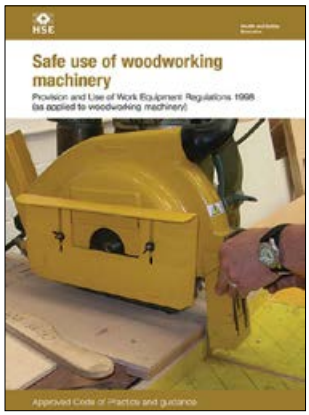
Health and Safety Executive

Safe use of woodworking machinery

Provision and Use of Work Equipment Regulations 1998 (as applied to woodworking machinery)

Approved Code of Practice and guidance



This Approved Code of Practice and guidance is aimed at employers, dutyholders and anyone who has responsibility for the safe use of woodworking machinery, such as managers and supervisors. It applies to most woodworking machinery, except hand-held tools, and includes tasks involving wood, corkboard, fibreboard and composite materials. It gives practical advice on the safe use of woodworking machinery and covers the provision of information and training, as well as aspects of guarding.

Changes since the last edition:

- The guidance material has been revised and updated
- There are small changes to some ACOP paragraphs, to clarify and update information

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Approved Code of Practice

This Code has been approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice. You may use alternative methods to those set out in the Code in order to comply with the law.

However, the Code has a special legal status. If you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the Code, you will need to show that you have complied with the law in some other way or a Court will find you at fault.

Guidance

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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Introduction

Background

1 The woodworking industry has one of the highest accident rates in manufacturing. HSE statistics continue to show that accidents involving either contact with the dangerous parts of a woodworking machine or the wood being machined give woodworking a major injury rate that is above the manufacturing industry average.

2 The risks associated with using woodworking machinery are high since they use high-speed sharp cutters to do the job and in many cases these are necessarily exposed to enable the machining process to take place. Also, because many machines are still hand-fed, woodworking is probably the main industry where the hands of the operator are constantly exposed to danger.

3 As well as the high risk of injury from contact with the cutters, there is the risk of being injured by the ejection of the workpiece or cutters (or parts of them) from the machine. No two pieces of wood are the same; each piece behaves differently when machined or shaped during the production process. Knots and natural changes in the direction of the grain can give rise to snatching and kickback of the workpiece.

4 The Provision and Use of Work Equipment Regulations 1998 (PUWER)[1] relate to work equipment generally, rather than specifically to woodworking machinery. But it was recognised that an Approved Code of Practice (ACOP) and guidance specific to woodworking machinery was needed and it sets out what you do to meet the requirements of PUWER as applied to woodworking machinery. The ACOP text and associated guidance provide practical advice on how you can comply with the requirements of PUWER.

Who should read this book?

5 Employers, dutyholders and anyone else who has responsibility and/or control – directly or indirectly – for woodworking machinery and its use. Machine operators will also find this information useful. Throughout this book we have referred to the employer and self-employed people who have responsibility for providing woodworking machinery as ‘you’. Where the guidance is addressed to some other dutyholder, eg a hire company, the text makes this clear.

Scope

6 This document gives practical advice on the safe use of woodworking machinery and covers the provision of information and training as well as aspects of guarding. It is not an exhaustive guide on the guarding and safe operation of woodworking machinery, but a practical guide on how the requirements of PUWER should be met. It applies to all sectors and most woodworking machinery except hand-held tools. It applies to machinery that is used for working on wood, cork, fibreboard and material composed wholly or partly of any of these materials.

Other HSE information

7 Advice on the safe use of the most common woodworking machines as well as specific information on controlling noise and wood dust, can be found at www.hse.gov.uk/woodworking and in HSE's Woodworking Information Sheets (see 'Further reading' for details).

What are the differences between this book and the previous edition?

8 The changes, which are summarised below, have been widely consulted on.

9 Changes in this edition include:

(a) the background information has been updated and some of the historical information removed;
(b) references to 'PUWER 98' have been replaced by 'PUWER';
(c) small changes to some figures (Figures 5 and 6) for clarity;
(d) guidance material has been simplified and there is more use of lists;
(e) small amendments to some ACOP paragraphs for simplification, clarification or where historical dates have passed;
(f) where parts of regulations do not apply to woodworking machinery, these parts have been omitted (eg regulation 2);
(g) small additions to ACOP and guidance material to include health issues.

About ACOPs

10 Approved Codes of Practice are approved by the HSE Board with the consent of the Secretary of State (see Appendix 4: Notice of Approval for details).

11 ACOP text explains how to comply with the law in a specific way and has a special status in law. If you do not follow the advice in ACOP text and you are prosecuted for a breach of the law, the court will take your breach of the law as proven unless you can show that you have complied with the law in another equally effective way. If you follow the advice in an ACOP, you can be sure that you will be doing enough to comply with the law.

12 Guidance text is different – following it is not compulsory, unless specifically stated. If you follow it, you will normally be doing enough to comply with the law, but you may use other methods. The ACOP describes preferred or recommended methods that can be used (or standards to be met) to comply with PUWER and the duties imposed by the Health and Safety at Work etc Act 1974 ('the HSW Act').[2] The accompanying guidance also provides advice on achieving compliance, or it may give information of a general nature, including explanation of the requirements of the law, more specific technical information or references to further sources of information.

13 The legal status of ACOP and guidance text is given on the copyright page.

Presentation

14 The ACOP text is set out in **bold** and the accompanying guidance in normal type, the text of the Regulations is in *italics*. Coloured borders also indicate each section clearly.

The Regulations

Regulation 1 Citation and commencement

Regulation 1

These Regulations may be cited as the Provision and Use of Work Equipment Regulations 1998 and shall come into force on 5th December 1998.

Regulation 2 Interpretation

Regulation 2

(1) In these Regulations, unless the context otherwise requires—

"the 1974 Act" means the Health and Safety at Work etc. Act 1974;

"employer" except in regulation 3(2) and (3) includes a person to whom the requirements imposed by these Regulations apply by virtue of regulation 3(3)(a) and (b);

"the Executive" means the Health and Safety Executive;

"use" in relation to work equipment means any activity involving work equipment and includes starting, stopping, programming, setting, transporting, repairing, modifying, maintaining, servicing and cleaning;

"work equipment" means any machinery, appliance, apparatus, tool or installation for use at work (whether exclusively or not);

and related expressions shall be construed accordingly.

(4) Any reference in these Regulations to—

(a) a numbered regulation or Schedule is a reference to the regulation or Schedule in these Regulations so numbered; and
(b) a numbered paragraph is a reference to the paragraph so numbered in the regulation in which the reference appears.

Note; reference to 'essential requirements'; 'inspection'; 'power press'; and 'thorough examination' in regulation 2(1); and regulations 2(2) and 2(3) are not included here as they are not specifically relevant to this ACOP.

Guidance 2

Use

15 The definition of 'use' is wide and covers more than just the machining operation. It includes the activities of starting, stopping, programming (eg of a CNC machine), setting, the selection of guards and protection devices and their installation before use, transporting, repairing, modifying, maintaining, servicing and cleaning.

Guidance 2

Work equipment

16 PUWER applies to all work equipment, but the scope of this document is narrower. It only covers woodworking machinery, although this term should be interpreted to include machinery that is used for working on wood, cork, fibreboard and material composed wholly or partly of any of these materials.

Regulation 3 Application

Regulation 3

(1) These Regulations shall apply—

(a) in Great Britain; and
(b) outside Great Britain as sections 1 to 59 and 80 to 82 of the 1974 Act apply by virtue of the Health and Safety at Work etc. Act 1974 (Application outside Great Britain) Order 1995 ("the 1995 Order").

(2) The requirements imposed by these Regulations on an employer in respect of work equipment shall apply to such equipment provided for use or used by an employee of his at work.

(3) The requirements imposed by these Regulations on an employer shall also apply—

(a) to a self-employed person, in respect of work equipment he uses at work;
(b) subject to paragraph (5), to a person who has control to any extent of—
(i) work equipment;
(ii) a person at work who uses or supervises or manages the use of work equipment; or
(iii) the way in which work equipment is used at work,

and to the extent of his control.

(4) Any reference in paragraph (3)(b) to a person having control is a reference to a person having control in connection with the carrying on by him of a trade, business or other undertaking (whether for profit or not).

(5) The requirements imposed by these Regulations shall not apply to a person in respect of work equipment supplied by him by way of sale, agreement for sale or hire-purchase agreement.

(6) Subject to paragraphs (7) to (10), these Regulations shall not impose any obligation in relation to a ship's work equipment (whether that equipment is used on or off the ship).

(7) Where merchant shipping requirements are applicable to a ship's work equipment, paragraph (6) shall relieve the shore employer of his obligations under these Regulations in respect of that equipment only where he has taken all reasonable steps to satisfy himself that the merchant shipping requirements are being complied with in respect of that equipment.

(8) In a case where the merchant shipping requirements are not applicable to the ship's work equipment by reason only that for the time being there is no master, crew or watchman on the ship, those requirements shall nevertheless be treated for the purpose of paragraph (7) as if they were applicable.

Regulation 3

(9) Where the ship's work equipment is used in a specified operation paragraph (6) shall not apply to regulations 7 to 9, 11 to 13, 20 to 22 and 30 (each as applied by regulation 3).

(10) Paragraph (6) does not apply to a ship's work equipment provided for use or used in an activity (whether carried on in or outside Great Britain) specified in the 1995 Order save that it does apply to—

(a) the loading, unloading, fuelling or provisioning of the ship; or
(b) the construction, reconstruction, finishing, refitting, repair, maintenance, cleaning or breaking up of the ship.

(11) In this regulation—

"master" has the meaning assigned to it by section 313(1) of the Merchant Shipping Act 1995;

"merchant shipping requirements" means the requirements of regulations 3 and 4 of the Merchant Shipping (Guarding of Machinery and Safety of Electrical Equipment) Regulations 1988 and regulations 5 to 10 of the Merchant Shipping (Hatches and Lifting Plant) Regulations 1988;

"ship" has the meaning assigned to it by section 313(1) of the Merchant Shipping Act 1995 save that it does not include an offshore installation;

"shore employer" means an employer of persons (other than the master and crew of any ship) who are engaged in a specified operation;

"specified operation" means an operation in which the ship's work equipment is used—

(a) by persons other than the master and crew; or
(b) where persons other than the master and crew are liable to be exposed to a risk to their health or safety from its use.

Guidance 3

Where PUWER applies

17 PUWER applies:

(a) to all work equipment used where the HSW Act applies, ie to all sectors, not only factories, offices and shops but also, eg schools, universities, hospitals, hotels, places of entertainment and offshore oil and gas installations;
(b) to work equipment used in the common parts of shared buildings (such as lifts), private roads and paths on industrial estates and business parks and temporary work sites, including construction sites;
(c) throughout Great Britain and has effect wherever work is done by the employed or the self-employed except for domestic work in a private household;
(d) to work equipment used by homeworkers and to work equipment used in hotels, nursing homes and similar establishments and to parts of workplaces where 'domestic' staff are employed, such as the kitchens of hostels or sheltered accommodation.

PUWER therefore applies at all workplaces where woodworking machinery and equipment is used.

Guidance 3

18 PUWER places duties on:

(a) employers;
(b) the self-employed;
(c) people who have control of work equipment.

19 The duty on people who have control of work equipment reflects the way that work equipment is used in industry where there may not necessarily be a direct 'employment' relationship between the user and the person who controls the work equipment, eg when it is hired. If you have duties under PUWER you need to ensure that the woodworking machinery you provide for use at work complies with the Regulations.

