



Australian Government

MEA425A Perform bolted composite skin repairs

Release 1

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Modification History

Release 1 - New unit of competency

Unit Descriptor

This unit of competency is part of the Aeroskills Structures Maintenance Certificate IV training pathway, and of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathways. It covers the competencies required for performing bolted repairs to aircraft composite skin. 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).

Application of the Unit

This unit requires application of hand skills and the use of maintenance publications, applicable materials, tools and methods to repair aircraft composite skin surfaces using bolted repair techniques.

Applications include composite skin surfaces from fixed and rotary wing aircraft and aircraft components either on-aircraft or in the workshop.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEA401C Inspect aircraft structures

OR

MEA339C Inspect, repair and maintain aircraft structures

OR

MEA363B Inspect, repair and maintain structures and related components of non-pressurised small aircraft

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

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| 1 | Plan repair | <ul style="list-style-type: none"> 1.1 Extent of damage is correctly assessed to assist in determining repair procedure 1.2 Structure is supported and prepared in accordance with the applicable maintenance manual to ensure personnel safety and freedom from damage 1.3 Appropriate bolted repair scheme is identified in accordance with structural repair manual and/or approved data 1.4 Specialist advice is obtained in establishing an approved repair scheme where a standard repair scheme cannot be identified or damage criteria are out of limits 1.5 All materials and equipment required are organised |
| 2 | Repair components using bolted patches | <ul style="list-style-type: none"> 2.1 Damage is cleaned up ready for repair while observing work health and safety (WHS) requirements 2.2 Patch material is obtained and patches are fabricated in accordance with the applicable repair scheme 2.3 Repair plug material is obtained and cut to size 2.4 Patches are fitted and secured with fasteners in accordance with the repair scheme 2.5 Applicable sealant is applied in accordance with the repair scheme 2.6 Surface finish is restored as required |

- 2.7 Required maintenance documentation is completed and processed in accordance with standard enterprise procedures
- 2.8 Completed assemblies are tagged, sealed or packaged as required

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- applying relevant WHS procedures, including the use of material safety data sheets (MSDS) and applicable items of personal protective equipment (PPE)
- using approved maintenance documentation and aircraft publications relating to bolted repairs to composite aircraft skin
- identifying composite component applications in aircraft structures
- identifying various aircraft composite materials and their basic properties by interpretation of markings and visual means
- identifying the range of bolted repair patch and repair plug materials
- identifying applicable fasteners
- identifying applicable sealants
- assessing composite component damage using visual and tap test methods
- performing composite skin bolted repairs:
 - external patch repair
 - internal patch repair
 - external/internal patch repair
- correctly interpreting and/or producing repair scheme/modification drawings/sketches
- using appropriate hand tools and machines to perform bolted repairs, including drilling/cutting equipment and material fasteners

Required knowledge

Required knowledge includes:

- aircraft construction principles and the causes of structural damage, including metal fatigue and corrosion
- structural fatigue preventative measures
- composite terminology and materials used
- bolted repair methods
- types of patch material
- fastener types, specifications and identification
- plug materials
- use of scrim to prevent galvanic corrosion
- sealants used in bolted patch repairs and their application and handling
- paints and finishes for composite structure
- WHS precautions associated with repair of aircraft structure
- MSDS
- relevant PPE

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to apply hand skills and use maintenance publications, applicable materials, tools and methods to repair aircraft composite skin using bolted repairs while applying all relevant safety procedures.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The underlying skills inherent in this unit should be transferable across the range of composite skin materials and patch materials and fasteners. Correct checking and wearing of PPE is critical.</p> <p>Evidence of knowledge about bolted repair techniques and the use of the standard repair manual in a range of different repair situations will be necessary to supplement evidence of ability to plan and undertake repair.</p> <p>A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of the unit of competency are being achieved under routine supervision on the application of repair patches from each of Groups 1 to 3 in the Range Statement. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide.</p>
<p>Context of and specific resources for assessment</p>	<p>Competency should be assessed in the workplace or simulated workplace. It is also expected that general purpose tools and test equipment found in most routine situations would be used where appropriate.</p>
<p>Method of assessment</p>	
<p>Guidance information for assessment</p>	

Range Statement

<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p>Note</p>	<p>Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide.</p>
<p>Applicable materials and methods</p>	<p>Types of bolted repair include:</p> <ol style="list-style-type: none"> 1. External 2. Internal 3. External/internal
<p>Application</p>	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> • scheduled or unscheduled maintenance activities • individual or team-related activities
<p>Procedures and requirements</p>	<p>Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise</p>

Unit Sector(s)

Aviation maintenance

Custom Content Section

Not applicable.