

Title	Demonstrate and apply knowledge of intermediate heavy fabrication trade practice		
Level	3	Credits	10

Purpose	<p>This unit standard is for use in intermediate level training of fabrication trades and covers fabrication of components using plate over 4mm thickness.</p> <p>People credited with this unit standard are able to demonstrate knowledge of intermediate heavy fabrication trade practice; and fabricate objects for the heavy fabrication industry.</p>
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Classification	Mechanical Engineering > Engineering - Fabrication
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Available grade	Achieved
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Prerequisites	Unit 29650, <i>Demonstrate knowledge of the safe use of powered equipment in a mechanical engineering or fabrication workshop</i> , or demonstrate equivalent knowledge and skills.
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Guidance Information

- References

Health and Safety at Work Act 2015.
 Accident Compensation Corporation and Department of Labour. *Metal Industry Guidelines for Safe Work*. Wellington: ACC, 2007. Available from <http://www.acc.co.nz>.
- Definitions

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

Intermediate heavy fabrication trade practice – trade knowledge and practical skills expected by industry of a typical second or third year heavy fabrication apprentice.

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 Related unit standards

This unit standard is one of a comprehensive set of fabrication unit standards. Other available related unit standards can be found by searching the Directory of Assessment Standards (DAS) on the NZQA website <http://www.nzqa.govt.nz> in the *Engineering - Fabrication* domain.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of intermediate heavy fabrication trade practice.

Performance criteria

1.1 Fabrication processes are described in accordance with accepted industry practice.

Range laying out, marking off, measuring, cutting, joining, forming and shaping, assembling, use of jigs and fixtures.

1.2 Operation principles for fabrication machinery are described in accordance with workplace procedures.

1.3 Potential hazards associated with the use of fabrication machinery are described in accordance with workplace procedures.

1.4 Metal types are compared in terms of suitability for fabrication.

Range steel plate, structural steel, stainless steel plate, aluminium.

1.5 Quality control checks used in fabrication to ensure that the finished product meets specifications are described in accordance with accepted industry practice.

Range checks – assembly, orientation, measurement, pressure test, surface finish, labelling, pre-camber.

1.6 Non-destructive testing principles are described in accordance with accepted industry practice.

Range visual examination, dimensional checks, penetrant inspection, magnetic particle inspection.

Outcome 2

Fabricate basic objects for the heavy fabrication industry.

Range basic objects – four simple objects, each based on two or more of cylindrical, pyramidal, conical, square, or rectangular shapes; one assembly incorporating at least two of the simple objects;
materials – two different metals; two metal thicknesses 4mm minimum, including plate; two structural shapes (examples are – flat bar, rod, pipe, rectangular hollow section, channel, angle).

Performance criteria

2.1 Workplace safety procedures are followed.

Range examples are – use of personal protective equipment, checking of equipment for faults, use of fume extraction equipment, elimination of risk of fire or explosion, protection from arc radiation.

2.2 Fabrication processes are demonstrated in accordance with workplace procedures.

Range processes – laying out, marking including application of fabrication allowances, cutting, forming and shaping, assembling, use of jigs and machine fixtures;
examples of tools and equipment for fabrication processes are – files, hacksaws, taps, dies, reamers, hammers, drills, callipers, squares, dividers, rules, protractors, radius and beam gauges, tape measures, straight edges, combination sets, chalk line, trammels, punches, angle meters, clamps, spanners, screw drivers, Allen keys, riveting tools;
examples of machinery for fabrication processes are – grinders, saws, drilling machines, metal bending and rolling machines, hole punches, metal cutting machines.

2.3 Fabricated objects are inspected and measured to verify compliance with specifications and any deviations are identified.

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 July 2009	31 December 2022
Review	2	20 July 2017	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.