



Australian Government

MEAMEC0040 Maintain airframe systems of basic light fixed wing 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 MEA351 Maintain airframe systems of basic light fixed wing aircraft.

Application

This unit describes the skills and knowledge required to apply hand skills and use system/component knowledge and applicable maintenance publications and test equipment to inspect, test and troubleshoot, and replace components of airframe systems of fixed wing aircraft that have fixed undercarriage and a normally aspirated engine driving a fixed pitch propeller, or a small gas turbine engine. This may be done during the performance of scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

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. Inspect basic light fixed wing airframe systems	1.1 Identify specific inspection requirements using relevant maintenance documentation and modification status, including system defect reports, when required 1.2 Check isolation tags and configure aircraft for safe system inspection and operation in accordance with maintenance manual 1.3 Visually or physically check airframe system components for external signs of defects in accordance with applicable maintenance manual 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) 1.4 Identify and report defects in accordance with standard enterprise procedures
2. Test/adjust basic light fixed wing airframe systems and components	2.1 Prepare aircraft and system in accordance with applicable maintenance manual for the application of power or system operation 2.2 Functionally test airframe system in accordance with maintenance manual for evidence of serviceability or malfunction 2.3 Perform system adjustment or rigging in accordance with maintenance manual
3. Troubleshoot basic light fixed wing airframe systems	3.1 Use available information from maintenance documentation, inspection and test results, when required, to assist in fault determination 3.2 Use maintenance manual fault-diagnosis guides and logic processes to ensure efficient and accurate troubleshooting to line replacement level 3.3 Obtain required specialist advice to assist with the troubleshooting process 3.4 Locate airframe system faults and clearly identify and record the causes of the faults in maintenance documentation, when required, in accordance with standard enterprise procedures 3.5 Determine rectification requirements
4. Remove and install basic light fixed wing airframe system components	4.1 Render system safe in accordance with the applicable maintenance manual and fit isolation tags, when required, to ensure personnel safety 4.2 Carry out airframe system component removal in accordance with the applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDSs and items of PPE 4.3 Complete and process required maintenance documentation 4.4 Tag, seal and pack removed components in accordance with

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	specified procedures 4.5 Check components to be installed to confirm correct part numbers, serviceability and modification status 4.6 Check mass balance of control surfaces to be installed in accordance with the applicable maintenance manual, when required 4.7 Carry out installation in accordance with the applicable maintenance manual 4.8 Complete required maintenance documentation and process in accordance with standard 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 maintenance documentation, procedures and manufacturer's instructions.
- Writing skills to complete maintenance documentation.
- Numeracy skills to interpret and communicate data and technical information.

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 MEA351 Maintain airframe systems of basic light fixed wing aircraft.

Links

Companion Volume implementation guides are found in VETNet –

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

Assessment Requirements for MEAMEC0040 Maintain airframe systems of basic light fixed wing 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, demonstrated the ability to:

- maintain at least one of each system:
 - flight control systems
 - fixed undercarriage shock absorbers
 - master or slave cylinder brake systems
 - fuel systems
 - cabin heating systems
- on at least one component from each of the following groups:
 - ailerons, elevators, rudders, trim tabs, flaps and slats
 - flight control wheels or sticks, cables, pulleys, guides, fairleads, bellcranks, rods, torque tubes, chains, sprockets, trim wheels or handles and rudder pedals or bars
 - fixed undercarriage hydraulic and rubber shock absorbers
 - wheels and brake units
 - brake master cylinders and rigid or flexible plumbing
 - rigid or flexible fuel tanks, selector or shutoff valves and rigid or flexible plumbing
 - cabin heater ducting and control valves.
- apply procedures, cleanliness requirements and safety precautions at all times and as relevant to the systems being maintained
- use hand skills, tools and test equipment to test, adjust and troubleshoot airframe systems and components, including airframe system component removal and installation
- remove, install and rig flight controls
- check flight control mass balance
- perform system functional tests and checks to isolate system faults and assess post-maintenance serviceability.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- work health and safety (WHS) precautions for airframe system maintenance, including the use of personal protective equipment (PPE) and material safety data sheets (MSDSs)
- standard trade practices for tool and test or rigging equipment usage and installation or securing of system components
- flight control system layout and operation
- theory of flight:
 - airflow
 - conditions of flight
 - lift and forces
 - drag
 - wings, tailplane and vertical stabiliser
 - lift augmentation (flaps, slats and slots)
 - aircraft control surfaces and their function (elevator, ailerons, rudder, elevons and trim tabs)
 - flight control balancing and flutter
 - stability and control and flight control rigging
- system layout and operation:
 - cockpit controls
 - cables and cable tensioning
 - pulleys and fairleads
 - bellcranks
 - levers
 - control surface horns
 - screwjacks
 - push or pull rods
- mechanical flight control system maintenance procedures and troubleshooting
- fixed undercarriage and shock absorber systems:
 - undercarriage configurations and types (tail wheel, tricycle and bicycle)
 - relative advantages of undercarriage configurations
 - steering systems
 - types of shock absorber (springs, leaf, coil, spring tube, rubber disc, bungee and oleo)
 - wheels and tyres
 - axles and wheel bearings
 - wheel spats
 - fixed undercarriage maintenance procedures and troubleshooting
- small aircraft brake systems:
 - types of brake system (mechanical and hydraulic)
 - master and slave cylinder hydraulic brake system operation
 - hydraulic fluids and seals
 - rigid and flexible plumbing

- brake pads and shoes
- brake discs and drums or linings
- brake system maintenance procedures and troubleshooting
- cabin heater system layout and operation:
 - heat source (muff heaters)
 - ducting for heating and demisting
 - valves and linkages
 - fan
 - cabin heating system maintenance procedures and troubleshooting
- fuel system layout and operation:
 - fuel tank types and location
 - selector valves and linkages
 - drain valves
 - rigid and flexible plumbing
 - fuel filters
 - boost pumps
- airframe system maintenance documentation including servicing schedules and maintenance manuals
- regulatory requirements and standard procedures relevant to airframe system maintenance.

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 maintaining airframe systems of basic light fixed wing 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 maintaining airframe systems of basic light fixed wing aircraft
 - tools and equipment specified in the maintenance documentation
 - general- and special-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.

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