20 Although only the courts can give an authoritative interpretation of the law, in considering the application of PUWER and this ACOP/guidance to people working under another's direction, the following information should be considered:

If people working under the control and direction of others are treated as self-employed for tax and national insurance purposes, they are nevertheless treated as their employees for health and safety purposes. It may therefore be necessary to take appropriate action to protect them. If any doubt exists about who is responsible for the health and safety of a worker this could be clarified and included in the terms of the contract. However, a legal duty under the HSW Act cannot be passed on by means of a contract and there will still be duties towards others under section 3 of the HSW Act. If such workers are employed on the basis that they are responsible for their own health and safety, legal advice should be sought before doing so.

Employers

21 If you are an employer (whether as an individual, partnership or company) you have a duty to ensure that items of work equipment provided for your employees and the self-employed working for you comply with PUWER.

Employees

22 If you are an employee you do not have any specific duties under PUWER. Your duties are covered in other legislation, in particular section 7 of the HSW Act and regulation 14 of the Management of Health and Safety at Work Regulations 1999 ('the Management Regulations').[3]

Self-employed people

23 If you are self-employed you have a duty to ensure that work equipment you provide for work or use at work complies with PUWER.

Trainees

24 If employees are being trained outside their normal workplace (eg at a college) the dutyholder will be the person in charge of the operation where they are being trained while the employee is there.

The duties of 'those in control of work equipment'

25 If you provide work equipment for use at work where you do not control its use or the premises where it is to be used, you should still ensure that the work equipment complies with PUWER. People in control of non-domestic premises who provide work equipment which is used by other people at work should also comply with PUWER. PUWER places duties on employers and the self-employed; offshore this includes owners, operators and contractors. Their duties cover both their own employees and, as people having control of work equipment, other workers who

Guidance 3

may be affected. Meeting these duties where a number of employers and their employees are involved requires co-operation and co-ordination of activities.

Regulation 4 Suitability of work equipment

Regulation 4

(1) Every employer shall ensure that work equipment is so constructed or adapted as to be suitable for the purpose for which it is used or provided.

(2) In selecting work equipment, every employer shall have regard to the working conditions and to the risks to the health and safety of persons which exist in the premises or undertaking in which that work equipment is to be used and any additional risk posed by the use of that work equipment.

(3) Every employer shall ensure that work equipment is used only for operations for which, and under conditions for which, it is suitable.

(4) In this regulation "suitable" means suitable in any respect which it is reasonably foreseeable will affect the health or safety of any person.

Guidance 4

26 This regulation deals with the safety of work equipment, including woodworking machinery. It deals with:

(a) its initial integrity;
(b) the place where it will be used;
(c) the purpose for which it will be used.

27 The selection of suitable woodworking machinery for particular tasks and processes makes it possible to reduce or eliminate many risks to the health and safety of people at the workplace. This applies both to the normal use of the equipment, as well as to other operations such as maintenance.

How risk assessment and the Management Regulations link with PUWER and this ACOP

28 The Management Regulations have important general provisions relating to the safety of work equipment, including the requirement to carry out a risk assessment. There is no specific regulation requiring a risk assessment in PUWER.

29 Risks to health and safety should be assessed taking into account matters such as the type of work equipment, substances and electrical or mechanical hazards to which people may be exposed.

30 You have a duty under health and safety law to ensure, as far as is reasonably practicable, the health, safety and welfare of your employees and others (such as temporary workers supplied through an employment agency).

31 When carrying out an assessment of the risk to their health and safety, you should identify groups of workers that might be particularly at risk such as young or disabled people, or those whose first language is not English. The outcome of your risk assessment will be helpful in meeting your duty to provide information, instruction, training and supervision necessary to ensure the health and safety of your employees. You will want to take account of factors such as their competence, experience, maturity etc. Formal qualifications, training certificates, aptitude tests etc might be used to help identify competence (see www.hse.gov.uk/competence for more information).

Guidance 4

32 The risk assessment carried out under regulation 3(1) of the Management Regulations will help you to select work equipment and assess its suitability for particular tasks. See the HSE leaflet *Risk assessment: A brief guide to controlling risks in the workplace*[4] for more information.

Managing health and safety

33 A good management system will help you identify problem areas, decide what to do, act on decisions made and check that the steps taken have been effective. Guidance on managing health and safety can be found at www.hse.gov.uk/managing.

Regulation 4(1)

34 Woodworking machinery must be suitable, by design, construction or adaptation, for the work it is provided to do. This means in practice that when you provide woodworking machinery you should ensure that it is suitable for the work to be undertaken and that it is used in accordance with the manufacturer's specifications and instructions. If woodworking machinery is adapted, it must still be suitable for its intended purpose.

Regulation 4(2)

35 This requires you to assess the location in which the woodworking machinery is to be used and take account of any risks that may arise from the particular circumstances.

Regulation 4(3)

36 This requirement concerns each particular process for which the woodworking machinery is to be used and the conditions under which it will be used. You need to make sure that the machinery is suitable for the process and conditions of use.

ACOP 4

Suitability of woodworking machinery

37 Some operations can be safely carried out on more than one machine. You should ensure that the most suitable machine available is selected for the task. For example, for grooving, a properly guarded vertical spindle moulding machine or routing machine are most suitable. If a circular saw is used for grooving, special guards should be provided to prevent access to that part of the saw blade above the table.

Guidance 4

38 Some operations are higher risk when carried out on one type of machine rather than another. For example, cutting a rebate on a properly guarded spindle moulding machine is lower risk than using the cutter block of a surface planing machine. Similarly, trimming very thin slivers of wood using a circular saw is higher risk than removing the same material by means of a surface planing machine. In some cases it is possible to carry out the work safely, provided more stringent safeguards than normal are taken.

ACOP 4

39 Where ripping operations are carried out, a circular saw or radial arm saw should not be used unless the saw blade, at all times, projects through the upper surface of the material being cut.

ACOP 4

40 A radial arm cross-cut saw should only be used for ripping operations if the machine has been designed or adapted especially for that purpose. In such cases it is essential that appropriate, additional safeguards, ie at least a riving knife, are used.

Limited cutter projection tooling

41 You should ensure that suitable tools are selected. The tools selected should be within the range specified by the machine manufacturer. Limited cutter projection tooling or other devices which achieve the same effect should be used on hand-fed machines.

Guidance 4

42 Limited cutter projection tooling, also known as 'chip thickness limitation tooling', is specifically designed and constructed to reduce the risk of injury. There is evidence to show that the use of these tools considerably reduces the severity of the injury if a machine operator's fingers come into contact with the rotating tool (see Figures 1 and 2).

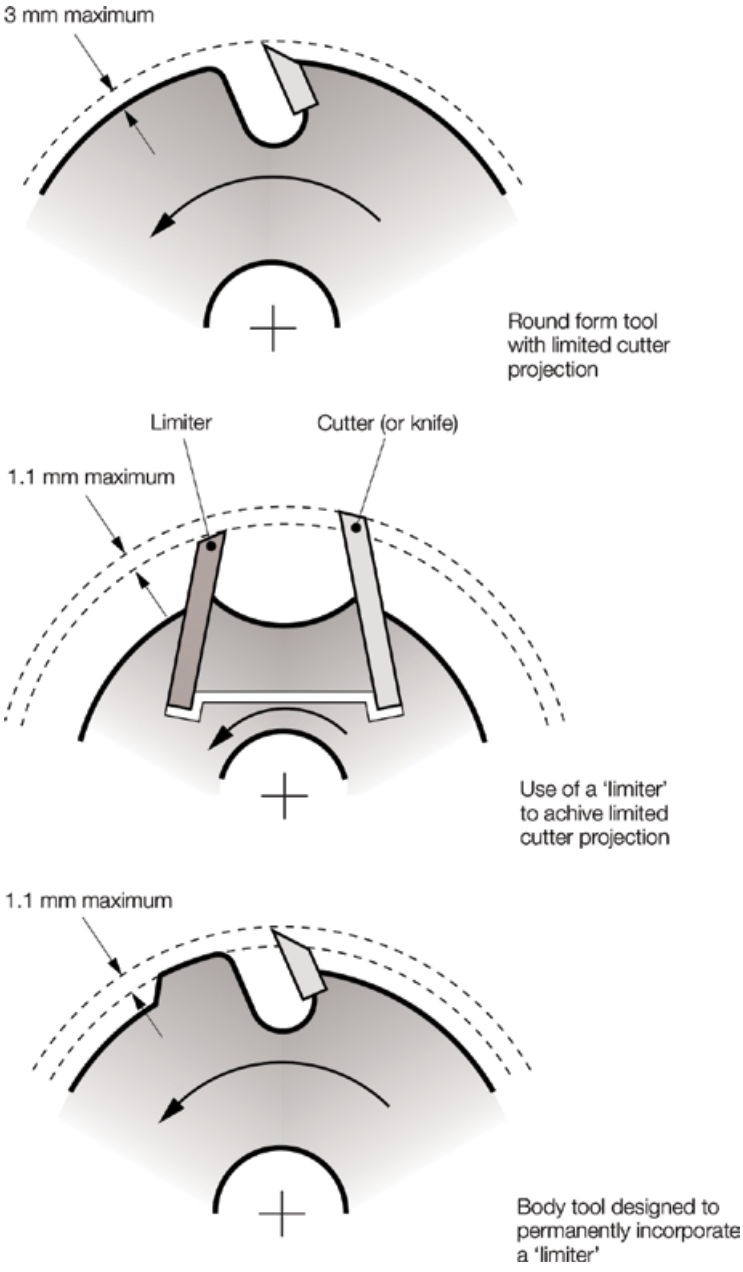

Figure 1 Examples of round form tooling with limited cutter projection

Guidance 4

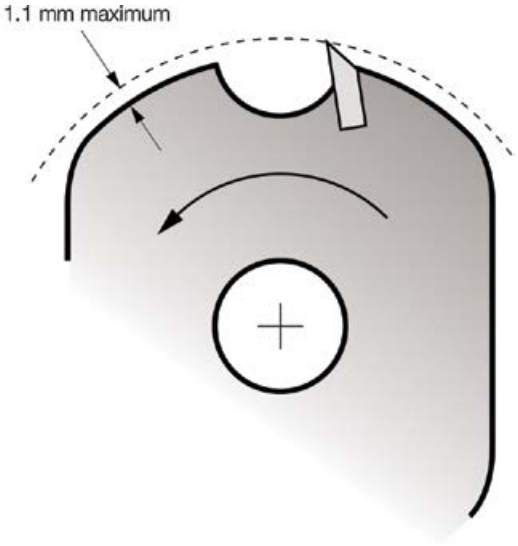

Figure 2 An example of a non-round form tool with limited cutter projection

43 The European (CEN) Standard BS EN 847-1:2013 *Tools for woodworking. Safety requirements. Milling tools and circular saw blades*[5] gives guidance on safety standards for tools on new machines. More information can also be found in *PUWER 98: Selection of tooling for use with hand-fed woodworking machines*.[6]

44 It is possible to fit limited cutter projection tooling to vertical spindle moulding machines, single-end tenoning machines and some rotary knife and copying lathes.

ACOP 4

Tool speeds

45 No tool should be run at speeds greater than the safe working speed marked on the tool or specified in the information supplied by the manufacturers or suppliers of the tool.

Cylindrical cutter blocks

46 Only cylindrical cutter blocks should be used on hand-fed planing machines. To prevent the cutters from becoming accidentally detached from the block, the manufacturer's recommendations for balancing and mounting should be followed.

