



**Australian Government**

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

# **MEA423A Aircraft structure major disassembly and reassembly**

**Release: 1**

## **MEA423A Aircraft structure major disassembly and reassembly**

### **Modification History**

New unit.

### **Unit Descriptor**

This unit of competency is part of the Aeroskills Structures Maintenance Certificate IV training pathway. It covers the competencies required for major disassembly and reassembly of aircraft structure for the purposes, such as major repair or modification. The unit is used in workplaces that operate under the airworthiness regulatory systems of the ADF and CASA.

### **Application of the Unit**

This unit requires application of hand skills and use of maintenance publications, drawings, and appropriate jigs, fixtures and tools to disassemble and reassemble aircraft structure. Structural repair/modification is covered by MEA422A Repair/modify aircraft metal structure or MEA405B Repair/modify aircraft composite material structure/components. Where fabrication of replacement components is required the applicable units are MEA420A Fabricate basic structural components for aircraft and MEA421A Fabricate advanced structural components for aircraft. Applications include fixed and rotary wing aircraft.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

MEA401C Inspect aircraft structure

### **Employability Skills Information**

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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## Elements and Performance Criteria

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|---|---|
| 1 Interpret specifications and organise materials             | <p>1.1 The procedure for assembly/disassembly of structure is determined in order to plan equipment use</p> <p>1.2 Appropriate jigs, fixtures or bracing methods are selected to ensure maintenance of contour/structural integrity during disassembly/assembly operations</p> <p>1.3 All components and equipment are organised</p>  |
| 2 Prepare aircraft or sub-assembly for structural disassembly | <p>2.1 Structure is supported with appropriate jigs, fixtures or bracing, as required</p> <p>2.2 Structural components are removed, as required, to provide access</p>  |
| 3 Disassemble aircraft structure or sub-assembly              | <p>3.1 Aircraft standard practices are applied in the removal of structural hardware and fasteners</p> <p>3.2 Disassembled components are tagged, as required, to facilitate correct reassembly</p>   |
| 4 Prepare components and tooling for assembly                 | <p>4.1 Jigs and fixtures are set up to ensure accuracy of component assembly</p> <p>4.2 Replacement component alignment is checked for conformance to specifications prior to fastener hole generation</p> <p>4.3 Hole location/relocation is carried out in accordance with specification procedures and standard practices</p> <p>4.4 Standard practices in hole generation sequencing are followed to ensure that assembly stress defects are not built in</p> <p>4.5 Components are disassembled, cleaned, deburred and</p> |

surface treatments applied prior to final assembly

5 Assemble aircraft  
structure or sub- assembly

5.1 Sealants and/or adhesives are selected and applied in accordance with assembly specifications or applicable documentation

5.2 Components are positioned and secured with appropriate temporary fastening devices for accurate assembly

5.3 Fasteners are selected and installed in accordance with assembly specifications or applicable manuals

6 Inspect completed  
assemblies

6.1 Assembled components are inspected to confirm dimensional accuracy and specifications are met

6.2 Checking or testing equipment is used, where appropriate, to ensure requirements are met

6.3 Aircraft mensuration is checked for compliance with applicable maintenance manuals, where necessary

6.4 Required documentation is completed and processed in accordance with standard enterprise procedures

## Required Skills and Knowledge

Look for evidence that confirms knowledge of:

- aircraft construction principles, including the causes of structural fatigue and corrosion
- describing the basic construction methods used to assemble:
  - fuselage (pressure and non-pressurised)
  - wings, vertical and horizontal stabilisers, rotary wing tail cones and pylons
  - engine nacelles/pylons
  - doors and windows, including seals, sealants and locking mechanisms
- material specifications for aluminium alloys and steel alloys used in aircraft structure
- composite cloths, matrix materials and adhesives
- structural material identification by markings and numbering systems
- material identification by chemical, electrical and mechanical methods
- material storage requirements
- hardware types and specifications
- composite bonding methods
- identification of hardware
- sealants used in aircraft structure and their application and handling
- chemical surface treatments
- electroplating
- paints and finishes
- OHS precautions associated with repair of aircraft structure, including the safe handling of heavy components
- MSDS
- PPE

Look for evidence that confirms skills in:

- applying relevant OHS procedures, including the use of MSDS and applicable items of PPE
- the use of approved maintenance documentation and aircraft publications relating to aircraft structural disassembly and assembly
- correctly supporting the aircraft structure by jacking, trestling, bracing and/or jiggling methods
- safely handling heavy components during removal and assembly
- identifying various aircraft metals/composite materials and their basic metallurgy properties by interpretation of markings, numbering systems or visual, chemical or mechanical means
- handling and storing aircraft metal and composite components to industry standards
- identifying aircraft structural assembly fasteners (metal and composite) by interpretation of markings, numbering systems, size, shape and colour
- using appropriate hand tools and machines to remove and assemble aircraft structural components, parts, sections and skin, including riveting equipment, drilling equipment, aligning tools, reamers and material fasteners (grip pins)

- applying correct removal and installation techniques for general and close tolerance fasteners (rivets, standard and oversize – hilocks), including hole preparation and location techniques
- performing aircraft alignment and mensuration checks
- applying sealants and restoring aircraft structure surface finishes

## Evidence Guide

<p>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.</p>	
<p><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to apply hand skills and use maintenance publications, drawings and specifications and appropriate jigs, fixtures and tools to disassemble and reassemble aircraft structure while applying all relevant safety precautions.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>The underlying skills inherent in this unit should be transferable into other areas that require similar techniques. It is essential that procedures take into account all safety precautions and quality requirements, standards and practices, and processes associated with assembly.</p> <p>Evidence of knowledge about repair techniques and the use of the standard repair manual in a range of different repair situations will be necessary to supplement evidence of ability to plan and undertake structure and component repair.</p> <p>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 elements from each of Groups 1 to 3 listed in the Range Statement. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide.</p>
<p><b>Context of and specific resources for assessment</b></p>	<p>Competency should be assessed in the work environment, using tools and equipment specified by aircraft maintenance manuals. It is also expected that general purpose tools and ground support equipment found in most routine situations would be used where appropriate.</p>
<p><b>Method of assessment</b></p>	
<p><b>Guidance information for assessment</b></p>	

## Range Statement

<p>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.</p>	
<b>Note</b>	The Range Statements below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide.
<b>Scope</b>	<p>The competency applies to:</p> <ol style="list-style-type: none"> <li>1. Assembly of aircraft sub-assemblies or end items from detailed parts using jigs and fixtures</li> <li>2. Disassembly and reassembly of aircraft structure, such as wings, tailplanes or fuselage sections, using trestling, jigs and fixtures</li> <li>3. Replacement of major structural load carrying members, for example, skins, longerons, spars, frames and bulkheads</li> </ol>
<b>Assembly procedures</b>	<p>Assembly procedures will include:</p> <ul style="list-style-type: none"> <li>• drilling, reaming and counter-sinking</li> <li>• fitting of fasteners and rivets</li> <li>• application of adhesives and sealants</li> <li>• fitting of hardware</li> <li>• application of corrosion inhibitors and protective coatings</li> </ul> <p>Assembly stress defects can refer to:</p> <ul style="list-style-type: none"> <li>• oil canning, buckling, contour misalignment and stress raisers</li> </ul>
<b>Application</b>	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> <li>• scheduled or unscheduled maintenance</li> <li>• individual or team-related activities</li> </ul>
<b>Procedures and requirements</b>	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise



## **Unit Sector(s)**

Aviation maintenance

## **Custom Content Section**

Not applicable.