

<b>Title</b>	<b>Demonstrate knowledge of and apply metal cutting and gouging processes</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>2</b>

<b>Purpose</b>	People credited with this unit standard are able to demonstrate knowledge of – steel gas cutting and gouging; plasma arc cutting and gouging; air carbon arc gouging for steel; and cut and gouge metal.
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<b>Classification</b>	Mechanical Engineering > Welding
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<b>Available grade</b>	Achieved
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<b>Entry information</b>	
<b>Critical health and safety prerequisites</b>	Unit 21912, <i>Apply safe working practices on an engineering worksite</i> ; Unit 29651, <i>Demonstrate knowledge of health and safety when welding and thermal cutting</i> ; Unit 29652, <i>Demonstrate knowledge of safety, health, risk assessment, and hazard ID and control on an engineering worksite</i> ; or demonstrate equivalent skills and knowledge.
<b>Recommended skills and knowledge</b>	Unit 21907, <i>Demonstrate and apply knowledge of safe welding principles and quality assurance under supervision</i> .

## Explanatory notes

- Reference  
Health and Safety at Work Act 2015.  
AS/NZS 1554.1:2014 *Structural steel welding – Welding of steel structures*.  
Worksafe New Zealand. *Health and Safety in Welding*. (Wellington 2006): Available from <http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/welding-health-and-safety-in>.
- Definitions  
*Accepted industry practice* – approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.  
*Gas cutting* – oxygen cutting using a fuel gas such as acetylene or liquid petroleum gas (LPG).  
*Workplace procedures* – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, safety procedures, equipment operating procedures, codes of practice,

quality management practices and standards, procedures to comply with legislative and local body requirements.

### 3 Assessment information

All activities must be performed in accordance with relevant legislative and/or regulatory requirements; applicable workplace procedures and accepted industry practice.

- 4 This unit standard recognises basic competence. More advanced cutting and gouging competence is covered in Unit 2683, *Cut metals using manual thermal processes* and Unit 18106, *Gouge steel using the air carbon arc process* respectively.

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## Outcomes and evidence requirements

### Outcome 1

Demonstrate knowledge of steel gas cutting and gouging.

#### Evidence requirements

- 1.1 The principles of gas cutting and gouging are explained with reference to the equipment used.
- Range equipment – gas cylinders, regulators, flashback, arrestors, hoses, torch, tip, guides.
- 1.2 The applications, advantages, and disadvantages of gas cutting and gouging are compared with the plasma arc and air carbon arc processes.
- 1.3 Cutting and gouging parameters and consumables are described.
- 1.4 Typical gas cutting and gouging faults are described in terms of cause, significance, and corrective action.

### Outcome 2

Demonstrate knowledge of plasma arc cutting and gouging.

#### Evidence requirements

- 2.1 The principles of plasma arc cutting and gouging are explained with reference to the equipment used.
- Range power source, gas supply, electrode, torch (tip, nozzle), guides.
- 2.2 The applications, advantages, and disadvantages of plasma arc cutting and gouging are compared with the gas and air carbon arc processes.
- 2.3 Cutting and gouging parameters and consumables are described for steel, stainless steel, and aluminium.

- 2.4 Typical plasma arc cutting and gouging faults are described in terms of cause, significance, and corrective action.

### Outcome 3

Demonstrate knowledge of air carbon arc gouging for steel.

#### Evidence requirements

- 3.1 The principles of air carbon arc gouging are explained with reference to the equipment used.
- Range power source, torch, compressed air, electrode.
- 3.2 The applications, advantages, and disadvantages of air carbon arc gouging are compared with gouging using the gas and plasma arc processes.
- 3.3 Air carbon arc gouging parameters and consumables are described.
- 3.4 Typical air carbon gouging faults are described in terms of cause, significance, and corrective action.
- 3.5 Post-gouging clean up processes are described.

### Outcome 4

Cut and gouge metal.

Range metal material examples are – steel, stainless steel, aluminium. Evidence of cutting and gouging of at least one metal material is required.  
equipment examples are – gas, plasma arc, air carbon arc. Evidence of use of two types of equipment is required.

#### Evidence requirements

- 4.1 Work area is assessed for hazards associated with the cutting and gouging and safe work precautions taken.
- 4.2 Equipment is checked, set-up, and used for cutting and gouging of metal.
- 4.3 Equipment is shut down.

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<b>Planned review date</b>	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	22 May 2009	31 December 2021
Review	2	16 March 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 (CMRs). 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](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.