Guidance 4

47 The shape of cutters on some machines will affect the operator's safety. The cutters mounted on spindle moulding machines are invariably detachable from the cutter block or tool body and it is important that the cutter is the correct thickness for the cutter block or spindle upon which it is to be mounted appropriately.

Choosing tools

48 This regulation also applies to the correct choice of tool for the work and to the need for the cutter to be kept in good condition. Cutters should be kept sharp. If they are cracked or otherwise damaged in a way that increases the risk of break-up, they should not be used and should be disposed of.

Regulation 5 Maintenance

Regulation 5

(1) Every employer shall ensure that work equipment is maintained in an efficient state, in efficient working order and in good repair.

(2) Every employer shall ensure that where any machinery has a maintenance log, the log is kept up to date.

Guidance 5

49 This regulation builds on the general duty in the HSW Act which requires work equipment to be maintained so that it is safe. It does not cover the maintenance process (that is covered by the general duties of the HSW Act) or the construction of work equipment so that maintenance can be carried out without risk to health or safety.

50 All parts of the woodworking machinery should be maintained so that its performance does not deteriorate to the extent that it puts people at risk. In regulation 5, 'efficient' relates to how the condition of the woodworking machinery might affect health and safety. It is not concerned with productivity.

Frequency of maintenance

51 Woodworking machinery may need to be checked frequently to ensure that safety-related features are functioning correctly. The frequency of such checks will vary and depends on the machinery itself and the risks involved. It should also take into account:

(a) the intensity of use;
(b) the operating environment;
(c) the variety of operations.

The manufacturer's instructions should help you determine the items that require maintenance, as well as the type of maintenance they need, eg proper lubrication, replacement and adjustment of parts, and the frequency of the maintenance work.

Maintenance management

52 The extent and complexity of maintenance can vary substantially from simple checks on basic woodworking machinery to integrated programmes for complex machinery. In all circumstances, for maintenance to be effective, it needs to be targeted at the parts of work equipment where failure or deterioration could lead to increased risks to health and safety. To achieve this, a number of maintenance management techniques could be used:

(a) planned preventive;
(b) condition-based;
(c) breakdown.

53 Different techniques for the management of maintenance have different benefits:

(a) planned preventive maintenance involves replacing parts or making necessary adjustments at preset intervals so that hazards do not occur as a result of the deterioration or failure of the equipment;
(b) condition-based maintenance involves monitoring the condition of safety critical parts and carrying out maintenance whenever necessary for the same purposes. When safety critical parts could fail and cause the equipment,

Guidance 5

guards or other protection devices to fail in a dangerous way, a formal system of planned preventive or condition-based maintenance should be used;

(c) breakdown maintenance, however, only needs to be carried out after failure has occurred. This is appropriate only if the failure does not present an immediate risk and can be corrected before risk occurs, eg, through effective fault reporting and maintenance schemes.

54 You should select appropriate techniques using risk assessment and apply them independently or in combination to address the risks involved.

55 You may need to review and revise maintenance management measures in certain circumstances, eg if the woodworking machinery is subjected to particularly heavy use.

Maintenance log

56 You do not have to keep a maintenance log, but it is recommended that you keep a record of maintenance for high-risk woodworking machinery. A detailed maintenance log can provide information for future planning of maintenance activities and inform maintenance personnel and others of previous action taken. If you do have a maintenance log, keep it up to date.

Training for maintenance workers

57 Maintenance work should only be carried out by people who have the combination of training, skills, experience and knowledge to do the work.

Hired work equipment

58 If items of woodworking machinery are hired, it is important for both the hire company and the person responsible for hiring the equipment to establish which party will carry out safety-related maintenance. This is particularly important for equipment on long-term hire and the terms of the agreement should be set out or recorded in writing.

59 Sometimes safety-related maintenance work is not carried out by the dutyholder with ultimate responsibility for the work equipment in the mistaken belief that the other party will do it. If the hire company is some distance from the user site, it would be uneconomical for their staff to carry out simple checks and make minor adjustments, so the user may agree to carry them out. Both parties should agree exactly what they are responsible for and make sure that this is communicated to the people who will be carrying out the maintenance.

ACOP 5

Maintaining woodworking machinery

60 You should ensure that the maintenance of woodworking machinery includes at least:

(a) worktables (upon which a workpiece rests or over which it passes). These should be smooth and free of any obstruction or damage that is likely to interrupt the continuous feeding of any workpiece to the tool;

(b) mechanical feed systems (where used). These should track and run smoothly;

(c) guards (particularly adjustable, interlocked or automatic guards). These should be freely adjustable over the full range of work for which they are designed, and continue to fulfil their safety function;

(d) protection devices including two-handed controls and photo-electric

ACOP 5

devices (where provided). These should be in effective working order;
(e) tools. These should be sufficiently sharp and not damaged in such a way to increase the likely risk of disintegration/break-up;
(f) toolholders and workpiece clamping systems (where fitted). These should move freely and continue to function safely;
(g) protection appliances (such as jigs, holders, push-sticks etc). These should be stored in a safe place to minimise the risk of damage and be checked to ensure that they are fit for safe use.

Regulation 7 Specific risks

Regulation 7

(1) Where the use of work equipment is likely to involve a specific risk to health or safety, every employer shall ensure that—

(a) the use of that work equipment is restricted to those persons given the task of using it; and
(b) repairs, modifications, maintenance or servicing of that work equipment is restricted to those persons who have been specifically designated to perform operations of that description (whether or not also authorised to perform other operations).

(2) The employer shall ensure that the persons designated for the purposes of sub-paragraph (b) of paragraph (1) have received adequate training related to any operations in respect of which they have been so designated.

ACOP 7

61 You should ensure, as far as reasonably practicable, that the main risks are controlled by:

(a) eliminating the risks; or if that is not possible:
(b) taking measures to control the risks such as the provision of guards; but if the risks cannot be adequately controlled:
(c) taking appropriate management measures to deal with the remaining risk, such as organising your work to reduce exposure to the hazard, involving employees and the provision of information, instruction and training.

Normal operation

62 You should ensure that where the risks from the use of work equipment cannot be adequately controlled by measures, such as guards or protection devices, during its normal operation, it is particularly important that only the people whose task it is should be allowed to use such equipment. They should have received sufficient information, instruction and training to enable them to carry out the work safely.

Repairs, modifications etc

63 You should ensure that where the risks from the use of work equipment cannot be adequately controlled by measures such as guards or protection devices during repair, maintenance, or other similar work, only people who have received sufficient information, instruction and training to enable them to carry out the work safely should do the work. They shall be the designated person for the purpose of this regulation.

Guidance 7

64 The use of woodworking machines should be restricted to people who are properly trained and have enough information and instruction, particularly where the

Guidance 7

machine is hand-fed. Much of the cutting tool needs to be exposed to allow the machining of the workpiece. The effort of moving the material through the machine is usually towards the fast moving cutter(s) which in many cases cannot be fully enclosed. Safety therefore relies on a combination of the use of guards, protection devices and protection appliances, selecting competent people to use the equipment and following safe working practices and systems of work.

65 On machines with an integrated feed mechanism, there is less risk of contact with the tool and ejection of the workpiece. However, there are still inherent dangers during normal operation and similar precautions should be taken.

66 For both integrated and hand-fed machines, there are high residual risks while setting, adjusting, removing off-cuts and cleaning of the tools and machines, so take appropriate precautions.

Specific risks to health

67 When considering the risks from dangerous machinery such as that used in woodworking operations it is easy to become focussed only on the safety risks. However, risks to the health of your workers from manual handling, dust, fumes, noise, hand/arm vibration etc are equally important, and you should consider them in your risk assessment. Guidance on health risks in the woodworking industry can be found at www.hse.gov.uk/woodworking/healthrisks.htm.

Regulation 8 Information and instructions

Regulation 8

(1) Every employer shall ensure that all persons who use work equipment have available to them adequate health and safety information and, where appropriate, written instructions pertaining to the use of the work equipment.

(2) Every employer shall ensure that any of his employees who supervises or manages the use of work equipment has available to him adequate health and safety information and, where appropriate, written instructions pertaining to the use of the work equipment.

(3) Without prejudice to the generality of paragraphs (1) or (2), the information and instructions required by either of those paragraphs shall include information and, where appropriate, written instructions on—

- *(a) the conditions in which and the methods by which the work equipment may be used;*
- *(b) foreseeable abnormal situations and the action to be taken if such a situation were to occur; and*
- *(c) any conclusions to be drawn from experience in using the work equipment.*

(4) Information and instructions required by this regulation shall be readily comprehensible to those concerned.

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68 This regulation builds on the general duty in the HSW Act to provide employees and others, such as temporary workers supplied through an employment agency, with the information and instructions that are necessary to ensure, so far as is reasonably practicable, their health and safety. It also links with the general requirement in the Management Regulations to provide information to employees relating to their health and safety. Employers have a legal duty to consult with their employees on matters relating to health and safety in the

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workplace. For further information see the HSE leaflet *Consulting employees on health and safety: A brief guide to the law.*[7]

Information and instructions

69 Regulations 8(1) and 8(2) refer to written instructions. These can include the information provided by manufacturers or suppliers of woodworking machinery, eg instruction sheets or manuals, instruction placards, warning labels and training manuals. They can also include in-house instructions and instructions from training courses. There are duties on manufacturers and suppliers to provide sufficient information, including drawings, to enable the correct installation, safe operation and maintenance of woodworking machinery. You should ask or check that they are provided.

What the information and instructions should cover

70 Any information and written instructions you provide should cover:

(a) all health and safety issues relating to the use of the woodworking machinery;
(b) any limitations on these uses;
(c) any foreseeable difficulties that could arise;
(d) the methods to deal with them;
(e) any practical tips gained from experience of using the woodworking machinery.

Who needs the information and instructions

71 You should make sure that any written instructions are available to the people, including any temporary workers, who use woodworking machinery. You should also ensure that instructions are made available to other people who need them, eg maintenance instructions need to be made available or passed to the people involved in maintaining your woodworking machinery.

72 Supervisors and managers also need access to the information and written instructions. The amount of detailed health and safety information they need to have immediately available for day-to-day running of production lines will vary but it is important that they know what information is available and where to find it quickly if needed.

How to make the information and instructions available

73 Information can be made available in writing, or given verbally where it is considered sufficient. It is your responsibility to decide what is appropriate, taking into consideration the individual circumstances. Where there are complicated or unusual circumstances the information should be in writing. Other factors need to be taken into consideration such as the degree of skill of the workers involved, their experience and training, the degree of supervision and the complexity and length of the particular job.

74 The information and written instructions should be easy to understand. They should be in clear English and/or other languages if appropriate for the people using them. They should be set out in a logical order with illustrations where appropriate. Standard symbols should be used.

75 You should give special consideration to any employees whose first language is not English, those with language difficulties or with disabilities which could make it difficult for them to receive or understand the information or instructions. You may

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need to make special arrangements in these cases, this could include, eg DVDs or translation into another language or using an interpreter.

