



Australian Government

MEASTR0016 Repair and modify aircraft metal structure

Release: 1

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Modification History

Release 1. Unit code and title changed. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Range of Conditions removed, and relevant information moved to Assessment Requirements. Assessment Requirements clarified. Supersedes and is equivalent to MEA422 Repair/modify aircraft metal structure.

Application

This unit describes the skills and knowledge required to apply hand skills and use special tools, structural repair manuals and approved repair schemes to repair aircraft structure during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

Applications include the metal structure of fixed and rotary wing aircraft.

Fabrication of replacement components is covered by the units MEASTR0014 Fabricate basic structural components for aircraft and MEASTR0015 Fabricate advanced structural components for aircraft. Major structural disassembly is covered by unit MEASTR0017 Aircraft structure major disassembly and reassembly.

The unit is used in workplaces that operate under the airworthiness regulatory systems of the Civil Aviation Safety Authority (CASA) and the Defence Aviation Safety Authority (DASA).

Any other relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MEASTR0001 Inspect aircraft structures

Competency Field

Aviation maintenance

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to undertake repair	1.1 Assess extent of damage to assist in determining repair procedure 1.2 Prepare and support structure in accordance with maintenance manual to ensure personnel safety and freedom from damage 1.3 Identify modification or repair scheme in accordance with structural

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	repair manual or approved data 1.4 Obtain specialist advice for approved repair scheme where a standard repair scheme cannot be identified, or damage is out of limits 1.5 Organise required materials and equipment in accordance with repair procedure
2. Modify or repair aircraft structure	2.1 Perform structural repairs in accordance with approved repair scheme, ensuring that aircraft standard practices are used, and process requirements are carried out 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 Restore required aircraft structure sealing and surface finishes 2.3 Clean work area of all waste material or contaminants in accordance with standard enterprise procedures 2.4 Make required adjustments to components to operate within prescribed specifications 2.5 Tag, seal and package or cradle repaired components in accordance with specified procedures 2.6 Complete and process required documentation in accordance with standard enterprise procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

- Reading skills to interpret maintenance manuals and repair schemes.
- Writing skills to complete documentation.
- Numeracy skills to interpret technical information including sketches and drawings.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEA422 Repair/modify aircraft metal structure.

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 MEASTR0016 Repair and modify aircraft metal structure

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Performance Evidence

There must be evidence the candidate has completed all the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- repair or modify aircraft metal structures while doing each of the following tasks during scheduled or unscheduled maintenance:
 - remove corrosion by chemical and mechanical methods
 - restore protective coatings
 - apply sealants and jointing compounds
 - generate freehand precision hole
 - remove and install structural hardware, fastening devices, bushes, bearings and bearing surfaces
 - remove and repair damaged sections and reinstall
- apply correct removal, installation and repair techniques for:
 - a range of rivets (blind and solid) using hand, squeeze and pneumatic situations
 - a range of close tolerance fasteners (standard and oversize – hilocks, taper locks), including hole preparation
 - threaded devices, including internal and external thread cutting, helicoil inserts and damaged stud replacement
 - hardware assembled by close tolerance fits using heat, cooling and force methods, including bearings, bushes and inserts
- correctly support the aircraft structure by jacking, trestling or jiggling methods during the above modifications or repairs
- perform a range of metal structure repair techniques while performing above modifications or repairs, including:
 - metal scab patch, flush, splice, lap and formed section repair
 - metal-to-metal and metal-to-composite bonding
- identify various aircraft metals and their basic metallurgy properties by interpretation of markings, numbering systems or visual, chemical or mechanical means to inform selection of modification or repair scheme
- identify various aircraft composite materials and their basic properties by interpretation of markings and visual means to support materials selection

- handle and store aircraft metals and composite materials, including sealing agents, to industry standards
- identify aircraft structural assembly fasteners (metal and composite) by interpretation of markings, numbering systems, size, shape and colour during and after repair or modification work
- correctly interpret or produce repair scheme or modification drawings for the groups above, and cumulatively include third angle projection, isometric, sectional formats and hand sketches
- for the above modifications or repairs, use appropriate hand tools and machines to remove and assemble aircraft structural components, parts, sections and skin, including riveting equipment, drilling equipment, aligning tools and material fasteners (grip pins)
- apply structural corrosion removal/treatment techniques during the repair process
- restore aircraft structure sealing and surface finishes.
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Knowledge Evidence

There must be evidence the candidate has knowledge of:

- aircraft construction principles and the causes of structural damage, including metal fatigue and corrosion
- structural fatigue preventative measures
- structural corrosion removal and preventative measures
- aircraft repair schemes and modification data/drawings
- procedures for the design and approval of repair schemes and modifications
- material specifications for aluminium alloys and steel alloys used in aircraft structure
- structural material identification by markings and numbering systems
- material identification by chemical, electrical and mechanical methods
- material storage requirements
- hardware types and specifications
- identification of hardware
- sealants used in aircraft structure and their application and handling
- chemical surface treatments
- electroplating
- paints and finishes
- work health and safety (WHS) precautions for repair or modification of aircraft metal structures
- how to access and apply material safety data sheets (MSDS)
- personal protective equipment (PPE) for repair or modification of aircraft metal structures.
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Assessment Conditions

The following conditions of assessment represent the requirements of the regulators Civil Aviation Safety Authority (CASA) and the Defence Aviation Safety Authority (DASA) and maintenance stakeholders and must be rigorously observed.

Skills must have been demonstrated under routine supervision in the workplace or in a simulated environment that reflects workplace conditions and contingencies encountered in repairing and modifying aircraft metal structures. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - workplace procedures, manufacturing specifications, codes, standards, manuals, and reference materials relevant to repairing and modifying aircraft metal structures
 - tools and equipment specified by aircraft maintenance manuals
 - general-purpose tools, ground support and test equipment found in most routine situations and required for repairing and modifying aircraft metal structures.

Evidence of tasks demonstrating competency must be recorded in a log of industrial experience and achievement.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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