



Australian Government

MEA109 Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

Release: 1

MEA109 Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

Modification History

Release 1 - New unit of competency

Application

This unit of competency is applicable to all Aeroskills maintenance training pathways. It requires application of basic hand skills and standard trade practices in the maintenance of aircraft and aircraft components.

The competency applies to the selection and use of hand and power tools and equipment associated with scheduled and unscheduled on-aircraft or workshop-related activities in the aircraft maintenance environment that involve:

- laying out and fabricating simple items from common aircraft materials
- assembling items using a representative range of common types of aircraft attachment hardware for which relevant fits and clearances, appropriate safety locking devices and fasteners, including lockwire, are correctly selected and applied
- assembling/connecting a range of common aircraft connectors and plumbing, applying safety locking devices, where applicable
- assembling/connecting aircraft control cables and applying safety locking devices, where applicable
- the use of lubrication equipment and lubricants.

Work may be performed individually or as part of a team and in accordance with industry standard procedures specified by manufacturers, regulatory authorities or the enterprise.

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).

Where a 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

MEA105	Apply quality standards applicable to aviation maintenance processes
MEA108	Complete aviation maintenance industry documentation

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.
1. Assess task requirements	1.1 Available information from relevant documentation and/or other sources, including communication with other personnel, is interpreted and assessed to determine the task and tooling requirements
2. Select tools and/or equipment	2.1 Hand and/or power tools or equipment, including lubrication equipment and lubricants, are selected for appropriate application to the required task 2.2 All tools and/or equipment to be used are checked for condition or calibration, where necessary 2.3 Unsafe or faulty tools or equipment are identified and marked for repair according to enterprise procedures
3. Use tools and/or equipment	3.1 Tools and/or equipment are used according to standard practices to ensure the correct outcome is produced 3.2 Tools and/or equipment use is carried out without damage to components or tooling in a safe and efficient manner 3.3 Operational maintenance of tools or equipment is undertaken according to standard workshop procedures
4. Store tools and/ or equipment	4.1 Tools and/or equipment are stored safely and securely in accordance with enterprise procedures
5. Apply standard trade practices	5.1 Simple items are manufactured using basic engineering hand skills 5.2 Common types of aircraft attachment hardware are correctly selected and used 5.3 Common types of safety locking devices and fasteners are correctly selected and used 5.4 Aircraft components, devices and hardware are

lockwired in the correct manner, using the appropriate wire gauge

- 5.5 Common types of aircraft connectors and plumbing are accurately assembled or connected

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.

The use of tools and equipment includes:

- The related manipulative skills required to perform aircraft maintenance in areas where access is extremely limited

Unit Mapping Information

Release 1 – equivalent to MEA109B Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

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 MEA109 Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

Modification History

Release 1 - New unit of competency

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:

- the correct identification, inspection of, application, use and storage of general and purpose specific hand tools (i.e. spanners, screwdrivers, pliers, hammers, cutting devices, files, punches, drills and marking out tools) that may be found in an aircraft engineering workshop or hangar
- the correct identification, inspection of (including calibration), application, use and storage of precision measuring tools (i.e. micrometers, vernier instruments, feeler gauges, go/no-go gauges) that may be found in an aircraft engineering workshop or hangar. Reading instrument scales must be clearly demonstrated during application of instruments to ensure compliance with specifications
- the correct identification, inspection of, application, operation and storage/servicing of portable and fixed power and machine tools (i.e. drills, presses, grinders, shears, pan breaks) that may be found in an aircraft engineering workshop or hangar
- identification, inspection and use of lubrication equipment
- determination of correct lubricants for specified applications
- identification of common ferrous and non-ferrous aircraft materials
- identification of common aircraft composite and non-metallic materials (other than wood)
- identification of aircraft hardware by markings, part numbers, size, shape and material
- the installation of aircraft hardware using standard practices/techniques to ensure safe security and includes:
 - minimum thread engagement
 - split pinning
 - lockwiring
 - application of locking compounds
 - locking tabs, spring washers
 - lock nuts
- the installation of aircraft hardware using tightening, torquing and tensioning techniques. Calculating setting, reading scales and setting up of torque wrench and/or tensioning devices must be clearly demonstrated before application of wrench or device
- identification of various types of aircraft rigid and flexible plumbing and their connectors
- identification of aircraft control cables and related cable system hardware

- manufacture of simple items using basic hand skills.
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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:

- types of standard aircraft hardware and methods of identification, including bolts, nuts, washers, pins (cotter, tapered) and fasteners (rivets and camlocs)
- materials from which hardware is manufactured and its applications, including plain, corrosion resistant and temperature/heat resistant
- types of safety locking devices and their application
- common ferrous and non-ferrous aircraft materials, heat treatment and testing
- characteristics and properties of common composite and non-metallic materials other than wood
- types of aircraft cable, turnbuckles, end fittings, tensiometers, pulleys and cable system components, and aircraft flexible control systems
- types and characteristics of lubricants
- types and uses of lubrication equipment
- fits and clearances
- laying out of simple items for manufacture using basic hand skills
- hand and power tool storage and maintenance requirements
- tool calibration requirements
- WHS requirements relevant to the use of hand and power tools.

Assessment Conditions

- Competency should be assessed in the work environment, or by use of simulated activities, using tools and equipment specified by aircraft manuals as well as general purpose tools and test equipment found in most routine situations.
- This unit must be linked in its assessment and application to those units that apply to actual maintenance of aircraft. It is essential that all WHS requirements are met and understood.
- Evidence of knowledge about how tools and equipment are selected, used and maintained is essential. The ability to manipulate tools and equipment correctly in the performance of tasks is necessary to demonstrate transferability of hand skills across a variety of applications.
- 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:
 - laying out and fabricating simple items from common aircraft materials

- assembling items using a representative range of common types of aircraft attachment hardware for which relevant fits and clearances, appropriate safety locking devices and fasteners, including lockwire, and applicable lubricants are correctly selected and applied
- assembling/connecting a range of common aircraft connectors and plumbing, applying safety locking devices, where applicable
- assembling/connecting aircraft control cables and applying safety locking devices, where applicable.
- 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 Implementation Guide).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).
- 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.

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