Title	**Manually produce engineering sketches**		
Level	**2**	**Credits**	**3**

Purpose	This is an entry level unit standard for sketching engineering objects to a standard where all information required to produce the object is communicated. This unit standard is for use in the training and assessment for mechanical engineering trades. This unit standard is one of a series of three unit standards with 29653 and 29654. People credited with this unit standard are able to interpret and manually produce freehand and aided, two and three dimensional sketches to communicate all job requirements.

Classification	Mechanical Engineering > Engineering Drawing and Design

Available grade	Achieved

Entry information	
Recommended skills and knowledge	Unit 29654, *Demonstrate knowledge of and interpret mechanical engineering drawings and geometric tolerancing*.

Explanatory notes

1 References
SAA/SNZ HB1:1995 *Technical drawing for students*. Available from Standards New Zealand.
Boundy, A. W. 2011. *Engineering Drawing*, 8th ed., McGraw-Hill Inc. Australia.

2 Definitions
Aided refers to the production of engineering sketches with the aid of appropriate guiding instruments (such as rule, set-square, and compass, but excluding computer software), and requiring the precise representation of angles and dimensions.
Freehand refers to the production of engineering sketches without the aid of guiding instruments, and involving the estimation of angles and dimensions.
Interpret refers to explaning in practical terms of features shown graphically in the sketch. Typically this would involve re-sketching the object in an alternative projection or view.
Orthographic refers to a projection representing a three–dimensional object in two dimensions with a number of plane views, each of which includes two of the object's three dimensions of length, breadth and depth.
Pictorial refers to isometric and oblique projections.

Simple engineering objects refers to objects of an uncomplicated design that can be produced using mechanical engineering or fabrication equipment. Examples - mounting brackets, guards, jigs, pipe joints, simple turned components.

3 Range
All drawings to be unambiguous, in proportion, and clear; using as many views as necessary to convey all required information required to produce the object drawn. Evidence is required of a minimum of three sketches for each evidence requirement (total of 12 sketches) with a minimum of four of the following shapes: rectangle; circle; cylinder; cone; ellipse; pyramid incorporated across the three sketches for each evidence requirement.

4 Assessment information
Evidence given must be within the context of mechanical engineering or fabrication. The purpose of this unit standard is to assess the ability to interpret and communicate job requirements through freehand and aided sketches. At this level, assessment of competency should be based on the ability to produce unambiguous and clear drawings that are in proportion, and communicate all information required to produce the object drawn, rather than on compliance with international drawing standards.

Outcomes and evidence requirements

Outcome 1

Manually produce freehand engineering sketches of given simple engineering objects to communicate all job requirements.

Evidence requirements

1.1 Freehand orthographic sketches are drawn.

1.2 Freehand pictorial engineering sketches are drawn.

Outcome 2

Manually produce aided engineering sketches of given simple engineering objects to communicate all job requirements.

Evidence requirements

2.1 Aided orthographic engineering sketches are drawn.

2.2 Aided pictorial engineering sketches are drawn.

Replacement information	This unit standard replaced unit standard 2430.

Planned review date	31 December 2021

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	15 September 2016	N/A
Revision	2	19 January 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.

Please note
Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

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.