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Information and instructions for woodworking machinery

76 You should ensure that information and instructions provided on the use of woodworking machinery includes, where relevant:

(a) the speed, range, type and dimensions of tools suitable for the machine;
(b) any limitation on the cutting speeds of the machine, particular operations or size and material of any workpiece;
(c) procedures relating to the repair or replacement of any guard or protection device;
(d) the availability, suitability and use of any additional protection device or protection appliance;
(e) the correct procedures to be followed for setting and adjusting operations;
(f) safe methods of handling tools;
(g) correct procedures for start-up and shutdown, isolation and how to discharge any residual energy;
(h) procedures for cleaning saw blades by hand (which should be carried out with the machine isolated and the blade stopped);
(i) procedures for adjusting any guard, tool, clamp or other part of a machine (which should not be carried out while any part of the machine is in motion, unless they can be done safely).

Guidance 8

77 Information and instruction is needed on the safe mounting of tools and cutters.

78 For most tools, methods for safe handling will be straightforward, but certain high-risk operations will require special information and instruction, eg how to handle the band blade of a band re-saw to the 'saw doctor's' shop and the handling of veneer guillotine blades when they are removed for sharpening.

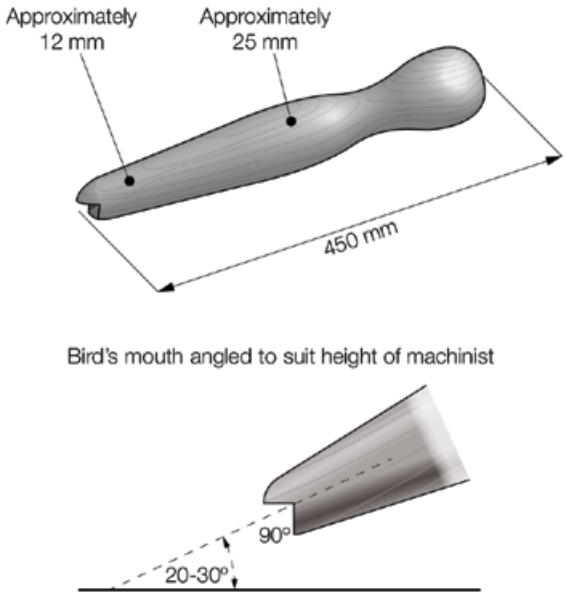

Figure 3 A suitable design for a push-stick

Guidance 8

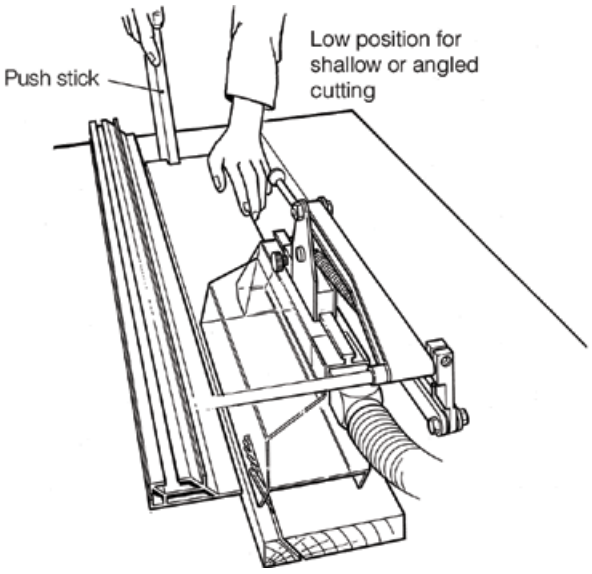

Figure 4 Use of a push-stick

79 When operating a hand-fed circular saw, a push-stick should always be used when making any cut less than 300 mm in length or when feeding the last 300 mm of a longer cut. The operator's leading hand should never be closer than is necessary to the front of the saw and hands should never be in line with the saw blade. When a push-stick is used, the left hand should be moved to a position along the plane of the saw, so that in the event of an unexpected movement of the workpiece, the fingers will not be thrown against the teeth. A push-stick should always be used to remove the cut piece from between the saw and the fence, unless the width of the cut piece exceeds 150 mm. More information can be found in *Circular saw benches: Safe working practices*[8] and the poster *Circular sawing machines*.[9]

80 When operating a vertical spindle moulding machine, it may be necessary for the cutters to have to break into the solid face of the workpiece rather than starting the cut at the beginning and/or to have to break out before the end. This type of work requires a jig and control of the workpiece is greatly improved if this is used in conjunction with stops. Stops also allow greater stability of the workpiece and prevent kickback when 'dropping on'. Typically, the jig containing the workpiece is placed against a back stop, fed slowly onto the cutters to break in, then fed forward past the cutters against the false fence to the front stop and the jig taken off. A typical arrangement is shown in Figure 5. More information can be found in *Safe use of vertical spindle moulding machines*[10] and on HSE's woodworking website at www.hse.gov.uk/woodworking/spindlemoulder.htm.

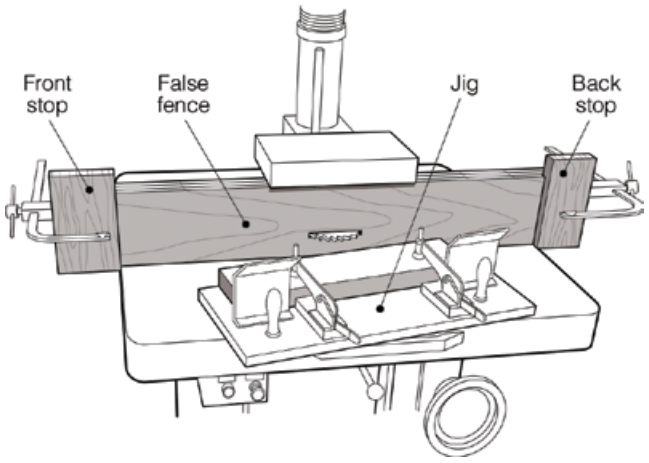

Figure 5 Jig (note toggle clamps and handles) and back/front stops for producing stopped work

Guidance 8

81 Where the motor driving a vertical spindle moulding machine is capable of operating at two working speeds, arrangements should be made to ensure that the machine cannot run at the higher speed without first being run at the lower speed. This will minimise the risk of tooling being damaged.

82 Two categories of information and instruction are relevant. Both have an important role for safety:

(a) verbal communication;
(b) recorded information, eg keeping records of the significant findings of assessments, and manufacturers' and suppliers' information.

83 It is important that you make available any recorded information and instruction that is necessary for safety to managers, supervisors and machine operators, as appropriate.

84 The role of the manager and supervisor will be important where 'foreseeable abnormal situations' are likely to occur and where there are 'any conclusions to be drawn from experience'. A good example of this is the action to be taken in the event of a malfunction of a guard or a machine control. Further guidance on supervisors responsibilities is available in the HSE leaflet *Supervising for safety in woodworking – Are you as good as you think you are?*[11]

Regulation 9 Training

Regulation 9

(1) Every employer shall ensure that all persons who use work equipment have received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.

(2) Every employer shall ensure that any of his employees who supervises or manages the use of work equipment has received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.

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Who should be trained?

85 You should ensure that training is provided for machine operators and those who help in the machining process, eg in taking off, feeding and/or loading workpieces etc. It should also be provided for those who set, clean, or maintain woodworking machinery.

Training schemes for woodworking

86 All training schemes should include the following elements:

(a) General. Instruction in the safety skills and knowledge common to woodworking processes. This should include aspects of good housekeeping and awareness of the dangers such as 'taking off', 'dropping on' and 'kickback'.
(b) Machine specific. Practical instruction in the safe operation of the machine, including in particular:
(i) the dangers arising from the machine and any limitations in its use;
(ii) the main causes of accidents and relevant safe working practices, including the use of correct tooling (limited cutter projection tooling

ACOP 9

where appropriate), guards, protection devices, appliances, the use of the braking system where fitted and dust control measures such as local exhaust ventilation (LEV).

(c) Familiarisation. On-the-job training under close supervision.

Guidance 9

Training content and its effectiveness

87 Training can be carried out in-house, externally or a combination of both. In all cases you should take care to ensure that the class of the machine involved and the type of work which the operator is expected to carry out has been adequately covered. It is essential to ensure that machine-specific training is given. If training schemes do not include this they will not fully meet all the necessary training requirements. Also, where modular training is carried out, it is essential to ensure that the modules cover training on all the machines that the trainee will be expected to work on and the types of work to be done.

In-house training by supervisors and managers

88 Where training is carried out by a supervisor or manager, they should be competent in the safe operation of the class and type of machine, the type of work or operation on which the training is to be given and the risks and control measures to be adopted in each particular case. The correct selection of supervisors and managers who undertake training is central to any successful training scheme.

89 Guidance on suggested content for training courses is given in Appendix 1. Examples of training records are given in Appendix 2. A suggested specification for in-house training is set out at Appendix 3. More information on training, supervision, training providers and woodworking training courses can be found at www.hse.gov.uk/woodworking/training.htm.

Machine operators

90 The training and supervision needs of each individual operator will vary. It is essential that an assessment is made of those needs by someone competent to make such an assessment.

Young people

91 PUWER does not contain any specific requirements relating to the age of people using woodworking machinery, since this is already covered by regulation 19 of the Management Regulations.

What do the Management Regulations require?

92 Every employer must ensure, so far as reasonably practicable (see www.hse.gov.uk/youngpeople/law/#sfarp), the health and safety of all their employees, irrespective of age. As part of this, there are certain considerations that need to be made for young people. Putting the requirements into practice should be straightforward. In most cases an employer should already have the necessary risk management arrangements in place. Definitions of young people and children by age:

(a) a **young person** is anyone under 18; and
(b) a **child** is anyone who has not yet reached the official minimum school leaving age (MSLA). Pupils will reach the MSLA in the school year in which they turn 16.

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93 There is no requirement for an employer to carry out a separate risk assessment specifically for a young person. If they have not previously employed a young person they should review their existing risk assessment and take into account the specific factors for young people, before a young person starts with them. Areas that may be particularly relevant to take into account could include their inexperience, lack of awareness of potential risks and their immaturity. It follows that you would not want young people to use high-risk woodworking machinery unless they have the necessary competence and maturity which includes having completed appropriate training.

94 High-risk woodworking machinery is considered to include any woodworking machine which is hand-fed. The term 'hand-fed' is defined in BS EN 847-1. It includes not only manual holding and/or guiding of the workpiece or of a machine element incorporating a tool, but also the use of a hand-operated carriage on which the workpiece is placed manually or clamped and the use of a demountable power feed unit. High-risk woodworking machinery also includes the following machines, however fed:

(a) any sawing machine fitted with a circular blade or saw band;
(b) a planing machine when used for surfacing;
(c) a vertical spindle moulding machine.

95 A child must never carry out such work involving these risks, whether they are permanently employed or under training such as work experience.

96 A young person, who is not a child, can carry out work involving these risks if:

(a) the work is necessary for their training;
(b) the work is properly supervised by a competent person;
(c) the risks are reduced to the lowest level, so far as reasonably practicable.

Demonstrating competence

97 Employers need to satisfy themselves that in addition to being adequately trained, workers can demonstrate competence in the work that they are expected to do.

98 Part of assessing competence means measuring the success of the training that has been given. The person carrying out the assessment should be familiar not only with the machining process but also with the risks and the safe working practices that are used.

99 Competence is demonstrated by the trainee when the required knowledge and safe working practices are used consistently when working at the machine.

100 A competent worker will be able to demonstrate:

(a) selection of the correct machine and tooling for the job, ie have the ability to say 'This is the wrong machine for the job, it can be done more safely on...';
(b) the purpose and adjustment of guards, protection devices and appliances;
(c) a knowledge of safe methods of working including appropriate selection of jigs, holders, push-sticks and similar protection appliances;
(d) a practical understanding of legal requirements, eg the need to provide and use guards, as well as their correct adjustment and positioning etc;
(e) a knowledge of the nature of wood and the hazards which this produces including kickback, snatching and ejection.

