



Australian Government

MEA401 Inspect aircraft structures

Release: 2

MEA401 Inspect aircraft structures

Modification History

Release 2. Equivalent to MEA401 Inspect aircraft structures with amended prerequisite codes.

Application

This unit of competency requires application of hand skills and use of maintenance documentation and manuals to inspect aircraft structure and identify damage and deterioration during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

Applications include the structure of fixed and rotary wing aircraft.

The unit is part of the Aeroskills Structures Maintenance Certificate IV and of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathways.

The unit 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

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 and modification status, including defect reports, where relevant, are 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 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) |
| | 1.3 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 WHS requirements, including the use of MSDS and items of 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 |

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.

Preparation and access to structure includes:

- Preparation for non-destructive testing (NDT) (access to relevant structural zones and components)

Aircraft structure inspection includes:

- 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
- 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
- Visual inspection, physical checks, mensuration and alignment

Inspection techniques include:**Procedures and requirements include:**

- Industry standards specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 2. Equivalent to MEA401 Inspect aircraft structures

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 MEA401 Inspect aircraft structures

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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 use of PPE and MSDS
- using approved maintenance documentation and aircraft publications relating to aircraft structure
- identifying various aircraft metals and their basic properties
- identifying potential causes of structural failure
- demonstrating appropriate cleaning procedures to enable structure inspection
- demonstrating correct inspection procedures, in particular pressurised aircraft, in accordance with aircraft and procedures manuals
- performing aircraft mensuration and alignment checks
- identifying damage to aircraft metallic (ferrous and non-ferrous) structures and/or components by way of:
 - impact
 - fatigue
 - corrosion
- identifying the various forms of structural corrosion, stating the causes and structural effects of corrosion on aircraft
- identifying composite materials used in aircraft construction, associated safety precautions and hazards
- inspecting damage and assessing composite components/structures for:
 - impact damage
 - fatigue.

The underlying skills inherent in this unit should be transferable across a range of structural inspections associated with aircraft maintenance. It is essential that the procedures take into account all aircraft and personal safety precautions relating to aircraft structure.

Evidence is required of the ability to interpret and apply aircraft structural inspection requirements. This may be demonstrated through application across a range of structural components and materials. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical. The application of the procedures should also clearly indicate knowledge of structural flight loads.

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
- structural component attachment methods
- describing the construction methods used in:
 - fuselage sections
 - wing sections
 - engine nacelles and mounts
 - windows and window frames
 - doors, locks and access panels in pressurised and unpressurised aircraft
- defining 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
- procedures and methodology for performing aircraft mensuration and alignment checks
- describing NDT methods and application of the various techniques
- describing construction methods of, and assessing common defects in, aircraft plastic transparencies
- describing basic constructional features of, and assessing common defects in, glass windscreens
- defining the terms associated with composite materials
- WHS procedures
- relevant PPE
- how to obtain MSDS.

Assessment Conditions

- Competency should be assessed in the workplace or simulated workplace 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 on at least one (1) task from each of the following groups:
 - preparation for non-destructive testing (NDT) (access to relevant structural zones and components)

- inspection of:
 - 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
 - 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.
- 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>