

Title	Develop profile, and grind and hone profile cutters in-head		
Level	4	Credits	25

Purpose	People credited with this unit standard are able to: determine and develop profile shape; manage hazards associated with grinding and honing profile cutters in-head; clean cutterhead, and check for faults and positioning; prepare grinder; mount and adjust cutterhead and template; grind and hone cutters; and store cutterhead.
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Classification	Solid Wood Manufacturing > Timber Machining
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Available grade	Achieved
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Guidance Information

- 1 Legislation
Health and Safety at Work Act 2015.
Resource Management Act 1991.
- 2 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.
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.
- 3 Assessment information
All activities and evidence must meet workplace procedures, accepted industry practice, and manufacturer's specifications.
- 4 Recommended unit standard for entry: Unit 669, *Demonstrate knowledge of grinding wheels and fluids*.

Outcomes and performance criteria

Outcome 1

Determine and develop profile shape.

Performance criteria

1.1 Profile type, dimensions, and tooling information are determined in accordance with customer requirements.

Range may include but is not limited to – measurements, angles, radii, minimum cutting circle, cutter face spacing, cutting angle.

1.2 Profiles are drawn to true shape and actual size.

1.3 Profiles are developed to determine final cutter shape where required.

Range may include but is not limited to – minimum cutting circle, cutter face spacing, cutting angle, drawing accuracy, placement of intersection points, use of drawing equipment.

Outcome 2

Manage hazards associated with grinding and honing profile cutters in-head.

Performance criteria

2.1 Hazards associated with grinding and honing profile cutters in-head are identified and actions to be taken to manage the hazards are described.

Range may include but is not limited to – grinding wheel disintegration, loose grinding wheel, exposure to grinding coolant.

2.2 Safe work practices associated with grinding and honing profile cutters in-head are identified and applied.

Range practices may include but are not limited to – isolation procedures, lock-outs, emergency stops, machine guarding, wearing of appropriate safety equipment.

Outcome 3

Clean cutterhead, and check for faults and positioning.

Performance criteria

3.1 The effects of uncleaned cutterheads on the grinding operation are explained.

Range evidence of three effects is required.

3.2 Cutterhead is cleaned of all foreign matter that could affect grinding.

- 3.3 Cutters and cutterhead are checked for faults and any remedial action is identified.
- Range faults may include but is not limited to – cracks, chips, burns, delamination, raised spots;
remedial action – grind or replace.
- 3.4 The effect of insufficient cutter projection during grinding is explained.
- 3.5 Cutters are checked for position in or on cutterhead and are adjusted if required.
- Range insertion, projection.

Outcome 4

Prepare grinder.

Performance criteria

- 4.1 Grinder and work area are cleaned of all foreign matter that could affect grinding.
- 4.2 The selection of grinding wheel and grinder speed is explained.
- 4.3 Grinding wheel and grinder speed are selected to suit cutter steel and grinder capacity.
- 4.4 Grinding wheel is checked for faults and any remedial action is taken and described.
- Range faults – cracks, clogging;
action – replacement, dressing or shaping.
- 4.5 The effects of poor shaping, dressing, and grinder set up practices are explained.
- 4.6 Grinding wheel is trued, shaped, and dressed where applicable.
- 4.7 Grinding wheel is fitted, and grinder operation is checked.
- Range true running, vibration.
- 4.8 Grinding angle is set. The effects of using extreme grinding angles on planer operations is explained.
- 4.9 Automatic feed is set where applicable.
- Range in-feed, cross-feed, clearance.
- 4.10 Size and shape of stylus is checked for suitability to profile.

Outcome 5

Mount and adjust cutterhead and template.

Performance criteria

5.1 Cutterhead is locked to the arbor. The consequence of failure to lock the cutterhead to the arbor is explained.

5.2 Dividing head and tool rest position are explained and set.

5.3 Template is mounted and is adjusted to cutters.

Range axial and radial adjustments.

5.4 Clearance between grinding wheel and cutters is adjusted.

5.5 Coolant level is checked and topped-up.

Range wet grinding.

Outcome 6

Grind and hone cutters.

Performance criteria

6.1 Operation of grinder is checked after the first pass.

6.2 Coolant flow rate and cleanliness are maintained during wet grinding.

6.3 Cutter edge defects that can be remedied by grinding are explained.

6.4 Cutters are ground until the specified edge and clearance angles are obtained across all cutters

6.5 Cutter edges are ground to conform to template.

6.6 Cutter edges are sharpened to specified angle and are free from defects and concentric.

Range burning, chipping, grinding marks.

6.7 Cutters are honed, and the burr is completely removed.

6.8 Grinder is cleaned.

Outcome 7

Store cutterhead.

Performance criteria

- 7.1 Cutterhead is drained if applicable.
- 7.2 Cutterhead is safely stored to avoid moisture and dust.
- 7.3 Records are completed.

Replacement information	This unit standard replaced unit standard 687 and unit standard 16242.
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Planned review date	31 December 2024
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 December 2006	31 December 2012
Review	2	15 April 2011	N/A
Review	3	25 June 2020	N/A

Consent and Moderation Requirements (CMR) reference	0013
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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.