



Australian Government

Department of Education, Employment and Workplace Relations

FPICOT3233B Sharpen and align blades and knives

Release: 1

FPICOT3233B Sharpen and align blades and knives

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to sharpen and align a range of straight and angled blades and knives for a variety of machines that use either babbitting or set screw processes for positioning knives and blades in disc chippers, canters, chipping heads and/or reducers

General workplace legislative and regulatory requirements apply to this unit; however there are no specific licensing or certification requirements at the time of publication

This unit replaces FPICOT3233A Sharpen and align blades and knives

Application of the Unit

Application of the unit

The unit involves sharpening and aligning blades and knives in a forest products factory setting

The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare blades and knives for sharpening	1.1. Applicable occupational health and safety (OHS), environmental, legislative and organisational requirements relevant to sharpening and aligning blades and knives are identified and followed 1.2. Work order is reviewed and clarified with appropriate personnel 1.3. Type of blade or knife to be sharpened is removed from the designated machinery 1.4. Equipment is selected appropriate to work requirements and checked for operational effectiveness in line with manufacturer recommendations 1.5. Sharpening and aligning process is planned in line with site procedures and environmental requirements 1.6. Communication with others is established and maintained in line with OHS requirements
2. Assess condition and set up blades or knives and assemblies	2.1. Cutting performance of blade or knife is assessed to determine sharpening requirements 2.2. Condition of knife holder, jig and chuck is assessed and defects are corrected 2.3. Knife holder is cleaned and secured to the chuck to enterprise standards 2.4. Jig type and setting are selected for required blade or knife setup
3. Sharpen blades and knives	3.1. Pre-startup checks are carried out on equipment in line with site requirements 3.2. Blades or knives are cleaned of excess build-up and babbitts and inspected for defects, with those unable to be repaired by sharpening replaced 3.3. Geometry for blades or knives is selected from manufacturer's instructions 3.4. Grinder is set up with suitable attachment for holding the knife or blade and grinding wheel is examined and dressed 3.5. Grinding wheel speed and feeds are selected to suit the wheel and the blade or knife 3.6. Grinding wheel is fed across and into cutting edge to obtain clean cutting edge to conform to geometric requirements without defects and burns 3.7. Coolant is applied in line with manufacturer

ELEMENT**PERFORMANCE CRITERIA**

- specifications
- 3.8. Blade or knife is inspected after sharpening for accuracy and remaining ***burrs*** are honed to obtain a sharp cutting edge
- 3.9. Blades and knives that cannot be sharpened or are damaged in the sharpening process are ***dealt with*** in line with site procedures, manufacturer recommendations and environmental requirements
- 3.10. Sharpening and equipment faults are ***recorded and reported*** to the appropriate personnel
4. Align blades and knives
- 4.1. Babbitts are inspected to assess the requirement for ***reconditioning***
- 4.2. Babbitt material is heated to required ***pouring temperature***
- 4.3. Blade or knife is set up in pouring jig to required dimensions and babbitt is poured without excessive material wastage and avoiding cavities and shrinkage
- 4.4. Assembly is cooled and excess material removed to allow correct positioning in machinery
- 4.5. ***Set screws*** are inspected in line with standard operating procedures, and bent or broken screws are replaced
- 4.6. Set screws are adjusted to position knife or blade at the correct depth
- 4.7. Set screws are locked into position to avoid knife or blade movement

Required Skills and Knowledge**REQUIRED SKILLS AND KNOWLEDGE**

This describes the essential skills and knowledge and their level required for this unit.

Required skills

- Technical skills sufficient to use and maintain relevant tools, machinery and equipment; set up grinder and all attachments to suit knife or blade type; efficiently and safely sharpen blades and knives to enterprise requirements
- Communication skills sufficient to use appropriate communication and interpersonal techniques with colleagues and others
- Literacy skills sufficient to record and report workplace information; maintain

REQUIRED SKILLS AND KNOWLEDGE

documentation

- Numeracy skills sufficient to measure, estimate and calculate time required to complete a task
- Problem solving skills sufficient to identify problems and equipment faults; demonstrate appropriate response procedures

Required knowledge

- Applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and established safe practices relevant to the full range of processes for sharpening and aligning blades and knives
- Environmental protection requirements, including the safe disposal of waste material, and the cleaning of plant, tools and equipment
- Organisational and site standards, requirements, policies and procedures for sharpening and aligning blades and knives
- Environmental risks and hazards
- Characteristics of metal, blades and knives
- Sharpening methods and geometry
- Aligning methods and settings
- Established communication channels and protocols
- Problem identification and resolution strategies, and common fault finding techniques
- Types of tools and equipment, and procedures for their safe use and maintenance
- Appropriate mathematical procedures for estimating and measuring, including calculating time to complete tasks
- Procedures for recording and reporting workplace information

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can safely and efficiently sharpen and align blades and knives in line with organisational requirements

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to, and satisfy, all of the requirements of the elements of this unit and include demonstration of:

