



Australian Government

MEAAVI0044 Maintain basic light aircraft electrical systems and components

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 MEA274 Maintain basic light aircraft electrical systems and components.

Application

This unit describes the skills and knowledge required to apply hand skills and use maintenance documentation or publications to maintain basic aircraft electrical systems and components involving inspection, limited testing and troubleshooting, and component removal and installation during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

Applications include fixed wing aircraft with fixed undercarriage and basic rotary wing aircraft with skids or floats and no powered flight controls powered by either a normally aspirated piston engine or small gas turbine.

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

MEA246 Fabricate and/or repair aircraft electrical hardware or parts

Competency Field

Aviation maintenance

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Inspect basic aircraft electrical systems and components	1.1 Identify specific inspection requirements using relevant maintenance documentation and modification status, including relevant system defect reports 1.2 Check isolation tags and configure aircraft for safe system inspection

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	and operation in accordance with maintenance manual 1.3 Visually or physically check direct current (DC) electrical system for external signs of defects in accordance with maintenance manual while observing all relevant work health and safety (WHS) requirements 1.4 Identify and report on defects in accordance with standard enterprise procedures
2. Test or adjust basic aircraft electrical systems	2.1 Prepare aircraft and system for application of power or system operation in accordance with maintenance manual 2.2 Perform functional testing of electrical system for evidence of serviceability or malfunction in accordance with maintenance manual 2.3 Perform required calibration or adjustments to system in accordance with maintenance manual
3. Troubleshoot basic aircraft electrical systems	3.1 Use available information from maintenance documentation and inspection and test results to assist in fault determination of identified issues 3.2 Troubleshoot issues to line replacement level using maintenance manual fault diagnosis guides and logic processes 3.3 Obtain required specialist or supervisory advice to assist with troubleshooting process 3.4 Locate system faults and identify and record causes of faults in required maintenance documentation, in accordance with standard enterprise procedures 3.5 Determine requirements for rectification of faults
4. Remove and install basic aircraft electrical system components	4.1 Render system safe and prepare it in accordance with maintenance manual, fitting required isolation tags, to ensure personnel safety 4.2 Remove electrical components in accordance with maintenance manual while observing all relevant WHS requirements 4.3 Complete and process required maintenance documentation relating to removal in accordance with standard enterprise procedures 4.4 Tag and pack removed components in accordance with standard enterprise procedures 4.5 Confirm correct part numbers, modification status, serviceability and shelf life of electrical components to be installed against maintenance manual 4.6 Perform physical installation of electrical components in accordance

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	with maintenance manual, and ensure appropriate adjustment/alignment with mechanical interface is carried out 4.7 Reinstall system to operational condition and prepare for required testing in accordance with maintenance manual 4.8 Complete and process required maintenance documentation relating to installation 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 manuals, inspection procedures and specifications (allowable limits).
- Writing skills to record and report on defects and faults and their causes
- Numeracy skills to interpret and communicate technical information and take and interpret electrical measurements.

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 MEA274 Maintain basic light aircraft electrical systems and 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 MEAAVI0044 Maintain basic light aircraft electrical systems and components

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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:

- maintain basic light aircraft electrical systems and components during scheduled or unscheduled maintenance activity to meet requirements on electrical looms, cables and connection hardware, and on each of the following systems and on at least one major component/line replaceable unit (LRU) in each case:
 - direct current (DC) power generation, regulation and distribution systems
 - piston engine and gas turbine engine ignition and starting systems (gas turbine may be omitted where not applicable to the enterprise)
 - DC electrical systems, such as flaps, including related motors and actuators
 - aircraft lighting
 - aircraft main battery (competency may be demonstrated through the performance of a battery check).
- perform component removal and installation on at least one component from each of the following:
 - DC generators, and alternator or rectifier generators, and components of related single generator regulation and distribution systems
 - motors
 - actuators
 - piston engine and gas turbine engine ignition and starting system components (gas turbine may be omitted where not applicable to the enterprise)
 - aircraft batteries
 - aircraft lighting components such as bulbs, lenses, switches and rheostats
- correctly connect DC generators, alternator or rectifier generators and starter/generators during the above maintenance activities
- recognise system and component defects or external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling or harnesses) and security in each of:
 - DC power generation systems including regulation, distribution and control
 - battery installations
 - piston engine ignition and starting systems

- gas turbine engine ignition and starting systems (where applicable to the enterprise)
- internal/external lighting systems, including controls
- motors and actuators in basic DC electrical systems
- perform functional testing by applying logic processes, taking and interpreting electrical measurements, using test equipment and appropriate wiring diagrams and manuals to isolate malfunctions faults in the listed systems and assess post-maintenance serviceability
- apply testing procedures, cleanliness requirements and safety precautions at all times, and as relevant to the system/s being maintained.

Knowledge Evidence

- component attachment methods
- connection of hardware and plugs
- DC electrical principles, including:
 - properties of permanent magnets
 - precautions for the care and storage of permanent magnets
 - properties of electromagnets
 - primary and secondary cells
 - aircraft battery types, construction, care and safety
 - resistor characteristics
 - fuses and circuit breakers
 - fundamental DC circuits
 - inductive circuits
 - capacitive circuits
 - basic fault-finding principles
- general construction, operating characteristics and applications for aircraft, including:
 - DC generators
 - alternator/rectifier generators
 - DC motors including starter motors
 - starter/generators
 - DC actuators (linear and rotary)
 - gas turbine high energy ignition system components and related safety precautions
 - lighting systems
- how to locate and identify components of:
 - DC power generation, regulation, distribution and control systems and components, including:
 - generators and starter/generators
 - regulators
 - bus bars
 - circuit breakers and fuses
 - wiring

- piston engine ignition and starting systems and components, including
 - magnetos or coils
 - starter motors
 - ignition switches/start switches
 - ignition harnesses
 - low tension wiring
 - spark plugs
 - auxiliary starting devices
- gas turbine engine ignition and starting systems (where applicable to the enterprise), including:
 - starter motors and starter/generators
 - high energy ignition units
 - control units
 - switches
- batteries and associated mounting equipment, including related anti-vibration aids
- motors and actuators in basic DC electrical systems
- the basic layout (block diagram level), function and operation of the systems listed above
- electrical system maintenance requirements and troubleshooting procedures
- work health and safety (WHS) practices for basic light aircraft electrical systems and components, including those relating to gas turbine engine high energy ignition units
- maintenance manuals for basic light aircraft electrical systems and components
- relevant regulatory requirements and standard procedures.
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Assessment Conditions

The following conditions of assessment represent the requirements of the regulators (DASA and 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 basic light aircraft electrical system components. 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 basic light aircraft electrical system components
 - tools and equipment specified in maintenance documentation
 - general-purpose tools and test equipment found in most routine situations and required for maintaining basic light aircraft systems and components.

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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