Guidance 9

Refresher training

101 As well as providing training for new recruits, you should consider whether refresher training for trained and experienced operators of woodworking machines is needed. Skills decline if they are not used regularly. You should also pay particular attention to people who occasionally deputise for others – they may need more frequent refresher training than those who do the work regularly. This is also particularly relevant if:

(a) a worker has not operated a particular class of machine for some time;
(b) the method of control of the machine has changed;
(c) new equipment or technology is introduced;
(d) the system of work changes.

When should training take place?

102 The Management Regulations specify that health and safety training should take place within working hours.

Regulation 11 Dangerous parts of machinery

Regulation 11

(1) Every employer shall ensure that measures are taken in accordance with paragraph (2) which are effective—

(a) to prevent access to any dangerous part of machinery or to any rotating stock-bar; or
(b) to stop the movement of any dangerous part of machinery or rotating stock-bar before any part of a person enters a danger zone.

(2) The measures required by paragraph (1) shall consist of—

(a) the provision of fixed guards enclosing every dangerous part or rotating stock-bar where and to the extent that it is practicable to do so, but where or to the extent that it is not, then
(b) the provision of other guards or protection devices where and to the extent that it is practicable to do so, but where or to the extent that it is not, then
*(c) the provision of jigs, holders, push-sticks or similar protection appliances used in conjunction with the machinery where and to the extent that it is practicable to do so, and the provision of such information, instruction, training and supervision as is necessary.**

(3) All guards and protection devices provided under sub-paragraphs (a) or (b) of paragraph (2) shall—

(a) be suitable for the purpose for which they are provided;
(b) be of good construction, sound material and adequate strength;
(c) be maintained in an efficient state, in efficient working order and in good repair;
(d) not give rise to any increased risk to health or safety;
(e) not be easily bypassed or disabled;
(f) be situated at sufficient distance from the danger zone;
(g) not unduly restrict the view of the operating cycle of the machinery, where such a view is necessary;
(h) be so constructed or adapted that they allow operations necessary to fit or replace parts and for maintenance work, restricting access so that it is

Regulation 11

allowed only to the area where the work is to be carried out and, if possible, without having to dismantle the guard or protection device.

(4) All protection appliances provided under sub-paragraph (c) of paragraph (2) shall comply with sub-paragraphs (a) to (d) and (g) of paragraph (3).

(5) In this regulation—

"danger zone" means any zone in or around machinery in which a person is exposed to a risk to health or safety from contact with a dangerous part of machinery or a rotating stock-bar;

"stock-bar" means any part of a stock-bar which projects beyond the head-stock of a lathe.

*as amended by SI 2002/2174 reg 7(b)

Guidance 11

Regulation 11(1)

103 Regulation 11(1) requires employers to take effective measures to prevent access to dangerous parts of machinery or stop their movement before any part of a person enters a danger zone.

104 The term 'dangerous part' has been established in health and safety law through judicial decisions. In practice this means that if a piece of work equipment could cause injury if it is being used in a foreseeable way it can be considered a dangerous part.

Risk assessment

105 Your risk assessment carried out under regulation 3 of the Management Regulations should identify hazards presented by machinery. If the hazard could present a reasonably foreseeable risk to a person, the part of the machinery generating that risk is a 'dangerous part'. The hazard generally results in a risk when the part of the machinery is in motion. The risk assessment should evaluate the nature of the injury, its severity and likelihood of occurrence. The risk to be overcome is contact of part of the body or clothing with the dangerous part of the machinery. The hazards from woodworking machinery will be identified as part of the risk assessment. The purpose of the risk assessment is to identify measures that can be taken to overcome the risks that the hazards present.

Regulation 11(2)

106 Regulation 11(2) specifies the measures which should be taken to prevent access to the dangerous parts of the woodworking machinery, ranked in the order they should be implemented. It may be necessary to select a combination of measures (see paragraph 111 for an example of this). The levels of protection are:

(a) fixed enclosing guards;
(b) other guards or protection devices such as interlocked guards and pressure mats;
(c) protection appliances such as jigs, holders and push-sticks etc;
(d) the provision of information, instruction, training and supervision.

The information, instruction, training and supervision that is provided should enable the operators to be fully aware of how guards and protection devices should be set and used and the likely result if they are not correctly used or shortcuts are taken.

ACOP 11

Preventing access to dangerous parts of woodworking machinery

107 You should ensure that where practicable, access to the tools, cutters or other dangerous parts of a woodworking machine is prevented by fixed guards or distance barriers until they are safely at rest.

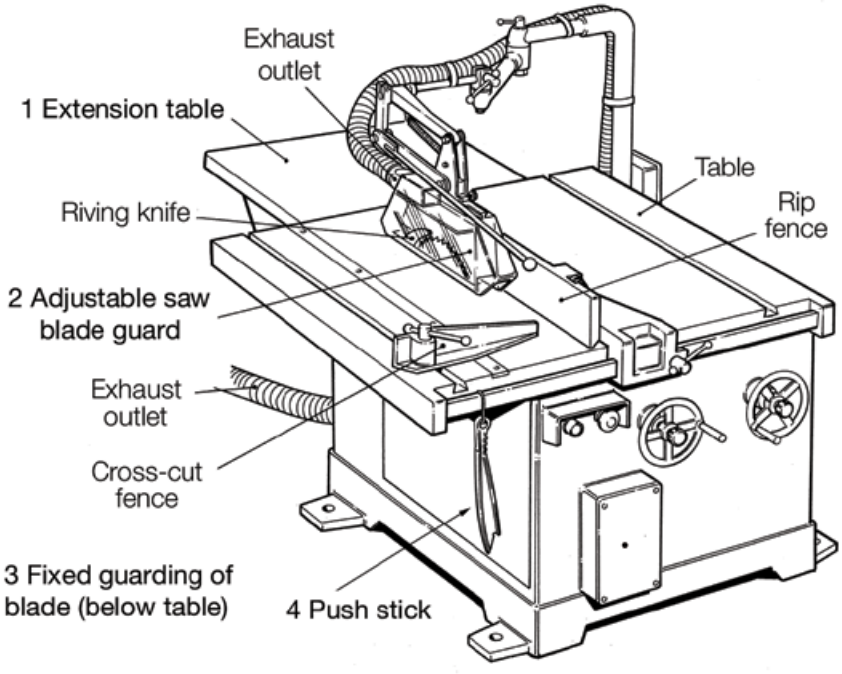
108 Where it is not possible to prevent access to the dangerous parts by fixed guards alone, a combination of fixed guards, adjustable guards and, if necessary, protection devices should be provided.

109 Where guarding is achieved by means of an outer fence of the perimeter type, any hinged, sliding or moveable guards forming a part of that fence or enclosure (such as a door or panel) should be interlocked so that the machine will not run unless they are effectively closed.

110 Adjustable guards should be kept as close to the workpiece as possible while the machine is operating. Adjustments to guards should not be carried out while the cutter(s) is in motion unless this can be done safely.

Guidance 11

111 The guarding arrangements for a circular saw bench provide a good illustration of how this hierarchy of safeguards is applied in practice, since they combine nearly all elements of the regulation (see Figure 6). See *Circular saw benches. Safe working practices* the poster *Circular sawing machines* and HSE's woodworking website at www.hse.gov.uk/woodworking/training.htm for more information.



Key:

1 An extension table is needed as a protection device if a second person works at the rear of the blade, taking off cut material.
2 Adjustable guards enclose the top part of the saw blade which is not used for cutting the workpiece.
3 Fixed guards form a partial enclosure for some of the dangerous parts (ie those below the bench/table).
4 A push-stick is a protection appliance that keeps the operator's hands away from the blade as the wood is pushed towards it.

Figure 6 Safeguarding arrangements for a circular saw bench

ACOP 11

112 An adjustable guard should be:

(a) capable of adjustment over the full range of the size and position of the tool and the workpiece;
(b) of sufficient size and shape so as to enclose as much of the tool as is practicable during the cutting operation;
(c) sufficiently strong and rigid so as to withstand normal usage and to contain small pieces of the tools and workpiece that may be thrown off. Guards manufactured from wood are unlikely to be suitable in view of the likelihood of them being easily cut should they come into contact with the tool. The exception is the bridge guard for a surface planing machine which should be made from a material such as plywood or light alloy, so that in the event of contact with the cutter block, neither guard nor cutter block will disintegrate. Most guards should therefore be made of metal or hard plastic. Where it is necessary for the operator to see the cutting edge, a sighting slot or a transparent panel in the guard should be provided;
(d) capable of being adjusted without risk to the operator. Workpiece guiding fences should be capable of accepting additional wooden false fences.

113 A protection appliance (jigs, holders and push-sticks etc) should be:

(a) made of strong and rigid material that will not damage the tool should it come into contact with it. In most cases therefore, such appliances should be made of wood or a similar material;
(b) designed so that when properly used, it controls the movement of the workpieces;
(c) capable of being held firmly. Handholds should be incorporated if the shape of the appliance does not in itself provide adequate means of being gripped securely;
(d) equipped, where necessary, with means of clamping and/or holding the workpiece;
(e) readily available for use at the machine or machines for which it is intended to be used.

Guidance 11

Routine checks

114 All guards, particularly adjustable or automatic guards, need to be kept in good working condition and regularly checked to ensure that they move freely, are free from any defect and are capable of being adjusted over the full range of work for which they were designed.

115 Protection devices and guards with interlocking devices need to be checked regularly to ensure that they continue to operate correctly. It is recommended that they are checked at least once a working shift. Protection devices should, when actuated, stop the machine and/or prevent start-up. Guards should, when closed, prevent access to hazardous motion and when opened, actuate the interlocking device to stop the machine and/or prevent start-up.

116 If tool holders and workpiece clamping systems are fitted, they need to be checked for correct adjustment, free movement and the absence of damage.

117 Protection appliances such as jigs, workpiece holders, push-sticks etc should be stored in a safe place to minimise the risk of damage and should be regularly checked to ensure that they are fit for safe use.

Regulation 12 Protection against specified hazards

Regulation 12

(1) Every employer shall take measures to ensure that the exposure of a person using work equipment to any risk to his health or safety from any hazard specified in paragraph (3) is either prevented, or, where that is not reasonably practicable, adequately controlled.

(2) The measures required by paragraph (1) shall—

(a) be measures other than the provision of personal protective equipment or of information, instruction, training and supervision, so far as is reasonably practicable; and
(b) include, where appropriate, measures to minimise the effects of the hazard as well as to reduce the likelihood of the hazard occurring.

(3) The hazards referred to in paragraph (1) are—

(a) any article or substance falling or being ejected from work equipment;
(b) rupture or disintegration of parts of work equipment;

(4) For the purposes of this regulation "adequately" means adequately having regard only to the nature of the hazard and the nature and degree of exposure to the risk.

Note: (c) to (e) of regulation 12(3) and regulation 12(5) are not included here as they are not specifically relevant to this ACOP.

ACOP 12

Ejected material/disintegration

118 You should take adequate measures to control the risks from 'kickback'.

119 Where a demountable power feed device or machine integrated power feed is used, the size and rating of the power feed should be sufficient to overcome the forces of kickback.

120 The guarding at the machine should provide a sufficient degree of protection in the event of the cutter or tool disintegrating or the cutter being ejected.