- following applicable commonwealth, state or territory legislative and regulatory requirements and codes of practice relevant to sharpening and aligning blades and knives
- following organisational policies and procedures relevant to sharpening and aligning blades and knives
- removing and replacing babbitts and set screws in line with standard operating procedures and machine settings
- pouring babbitts to site procedures and finishing standard
- removing and replacing set screws in line with site procedures and machine requirements

Context of and specific resources for assessment

- Competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of required knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to follow relevant regulatory or Australian Standards requirements
- The following resources should be made available:
 - workplace location or simulated workplace
 - materials and equipment relevant to undertaking work applicable to this unit
 - specifications and work instructions

EVIDENCE GUIDE

Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required knowledge
- Assessment must be by direct observation of tasks, with questioning on required knowledge and it must also reinforce the integration of employability skills
- Assessment methods must confirm the ability to access and correctly interpret and apply the required knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

RANGE STATEMENT

OHS requirements:

are to be in line with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- fire fighting equipment
- hazard and risk control
- fatigue management
- elimination of hazardous materials and substances
- safe forest practices, including required actions relating to forest fire
- manual handling including shifting, lifting and carrying

Environmental requirements may include:

- legislation
- organisational policies and procedures
- workplace practices

Legislative requirements:

are to be in line with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice and may include:

- award and enterprise agreements
- industrial relations
- Australian Standards
- confidentiality and privacy
- OHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

Organisational requirements may include:

- legal
- organisational and site guidelines
- policies and procedures relating to own role and responsibility
- quality assurance
- procedural manuals
- quality and continuous improvement

RANGE STATEMENT

processes and standards

- OHS, emergency and evacuation procedures
- ethical standards
- recording and reporting requirements
- equipment use, maintenance and storage requirements
- environmental management requirements (waste minimisation and disposal, recycling and re-use guidelines)

Blades and knives may include:

- chipper and canter/reducer knives
- planer and thicknesser blades
- spindle moulder knives
- guillotine blades
- all other types of blades or knives that can be sharpened through a parallel grinding process

Work order is to include:

- instructions for sharpening and aligning blades and knives in designated equipment

and may also include:

- instructions for the environmental monitoring of work and procedures
- environmental care requirements relevant to the work

Appropriate personnel may include:

- supervisors
- suppliers
- clients
- colleagues
- managers

Sharpening

is the angle, depth of cut, and speed that the knife or blade passes over the grinding wheel to obtain a sharp edge and required surface finish

Equipment is to include:

- procedures for equipment lock-out, such as protecting operators and co-workers from accidental injury by isolating the machine from the power source

and may include:

- grinding machines and babbitt making equipment, such as melting pots

Alignment

is the process of setting blades or knives so that all blades and knives sit at the same angle and

RANGE STATEMENT

	height in relation to the abrasive wheel
Communication may include:	• verbal and non-verbal language • constructive feedback • active listening • questioning to clarify and confirm understanding • use of positive, confident and cooperative language • use of language and concepts appropriate to individual social and cultural differences • control of tone of voice
Cutting performance	is how the knife or blade performs in relation to production expectations
Knife holder	is the assembly that houses the knife when positioned on the machine chuck during sharpening
Pre-startup checks	are conducted to ensure: • machine has been set up correctly • systems are performing accurately • machine is operating to optimum performance
Babbitts	are the spacers that extend from the backs of knives and blades to determine knife extension and position in relation to the disc or knife holder in the machine
Defects may include cutting edges with:	• burrs • burns • chips • splits • dents
Geometry is to include:	• angle that a knife or blade is sharpened at allowing for the device the knives or blades are in and the material they will be cutting
Grinder attachments are to include:	• grinder mounted tables or blade holders: • with or without clamps • with or without automatic feed
Wheel speed	is the speed at which the grinding wheel rotates - too fast and it may burn the metal, too slow and it may produce a rough finish or grab the knife or

RANGE STATEMENT

	blade
Coolant	is used in conjunction with grinding operations to cool the metal blade or knife as it generates heat from the sharpening process
Burrs	• are thin raised sections of metal that extend from the cutting edge • must be removed through a honing process before the knife or blade commences cutting
Dealing with may include:	• recycling blades and knives that cannot be sharpened or are damaged in the process and cannot be repaired • sending blades and knives that cannot be sharpened or are damaged in the process and cannot be repaired to waste
Records and reports may include:	• knife or blade type and size • inspection information • grading and labelling outcomes • storage locations • quality outcomes • hazards • incidents • equipment malfunctions and may be: • manual • a computer-based system • other appropriate organisational communication system
Reconditioning	is the process of removing, melting and re-pouring babbitt material to the correct width, length and thickness
Pouring temperature	is the temperature at which the molten babbitt metal can be poured into a mould without solidifying at an early stage of the babbitt forming process
Set screws	are the spacers that extend from the backs of knives and blades to determine knife and blade extension and position in relation to the disc or knife holder in the machine

Unit Sector(s)

Not Applicable

Competency field

Competency field Common Technical