



Australian Government

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

Release: 2

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

Modification History

Release 2. Equivalent to MEA369 Inspect and maintain structures and related components of non-pressurised small aircraft with amended prerequisite codes.

Application

This unit of competency requires application of procedures and techniques associated with the inspection and maintenance of non-pressurised small aircraft structures during scheduled or unscheduled maintenance, including special inspections required after events, such as heavy landings, overstress or flight through heavy turbulence.

The unit also covers the performance of a limited range of minor metal and composite repairs that are classified as elementary maintenance. Also required is an application of procedures and techniques associated with the removal and installation of related structural and non-structural components, including items such as internal trim, seats and emergency equipment. Work may be performed individually or as part of a team.

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

MEA107	Interpret and use aviation maintenance industry manuals and specifications
MEA154	Apply work health and safety practices in aviation maintenance
MEA155	Plan and organise aviation maintenance work activities
MEA156	Apply quality standards during aviation maintenance activities
MEA157	Complete aviation maintenance industry documentation
MEA158	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

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. Inspect aircraft structure | 1.1 Relevant maintenance documentation is used to identify specific inspection requirements |
| | 1.2 Appropriate preparation and access to the aircraft structure is undertaken to allow for proper inspection in accordance with maintenance documentation |
| | 1.3 Aircraft structure is visually or physically checked for signs of deformation defects or damage in accordance with maintenance documentation and approved procedures 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) |
| | 1.4 Damage or defects are assessed against damage or wear limits specified by structural repair manual or other approved data to determine if repair or replacement is required |
| | 1.5 Maintenance documentation is completed and processed in accordance with standard enterprise procedures |
| 2. Maintain aircraft structure | 2.1 Minor repairs classified as elementary maintenance are performed in accordance with approved repair methods ensuring that aircraft standard practices are used and process requirements are carried out while observing all relevant WHS requirements, including the use of MSDS and items of 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 |

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| | 2.4 | Required maintenance documentation is completed and processed in accordance with standard enterprise procedures | |
| 3. | Remove components | 3.1 | Structure is supported and prepared in accordance with the applicable maintenance manual to ensure personnel safety and freedom from damage to aircraft or component during component removal |
| | | 3.2 | Component removal is carried out in accordance with the applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDS and items of PPE |
| | | 3.3 | Required maintenance documentation is completed and processed in accordance with standard enterprise procedures |
| | | 3.4 | Where applicable, removed components are tagged and prepared for transport in accordance with specified procedures |
| 4. | Install components | 4.1 | Structural and/or non-structural components to be installed are checked to confirm correct part numbers, serviceability and modification status |
| | | 4.2 | Component installation is carried out in accordance with the applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDS and items of PPE |
| | | 4.3 | Support/safety equipment is removed at an appropriate time to ensure personnel safety and freedom from structural damage |
| | | 4.4 | 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.

Inspection of aircraft structure and removable components of structure include:

- Non-ferrous and ferrous alloys and composite (FRP) materials used in aircraft construction
- Structural fastening and attachment hardware and/or devices
- Seals and sealants
- Glass and moulded plastics
- Preparation for application of non-destructive testing (NDT) techniques
- Doors, hinges and locking mechanisms for damage/misalignment
- Inspections applicable to each of safe life, damage tolerant and fail safe structure relevant to enterprise
- Ageing aircraft inspection programs
- Inspection after abnormal events

Damage or defects include:

- Impact damage
- Fatigue cracking
- Corrosion
- Delamination of composites and bonded structures

Minor repairs include:

- Performing minor repair tasks classified as elementary maintenance, including:
 - repair of non-structural fairings, cover plates and cowlings
 - stop drilling of cracks and bonding to acrylic or Perspex windscreens
 - minor repairs to fabric surfaces
 - restoration of preservative or protective materials

Removable components include:

- Those that are installed using bolts and/or screws. Where component removal and installation requires the removal and installation of rivets the applicable unit is MEA371 Perform major repairs and modifications to small aircraft structure

Components include:

