking and/or establishment receive, in accordance with national laws and/or practices, adequate information concerning the points referred to in paragraph 1 (a) and (b) which is to be provided to the workers in question.

3. The employer shall take appropriate measures so that workers with specific functions in protecting the safety and health of workers, or workers' representatives with specific responsibility for the safety and health of workers shall have access, to carry out their functions and in accordance with national laws and/or practices, to:

(a) the risk assessment and protective measures referred to in Article 9 (1) (a) and (b);

(b) the list and reports referred to in Article 9 (1) (c) and (d);

(c) the information yielded by protective and preventive measures, inspection agencies and bodies responsible for safety and health.

Article 11

Consultation and participation of workers

1. Employers shall consult workers and/or their representatives and allow them to take part in discussions on all questions relating to safety and health at work.

This presupposes:

— the consultation of workers,

— the right of workers and/or their representatives to make proposals,

— balanced participation in accordance with national laws and/or practices.

2. Workers or workers' representatives with specific responsibility for the safety and health of workers shall take part in a balanced way, in accordance with national laws and/or practices, or shall be consulted in advance and in good time by the employer with regard to:

(a) any measure which may substantially affect safety and health;

(b) the designation of workers referred to in Articles 7 (1) and 8 (2) and the activities referred to in Article 7 (1);

(c) the information referred to in Articles 9 (1) and 10;

(d) the enlistment, where appropriate, of the competent services or persons outside the undertaking and/or establishment, as referred to in Article 7 (3);

(e) the planning and organization of the training referred to in Article 12.

3. Workers' representatives with specific responsibility for the safety and health of workers shall have the right to ask the employer to take appropriate measures and to submit proposals to him to that end to mitigate hazards for workers and/or to remove sources of danger.

4. The workers referred to in paragraph 2 and the workers' representatives referred to in paragraphs 2 and 3 may not be placed at a disadvantage because of their respective activities referred to in paragraphs 2 and 3.

5. Employers must allow workers' representatives with specific responsibility for the safety and health of workers adequate time off work, without loss of pay, and provide them with the necessary means to enable such representatives to exercise their rights and functions deriving from this Directive.

6. Workers and/or their representatives are entitled to appeal, in accordance with national law and/or practice, to the authority responsible for safety and health protection at work if they consider that the measures taken and the means employed by the employer are inadequate for the purposes of ensuring safety and health at work.

Workers' representatives must be given the opportunity to submit their observations during inspection visits by the competent authority.

Article 12

Training of workers

1. The employer shall ensure that each worker receives adequate safety and health training, in particular in the form of information and instructions specific to his workstation or job:

— on recruitment,

— in the event of a transfer or a change of job,

— in the event of the introduction of new work equipment or a change in equipment,

— in the event of the introduction of any new technology.

The training shall be:

— adapted to take account of new or changed risks, and

— repeated periodically if necessary.

2. The employer shall ensure that workers from outside undertakings and/or establishments engaged in work in his undertaking and/or establishment have in fact received appropriate instructions regarding health and safety risks during their activities in his undertaking and/or establishment.

3. Workers' representatives with a specific role in protecting the safety and health of workers shall be entitled to appropriate training.

4. The training referred to in paragraphs 1 and 3 may not be at the workers' expense or at that of the workers' representatives.

The training referred to in paragraph 1 must take place during working hours.

The training referred to in paragraph 3 must take place during working hours or in accordance with national practice either within or outside the undertaking and/or the establishment.

SECTION III

WORKERS' OBLIGATIONS

Article 13

1. It shall be the responsibility of each worker to take care as far as possible of his own safety and health and that of other persons affected by his acts or Commissions at work in accordance with his training and the instructions given by his employer.

2. To this end, workers must in particular, in accordance with their training and the instructions given by their employer:

(a) make correct use of machinery, apparatus, tools, dangerous substances, transport equipment and other means of production;

(b) make correct use of the personal protective equipment supplied to them and, after use, return it to its proper place;

(c) refrain from disconnecting, changing or removing arbitrarily safety devices fitted, e.g. to machinery, apparatus, tools, plant and buildings, and use such safety devices correctly;

(d) immediately inform the employer and/or the workers with specific responsibility for the safety and health of workers of any work situation they have reasonable grounds for considering represents a serious and immediate danger to safety and health and of any shortcomings in the protection arrangements;

(e) cooperate, in accordance with national practice, with the employer and/or workers with specific responsibility for the safety and health of workers, for as long as may be necessary to enable any tasks or requirements imposed by the competent authority to protect the safety and health of workers at work to be carried out;

(f) cooperate, in accordance with national practice, with the employer and/or workers with specific responsibility for the safety and health of workers, for as long as may be necessary to enable the employer to ensure that the working environment and working conditions are safe and pose no risk to safety and health within their field of activity.

