

Title	Produce components by performing advanced engineering grinding operations		
Level	4	Credits	15

Purpose	<p>This unit standard covers production of components requiring close tolerances or complex surfaces by performing operations such as jig grinding, thread grinding, roll grinding, profile grinding, gauge grinding, or grinding eccentrics.</p> <p>People credited with this unit standard are able to prepare for and perform, advanced grinding operations, and verify grinding accuracy.</p>
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Classification	Mechanical Engineering > Engineering Machining and Toolmaking
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Available grade	Achieved
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Guidance Information

- 1 References

Health and Safety at Work Act 2015.
AMSE B4.2-1978, *Preferred Metric Limits and Fits*, The American Society of Mechanical Engineers.
- 2 Definitions

Accepted industry practice – approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.

Specifications – detail that defines an object being made; commonly communicated by annotated and dimensioned drawings; by written description, or by other communication media. External references may also be used to specify objects such as tables or industry standards.

Workplace procedures – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.
- 3 Recommended for entry

Unit 2712, *Produce components by performing engineering grinding operations*.
- 4 Related unit standards

This unit standard is one of a set used for assessing grinding:

- Unit 29671, *Demonstrate knowledge of machining equipment, tools, and principles* (Level 2); an introductory machining knowledge standard for use across mechanical engineering trades.
- Unit 29673, *Apply good work practices when performing basic mechanical engineering machining operations under supervision* (Level 2); an introductory practical machining standard for use across mechanical engineering trades.
- Unit 30281, *Perform milling and turning operations in mechanical engineering* (Level 3); a progressive general purpose unit standard for use across mechanical engineering trades.
- Unit 2712, *Produce components by performing engineering grinding operations* (Level 3); a grinding specific unit standard for machinists and toolmakers.
- Unit 2718, *Produce components by performing advanced engineering grinding operations* (Level 4); an advanced grinding specific unit standard for machinists and toolmakers.

5 Timeframe

All activities are expected to be completed within commercially acceptable timeframes.

Outcomes and performance criteria

Outcome 1

Prepare for advanced grinding operations.

Range examples of advanced grinding operations are – jig grinding, thread grinding, roll grinding, profile grinding, gauge grinding, grinding eccentrics; three of the above operations using the appropriate accessories are required.

Performance criteria

- 1.1 Machine condition and capability are checked in accordance with job requirements and workplace procedures.
- 1.2 Specifications are interpreted and work planned in accordance with accepted industry practice.
- 1.3 Components are marked out as required, in accordance with specifications.
- 1.4 Accessories and work-holding fixtures are installed to securely hold the work.
- 1.5 Grinding wheels are selected, dressed, balanced if necessary, and mounted securely.
- 1.6 Grinding speeds and feeds are selected for efficient machining of the material used.

Outcome 2

Perform advanced grinding operations.

Range evidence is required for the range of operations covered in outcome 1.

Performance criteria

- 2.1 Machine coolant type and flow are adjusted as required by machine and grinding operations.
- 2.2 Damage to work and equipment is prevented in accordance with workplace procedures.
- 2.3 Components are machined and finished to tolerances, and demagnetised where appropriate, in accordance with specifications and workplace procedures.
- 2.4 Machine is cleaned and waste material disposed of in accordance with workplace procedures.

Outcome 3

Verify grinding accuracy

Range evidence is required for components ground for outcome 2.

Performance criteria

- 3.1 Components are measured using appropriate instruments to confirm dimensional accuracy.
- 3.2 Measurements are recorded in accordance with workplace procedures.

Planned review date	31 December 2022
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 January 1995	31 December 2012
Revision	2	14 April 1997	31 December 2012
Revision	3	13 November 1997	31 December 2012
Revision	4	5 January 1999	31 December 2012
Revision	5	25 September 2001	31 December 2012
Review	6	20 June 2006	31 December 2022
Rollover and Revision	7	17 November 2011	31 December 2022
Review	8	14 December 2017	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.