121 Risk of break-up should be minimised by the use of proprietary tools which should be maintained in good and sound condition.

Guidance 12

122 Although many of the hazards set out in regulation 12(3) are relevant to woodworking, the only two which fall within the scope of this ACOP are:

(a) material being ejected;
(b) disintegration.

Kickback

123 Kickback is common and is dangerous on hand-fed machines, especially circular saws, vertical spindle moulding machines and planing machines. Selection of the appropriate measure(s) to either prevent or control the risk depends on the machine and the process being carried out. For the common machines these measures are set out in paragraphs 124–126.

Guidance 12

124 Ejection, which can result from 'kickback', occurs when the tool bites into the wood. This causes the wood to be forcibly thrown out of the machine – often in the direction of the operator.

125 Protection devices, such as clamps that are used to control the effects of kickback, can be manual or power-operated and can take a number of forms. Power-operated clamps normally use hydraulic or pneumatic cylinders with suitable attachments.

126 Protection appliances include feed rollers, belts, spring-loaded pressure pads, drive wheels, jigs, holders etc. They may be used individually or in combination (see Figure 5).

ACOP 12

127 At circular saw benches, the risk of kickback of the workpiece should be reduced by the provision and use of a properly designed and well-adjusted riving knife.

128 The riving knife should:

(a) be securely fixed below the machine table;
(b) be positioned directly behind and in line with the saw blade;
(c) be shaped so that the inner edge of the riving knife follows as closely as practicable the contours of the largest saw blade that is designed to be used on the machine;
(d) be strong and rigid;
(e) have sides with smooth flat surfaces;
(f) be kept adjusted so that it is as close as practicable to the saw blade and in particular is within 8 mm from the blade at table level;
(g) be kept adjusted so the vertical distance between the top of the riving knife and the top of the blade is no more than 25 mm (except for saw blades that are more than 600 mm in diameter in which case the extension should be to a height of at least 225 mm above the machine table);
(h) in the case of a parallel plate saw, be thicker than the plate of the saw blade.

Guidance 12

129 More information on riving knives can be found in *Circular saw benches: Safe working practices*.

ACOP 12

130 For vertical spindle moulding machines, when carrying out straight work, a demountable power feed device should be used wherever and whenever possible. When the use of such a device is not possible, eg when carrying out stopped work or curved work, a properly designed and well-made workpiece holder or jig should be used which will enable the operator to hold or control the workpiece firmly at a safe distance from the tool.

131 When carrying out 'stopped' work (which involves the workpiece being 'dropped on' to the tool, part way along its length), 'stops' should be fitted at each end of the cutting run and the workpiece held in a holder or jig described in paragraph 126. Particular attention should be paid where the workpiece is fed in the same direction as the rotating tool. This is termed backcutting or climbcutting and is a highly dangerous operation. This is because the machinist cannot exert any force to resist the sudden forward movement of the workpiece if the cutter snatches. It should be discouraged even if a jig or work holder is used. Wherever possible, feed the workpiece to the tool against the direction of spindle rotation.

Guidance 12

132 See *Safe use of vertical spindle moulding machines* and HSE's woodworking website at www.hse.gov.uk/woodworking/spindlemoulder.htm for more information.

ACOP 12

133 Additional protection devices such as spring-loaded guards, known as 'Shaw Guards' should be used in conjunction with a power feed where this will provide an enhanced level of safety.

134 Sectional feed rollers, designed and constructed so as to restrain any workpiece ejected towards the infeed end of the machine, should be used for planing machines used for thicknessing. They should also be used for thicknessing machines when processing more than one piece at a time.

135 When multi-rip sawing machines and straight-line edging machines process more than one workpiece at a time, anti-kickback fingers should be used to restrain any workpiece which is ejected towards the in-feed end of the machine.

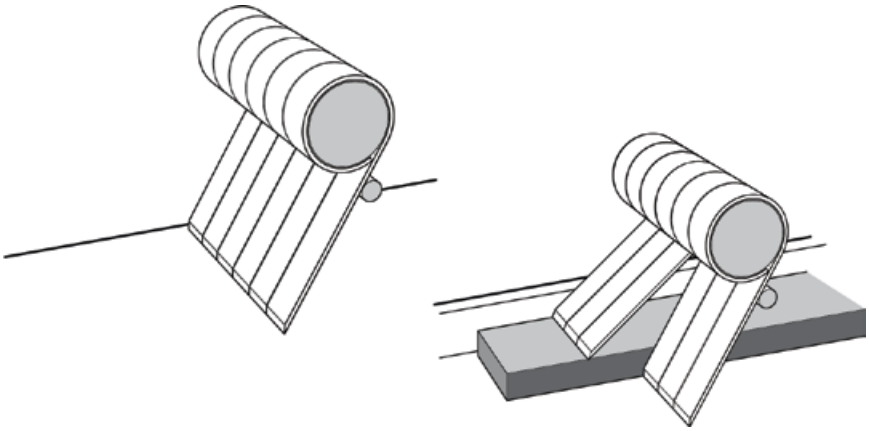


Figure 7 Anti-kickback fingers

Guidance 12

Devices to protect safety and health

136 There is considerable scope for combining protection devices so that, eg access to dangerous parts is prevented by a guard that incorporates a connection to a local exhaust ventilation (LEV) system (see Figure 6); or a jig that keeps hands distant from cutters is sized to damp vibration. It can help to consider all the main hazards – health as well as safety – when tackling adaptations. See paragraph 67.

Regulation 15 Stop controls

Regulation 15

(1) Every employer shall ensure that, where appropriate, work equipment is provided with one or more readily accessible controls the operation of which will bring the work equipment to a safe condition in a safe manner.

(2) Any control required by paragraph (1) shall bring the work equipment to a complete stop where necessary for reasons of health and safety.

(3) Any control required by paragraph (1) shall, if necessary for reasons of health and safety, switch off all sources of energy after stopping the functioning of the work equipment.

Regulation 15

(4) Any control required by paragraph (1) shall operate in priority to any control which starts or changes the operating conditions of the work equipment.

Guidance 15

Braking devices

137 Woodworking tools run at very high speeds. Sometimes workers approach the tools forgetting that they are running down. Sometimes, because of the stroboscopic effect of alternating current workshop lighting on rotating tools, workers believe that they have come to rest when they have not. Operators can also switch off the power to the tools and leave the machine to run down unattended. All of these possibilities put workers at risk.

ACOP 15

138 You should fit braking devices to reduce the rundown time of cutting tools on woodworking machinery where the risk assessment shows that this is necessary. They are considered necessary for the following machines:

(a) circular saw benches;
(b) dimension saws;
(c) powered and hand-fed cross-cut saws (unless there is no risk of contact with the blade during rundown);
(d) single-end and double-end tenoning machines and combined machines incorporating a circular saw and/or tenoning attachment;
(e) narrow band saws;
(f) re-saws;
(g) vertical spindle moulding machines (unless fitted with a manual or foot-operated brake);
(h) hand-fed routing machines;
(i) thicknessing machines;
(j) planing/thicknessing machines;
(k) surface planing machines.

139 Braking devices are not considered necessary when:

(a) machines have a rundown time of 10 seconds or less;
(b) the effect of braking could be detrimental to the integrity of the machinery;
(c) machines have been built in conformity with a harmonised European standard (and a reference to the standard has been published in the *Official Journal of the European Union*, where the standard does not require braking devices.

Guidance 15

140 Most types of new woodworking machines will be equipped with an automatic brake for the tool spindle or spindles as this requirement has been introduced into the relevant CEN Standards. This will reduce rundown times on most machines to less than 10 seconds. However, while it is possible to fit some form of braking to any woodworking machine, for some machines, bringing them to rest within 10 seconds might be positively harmful to the machine and dangerous to the operator or others close by. This is the case where:

(a) large amounts of energy have to be dissipated during braking, eg a band re-saw;
(b) there is a danger of blades breaking, eg as a result of a crack, as may be the case on any machine fitted with a band blade.

The overriding consideration should be to bring the machine to a safe stop. The run-down time should be less than the run-up time, with the Standards allowing an overriding maximum of 35 seconds for some larger machines.

Guidance 15

141 Further guidance can be found in *PUWER 98: Retrofitting of braking to woodworking machines.*[11]

Regulation 20 Stability

Regulation 20

Every employer shall ensure that work equipment or any part of work equipment is stabilised by clamping or otherwise where necessary for purposes of health or safety.

Guidance 20

142 Because of the way most woodworking machines work, there is a risk of the machine moving unintentionally along the floor (or bench). For this reason and to minimise the health risk from noise and vibration, all machines, other than portable machines, should be secured in place. This is most effectively done by fastening to the floor, bench or similar fixture. Woodworking machines used outside, such as on construction sites or where cut timber is processed, may need the ground to be suitably prepared and may need to be held down by staking or use of weights.

143 Some machines, eg vertical panel saws, single-sided track-fed tenoning machines and narrow band saws can often be inherently unstable. Special steps need to be taken to ensure stability during operation.

Regulation 23 Markings

Regulation 23

Every employer shall ensure that work equipment is marked in a clearly visible manner with any marking appropriate for reasons of health and safety.

ACOP 23

Tools for use at woodworking machines

144 The safe working speed should, where possible, be displayed or marked on the machine.

145 The safe working speed should, where possible, be displayed or marked on the tool. Where this is not possible, a table should be available to those who select and/or use the tools showing their speed range.

Circular sawing machines

146 The diameter of the smallest saw blade that should be used should be marked on every circular sawing machine.

Guidance 23

147 These markings are necessary to ensure that the risks that might arise from too low a peripheral blade speed are controlled.

Regulation 24 Warnings

Regulation 24

(1) Every employer shall ensure that work equipment incorporates any warnings or warning devices which are appropriate for reasons of health and safety.

(2) Without prejudice to the generality of paragraph (1), warnings given by warning devices on work equipment shall not be appropriate unless they are unambiguous, easily perceived and easily understood.

ACOP 24

Planing machines

148 If a combined surface planing and thicknessing machine is used for thicknessing and the machine does not have sectional feed rollers or another device to prevent kickback/ejection then a notice should be displayed, stating that only one workpiece at a time shall be fed into the machine. Similar precautions should be adopted if a surface planing machine fitted with a demountable thicknessing device is used for thicknessing and the machine does not have sectional feed rollers etc.

Appendix 1 Training woodworking machinists

1 Thorough and systematic training in safe working practices, both for those who work at woodworking machines and those who have the responsibility to supervise them, is essential to make sure that serious accidents do not happen.

2 This appendix gives advice to employers and other interested people on how the legal requirements for training contained in PUWER can be translated into the workplace.

3 The advice applies to beginners, improvers and experienced woodworkers and can be used when taking on new staff, and for assessing the training needs of existing employees/workers. Where there are special needs, eg in sheltered workshops for mentally or physically disabled people, an assessment of the particular circumstances should be carried out.

4 People may work at a woodworking machine as part of their training, but they should be under the close supervision of someone who has a thorough knowledge and experience of safe working practices and safe operation of the machine (the supervisor must be thoroughly familiar with the points in paragraph 12 of this appendix). Passing on bad habits and shortcuts to trainees creates the potential for accidents to happen.

Young people

5 Young people are in a special position and warrant special consideration (see paragraphs 91–96 of the main text). Induction training is of particular importance for young people because of their relative immaturity and unfamiliarity with the working environment. Since they can often be unwilling to ask questions, because of lack of confidence or conversely as a show of bravado, you may find it useful to make sure that they have understood any instructions they have been given.

