



Australian Government

Department of Education, Employment and Workplace Relations

MEA402B Fabricate aircraft structural components

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit is part of the Aeroskills Structures Maintenance Certificate IV training pathway. It covers the competencies required to fabricate aircraft structural components in accordance with specifications and drawings. No licensing requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	This unit requires application of hand skills and the use of drawings, specifications and maintenance publications to fabricate structural components from aluminium alloys and steel alloys at various temper. Applications include components for fixed and rotary wing aircraft.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	MEA101B	Interpret occupational health and safety practices in aviation maintenance
	MEA103B	Plan and organise aviation maintenance work activity

Prerequisite units		
	MEA105B	Apply quality standards applicable to aviation maintenance processes
	MEA107B	Interpret and use aviation maintenance industry manuals and specifications
	MEA108B	Complete aviation maintenance industry documentation
	MEA109B	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret specifications and organise materials	1.1. Specifications and drawings are interpreted to determine material requirements. 1.2. Procedure for fabricating component is determined in order to plan equipment use. 1.3. Material is correctly identified to meet specifications. 1.4. All materials and equipment are organised.
2. Prepare material and tooling	2.1. Dimensions are translated to material in accordance with specifications. 2.2. Cutting and forming equipment is prepared and adjusted to ensure accuracy of fabrication. 2.3. Material is cut according to specifications ensuring minimisation of wastage and maintenance of surplus material identification. 2.4. Material requiring special treatment is made ready for the appropriate processes. 2.5. Solution treatment of materials is carried out in accordance with approved procedures and specifications.
3. Form material	3.1. Appropriate forming procedure is determined which ensures specifications are met and the most suitable method selected. 3.2. Forming equipment is operated correctly and safely. 3.3. Hand forming is accurately carried out where necessary. 3.4. Material is formed to meet specifications.
4. Hand correction of fabricated components	4.1. Components are checked for irregularities and correction requirements determined. 4.2. Irregularities are removed to meet required dimensions and specifications.
5. Inspect components	5.1. Fabricated components are inspected to confirm dimensional accuracy and specifications are met. 5.2. Checking fixtures are used where appropriate to ensure requirements are met. 5.3. Components requiring special or further treatment are made ready for the appropriate processes. 5.4. Completed components are tagged or identified as required.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- application of applicable OH&S procedures
- the use of approved maintenance documentation and aircraft publications relating to aircraft structure
- identifying various aircraft metals and their basic metallurgy properties by interpretation of markings, numbering systems or visual, chemical or mechanical means
- handling and storing aircraft metals to industry standards
- identifying aircraft structural assembly fasteners by interpretation of markings, numbering systems, size, shape and colour
- fabrication of aircraft structural components and parts by:
 - correctly interpreting drawings (including third angle projection, isometric, sectional formats and hand sketches)
 - developing component flat pattern using basic drawing tools, geometric drawing processes, parallel, radial and triangulation methods, calculating and applying bend allowance/deduction/setback (an understanding of flat pattern development terminology is required)
 - using appropriate hand tools, machines (stretching, shrinking, bending, cutting, drilling, rolling, wheeling and folding), forming blocks, templates, presses to form/produce dished, domed, curved components, bent/angled (L, Z, U, hat) sections and lightning holes, flanges, joggles
 - assembling component parts using appropriate hand and machine tools and standard aircraft fasteners to industry standards
- applying appropriate metal heat treatment processes
- applying appropriate metal surface treatments

Required knowledge

Look for evidence that confirms knowledge of aircraft construction principles

Evidence Guide

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.

Overview of assessment

A person who demonstrates competency in this unit must be able to apply hand skills and use drawings, specifications and maintenance publications to fabricate aircraft structural components from a range of aircraft metals while applying all relevant safety precautions.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The underlying skills inherent in this unit should be transferable across a range of aircraft applications. It is essential that procedures take into account all safety precautions and quality requirements. Skill and knowledge application must include set back, bend allowance and other standard practices associated with forming of material.

Evidence of knowledge and skills associated with the broad range of structural fabrication techniques and their application to different materials used in aircraft manufacture will be required to supplement evidence of ability to fabricate components.

A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of the Unit of Competency are being achieved under routine supervision on a representative range of structural fabrication tasks. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry .

Context of and specific resources for assessment

Competency should be assessed in the work environment, using tools and equipment specified by aircraft maintenance manuals. It is expected that general purpose tools and test equipment found in most routine situations would be used where appropriate.

Method of assessment

Guidance information for assessment

Range Statement

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.	
Competency is to be assessed:	using materials comprising various types of sheet metal used in aircraft manufacture, including aluminium alloys and structural steel alloys across a range of temper.
Machinery processes are to include:	bending, cutting, rolling, shrinking and stretching.
Procedures and requirements	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Sector(s)

Unit sector	
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Competency field

Competency field	Aviation maintenance
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Co-requisite units

Co-requisite units		

