

<b>Title</b>	<b>Demonstrate knowledge of pneumatic power systems</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>5</b>

<b>Purpose</b>	<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 pneumatic power; pneumatic power systems and applications; and describe hazards associated with pneumatic power systems.</p>
----------------	--

<b>Classification</b>	Mechanical Engineering > Fluid Power - Pneumatics
-----------------------	---

<b>Available grade</b>	Achieved
------------------------	----------

## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of the principles of pneumatic power.

#### Performance criteria

- 1.1 The purpose and advantages of pneumatic power transmission are described compared to mechanical and hydraulic power transmission.
- 1.2 Terminology is explained in the context of a pneumatic system.
 

Range terminology – prime movers: linear, rotary, radial; pressure, flow, orifice flow, force, torque, holding pressure, load, lift, stroke.
- 1.3 Atmospheric, gauge, absolute pressure, and vacuum are distinguished and their use in pneumatic systems explained.
- 1.4 Pascal's law is described in terms of how it's principles apply to pneumatic power transmission.
- 1.5 Formulas are used to calculate the performance of pneumatic systems.
 

Range pressure and force, with transposition of variables; examples of variables are – tube diameter and flow rate, cylinder volume, actuator speed (both directions); units – international standard.

**Outcome 2**

Demonstrate knowledge of pneumatic power systems and applications.

**Performance criteria**

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

Range purpose of components, types of gases, contamination, precision control, operational response rate, difference between air production and air consuming systems.

2.2 Two pneumatic power systems applications are identified and their component functions explained.

**Outcome 3**

Describe hazards associated with pneumatic power systems.

**Performance criteria**

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

Range includes – actuator stopped or stalled, stored energy.

3.2 Potential personal injury hazards and their prevention or mitigation are described.

Range hazards – crushing and pinch points, sudden shoot out, presence of carbon monoxide in system, exposure to compressed air, split tube or pipe.

<b>Planned review date</b>	31 December 2027
----------------------------	------------------

**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

<b>Consent and Moderation Requirements (CMR) reference</b>	0013
--	------

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](mailto:qualifications@hangaarorau.nz) if you wish to suggest changes to the content of this unit standard.