Authorisation to operate woodworking machines

6 No one should be allowed to work at a woodworking machine unless they have demonstrated competence (see paragraphs 97–100 of the main text). This will often be based on an assessment carried out by a supervisor or trainer but it is advisable that competent operators are authorised in writing by a responsible person such as a partner, director or member of senior management.

7 Authorisation should not be given unless the responsible person is satisfied that the operator is sufficiently trained and has demonstrated competence, including the adoption of safe working practices (see Figure 8). The authorisation should list those machines and operations for which authorisation is given and it should be made clear to the operator that other machines should not be used until authorisation is given. A copy of the authorisation should be given to the operator for their personal record.

Selection

8 The selection of supervisors and trainers is central to any successful training scheme. They must be competent in the operation of the machines on which training is to be given and they must be able to communicate easily and have the necessary technical understanding and knowledge of the legal requirements.

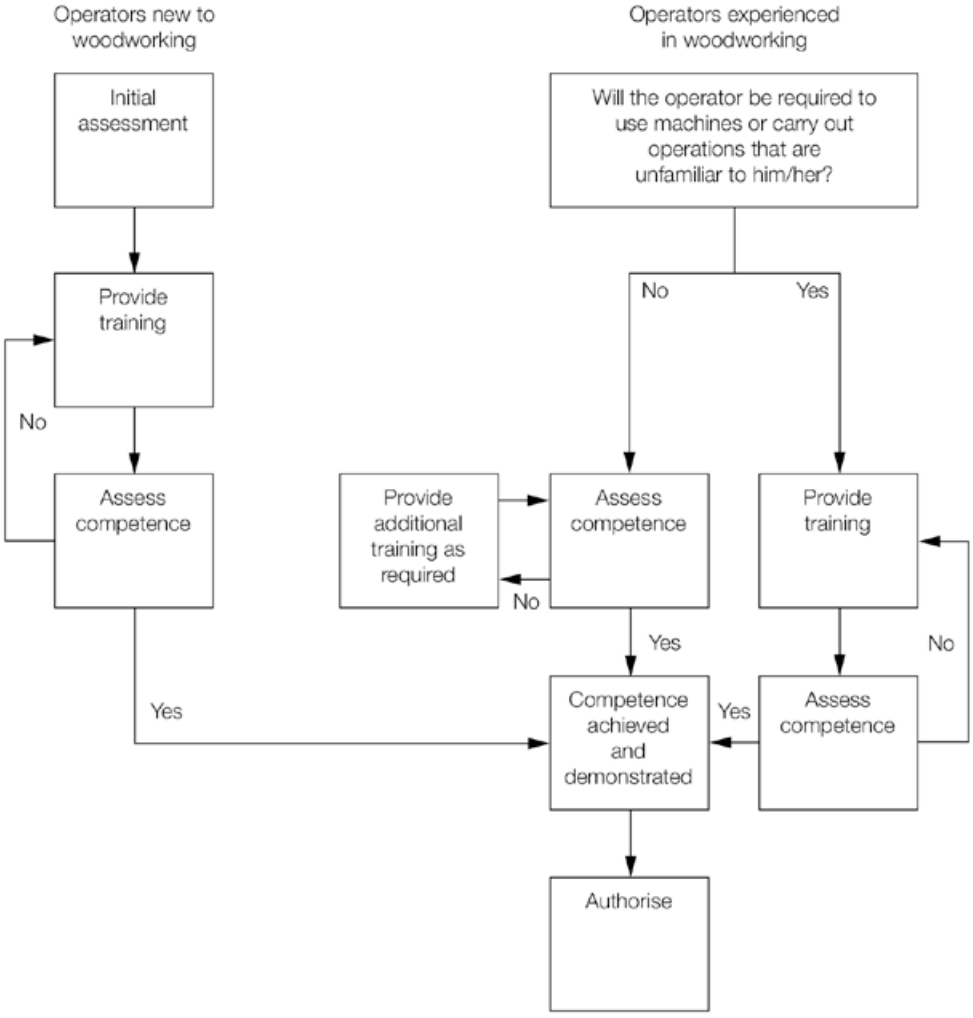


Figure 8 Assessment and authorisation of machine operators

9 Potential machine operators should be selected with care. Those selected for training should be reliable and have the ability to do the job in a responsible manner. People with disabilities may well be able to work safely at woodworking machines, but in such cases medical advice should be obtained.

Assessment

10 Assessment is carried out in two stages:

(a) to identify the training needs of the individual;
(b) to measure the success of the training that has been given.

11 An initial assessment should be carried out for all:

(a) people changing jobs within the company;
(b) new employees or those new to wood machining.

12 Existing staff who use woodworking machines should not be overlooked although identifying the training needs of experienced employees can pose particular problems. Assessment should test competence in the following areas, all of which are essential to safe working:

(a) machine selection: the ability to say 'this is the wrong machine for this operation. It could be done more safely on . . .';
(b) purpose and adjustment of guards and safeguards;
(c) knowledge of those operations prohibited on that machine without additional safeguards;
(d) selection and use of safety devices such as push-sticks, jigs, holders etc;
(e) practical understanding of the legal requirements. For example the function and setting of the riving knife on a circular bench saw, the adjustment of the top guard on a circular saw or the bridge guard on a surface planing machine. The appropriate use of guards, stops and jigs on a spindle moulder;
(f) safe working practices including feeding, setting, cleaning, taking off and proper work support;
(g) the nature of wood and the hazards this produces, including kickback, snatching and hazard to health from wood dust.

13 It is advisable to make and keep a written record of all assessments. The person carrying out the assessment should be familiar not only with the machining processes but also with the relevant legal requirements and safe working practices.

Supervision

14 It is difficult to define precisely what represents an adequate level of supervision as it will vary throughout the training process. Initially, supervision should be continuous and on a one-to-one basis, with gradual relaxation as the trainee becomes more competent. As each new operation or training element is introduced, the level of supervision will need to rise again, reducing gradually to a more general level only when the trainee has demonstrated competence by consistent adoption of safe working practices.

Training

15 Training may take a number of forms: external, in-house or a combination of both. In all cases an achievement record should be maintained and periodically reviewed for each operator. An example of a suitable format for a training record is given in Appendix 2.

External courses

16 You should take care to ensure that the class of machine and type of work which the operator is expected to do has been covered by the course. It is very important to establish that training has been received over the full range of work to be carried out. For example some training modules on the vertical spindle moulding machine include only straight work; stopped work and curved work require additional skills and further training will be needed.

In-house training

17 This should consist of three elements:

(a) General. The basic skills and knowledge common to all woodworking machines. This will include aspects of 'good housekeeping' and awareness of

danger appropriate to someone 'taking-off', plus a knowledge of the relevant legislation.

(b) Machine specific. The basic skill in the operation of the machine, including the position and function of emergency stops; basic safety rules related to the operation of a machine or class of machines; the use and adjustment of guards and safety devices.

(c) Familiarisation. On-the-job operation under close supervision.

18 Guidance on the establishment of an in-house training scheme is given in Appendix 3. Its purpose is to lay down guidelines for development of training schemes and to aid assessment on whether the legal requirements have been met (see Table 2 in Appendix 3).

19 The various stages of training may be combined or integrated. Where the general and machine-specific training is given externally at a college or training centre, it is important that familiarisation is carried out in the workplace under close supervision.

20 If in-house training is carried out in conjunction with an external course, then the standard of supervision should be the same as for familiarisation training.

21 Many training providers accredited by recognised training bodies are able to design and deliver training programmes tailored to the needs of a particular company. Details of training providers and woodworking training courses can be found on HSE's woodworking website at www.hse.gov.uk/woodworking/providers.htm. Training can take place at a college of further education or within the workshop environment. In the latter case, there is the advantage that the training can be related to the machine models and individual processes used in the organisation. However, production needs must never be allowed to prejudice the quality of the training given or the level of supervision provided.

Refresher training

22 Refresher training is appropriate for trained and experienced operators of woodworking machines and is particularly important if they have not operated a particular class of machine for some time or if the method of control or operation of the machine have been significantly changed, eg NC and CNC machines.

Appendix 2 Examples of training records

Example of employer's record: Sheet 1 – List of authorised machine operators

The authorised trainer of_____ is_____
(the company) (name of trainer)

Date_____

I certify that:

(a) I have carried out training, as indicated on the machines listed.
(b) I am satisfied that the people named below have demonstrated competence in the operation of the machines listed and have met all the training objectives for those machines, including:
  (i) correct selection of machine for type of work to be done;
  (ii) purpose and adjustment of guards and safeguards;
  (iii) correct selection and use of safety devices – push-sticks, push spike, jigs and work-holders;
  (iv) practical understanding and application of legal requirements;
  (v) safe working practices to include feeding, setting, cleaning and taking off.

Signed _____(Trainer)

	Machine											
Operator	Circular rip saw	Cross-cut saw	Dimension saw	Surface planning m/c	Thickness planning m/c	Single-ended tenoner	Spindle moulder	High speed router	Four -sided planer moulder	Narrow band saw	Band re-saw	etc
J Brown												
H Davies												
M Ward												

Example of employer's record: Sheet 2 – List of authorised operators for a specific machine

Machine/class of machine

List of people authorised to use_____machine

Name	Date of birth	Assessment of competence by:		Range of work authorised	Training courses or modules completed: Title and date	Any special conditions of use	Authorised by Director/ Senior Manager
		Supervisor's name	Date				

Example of employer's record: Sheet 3 – Individual machine operator's record of training and authorisation

Record of training and authorisation

Name_____ Date of birth_____ Address_____

Machinist's signature_____ Date_____

Machine or machine class	Assessment of competence by:		Range of work authorised	Training courses or modules completed: Title and date	Any special conditions of use	Authorised by Director/Senior Manager
	Authorised trainer and organisation	Date				

Appendix 3 Suggested in-house training specification

1 The purpose of this guidance is to enable employers to set up their own in-house training scheme and to satisfy themselves and others that their legal duties have been met.

2 The scheme need not necessarily be complex or sophisticated, but must always contain the following essential elements:

(a) who the programme is designed for;
(b) what tasks they should be able to perform safely on completion of the programme, eg:
  (i) taking off from an 'x' machine;
  (ii) operation of the 'y' machine (including specific listed operations);
  (iii) setting of the 'z' machine;
(c) who is responsible for carrying out the training (and also for the overall supervision if more than one trainer is involved);
(d) the means by which the training will be given and how it is to be verified (method of assessment); and
(e) details of the procedure to be adopted if the assessment shows that the trainee has not achieved a satisfactory level of competence, eg specify further training, different training, review of trainee's suitability.

3 Devising training material is a time-consuming and specialised job. Most employers will start by reviewing the material available, which can be used with or without amendments. For many traditional woodworking machines, the employer's task will be to select a suitable training package, amend or extend it as required, appoint someone to carry out training and assessment and arrange for record keeping.

4 Some questions will always need to be answered at the planning stage, eg:

(a)	Classes of machine to be covered		
(b)	Level of work:	Taking off	
		Operating	
		Setting	
(c)	People involved:	Trainees	Age
			Previous experience
		Trainers	Should have craft experience
			Should be trained as trainers
			Should be thoroughly familiar with the matters specified in regulation 9

5 The decision will have to be made whether to bring in an experienced trainer from outside the company, such as a college of further education or a training consultant.