- Removable components of wings, tail booms, pylons, empennage, skids, fairings and nacelles
- Removable components or sections of non-pressurised fuselages
- Non-pressurised fuselage entry, cargo, access doors and associated seals, including checking and adjustment of all doors and access panels and associated locking

	mechanisms
Specialist advice is obtained from:	• Non-pressurised fuselage windows and transparent panels • Floor panels • 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

Release 2. Equivalent to MEA369 Inspect 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 MEA369 Inspect and maintain structures and related components of non-pressurised small aircraft

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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
- demonstrating appropriate cleaning procedures to enable structure inspection
- demonstrating correct inspection procedures in accordance with aircraft and procedures manuals
- 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
- 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
- performing metal, composite and fabric repairs classified as elementary maintenance
- restoring aircraft structure sealing and surface finishes
- using relevant maintenance documentation and aircraft manuals to:
 - remove and install structural and non-structural components
 - remove and install aircraft interior fittings
 - remove and install doors, door seals, windows and transparent panels
 - checking and adjusting all doors and access panels, including locking mechanisms
- removing and installing emergency equipment.

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 minor repair of aircraft structure other than primary structure is essential. This may be demonstrated through application across a number of aircraft structures or aircraft types. Ability to interpret inspection and minor repair procedures and apply them in practice is critical.

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
- construction methods and materials used in:
 - fuselage sections
 - wing sections
 - engine nacelles and mounts
 - windows and window frames
 - doors, locks and access panels
- definition of structural terms, i.e. safe life, damage tolerant, failsafe, stress, strain, shear and cycles
- inspection requirements for metal and composite structure, including:
 - ageing aircraft inspection requirements
 - safe life structure
 - damage tolerant structure
 - fail safe structure
 - inspection following abnormal events
- potential causes of structural failure
- NDT methods and application of the various techniques
- construction methods of, and assessing common defects in, aircraft plastic transparencies
- basic constructional features of, and assessing common defects in, glass windscreens
- aircraft fabric coverings and methods for performance of minor repairs classified as elementary maintenance
- the various forms of structural corrosion, stating the causes and structural effects of corrosion on aircraft
- the terms associated with composite materials and types of composite materials
- non-structural component methods of attachment and faying surface treatment
- non-pressurised fuselage aircraft doors, related seals and window and transparent panel attachment methods and sealing
- aircraft interior fittings (trim, linings, seats and floor panels) construction and attachment methods
- the location and attachment or stowage methods for emergency equipment
- 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
- how to perform minor repairs to metal and composite structure that are classified as elementary maintenance

- 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:
 - inspection and/or testing of at least one (1) item from each of the following groups:
 - non-ferrous and ferrous alloys and composite (FRP) materials used in aircraft construction
 - structural fastening and attachment hardware and/or devices
 - seals and sealants
 - glass and moulded plastics
 - preparation for application of NDT techniques
 - doors, hinges and locking mechanisms for damage/misalignment
 - inspections applicable to each of safe life, damage tolerant and fail safe structure relevant to enterprise
 - ageing aircraft inspection programs
 - inspection after abnormal events
 - recognition of each type of damage:
 - impact damage
 - fatigue cracking
 - corrosion
 - delamination of composites and bonded structures
 - one (1) minor elementary maintenance repair task from each of the following groups:
 - repair of non-structural fairings, cover plates and cowlings
 - stop drilling of cracks and bonding to acrylic or Perspex windscreens
 - restoration of preservative or protective materials
 - one (1) removal and installation task from each of the following groups:
 - removable components of wings, tail booms, pylons, empennage, skids, fairings and nacelles
 - removable components or sections of non-pressurised fuselages

- non-pressurised fuselage entry, cargo, access doors and associated seals (including checking and adjustment of all doors and access panels and associated locking mechanisms)
- non-pressurised fuselage windows and transparent panels
- floor panels.
- 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 National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.
- 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 some of those required for units MEA304 Remove and install non-pressurised aircraft structural and non-structural components and MEA339 Inspect, repair and maintain aircraft structures. Refer to those units for details of credits that may be granted during assessment of those units.

Links

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