



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEA435A Weld aircraft components using the manual metal arc welding process**

**Release: 1**

## **MEA435A Weld aircraft components using the manual metal arc welding process**

### **Modification History**

New unit.

### **Unit Descriptor**

This unit of competency covers the development of competency elements required to gain approval within the CASA or ADF regulatory systems to weld aircraft components using the manual metal arc welding (MMAW) process. Individuals will be authorised to weld specific parent metal groups, as specified in CAAP 33-1(1) Aircraft manual welding: approvals and qualifications or RAAF Specification Engineering W5003 Welders – Qualification for Aircraft, Missile and Aerospace Fusion welding.

### **Application of the Unit**

The unit requires application of the skills and knowledge of MEM05045B Perform welds to code standards using manual metal arc welding process, to the welding of applicable parent metal groups as specified by the Regulators.

Individuals who have attained this unit and the applicable approval from the relevant Regulator for the relevant parent metal groups will be able to perform weld repairs on aircraft components or fabricate components where the applicable welding process is specified as MMAW.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

|           |                                                                            |
|-----------|----------------------------------------------------------------------------|
| MEA101B   | Interpret occupational health and safety practices in aviation maintenance |
| MEA105C   | Apply quality standards applicable to aviation maintenance processes       |
| MEA107B   | Interpret and use aviation maintenance industry manuals and specifications |
| MEA108B   | Complete aviation maintenance industry documentation                       |
| MEM05045B | Perform welds to code standards using manual metal arc welding process     |
| MEM05026C | Apply welding principles                                                   |

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

|                                                                   |                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Elements and Performance Criteria

- |                                                                       |                                                                                                                                            |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Prepare to perform repair or fabricate component using MMAW process | 1.1 The <b>materials</b> or <b>component</b> to be welded and the applicable <b>data</b> are identified in accordance with applicable data |
|                                                                       | 1.2 <b>Welding equipment</b> is inspected for serviceability and correct operation in accordance with standard operating procedures        |
|                                                                       | 1.3 Component (or materials) is prepared for welding                                                                                       |
| 2 Manual metal arc weld component                                     | 2.1 Welds are performed to the <b>required standard</b> in accordance with repair scheme or drawing                                        |
|                                                                       | 2.2 Completed welds are inspected for defects and any defects are rectified                                                                |
| 3 Complete documentation                                              | 3.1 Required documentation is completed in accordance with standard operating procedures                                                   |

## Required Skills and Knowledge

Look for evidence that confirms knowledge of:

- regulatory requirements applicable to aircraft welding
- standards applicable to aircraft welding
- the procedure for assessment of weld test pieces

Look for evidence that confirms skills in:

- safely applying advanced MMAW skills defined in unit MEM05045B Perform welds to code standards using MMAW welding process, to weld specified aircraft parent metal group materials or components to the standards specified by the Regulator (CASA or the ADF)
- applying welding principles (unit MEM05026C Apply welding principles) in the context of MMAW of aircraft materials
- identifying weld requirements from applicable documentation
- selecting and correctly using items of PPE applicable to MMAW of aircraft components

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Overview of assessment</b>                                                                       | Test pieces must be completed and assessed in accordance with the Regulatory requirements for the granting of aircraft welding approvals. Competency must be separately assessed for each parent metal group for which a MMAW authority is sought.                                                                                                                                                                                                                                                                                                                               |
| <b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b> | Evidence is required of the ability to produce manual metal arc welds to required specifications consistently across the range of components that are being fabricated or repaired, while applying all relevant safety precautions. The ability to do this must be demonstrated through the production of the test pieces specified for the welding process and parent metal group in the CAAP 33-1(0) Aircraft manual welding: approvals and qualifications or RAAF Specification Engineering W5003 Welders – Qualification for Aircraft, Missile and Aerospace Fusion welding. |
| <b>Context of and specific resources for assessment</b>                                             | Test pieces specified for each parent metal group for which approval is sought may be completed in the workplace or a simulated workplace. The individual must be provided with all required equipment, consumables, PPE, materials and data/drawings relating to the test pieces that are required for the approvals being sought. Assessment of test pieces must be carried out in a testing facility that meets the requirements specified by the applicable Regulator.                                                                                                       |
| <b>Method of assessment</b>                                                                         | Assessment methods are specified in the CAAP 33-1(0) Aircraft manual welding: approvals and qualifications or RAAF Specification Engineering W5003 Welders – Qualification for Aircraft, Missile and Aerospace Fusion welding.                                                                                                                                                                                                                                                                                                                                                   |
| <b>Guidance information for assessment</b>                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

|                           |                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Materials</b>          | Materials may be any metal used in the construction of aircraft components that is suitable for MMAW                                                                                                                                                                                                                                                         |
| <b>Component</b>          | Components may be any aircraft component where MMAW is specified as either a fabrication or repair technique                                                                                                                                                                                                                                                 |
| <b>Parent metal group</b> | Parent metal groups against which welding authorities are individually granted are: <ul style="list-style-type: none"><li>• aluminium alloys</li><li>• magnesium alloys</li><li>• carbon steels and low alloy steels</li><li>• corrosion and heat resisting steels</li><li>• nickel alloys</li><li>• copper-based alloys</li><li>• titanium alloys</li></ul> |
| <b>Required standard</b>  | Standards may be specified in: <ul style="list-style-type: none"><li>• regulations relating to required test pieces</li><li>• process specifications</li><li>• repair manuals</li><li>• overhaul manuals</li><li>• Australian and New Zealand Standards</li></ul>                                                                                            |

## Unit Sector(s)

Aviation maintenance

## Custom Content Section

Not applicable.