Table 1 Examples of essential elements to be included in training specification

Explain dangers	**Machine**	**Tool**	Contact with tool Ejection of tool or part of tool
		Drive	(Eg belt drive to tool spindles)
		Feed	(Eg trap between feed roller and workpiece)
		Clamping	(Eg trap between power clamp and workpiece)
	Workpiece	**Kickback**	Leading to: • contact with tool • forcible ejection of workpiece
		Instability	Due to poor stacking, handling, work support
	Health	**Wood dust**	Effect on lungs, nose, skin
		Noise	Effect on hearing (noise-induced hearing loss)
Explain how to reduce or eliminate danger by:	**Guards**	Selection, fitting and adjustment of guards for all routine jobs Modifications to standard guarding for non-routine jobs	
	Safety devices	Design and use of: • push-sticks • push-blocks • jigs/holding devices • false fences/stops Purpose and adjustment of riving knife on circular saws	
	Tooling	Use of tooling with limited cutter projection Use of low noise tooling Avoiding blunt tools Securing loose knives etc to prevent ejection Danger of over-tightening when mounting cutters	
	Workpiece support	Use of trestles, roller supports, extension tables Assistance of second person Angled cuts: Use of canting tables, fences, tools Use of jig or bed piece secured to table to achieve good work support	
	Safe systems of work	Use of brake to reduce rundown of tool Use of power feed Safe method for carrying out trial cuts (ie all safety devices/guards in position) Company's agreed safe methods of work for all routine jobs Refer to supervisor for non-routine work/fault condition Importance of good housekeeping	
Give essential background information	**Noise**	Action levels in the Noise at Work Regulations 2005[13] Symbols used to identify where hearing protection should be worn and duty of employees to wear hearing protection Type of hearing protection available, selection, fitting and maintenance	
	Dust	Control of wood dust by local exhaust ventilation (LEV),[14] use of suitable vacuum cleaners, good housekeeping Purpose of explosion relief in dust collectors and correct siting of panels/deflector plate (to relive freely to a safe place) Situations where respiratory protective equipment (RPE)[15] is required, eg hand sanding Selection and face fitting of dust masks to protect against wood dust (must be suitable for toxic dusts, ie to an appropriate BS or EN standard)	

6 For some machines, little or no published material is available. Possible strategies in this case would be:

(a) employ a training professional;
(b) look at the nearest equivalent material and adapt it;
(c) get help from the machine supplier;
(d) use an instruction manual and adapt it for training; or
(e) use published guidelines on writing training packages.

7 Whichever strategy is chosen, always check that you have covered all the essential elements. The trainee must be instructed in:

(a) dangers arising in connection with that machine;
(b) precautions to be observed;
(c) requirements of the law;
(d) methods of using guards, protection devices and appliances.

8 Assessment should be carried out at each stage. Elements (a)–(d) in paragraph 7 must be tested and retraining carried out as required.

9 Published material can be modified to suit your machines/processes, eg by giving details of:

(a) machine controls;
(b) local exhaust ventilation (LEV);
(c) jigs for particular jobs (illustrate with photographs as necessary);
(d) methods of handling/disposal of waste and off-cuts;
(e) work support devices available;
(f) tooling. Specify the tooling for the job, including limited cutter projection tooling for hand feeding where possible to fit them;
(g) a demountable power feed. Show where and how this can be used;
(h) additional guards for special jobs. Show where these are stored.

10 All this material could be put together, eg in a loose-leaf binder, to provide a training package for a particular machine and the manual could be readily updated as required.

11 Such a manual is no substitute for training and supervision, but it could act as a useful source of reference to reinforce training received.

12 Finally, ask questions. Does the trainee have all the information necessary to do the job safely?

Table 2 Developing an in-house training specification

1 Establish aims	**Who**	is the training course designed for? • How old are they? • What is their previous experience?
	What	tasks must they be able to perform on completion?
2 Design training package	**Who**	will deliver training? • Consultant? • Professional trainer? • Experienced employee?
	What	training material will they use? • Existing material? • Adapt existing material? • Write new material?
	Who	will have overall responsibility for supervision of trainers/ training package to ensure aims are met?
3 Set up assessment procedure	**Identify**	essential safety elements
	Assess	that these elements have been understood • Can trainee explain them in their own words? • Do they demonstrate this understanding when working under supervision?
4 Record what you have done	***Training given***	
	Assessments carried out	
	List of people authorised to operate specific machines	

Appendix 4 Notice of Approval

By virtue of section 16(4) of the Health and Safety at Work etc Act 1974, and with the consent of the Secretary of State for Work and Pensions, the Health and Safety Executive has on 13 August 2014 approved the revised Code of Practice entitled *Safe use of woodworking machinery* (Second edition, 2014, L114).

The revised Code of Practice gives practical guidance with respect to section 2 of the Health and Safety at Work etc Act 1974, the requirements of the Provision and Use of Work Equipment Regulations 1998 and the Management of Health and Safety at Work Regulations 1999. The Code of Practice comes into effect on 28 November 2014.

This revised edition replaces the previous edition entitled *Safe use of woodworking machinery* (Second edition) which came into effect on 5 December 1998.

Signed

TERESA QUINN
Secretary to the Board of the Health and Safety Executive

27 November 2014

References

1 *Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance* L22 (Fourth edition) HSE Books 2014 ISBN 978 0 7176 6619 5 www.hse.gov.uk/pubns/books/l22.htm

2 *Health and Safety at Work etc Act 1974* (c.37) The Stationery Office 1974 ISBN 978 0 10 543774 1

3 *The Management of Health and Safety at Work Regulations 1999* SI 1999/3242 The Stationery Office

4 *Risk assessment: A brief guide to controlling risks in the workplace* Leaflet INDG163(rev4) HSE Books 2014 www.hse.gov.uk/pubns/indg163.htm

5 BS EN 847-1:2013 *Tools for woodworking. Safety requirements. Milling tools, circular saw blades* British Standards Institution

6 *PUWER 98: Selection of tooling for use with hand-fed woodworking machines* Woodworking Information Sheet WIS37 HSE Books 1998 www.hse.gov.uk/pubns/wis37.htm

7 *Consulting employees on health and safety: A brief guide to the law* Leaflet INDG232(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg232.htm

8 *Circular saw benches: Safe working practices* Woodworking Information Sheet WIS16(rev2) HSE Books 2012 www.hse.gov.uk/pubns/wis16.htm

9 *Circular sawing machines* POS01 HSE Books 2011 ISBN 978 0 7176 6449 8 www.hse.gov.uk/pubns/books/circular-saw-poster.htm

10 *Safe use of vertical spindle moulding machines* Woodworking Information Sheet WIS18(rev1) HSE Books 2001 www.hse.gov.uk/pubns/wis18.htm

11 *Supervising for safety in woodworking - Are you as good as you think you are?* Leaflet INDG440 HSE Books 2010 www.hse.gov.uk/pubns/indg440.htm

12 *PUWER 98: Retrofitting of braking to woodworking machines* Woodworking Information Sheet WIS38(rev1) HSE Books 2012 www.hse.gov.uk/pubns/wis38.htm

13 *Reducing noise at woodworking machines* Woodworking Information Sheet WIS13(rev2) HSE Books 2014 www.hse.gov.uk/pubns/wis13.htm

14 *Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV)* HSG258 (Second edition) HSE Books 2011 ISBN 978 0 7176 6415 3 www.hse.gov.uk/pubns/books/hsg258.htm

15 *Wood dust: Selecting suitable respiratory protective equipment* Woodworking Information Sheet WIS14(rev2) HSE Books 2014
www.hse.gov.uk/pubns/wis14.htm

Further reading

General

Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996. Guidance on Regulations L64 (Third edition) HSE Books 2012 www.hse.gov.uk/pubns/books/l64.htm

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice and guidance L24 (Second edition) HSE Books 2013 ISBN 978 0 7176 6583 9 www.hse.gov.uk/pubns/books/l24.htm

Woodworking Information Sheets

Stacking round timber, sawn timber and board materials: Safe working practices Woodworking Information Sheet wis2(rev2) HSE Books 2014 www.hse.gov.uk/pubns/wis2.htm

Horizontal beam and vertical panel saws Woodworking Information Sheet WIS3(rev1) HSE Books 2011 www.hse.gov.uk/pubns/wis3.htm

Noise reduction at band re-saws Woodworking Information Sheet WIS4(rev2) HSE Books 2014 www.hse.gov.uk/pubns/wis4.htm

Safe use of hand-fed planing machines Woodworking Information Sheet WIS17(rev1) HSE Books 2000 www.hse.gov.uk/pubns/wis17.pdf

Safe use of vertical spindle moulding machines Woodworking Information Sheet WIS18(rev1) HSE Books 2001 www.hse.gov.uk/pubns/wis18.pdf

Health risks during furniture stripping using dichloromethane (DCM) Woodworking Information Sheet WIS19 HSE Books 1993 www.hse.gov.uk/pubns/wis19.pdf

Veneer guillotines: Safe working practices Woodworking Information Sheet WIS20(rev1) HSE Books 2014 www.hse.gov.uk/pubns/wis20.pdf

Wood dust: Controlling the risks Woodworking Information Sheet wis23(rev1) HSE Books 2012 www.hse.gov.uk/pubns/wis23.htm

Safeguarding board-edge processing machinery Woodworking Information Sheet wis27 HSE Books 1994 www.hse.gov.uk/pubns/wis27.htm

Rotary knife wood turning lathes: Safeguarding and reducing risks to health Woodworking Information Sheet wis28 HSE Books 1994 www.hse.gov.uk/pubns/wis28.pdf

Toxic woods Woodworking Information Sheet wis30(rev1) HSE Books 2012 www.hse.gov.uk/pubns/wis30.htm

Safety in the use of narrow band saws Woodworking Information Sheet wis31 HSE Books 1995 www.hse.gov.uk/pubns/wis31.pdf

Safe collection of wood waste: Prevention of fire and explosion Woodworking Information Sheet WIS32(rev1) HSE Books 2011 www.hse.gov.uk/pubns/wis32.htm

Safe use of power-operated cross-cut saws Woodworking Information Sheet WIS35(rev1) HSE Books 2011 www.hse.gov.uk/pubns/wis35.pdf

Safe use of manually operated cross-cut sawing machines Woodworking Information Sheet WIS36(rev1) HSE Books 2011 www.hse.gov.uk/pubns/wis36.pdf

Safe use of single-end tenoning machines Woodworking Information Sheet wis39 HSE Books 2000 www.hse.gov.uk/pubns/wis39.pdf

Safe use of four-sided moulding machines Woodworking Information Sheet wis40 HSE Books 2007 www.hse.gov.uk/pubns/wis40.pdf

More information on woodworking machines, including videos illustrating correct working practices, can be found on HSE's woodworking website at www.hse.gov.uk/woodworking. The website also has other information to help manage woodworking risks.

Further information for suppliers, installers and users of new and second-hand machinery can be found on HSE's work equipment and machinery webpages at www.hse.gov.uk/work-equipment-machinery/index.htm.

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

British Standards can be obtained in PDF or hard copy formats from BSI: http://shop.bsigroup.com or by contacting BSI Customer Services for hard copies only Tel: 0845 086 9001 email: cservices@bsigroup.com.

The Stationery Office publications are available from The Stationery Office, PO Box 29, Norwich NR3 1GN Tel: 0870 600 5522 Fax: 0870 600 5533 email: customer.services@tso.co.uk Website: www.tsoshop.co.uk. (They are also available from bookshops.) Statutory Instruments can be viewed free of charge at www.legislation.gov.uk where you can also search for changes to legislation.

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