SECTION IV

MISCELLANEOUS PROVISIONS

Article 14

Health surveillance

1. To ensure that workers receive health surveillance appropriate to the health and safety risks they incur at work, measures shall be introduced in accordance with national law and/or practices.

2. The measures referred to in paragraph 1 shall be such that each worker, if he so wishes, may receive health surveillance at regular intervals.

3. Health surveillance may be provided as part of a national health system.

Article 15

Risk groups

Particularly sensitive risk groups must be protected against the dangers which specifically affect them.

Article 16

Individual Directives — Amendments — General scope of this Directive

1. The Council, acting on a proposal from the Commission based on Article 118a of the Treaty, shall adopt individual Directives, *inter alia,* in the areas listed in the Annex.

2. This Directive and, without prejudice to the procedure referred to in Article 17 concerning technical adjustments, the individual Directives may be amended in accordance with the procedure provided for in Article 118a of the Treaty.

3. The provisions of this Directive shall apply in full to all the areas covered by the individual Directives, without prejudice to more stringent and/or specific provisions contained in these individual Directives.

Article 17

Committee

1. For the purely technical adjustments to the individual Directives provided for in Article 16 (1) to take account of:

— the adoption of Directives in the field of technical harmonization and standardization, and/or

— technical progress, changes in international regulations or specifications, and new findings,

the Commission shall be assisted by a committee composed of the representatives of the Member States and chaired by the representative of the Commission.

2. The representative of the Commission shall submit to the committee a draft of the measures to be taken.

The committee shall deliver its opinion on the draft within a time limit which the chairman may lay down according to the urgency of the matter.

The opinion shall be delivered by the majority laid down in Article 148 (2) of the Treaty in the case of decisions which the Council is required to adopt on a proposal from the Commission.

The votes of the representatives of the Member States within the committee shall be weighted in the manner set out in that Article. The chairman shall not vote.

3. The Commission shall adopt the measures envisaged if they are in accordance with the opinion of the committee.

If the measures envisaged are not in accordance with the opinion of the committee, or if no opinion is delivered, the Commission shall, without delay, submit to the Council a proposal relating to the measures to be taken. The Council shall act by a qualified majority.

If, on the expiry of three months from the date of the referral to the Council, the Council has not acted, the proposed measures shall be adopted by the Commission.

Article 18

Final provisions

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 31 December 1992.

They shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the texts of the provisions of national law which they have already adopted or adopt in the field covered by this Directive.

3. Member States shall report to the Commission every five years on the practical implementation of the provisions of this Directive, indicating the points of view of employers and workers.

The Commission shall inform the European Parliament, the Council, the Economic and Social Committee and the Advisory Committee on Safety, Hygiene and Health Protection at Work.

4. The Commission shall submit periodically to the European Parliament, the Council and the Economic and Social Committee a report on the implementation of this Directive, taking into account paragraphs 1 to 3.

Article 19

This Directive is addressed to the Member States.

Done at Luxembourg, 12 June 1989.

For the Council
The President
M. CHAVES GONZALES

ANNEX

List of areas referred to in Article 16 (1)

— Work places
— Work equipment
— Personal protective equipment
— Work with visual display units
— Handling of heavy loads involving risk of back injury
— Temporary or mobile work sites
— Fisheries and agriculture

II. EUROPEAN STANDARDS

EN 074-1
Couplers, spigot pins and base plates for use in false work and scaffolds – Part 1 Couplers for tubes – Requirements and test procedures

EN 131-1
Ladders – Terms, types, functional sizes

EN 131-2
Ladders – Requirements, testing, marking

EN 341
Personal protective equipment against falls from a height – Descender devices

EN 280:2001
Mobile elevating work platforms – Design calculations, stability criteria, construction – Safety, examinations and tests

