



Australian Government

MEA370 Repair the structure of non-pressurised small aircraft

Release: 1

MEA370 Repair the structure of non-pressurised small aircraft

Modification History

Release 1 - New unit of competency

Application

This unit of competency requires application of procedures and techniques associated with the repair of non-pressurised small aircraft structure during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team and involves the performance of a limited range of metal and composite repairs. Where extensive repair involving the replacement of major structural components, such as wing spars and fuselage frames, is required the applicable unit is MEA371 Perform major repairs and modifications to small aircraft metal structure.

The unit is part of the Aeroskills Mechatronics Certificates III and IV small aircraft maintenance training pathways.

Where a Civil Aviation Safety Authority (CASA) licensing outcome is sought this unit forms part of the CASA requirement for the granting of the chosen maintenance certification licence under Civil Aviation Safety Regulation (CASR) Part 66, in accordance with the licensing provisions in the Companion Volume Implementation Guide.

Pre-requisite Unit

MEA369 Inspect and maintain structures and related components of non-pressurised small aircraft

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.

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|--------------------------------|--|
| 1. Prepare to undertake repair | 1.1 Extent of damage is correctly assessed to assist in determining repair procedure |
| | 1.2 Appropriate repair scheme is identified in accordance |

		with structural repair manual and/or approved data
	1.3	Specialist advice is obtained in establishing an approved repair scheme where a standard repair scheme cannot be identified or damage is out of limits
	1.4	All materials and equipment required are organised
2.	Repair aircraft structure	
	2.1	Structural repairs are performed 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	Preventative maintenance techniques are employed to preserve the integrity of aircraft structure
	2.3	Work area is cleaned of all waste material or contaminants
	2.4	Required maintenance 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.

- Damage or defects include:**
- Impact damage
 - Fatigue cracking
 - Corrosion
 - Delamination of composites and bonded structures
- Structural repairs include:**
- Removing corrosion by chemical and mechanical methods
 - Restoring protective coatings

	• Applying sealants and jointing compounds • Freehand precision hole generation • Removing and installing structural hardware and fastening devices • Removing and replacing bushes, bearings and bearing surfaces • Metal scab patch, flush, splice, lap and formed section repairs • Composite external patch, scarf, stepped and bolted repairs
Specialist advice is obtained from:	• Supervisors • Specialist structures personnel
Maintenance documentation includes:	• Servicing schedules • Maintenance manuals
Procedures and requirements include:	• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

New unit of competency partially replacing MEA363B Inspect, repair and maintain structures and related components of non-pressurised small aircraft

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 MEA370 Repair the structure of non-pressurised small aircraft

Modification History

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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:

- applying all relevant WHS procedures, including the selection and use of MSDS and applicable items of PPE
- identifying damage to aircraft metallic (ferrous and non-ferrous) structures and/or components by way of impact, fatigue or the various types of corrosion
- inspecting damage and assessing composite components/structures
- identifying various aircraft metals and their basic properties
- identifying composite materials used in aircraft construction, associated safety precautions and hazards
- correctly interpreting repair scheme drawings, including third angle projection, isometric, sectional formats and hand sketches
- using appropriate hand tools and machines, including riveting equipment, drilling equipment, aligning tools and material fasteners (grip pins)
- applying 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 – hillocks and 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
- performing a range of metal structure and composite material repair techniques, including:
 - metal scab patch, flush, splice, lap and formed section repair
 - composite external patch, scarf, stepped and bolted repairs
 - metal to metal and metal to composite bonding
- applying structural corrosion removal/treatment techniques
- restoring aircraft structure sealing and surface finishes.

It is essential that the procedures take into account all aircraft and personal safety precautions relating to aircraft structure.

Evidence of transferability of skills and knowledge related to inspection, testing and repair of aircraft structure is essential. This may be demonstrated through application across a number of aircraft structures or aircraft types. Ability to interpret inspection and repair procedures and specifications and apply them in practice is critical. The application of the procedures should also clearly indicate knowledge of structural flight loads and aerodynamic requirements.

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:

- applicable WHS procedures, including the use of PPE and MSDS
- requirements for handling and storing aircraft metals and composite materials, including sealing agents, to industry standards
- means of identifying aircraft structural assembly fasteners (metal and composite) by interpretation of markings, numbering systems, size, shape and colour
- structural and non-structural component methods of attachment, faying surface treatment and fuel tank sealing
- assessment of structural damage:
 - types and classes of mechanical damage
 - types of corrosion and determining the extent of damage
 - relevant documentation and manuals
 - damage limits and repair schemes for metallic and non-metallic structure
- procedures for the fabrication and fitment of metal repairs:
 - scab patch
 - flush patch
 - splice
 - lap
 - formed section
- corrosion removal and passivation
- procedures for performing composite repairs:
 - external patch
 - scarf patch
 - stepped repairs
 - bolted repairs
- repair of integral fuel tanks and sealing of faying surfaces, including specific WHS and PPE requirements
- surface finishes and methods of restoration, including specific WHS and PPE requirements
- how to obtain MSDS
- relevant maintenance and structural repair manuals
- relevant regulatory requirements and standard procedures.

Assessment Conditions

- Competency should be assessed in the work environment or simulated work environment using tools and equipment specified in maintenance documentation. It is also expected that general-purpose tools and test 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 across the variables in the Range of Conditions as follows:
 - recognition of each type of damage:
 - impact damage
 - fatigue cracking
 - corrosion
 - delamination of composites and bonded structures
 - one (1) repair task from each of the following groups:
 - remove corrosion by chemical and mechanical methods
 - restore protective coatings
 - apply sealants and jointing compounds
 - freehand precision hole generation
 - remove and install structural hardware and fastening devices
 - remove and replace bushes, bearings and bearing surfaces
 - metal scab patch, flush, splice, lap and formed section repair
 - composite external patch, scarf and stepped repairs.
- 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).
- Where the unit is to be used for CASA licensing purposes the Assessor must also meet the criteria specified in the CASR Part 147 Manual of Standards.
- The competency elements and performance criteria also cover a significant portion of those required for unit MEA339 Inspect, repair and maintain aircraft structures. Refer to that unit for details of credits that may be granted during assessment.

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