



Australian Government

MEA423 Aircraft structure major disassembly and reassembly

Release: 2

MEA423 Aircraft structure major disassembly and reassembly

Modification History

Release 2 – Assessment Conditions amended to permit assessment in a simulated workplace

Application

This unit of competency requires application of hand skills and use of maintenance publications, drawings, and appropriate jigs, fixtures and tools to disassemble and reassemble aircraft structure during scheduled or unscheduled maintenance. Structural repair/modification is covered by MEA422 Repair/modify aircraft metal structure or MEA405 Repair/modify aircraft composite material structure/components. Where fabrication of replacement components is required the applicable units are MEA420 Fabricate basic structural components for aircraft and MEA421 Fabricate advanced structural components for aircraft.

Work may be performed individually or as part of a team.

Applications include fixed and rotary wing aircraft.

This unit of competency is part of the Aeroskills Structures Maintenance Certificate IV training pathway. It is used in workplaces that operate under the airworthiness regulatory systems of the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA).

Pre-requisite Unit

MEA401 Inspect aircraft structure

Competency Field

Aviation maintenance

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

1. Interpret specifications and organise materials

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 The procedure for assembly/disassembly of structure is determined in order to plan equipment use
- 1.2 Appropriate jigs, fixtures or bracing methods are

			selected to ensure maintenance of contour/structural integrity during disassembly/assembly operations
		1.3	All components and equipment are organised
2.	Prepare aircraft or sub-assembly for structural disassembly	2.1	Structure is supported with appropriate jigs, fixtures or bracing, as required
		2.2	Structural components are removed, as required, to provide access
3.	Disassemble aircraft structure or sub-assembly	3.1	Aircraft standard practices are applied in the removal of structural hardware and fasteners 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)
		3.2	Disassembled components are tagged, as required, to facilitate correct reassembly
4.	Prepare components and tooling for assembly	4.1	Jigs and fixtures are set up to ensure accuracy of component assembly
		4.2	Replacement component alignment is checked for conformance to specifications prior to fastener hole generation
		4.3	Hole location/relocation is carried out in accordance with specification procedures and standard practices
		4.4	Standard practices in hole generation sequencing are followed to ensure that assembly stress defects are not built in
		4.5	Components are disassembled, cleaned, deburred and surface treatments applied prior to final assembly while observing all relevant WHS requirements, including the use of MSDS and items of PPE
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 while observing all relevant WHS requirements, including the use of

MSDS and items of PPE

	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
	6.6	Required documentation is completed and processed 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.

Scope of unit applies to:

- Assembly of aircraft sub-assemblies or end items from detailed parts using jigs and fixtures
- Disassembly and reassembly of aircraft structure, such as wings, tailplanes or fuselage sections, using trestling, jigs and fixtures
- Replacement of major structural load carrying members, for example, skins, longerons, spars, frames and

	bulkheads
Assembly procedures include:	• Drilling, reaming and counter-sinking • Fitting of fasteners and rivets • Application of adhesives and sealants • Fitting of hardware • Application of corrosion inhibitors and protective coatings
Assembly stress defects include:	• Oil canning, buckling, contour misalignment and stress raisers
Procedures and requirements include:	• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 2 -Assessment Conditions amended to permit assessment in a simulated workplace. Equivalent.

Release 1 – equivalent to MEA423A Aircraft structure major disassembly and reassembly

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 MEA423 Aircraft structure major disassembly and reassembly

Modification History

Release 2 – Assessment Conditions amended to permit assessment in a simulated workplace

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:

- applying relevant WHS procedures, including the use of MSDS and applicable items of PPE
- using 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.

The underlying skills inherent in this unit should be transferable into other areas that require similar techniques.

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:

- 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
- WHS precautions associated with repair of aircraft structure, including the safe handling of heavy components
- MSDS
- PPE.

Assessment Conditions

- Competency should be assessed in the work environment or simulated 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.
- The following conditions of assessment represent the requirements of the Regulators (ADF and CASA) and maintenance stakeholders and must be rigorously observed.
- A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements and performance criteria of the unit of competency are being achieved under routine supervision on elements from each of the following groups:
 - assembly of aircraft sub-assemblies or end items from detailed parts using jigs and fixtures
 - disassembly and reassembly of aircraft structure, such as wings, tailplanes or fuselage sections, using trestling, jigs and fixtures
 - replacement of major structural load carrying members, for example, skins, longerons, spars, frames and bulkheads.
- This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide (for details refer to the Companion Volume Assessment Guidelines).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).

Links

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