

<b>Title</b>	<b>Demonstrate knowledge of mechanical engineering systems used in wood manufacturing industries</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>10</b>

<b>Purpose</b>	People credited with this unit standard are able to demonstrate knowledge of: the types, uses and operator checks of mechanical drives; the types, uses and operator checks of bearings; the function of hydraulic systems; and pneumatic systems, used in wood manufacturing industries.
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<b>Classification</b>	Wood Manufacturing - Generic Skills > Wood Manufacturing Foundation Skills
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<b>Available grade</b>	Achieved
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## Guidance Information

### 1 Definitions

*Accepted industry practice* refers to approved codes of practice and standardised procedures accepted by the wider wood manufacturing industry as examples of best practice.

*Manufacturer's instructions* are instructions provided by manufacturers of substances, equipment, and machinery. These instructions may include details on safe and correct handling, use and storage of substances and/or details on substance properties. Examples are labels on substance containers, product data sheets, and operator's manuals.

*Mechanical engineering systems* – for the purpose of this unit standard refers to mechanical drives, bearings, hydraulic systems, and pneumatic systems.

*Wood manufacturing industries* include pulp and paper manufacturing, wood panels manufacturing, solid wood processing, and wood product manufacturing.

*Wood manufacturing operations* refer to any operation or organisation involved in the conversion of any wood materials to saleable products.

*Workplace procedures* refer to documented policies and procedures set by the organisation carrying out the work, and to documented or other directions provided to staff, and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the wood manufacturing sector.

### 3 Assessment information

All activities and evidence must meet workplace procedures and accepted industry practice.

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of the types, uses, and operator checks of mechanical drives in wood manufacturing industries.

#### Performance criteria

- 1.1 Types of gearboxes used in wood manufacturing operations are identified and at least one key function is explained.
- Range may include but is not limited to – helical, bevel, worm, worm and wheel.
- 1.2 The main functions of shaft coupling systems used in wood manufacturing operations are explained.
- 1.3 Mechanical drive components used in wood manufacturing operations are identified and their key functions are explained.
- Range may include but is not limited to – universal joint, universal shaft, belt drives, chain drives, pulleys.
- 1.4 Operator checks for deterioration of mechanical drives used in wood manufacturing operations are explained.
- Range may include but is not limited to – vibration, temperature, noise, corrosion, lubrication levels, looseness, abnormal movement, contamination.

### Outcome 2

Demonstrate knowledge of the types, uses, and operator checks of bearings used in wood manufacturing industries.

#### Performance criteria

- 2.1 Bearing types used in wood manufacturing operations are identified and their application is described in accordance with manufacturer's instructions.
- 2.2 The function of bearing components is explained in accordance with manufacturer's instructions.
- Range rolling elements, inner and outer ring, cage, seals.
- 2.3 Lubrication of bearings and their associated components are explained in accordance with manufacturer's instructions.
- Range type, quantity, sealing.

2.4 Operator checks for prevention of bearing failure in wood manufacturing operations are explained in accordance with manufacturer's instructions.

Range may include but is not limited to – noise, temperature, smell, corrosion, leaks, discolouration, vibration, contamination.

### Outcome 3

Demonstrate knowledge of the function of hydraulic systems used in wood manufacturing industries.

#### Performance criteria

3.1 Contaminants to be avoided in hydraulic systems are identified and their method of control is described in accordance with manufacturer's instructions.

3.2 Factors influencing the performance of hydraulic systems are described in accordance with manufacturer's instructions.

Range may include but is not limited to – pipe diameter, length, restrictions, valves, fittings.

3.3 Components in a hydraulic system are described in terms of their purpose.

Range components may include but are not limited to – piping and hoses, filters, gauges, valves, accumulators; cylinder ram, motor.

3.4 The hydraulic system is checked for signs of deterioration in accordance with manufacturer's instructions, and the signs are described in terms of the effects of the deterioration on the hydraulic system.

Range signs of deterioration may include but is not limited to – hydraulic pump cavitations, filter and strainer blockages, hydraulic fluid leaks, lubrication level monitoring, system over temperature.

3.5 Hydraulic system safety and environmental requirements are described.

Range hazards to people, system shutdown and isolation processes, prevention of hydraulic fluid leakage.

### Outcome 4

Demonstrate knowledge of pneumatic systems used in wood manufacturing industries.

#### Performance criteria

4.1 The function of pneumatic systems is described in terms of compressor and air delivery systems in accordance with manufacturer's instructions.

4.2 Types of air compressors are identified.

Range may include but is not limited to – reciprocating, rotary, axial flow, screw;  
evidence of two types is required.

4.3 Importance of maintaining the compressed air supply is explained in terms of instrumentation protection and process control.

4.4 Components in a pneumatic system are described in terms of their purpose.

Range components – compressors, air lines, regulators, drains, lubricators, filters.

4.5 The pneumatic system is checked for signs of deterioration in accordance with manufacturer’s instructions, and the signs are described in terms of the effects of the deterioration on the pneumatic system.

Range signs of deterioration may include but is not limited to – filter blockages, air leaks, lubrication level monitoring, compressor over heating.

4.6 Pneumatic system safety requirements are described.

Range safety requirements – people, system shutdown, isolation processes.

Planned review date	31 December 2024
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	30 November 2000	31 December 2020
Review	2	18 December 2006	31 December 2020
Review	3	25 January 2008	31 December 2020
Review	4	19 March 2010	N/A
Review	5	28 May 2020	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	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](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.