

Title	Demonstrate knowledge of pumps, fans, valves and static and dynamic balancing of components		
Level	3	Credits	3

Purpose	<p>This unit standard is intended for people training in mechanical engineering trades.</p> <p>People credited with this unit standard are able to demonstrate knowledge of pumps; fans; and valves used in mechanical engineering; and demonstrate knowledge of static and dynamic balancing of components.</p>
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Classification	Mechanical Engineering > Maintenance and Diagnostics in Mechanical Engineering
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Available grade	Achieved
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Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of pumps used in mechanical engineering.

Performance criteria

- 1.1 Pump types are identified and their use and principles of operation described using reference to diagrams.
- Range gear, reciprocating (piston), diaphragm, centrifugal, multistage.
- 1.2 Pump components for the pumps types listed in 1.1 are identified and their purpose described.
- 1.3 Common symptoms, causes, and remedial actions for pump operational faults are explained.
- Range cavitation, aeration, leakage, vibration.

Outcome 2

Demonstrate knowledge of fans used in mechanical engineering.

Performance criteria

- 2.1 Fans are identified, and their use and principles of operation described using reference to diagrams.
- Range axial, centrifugal.
- 2.2 Axial and centrifugal fan components are identified and their purpose described.
- 2.3 Common symptoms, causes, and remedial actions for axial and centrifugal fan faults are explained.
- Range vibration, noise, loss of flow and/or pressure.

Outcome 3

Demonstrate knowledge of valves used in mechanical engineering.

Performance criteria

- 3.1 Valve types are identified, and their use and principles of operation described using reference to diagrams.
- Range ball, butterfly, gate, globe, diaphragm, non-return, pressure relief.
- 3.2 Valve components for the pumps types listed in 3.1 are identified and their purpose described.
- 3.3 Common symptoms, causes, and remedial actions for valve faults are explained.
- Range leakage, stiffness, jamming, erosion wear.

Outcome 4

Demonstrate knowledge of static and dynamic balancing of components.

Performance criteria

- 4.1 The difference between static and dynamic balancing of components is described.
- 4.2 The terminology associated with static and dynamic balancing is used.
- Range force of gravity, centrifugal force, axis of rotation, bearing vibration, balancing weights, weight placement.
- 4.3 The effects of an out of balance component on machine performance are described.

- 4.4 Methods of statically and dynamically balancing components are described with reference to balancing equipment and material addition and removal.

Range components – flywheel or disk, large rotor.

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	20 June 2006	31 December 2014
Review	2	15 April 2011	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.