



Australian Government

AURVTW001 Carry out manual metal arc welding on components

Release: 1

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Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and weld components using the manual metal arc welding (MMAW) process. It involves preparing for the task, selecting, setting up and operating MMAW equipment, identifying and selecting welding electrodes appropriate to welding requirements, selecting and using suitable personal protective equipment (PPE), performing welding to required standard and specifications, inspecting weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Plan and prepare to weld component	1.1 Job requirements are determined from workplace instructions 1.2 Welding electrodes, weld size, type and sequence, and quantity of materials are identified

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Hazards associated with the work are identified and risks are managed 1.4 <i>Tools and equipment</i> are selected and checked for serviceability 1.5 Work is planned to minimise waste and use time efficiently
2. Weld materials using MMAW	2.1 Welding equipment is set up and used according to workplace procedures and <i>safety and environmental requirements</i> 2.2 Distortion prevention measures are identified and adjusted as required 2.3 Test runs are conducted according to workplace instructions and quality requirements 2.4 Materials are welded using MMAW process to required specifications
3. Check welds	3.1 Weld quality and specifications are confirmed by non-destructive inspection 3.2 Weld defects are identified, prepared for re-welding as required, and appropriate personnel are notified
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	locate appropriate sources of information efficiently.
Writing skills to:	legibly and accurately fill out workplace documentation.
Oral communication skills	clarify instructions and procedures

Skills	Description
to:	clearly report quality issues and job outcomes.
Numeracy skills to:	- identify and set welding machine settings - identify welding rod specifications.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	identify weld defects, quality issues and potential problems associated with MMAW process and refer problems to appropriate person.
Technology skills to:	use specialist MMAW equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Tools and equipment</i> must include:	- PPE - MMAW equipment - MMAW electrodes and materials - protective screens and fume extraction system.
<i>Safety and environmental requirements</i> must include:	- work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for: - selecting and using PPE when working with MMAW equipment, including approved welding helmet - using specialist welding tools and equipment - using protective screens and fume extraction system - manually handling components and MMAW equipment - identifying and controlling hazards - environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTW2001 Carry out manual metal arc welding procedures

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Assessment Requirements for AURVTW001 Carry out manual metal arc welding on components

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out manual metal arc welding (MMAW), including:
 - three bead runs, 150 mm long
 - three pad welds, 150 mm long
 - three butt welds, 150 mm long
 - three lap welds, 150 mm long.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out manual metal arc welding on components, including procedures for:
 - selecting and using personal protective equipment (PPE) when working with MMAW equipment, including approved welding helmet
 - using specialist welding tools and equipment
 - using protective screens and fume extraction system
 - manually handling components and MMAW equipment
 - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- hazards associated with MMAW, including:
 - arc eye and exposure to ultraviolet light
 - metal vapours, welding electrodes and welded components

- molten metal spatter and fire danger
- distortion control techniques, including:
 - bracing
 - pre-setting
 - tacking
 - bolting
 - clamping
 - jigs and fixtures
- material preparation techniques, including characteristics of different metal types
- procedures for setting up and operating MMAW equipment
 - methods and techniques for MMAW, including:
 - weld specifications
 - basic welding symbols
 - types of welding electrodes and their application
 - protection of vehicle electronics
 - weld inspection
 - identification and rectification of weld defects
- procedures for final inspection and testing of welded components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the MMAW that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for MMAW
- components to be welded as specified in the performance evidence
- welding materials and consumables
- MMAW equipment and operating instructions
- tools, equipment and materials appropriate for carrying out MMAW.

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