Title	**Apply advanced calculations for saw doctoring**		
Level	**4**	**Credits**	**10**

Purpose	People credited with this unit standard are able to select and use formulae to: complete calculations for bandsaw operations; circular saw operations, and saw shop equipment; and calculate drive motor capacity for bandsaw and circular saw centres. They are also able to develop proposed modifications to band saw and circular saw centres.

Classification	Solid Wood Manufacturing > Saw Doctoring

Available grade	Achieved

Guidance Information

1 Definitions

Accepted industry practice refers to approved codes of practice and standardised procedures accepted by the wider wood manufacturing industry as examples of best practice.

Key number is a constant calculated for individual machine centre and used in calculations pertaining to that machine.

RPM refers to revolutions per minute.

SMPM refers to surface metres per minute and is applied to rim, cutting or surface speed.

Workplace procedures refer to documented policies and procedures set by the organisation carrying out the work, and to documented or other directions provided to staff, and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the wood manufacturing sector.

2 Assessment information

a All activities and evidence must be in accordance with workplace procedures and accepted industry practice.

b Formulae for calculations must be provided.

3 Recommended unit standard for entry: Unit 17969, *Perform basic calculations for saw doctoring*.

Outcomes and performance criteria

Outcome 1

Select and use formulae to complete calculations for bandsaw operations.

Range calculations for – maximum and minimum tooth bite, gullet area, gullet sawdust capacity, average depth of cut, pitch, SMPM, feed speed, key number, strain.

Performance criteria

1.1 Bandsaw specification data are interpreted to identify the formulae to calculate required values.

1.2 Formulae are transposed in accordance with mathematical principles.

1.3 Calculations are completed to provide the required values.

1.4 Accuracy of the calculated values is verified against industry standards published in the reference text.

Outcome 2

Select and use formulae to complete calculations for circular saw operations.

Range calculations for – SMPM, tooth bite, feed speed, key number.

Performance criteria

2.1 Circular saw centre specification data are interpreted to identify the formulae required to calculate required values.

2.2 Formulae are transposed in accordance with mathematical principles.

2.3 Calculations are completed to provide the required values.

2.4 Accuracy of the calculated values is verified.

Outcome 3

Select and use formulae to complete calculations for saw shop equipment.

Range calculations for – gearbox ratios, shaft speeds and SMPM;
saw shop equipment may include but is not limited to- stretcher rollers, saw sharpeners.

Performance criteria

3.1 Saw shop equipment specification data are interpreted to identify the formulae required to calculate required values.

3.2 Formulae are transposed in accordance with mathematical principles.

3.3 Calculations are completed to provide the required values.

3.4 Accuracy of the calculated values is verified.

Outcome 4

Select and use formulae to calculate drive motor capacity for band saw and circular saw centres.

Performance criteria

4.1 Saw centre specification data are interpreted to identify the formulae required to calculate required values.

4.2 Formulae are transposed in accordance with mathematical principles.

4.3 Calculations are completed to provide the required values.

4.4 Accuracy of the calculated values is verified.

Outcome 5

Develop proposed modifications to band and circular saw centres.

Range modifications to – SMPM, RPM, tooth bite, feed speed, drive motor energy.

Performance criteria

5.1 Formulae are selected based on an analysis of the saw centre specification data provided.

5.2 Formulae are used to calculate operational values required to meet the proposed modifications.

5.3 Operational values are verified against industry standards to determine if the proposed modification is practical.

Planned review date	31 December 2024

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 November 2000	31 December 2020
Review	2	18 December 2006	N/A
Review	3	24 September 2020	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.