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| <b>Title</b> | <b>Demonstrate knowledge of the manual metal arc welding process in the automotive industry</b> |                |          |
| <b>Level</b> | <b>3</b>  | <b>Credits</b> | <b>2</b> |

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| <b>Purpose</b> | <p>This theory-based unit standard is intended for people in the automotive industry.</p> <p>People credited with this unit standard are able to demonstrate knowledge of the manual metal arc welding process in the automotive industry.</p> |
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| <b>Classification</b> | Motor Industry > Automotive Workshop Engineering |
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| <b>Available grade</b> | Achieved |
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### Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, and company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.
- 2 Performance of the outcomes of this unit standard must comply with the following:
  - Health and Safety at Work Act 2015;
  - Land Transport Rule: Heavy Vehicles 2004;
  - Land Transport Rule: Vehicle Repair 1998;
  - Land Transport Rule: Vehicle Standards Compliance 2002;
  - New Zealand Standard AS/NZS 2980:2018 *Qualification of welders for fusion welding of steels*.
- 3 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.
- 4 Definitions
  - Company requirements* refer to instructions to staff on policy and procedures that are available in the workplace. These requirements may include – company policies and procedures, work instructions, product quality specifications and legislative requirements.
  - Service information* refers to technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.
  - Suitable tools and equipment* refer to industry approved tools and equipment that are recognised within the industry as being the most suited to complete the task in a professional and competent manner with due regard to safe working practices.

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of the manual metal arc welding process in the automotive industry.

#### Performance criteria

- 1.1 The principles of the arc welding operation are described.
- Range producing heat for welding, achieving the arc, transferring the current from the power source, use of electrodes and flux.
- 1.2 The equipment required for arc welding is described.
- Range ac (alternating current) and dc (direct current) power sources, duty cycle rating, controls, leads, hand piece, electrodes.
- 1.3 The essentials of arc welding are described.
- Range arc length, choice of electrode, current range, angle of the electrode, speed of travel.
- 1.4 The handling and storage of electrodes are described.
- Range effects of dampness, loss of flux coating.
- 1.5 The arc welding procedure is described.
- Range weld preparation, welding positions, striking the arc, running a bead, cleaning.
- 1.6 Arc welding restrictions on motor vehicles and trailers are identified.
- 1.7 Welding faults and their causes are identified.
- Range porosity, cracking, slag inclusion, undercut, residual stress and distortion, weld appearance due to incorrect current and incorrect speed.
- 1.8 Procedures to protect a vehicle or machine's electronic systems are described.
- 1.9 Precautions to be observed when arc welding are identified.
- Range safety of the operator, equipment and nearby personnel; heat shielding of adjacent components.

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| <b>Replacement information</b> | This unit standard and unit standard 24372 replaced unit standard 950. |
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| <b>Planned review date</b> | 31 December 2025 |
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#### Status information and last date for assessment for superseded versions

| Process      | Version | Date          | Last Date for Assessment |
|--------------|---------|---------------|--------------------------|
| Registration | 1       | 20 March 2008 | 31 December 2022         |
| Review       | 2       | 29 April 2021 | N/A                      |

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| <b>Consent and Moderation Requirements (CMR) reference</b> | 0014 |
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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 MITO New Zealand Incorporated [info@mito.org.nz](mailto:info@mito.org.nz) if you wish to suggest changes to the content of this unit standard.