



Australian Government

MEA434 Weld aircraft components using the plasma arc welding process

Release: 2

MEA434 Weld aircraft components using the plasma arc welding process

Modification History

Release 2. Equivalent to MEA434 Weld aircraft components using the plasma arc welding process with amended prerequisite codes.

Application

The unit of competency requires application and adaption of the skills and knowledge of MEM05044B Perform welds to code standards using gas tungsten arc welding process, to the plasma arc welding (PAW) of applicable aircraft parent metal groups as specified by the Regulators during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit covers the development of competency elements required to gain approval within the Civil Aviation Safety Authority (CASA) or the Australian Defence Force (ADF) regulatory systems to weld aircraft components using the PAW 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.

Pre-requisite Unit

MEA107	Interpret and use aviation maintenance industry manuals and specifications
MEA154	Apply work health and safety practices in aviation maintenance
MEA156	Apply quality standards during aviation maintenance activities
MEA157	Complete aviation maintenance industry documentation
MEM05026C	Apply welding principles
MEM05044B	Perform welds to code standards using gas tungsten arc welding process

Competency Field

Aviation maintenance

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1.	Prepare to perform repair or fabricate component using PAW process	1.1	Materials or component to be welded and the applicable parent metal group are identified in accordance with applicable data
		1.2	Welding equipment is inspected for serviceability and correctly set up in accordance with standard operating procedures
		1.3	Component (or materials) are prepared for welding
2.	Plasma arc weld component	2.1	Welds are performed to the required standard in accordance with the applicable repair scheme or drawing while observing all relevant work health and safety (WHS) requirements, including the use of material safety data sheets (MSDS) and items of personal protective equipment (PPE)
		2.2	Completed welds are inspected for defects and any defects rectified
3.	Complete documentation	3.1	Required documentation is completed in accordance with standard enterprise procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different 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.

Materials include:

- Any metal used in the construction of aircraft components that is suitable for PAW

Components include:	• Any aircraft component where PAW is specified as either a fabrication or repair technique
Parent metal groups against which welding authorities are individually granted are:	• Aluminium alloys • Magnesium alloys • Carbon steels and low alloy steels • Corrosion and heat resisting steels • Nickel alloys • Copper-based alloys • Titanium alloys
Required standards are specified in:	• Regulations relating to required test pieces • Process specifications • Repair manuals • Overhaul manuals • Australian and New Zealand Standards

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEA434 Weld aircraft components using the plasma arc welding process

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Performance Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- safely applying advanced gas tungsten arc welding skills defined in unit MEM05044B Perform welds to code standards using gas tungsten arc welding process, and adapting them to perform PAW of specified aircraft parent metal group materials or components to the standards specified by the relevant Regulator (CASA or the ADF)
- applying welding principles (unit MEM05026C Apply welding principles) in the context of PAW of aircraft components or materials
- inspecting PAW process equipment for serviceability with particular emphasis on the orifice
- identifying weld requirements from applicable documentation
- selecting and correctly using items of PPE applicable to PAW of aircraft components.

Evidence is required of the ability to produce plasma 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.

Knowledge Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- regulatory requirements applicable to aircraft welding
- standards applicable to aircraft welding
- the procedure for assessment of weld test pieces
- equipment required for PAW and its operation and maintenance requirements
- the relative advantages of the plasma process for welding and cutting
- the composition of gases used in the PAW process
- safety precautions applicable to PAW and applicable PPE.

Assessment Conditions

- 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.
- 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.
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).

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