



**Australian Government**

# **MEA509 Manufacture, repair and alter aircraft related fabric components**

**Release: 2**

# MEA509 Manufacture, repair and alter aircraft related fabric components

## Modification History

Release 2. Equivalent to MEA509 Manufacture, repair and alter aircraft related fabric components with amended prerequisite codes.

## Application

This unit of competency requires application of skills and knowledge relating to the manufacture, repair and alteration of aircraft and support equipment fabric components. Manufacture and alteration may be to existing designs or may also involve design. Repair may involve sewing and/or the use of adhesives.

The unit applies to a range of aircraft environmental protection sets, aircraft life support equipment components, aircraft soft furnishings and associated trimming, aircrew personal fit and associated life support equipment, and to ground support equipment covers.

The unit is part of the Aeroskills Life Support and Furnishing Certificate III and IV training pathways. It 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                   |
| MEA118    | Conduct self in the aviation maintenance environment                                         |
| 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 |
| MEA511    | Operate and maintain sewing and overlocking machines                                         |
| MSFSF2002 | Machine sew materials                                                                        |

## Competency Field

Aircraft life support

## Unit Sector

## Elements and Performance Criteria

| Elements describe the essential outcomes. |                                | Performance criteria describe the performance needed to demonstrate achievement of the element. |                                                                                                                                                                                                                                                                                 |
|-------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.                                        | Manufacture a fabric component | 1.1                                                                                             | Technical instructions are identified and interpreted to ensure compliance in accordance with standard procedures                                                                                                                                                               |
|                                           |                                | 1.2                                                                                             | Detailed working plan is produced in accordance with standard procedures                                                                                                                                                                                                        |
|                                           |                                | 1.3                                                                                             | Fabric component is assembled and fittings are attached in accordance with standard 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                                                                                             | Aircraft related fabric components are presented for inspection by supervisor in accordance with standard enterprise procedures                                                                                                                                                 |
|                                           |                                | 1.5                                                                                             | Relevant documentation is completed and processed in accordance with standard enterprise procedures                                                                                                                                                                             |
| 2.                                        | Repair a fabric component      | 2.1                                                                                             | Technical instructions are identified and interpreted to ensure faults are corrected in accordance with standard procedures                                                                                                                                                     |
|                                           |                                | 2.2                                                                                             | Fabric component is repaired in accordance with standard procedures while observing all relevant WHS requirements, including the use of MSDS and items of PPE                                                                                                                   |
|                                           |                                | 2.3                                                                                             | Repaired components are presented for inspection by supervisor in accordance with standard enterprise procedures                                                                                                                                                                |
|                                           |                                | 2.4                                                                                             | Relevant documentation is completed in accordance with standard enterprise procedures                                                                                                                                                                                           |

- |    |                                                        |     |                                                                                                                          |
|----|--------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------|
| 3. | Alter a fabric component to meet customer requirements | 3.1 | Customer is consulted to establish the requirements to alter the fabric component and to ensure defined outcomes are met |
|    |                                                        | 3.2 | Identified alterations beyond own authority to alter are reported to supervisor                                          |
|    |                                                        | 3.3 | A detailed working plan is produced, where necessary, in accordance with standard procedures                             |
|    |                                                        | 3.4 | Altered fabric components are presented for inspection by supervisor in accordance with standard enterprise procedures   |
|    |                                                        | 3.5 | Relevant documentation is completed 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.

### Procedures and requirements include:

- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

### Fabric components include:

- Aircraft environmental protection sets and warning devices
- Aircraft life support equipment components
- Aircraft soft furnishings and associated trimming
- Aircrew personal fit and associated life support equipment
- Ground support equipment covers

### Technical instructions include:

- Aircraft operational requirements
- Job orders
- Manufacturers' specifications
- Maintenance manuals

**Standard procedures are found in any or all of:**

- Modification instructions
- Technical drawings
- Commonwealth/state/territory WHS legislation, regulations and codes
- Australian Standards
- Equipment manufacturers' specifications and procedures
- Industry practices
- Safety manuals
- Maintenance schedules
- Work instructions
- Maintenance organisation manuals
- MSDS
- Defence regulations and instructions
- Civil Aviation Safety Regulations (CASRs) and advisory material
- Standing instructions

**Detailed working plan includes:**

- Cutting plan
- Expected time of completion
- Manpower requirements
- Method and sequence of assembly
- Resource requirements (material, fittings, tools and ground support equipment)
- Technical sketch (working drawing)

**Assembly of fabric components and attachment of fittings includes:**

- Adhering
- Hand sewing
- Machine sewing
- Press fitting
- Stapling

**Faults include:**

- Broken stitching
- Broken zippers
- Contamination
- Corrosion of metal parts
- Damaged fittings
- Excessive wear
- Incorrect manufacture
- Tears in fabric
- Ultraviolet (UV) degradation

**Customers include:**

- Aircraft configuration authorities
- Aircrew
- Engineering maintenance managers
- Supervisors

- Defined outcomes include:**
- Effect on fit of fabric components
  - Effect on performance of altered fabric components
  - Availability of resources
  - Expected time of completion

## Unit Mapping Information

Release 2. Equivalent to MEA509 Manufacture, repair and alter aircraft related fabric components

## 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 MEA509 Manufacture, repair and alter aircraft related fabric components

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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 WHS practices relating to fabric component manufacture, repair and alteration, including the selection and correct use of PPE, where applicable
- handling, storing and organising transport of equipment
- using MSDS
- using maintenance publications, drawings and documentation relating to fabric component manufacture, repair and alterations
- applying basic sewing techniques associated with the manufacture, repair and alteration of aircraft fabric components
- using hand sewing techniques
- using basic drawing tools
- calculating dimension and allowable dimension variations
- completing measurements and estimating fabric requirements and other material requirements
- using pre-checking and inspection techniques to anticipate cutting problems and to avoid reworking and wastage
- using relevant hand and power tools
- using the limited workplace technology related to cutting, including tools, equipment, calculators and measuring devices
- cleaning and maintenance of equipment and tools.

The underlying skills inherent in this unit should be transferable across a range of aircraft life support equipment maintenance activities. It is essential that fabric component manufacture, repair and alteration procedures and safety precautions are fully observed, understood and complied with. Ability to interpret fabric component requirements and apply them in practice is critical.

This is to be demonstrated through demonstration of the ability to perform appropriate manufacturing, repair and alteration tasks that are within the bounds of the individual's authority.

## 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:

- relevant regulations, standards, enterprise procedures and maintenance publications
- WHS procedures relating to fabric component manufacture, repair and alteration, including the selection and use of PPE
- how to obtain MSDS
- basic sewing techniques using *AS 2860-1986 Textiles – stitch types – classification and terminology*
- construction principles of fabric components
- cutting equipment and techniques
- design features of finished items
- fabric types, common faults and inspection procedures
- impact of cutting on fabrics
- geometric drawing processes and techniques
- reading and interpreting specifications
- types of corrosion and contamination that may affect aircraft fabric components.

## Assessment Conditions

- Competency should be assessed in the workplace or simulated workplace using materials, tools and equipment specified in the maintenance manuals and applicable procedures. It is also expected that general and special-purpose tools and ground support equipment would be used where appropriate.
- The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards.
- 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 the following tasks:
  - recognising the limits of own authority
  - correctly manufacture three fabric components from technical instructions using machine sewing and at least one other assembly method (hand sew, press fit, adhere or staple)
  - recognising at least three faults and identifying limits of repair for the fabric components
  - altering a fabric component to meet customer requirements.
- 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

Companion Volume implementation guides are found in VETNet -

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