

Title	Demonstrate knowledge of hydraulic power systems		
Level	3	Credits	5

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 the principles of hydraulic power; hydraulic power systems and applications; and describe hazards associated with hydraulic power systems.</p>
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Classification	Mechanical Engineering > Fluid Power - Hydraulics
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Available grade	Achieved
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Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the principles of hydraulic power.

Performance criteria

- 1.1 The purpose and advantages of hydraulic power transmission are described compared to mechanical and pneumatic power transmission.
- 1.2 Terminology is explained in the context of a hydraulic system.
 - Range terminology – pressure, flow, force, torque, holding pressure, linear movement, rotary movement, load, lift.
- 1.3 Atmospheric, gauge, and absolute pressures are distinguished and their use in hydraulic systems explained.
- 1.4 Pascal’s law is described in terms of how it’s principles apply to hydraulic power transmission.
- 1.5 Formulas are used to calculate the performance of hydraulic systems.
 - Range pressure and force, with transposition of variables; examples of variables are – pump displacement, hose diameter and flow rate, cylinder volume, actuator speed (both directions); units – international standard.

Outcome 2

Demonstrate knowledge of hydraulic power systems and applications.

Performance criteria

2.1 Hydraulic power system operation is described with the aid of a simple system diagram.

Range purpose and function of components, types of fluid, contamination, pressure and flow control; components – reservoir, gauge, filter, control valves, pressure relief valves, pump, actuator, regulator.

2.2 Two hydraulic power system applications are identified and their component functions explained.

Range examples are – earth movers, lifting equipment, transport applications, manufacturing.

Outcome 3

Describe hazards associated with hydraulic power systems.

Performance criteria

3.1 The hazard risk of pressure in hydraulic power systems and its prevention or mitigation is described.

Range includes – pump running, pump stopped, stored energy.

3.2 Personal injury hazards and their prevention or mitigation are described.

Range hazards – crushing and pinch points, burns from hot oil at high pressure, fire from oil leaks, flailing hydraulic lines, injection of oil into the skin, oil leaks on floor, skin exposure to oils.

Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 May 2004	31 December 2014
Review	2	18 March 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 Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.