

Title	Perform basic fabrication operations under supervision		
Level	2	Credits	12

Purpose	<p>This unit standard is designed for entry level training in fabrication and related trades, and covers basic fabrication operations.</p> <p>People credited with this unit standard are able to: demonstrate introductory knowledge of fabrication processes, demonstrate knowledge of safe working practices in fabrication, prepare for fabrication of simple objects, fabricate simple objects, and adjust and maintain fabrication machines.</p>
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Classification	Mechanical Engineering > Engineering - Fabrication
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Available grade	Achieved
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Guidance Information

- 1 This unit standard is concerned with establishing safe use of machines and tools and proper operational practices, rather than precision fabrication. Therefore the specification of required fabrication precision for assessment purposes should take into account the introductory nature of this standard and the materials, machines, and tools used.
- 2 The skills of outcomes 3, 4, and 5 are expected to be demonstrated under close supervision.
- 3 References
 Health and Safety in Employment Act 1992.
 Occupational Safety and Health Service. *Guidelines for Guarding Principles and General Safety for Machinery*. Wellington: Department of Labour, 1995.
 Accident Compensation Corporation and Department of Labour. *Metal Industry Guidelines for Safe Work*. Wellington: ACC, 2007. Available from <http://www.acc.co.nz>.
- 4 Definitions
Industry practice – safe and sound practices generally accepted by competent trade persons within the fabrication industry.
Safety guidelines – guidelines for the safe operation of machinery and tools, such as those listed in the references, as well as guidelines for specific machines.

Outcomes and performance criteria

Outcome 1

Demonstrate introductory knowledge of fabrication processes.

Performance criteria

1.1 The processes are outlined in accordance with industry practice.

Range processes – metal selection, layout, marking, cutting, bending, forming, assembly;
outlines – purpose, brief description of process.

1.2 The basic principles of cutting and forming metals are described, with reference to the effects on the workpiece, tools, and material properties.

1.3 Basic machines used in the fabrication industry are identified and their applications briefly described in accordance with industry practice.

Range guillotine, press brake, shearing, sawing, bending, notching, folding, rolling, punching, grinding, drilling, cropping.

1.4 Cutting, bending, and joining allowances are calculated.

Outcome 2

Demonstrate knowledge of safe working practices in fabrication.

Performance criteria

2.1 Safe working practices relating to the fabricator are outlined.

Range includes but is not limited to – long hair, loose clothing, footwear, items of adornment, goggles, ear muffs, gloves, training, lifting techniques.

2.2 Hazards and safety practices associated with fabrication machines and tools are identified in accordance with safety guidelines.

Range includes but is not limited to – guards, unattended machines left running, emergency stops, chuck keys, spanners, cutting, grinding, bending, welding, riveting, machine capacity.

2.3 Safe working principles relating to materials are outlined.

Range disposal of waste material, spillages.

2.4 Location of fire extinguishers and emergency exits in the workshop are identified.

Outcome 3

Prepare for fabrication of simple objects.

Range simple fabrication objects – objects based on rectangular, cylindrical, conical, or pyramidal shapes, simple transitions, simple structural frames; materials – aluminium, mild steel in the range 0.4 to 6mm thickness; assembly methods may include but are not limited to – fasteners, welding; evidence of at least three different objects is required.

Performance criteria

- 3.1 Drawings and/or specifications are interpreted and fabrication processes clarified.
- 3.2 Machines and tools are selected and their operating procedures and fitness for use determined.
- 3.3 Materials are selected in accordance with specifications.

Outcome 4

Fabricate simple objects.

Range simple fabrication objects – objects based on rectangular, cylindrical, conical, or pyramidal shapes, simple transitions, simple structural frames; materials – aluminium, mild steel in the range 0.4 to 6mm thickness; assembly methods may include but are not limited to – fasteners, welding; evidence of at least three different objects is required.

Performance criteria

- 4.1 Basic fabrication processes are demonstrated by fabricating objects in accordance with industry practice.

Range basic fabrication processes – marking out, cutting, forming, assembly; application of cutting, bending, and joining allowances.
- 4.2 Machines and tools are set and used safely in accordance with industry practice and safety guidelines.
- 4.3 Fabrications are inspected and measured for compliance with specifications, and deviations identified.

Outcome 5

Adjust and maintain fabrication machines.

Performance criteria

- 5.1 Machines are left clean and ready for next use, and any unusable machines and tools are reported to the supervisor.
- 5.2 Waste material is disposed of in accordance with worksite procedures.
- 5.3 Routine checks, adjustments, and lubrication are carried out in accordance with machine operating procedures.

Replacement information	<p>This unit standard was replaced by unit standard 29670 and unit standard 29730.</p> <p>This unit standard replaced unit standard 2415.</p>
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 July 2008	31 December 2021
Review	2	8 December 2016	31 December 2021
Rollover	3	16 December 2021	31 December 2022

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>.