EN 353-1
Personal protective equipment against falls from a height – Part 1: Guided type fall arresters including a rigid anchor line

EN 353-2
Personal protective equipment against falls from a height – Part 2: Guided type fall arresters including a flexible anchor line

EN 354
Personal protective equipment against falls from a height – Lanyards

EN 355
Personal protective equipment against falls from a height – Energy absorbers

EN 358
Personal protective equipment for work positioning and prevention of falls from a height – Belts for work positioning and restraint and work positioning lanyards

EN 360
Personal protective equipment against falls from a height – Retractable type fall arresters

EN 361
Personal protective equipment against falls from a height – Full body harnesses

EN 362
Personal protective equipment against falls from a height – Connectors

EN 363
Personal protective equipment against falls from a height – Fall arrest systems

EN 364
Personal protective equipment against falls from a height – Test methods

EN 365
Personal protective equipment against falls from a height – General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging

EN 564
Mountaineering equipment – accessory cord – safety requirements and test method

EN 565
Mountaineering equipment – tape – safety requirements and test method

EN 601
Aluminium and aluminium alloys – Castings – Chemical composition of castings for use in contact with food

EN 795
Protection against falls from a height – Anchor devices – Requirements and testing

EN 813
Personal protective equipment for prevention of falls from a height – Sit harnesses

EN 1004
Mobile access and working towers made of prefabricated elements – Materials, dimensions, design loads and safety requirements

EN 1065
Adjustable telescopic steel props – Product specifications, design and assessment by calculation and tests

EN 1088:1999
Safety requirements on suspended access equipment – Design calculations, stability criteria, construction – Tests

EN 1263-1
Safety nets – Part 1 Safety requirements, test methods

EN 1263-2
Safety nets – Part 2 Safety requirements for the positioning limits

EN 1891-A
Personal protective equipment for the prevention of falls from a height – Low stretch kern mantel ropes

EN 12810-1
Facade scaffolds made of prefabricated components – Part 1 Products specifications

EN 12810-2
Facade scaffolds made of prefabricated components – Part 2 Particular methods of structural design

EN 12811-1
Temporary works equipment – Part 1 Scaffolds – Performance requirements and general design

EN 12811-2
Temporary works equipment – Part 2 Information on materials

EN 12811-3
Temporary works equipment – Part 3 Load testing

EN 12812
False work – Performance requirements and general design

EN 12813
Temporary works equipment – Load bearing towers of prefabricated components – Particular methods of structural design

EN 13331-1
Trench lining systems – Part 1 Product specifications

EN 13331-2 T
Trench lining systems – Part 2 Assessment by calculation or test

EN 13374
Temporary edge protection systems – Product specification, test methods

EN 13377
Prefabricated timber formwork beams – Requirements, classification and assessment

EN 14653-1
Manually operated hydraulic shoring systems for groundwork support – Part 1 Product specification

EN 14653-2
Manually operated hydraulic shoring systems for groundwork support – Part 2 Assessment by calculation or test

EN 1495:1997
Lifting platforms – Mast climbing work platforms

EN 1570:1998
Safety requirements for lifting tables

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Verordnung, mit der die Land- und forstwirtschaftliche Sicherheits- und Gesundheitsschutz-Verordnung geändert wird
Landesgesetzblatt (LGBl.) Nr. 62 vom 15.8.2005

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Landesgesetzblatt (LGBl.) Nr. 61 vom 11.5.2005

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Landesgesetzblatt (LGBl.) Nr. 102 vom 18.10.2005

Gesetz vom 14. Dezember 2005, mit dem die Salzburger Landarbeitsordnung 1995 geändert wird
Landesgesetzblatt (LGBl.) Nr. 21 vom 16.2.2006

Gesetz, mit dem die Wiener Landarbeitsordnung 1990 geändert wird
Landesgesetzblatt (LGBl.) Nr. 11 vom 14.2.2006

Verordnung der Steiermärkischen Landesregierung vom 30. Jänner 2006, mit der die Verordnung über die Durchführung des Bedienstetenschutzes im Bereich der Dienststellen des Landes geändert wird
Landesgesetzblatt (LGBl.) Nr. 26 vom 15.2.2006

Gesetz vom 14. Februar 2006, mit dem die Steiermärkische Landarbeitsordnung 2001 (STLAO 2001) geändert wird
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