



Australian Government

MEASTR0015 Fabricate advanced structural components for aircraft

Release: 1

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Modification History

Release 1. 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 MEA421 Fabricate advanced structural components for aircraft.

Application

This unit describes the skills and knowledge required to apply hand skills and use drawings, specifications and maintenance publications to fabricate advanced structural components involving complex and multiple curves and section shapes from aluminium alloys and steel alloys at various temper during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

Applications include components for fixed and rotary wing aircraft.

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

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

Elements and Performance Criteria

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

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1. Interpret specifications and organise materials	1.1 Determine materials requirements using specifications and drawings 1.2 Determine procedure for fabricating component or components to plan equipment use and ensure specifications will be met 1.3 Identify required materials in accordance with specifications 1.4 Organise required materials and equipment in accordance with standard enterprise procedures
2. Prepare material and tooling	2.1 Translate required dimensions to materials in accordance with specifications 2.2 Prepare cutting and forming equipment and adjust to ensure accuracy of fabrication 2.3 Cut materials according to specifications, ensuring wastage is minimised, and maintain identification of surplus material, while observing all relevant work health and safety (WHS) requirements, including the use of material safety data sheets (MSDSs) and items of personal protective equipment (PPE) 2.4 Prepare materials requiring special treatment for appropriate processes 2.5 Perform solution treatment on materials in accordance with approved procedures and specifications
3. Form material	3.1 Manufacture required templates, where required, by forming method 3.2 Design and manufacture press tools as required by selected forming method 3.3 Operate forming equipment to form material in accordance with drawings and specifications 3.4 Perform required hand forming of materials to meet specifications
4. Hand correct fabricated components	4.1 Check components for irregularities and determine correction requirements to meet specifications 4.2 Remove irregularities to meet required dimensions and specifications
5. Inspect components	5.1 Inspect fabricated components to confirm dimensional accuracy and specifications are met 5.2 Use required checking fixtures to ensure requirements are met 5.3 Prepare components requiring special or further treatment for the

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	appropriate processes 5.4 Tag or identify completed components in accordance with 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 specifications and drawings.
- Numeracy skills to interpret technical information including 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 MEA421 Fabricate advanced structural components for aircraft.

Links

Companion Volume implementation guides are found in VETNet – -

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

Assessment Requirements for MEASTR0015 Fabricate advanced structural components for aircraft

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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:

- fabricate advanced structural components for aircraft, using materials comprising various types of sheet metal used in aircraft manufacture, including aluminium alloys and structural steel alloys across a range of temper, during scheduled or unscheduled maintenance on structural fabrication tasks for at least one ferrous and one non-ferrous metal component, and:
 - correctly interpret drawings, including third angle projection, isometric, sectional formats and hand sketches
 - develop component flat pattern/s using basic drawing tools, geometric drawing processes, calculating and applying bend allowance/deduction/setback, and utilising:
 - parallel line
 - radial line
 - triangulation
 - use appropriate hand tools, machines (stretching, shrinking, bending, cutting, drilling, rolling, wheeling and folding), forming blocks, templates and presses to form or produce dished, domed, curved components, bent or angled (L, Z, U, hat) sections and lightening holes, flanges and joggles
 - assemble component parts using appropriate hand and machine tools and standard aircraft fasteners to industry standards.

During the above work the candidate must:

- identify various aircraft metals and their basic metallurgy properties by interpretation of markings, numbering systems or visual, chemical or mechanical means to inform materials selection
- handle and store aircraft metals to industry standards during and after cutting materials
- identify aircraft structural assembly fasteners by interpretation of markings, numbering systems, size, shape and colour while performing hand-forming tasks
- apply appropriate metal heat treatment processes while performing solution treatment
- apply appropriate metal surface treatments while preparing components for further or special treatment.

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Knowledge Evidence

There must be evidence the candidate has knowledge of:

- aircraft construction principles
- causes of structural fatigue and preventative measures
- structural corrosion and preventative measures
- aircraft structural drawings and repair scheme drawings
- 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
- chemical surface treatments
- electroplating
- paints and finishes
- flat pattern development and terminology
- design and manufacture of templates
- design and manufacture of press tools
- methods for folding complex and nested sections
- machinery used for stretching, shrinking, bending, cutting, drilling and rolling, use of forming blocks, templates and press tools to form components
- use of forming blocks, templates and press tools to form components
- work health and safety (WHS) precautions for fabrication of aircraft structural components
- how to access and apply relevant material safety data sheets (MSDSs)
- personal protective equipment (PPE) for fabrication of advanced structural components for aircraft.

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Assessment Conditions

The following conditions of assessment represent the requirements of the regulators Defence Aviation Safety Authority (DASA) and Civil Aviation Safety Authority (CASA) 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 fabricating advanced structural components for aircraft. 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 fabricating advanced structural components for aircraft
- tools and equipment specified by aircraft maintenance manuals
- general-purpose tools and test equipment found in most routine situations.

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.

Links

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