

Title	Develop fabrication patterns manually for simple three-dimensional objects		
Level	3	Credits	5

Purpose	<p>This unit standard is the first in a series of pattern development and marking out unit standards for people training in engineering fabrication trades.</p> <p>People credited with this unit standard are able to develop fabrication patterns manually for simple three-dimensional objects.</p>
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Classification	Mechanical Engineering > Engineering - Fabrication
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Available grade	Achieved
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Guidance information

1 References

Health and Safety at Work Act 2015.

Boundy, A; *Engineering Drawing, 8th edition*. McGraw-Hill Australia, 2011; ISBN 0071016767.

2 Definitions

Manually – produced using non-electronic drawing instruments.

Simple three-dimensional objects – objects based on right angles including no more than one transition. Examples are:

- right angle ducts, cylinders and bends;
- branches of equal diameter cylinders, cones (eccentric and concentric), pyramids;
- truncated right angle cones and pyramids;
- transitions: square to square, square to round, rectangular to rectangular, and between parallel planes with one offset.

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.

3 Related unit standards

This unit standard is one of a set for fabrication shape development and marking out:

- Unit 25704, *Develop fabrication patterns manually for simple three-dimensional objects* (Level 3); typically assessed off job.
- Unit 30440, *Mark out fabrication components using geometrical methods* (Level 3); typically assessed on job.
- Unit 25705, *Develop fabrication patterns manually for complex three-dimensional objects* (Level 4); typically assessed off job.

4 Materials

Examples of materials are – sheet, plate, structural sections, angles, channels, ducts, pipes, tubes.

Outcomes and performance criteria

Outcome 1

Develop fabrication patterns manually for simple three-dimensional objects.

Range six pattern developments involving parallel lines, radial lines and true shape elevations. Three pattern developments must involve transitions. The overall evidence must include developments covering three different material thicknesses.

Examples of developments are – right angle elbow joints in tube, diagonal cut through square or simple polygon prism, square to square and round to round transitions to join sections or ducts of different size, pipe interpenetration (such as small pipe penetrating large pipe).

Pattern material – paper or cardboard.

Performance criteria

- 1.1 Thickness calculations are made to establish orthographic view dimensions.
- 1.2 Sufficient orthographic views of objects are drawn to enable pattern development.
- 1.3 Patterns are manually developed from orthographic views.
- 1.4 Pattern developments include material thickness allowances.
- 1.5 Patterns are checked for dimensional accuracy in accordance with specifications, and any inaccuracies corrected.

Range examples are – measurement, modelling of patterns into three dimensional shapes.

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 2021
Review	2	16 March 2017	31 December 2022
Review	3	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.