



Australian Government

MEA202 Remove and install basic aircraft electrical system components

Release: 1

MEA202 Remove and install basic aircraft electrical system components

Modification History

Release 1 - New unit of competency

Application

This unit of competency requires application of hand skills and the use of maintenance documentation/publications in the removal and installation of aircraft direct current (DC) electrical system components of fixed and rotary wing aircraft that have only DC electrical systems during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit is part of the Avionic Certificate IV (Aircraft Maintenance Stream) training pathway.

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

MEA201 Remove and install miscellaneous aircraft electrical hardware/components

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.

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| 1. Remove DC aircraft electrical system components | 1.1 System is rendered safe and prepared in accordance with the applicable maintenance manual and isolation tags are fitted, where necessary, to ensure personnel safety |
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| | 1.2 | Electrical component removal is carried out in accordance with the applicable maintenance manual while observing all relevant work health and safety (WHS) requirements |
| | 1.3 | Required maintenance documentation is completed and processed in accordance with standard enterprise procedures |
| | 1.4 | Removed components are tagged and packaged in accordance with specified procedures |
| 2. | Install DC aircraft electrical system components | |
| | 2.1 | Electrical components to be installed are checked to confirm correct part numbers, modification status, serviceability and shelf life |
| | 2.2 | Physical installation of electrical components is performed in accordance with the applicable maintenance manual, ensuring appropriate adjustment/alignment with mechanical interface is carried out |
| | 2.3 | System is reinstated to correct operational condition in preparation for testing, as necessary |
| | 2.4 | Required maintenance documentation is completed and processed 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.

Electrical systems and components include:

- DC generators, and alternator/rectifier generators, and components of related single generator regulation and distribution systems
- Motors
- Actuators

Procedures and requirements include:

- Piston engine ignition and starting system components
- Aircraft batteries
- Specific components of DC electrical systems, such as flaps and landing gear
- Aircraft lighting
- Gas turbine engine igniter and starting systems
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 1 – equivalent to MEA202C Remove and install basic aircraft electrical system 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 MEA202 Remove and install basic aircraft electrical system components

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:

- identifying/locating:
 - DC power generation, regulation, distribution and control systems and components, i.e. regulators and bus bars
 - piston engine ignition systems and components, i.e. coils, magnetos, auxiliary starting devices (impulse couplings and inductors/vibrators)
 - gas turbine engine igniter and starting system components (where applicable to enterprise)
 - batteries (lead acid and nickel cadmium) and associated mounting equipment, including related anti-vibration aids
 - motors and actuators in basic DC electrical systems
 - specific components of DC electrical systems, such as flaps and landing gear
- correctly connecting DC generators and alternator/rectifier generators
- applying relevant WHS practices.

It is essential that cleanliness requirements and safety precautions applicable to the system being maintained are fully observed, understood and complied with, as well as work practices associated with electrostatic sensitive devices.

Evidence of transferability of skills and knowledge related to removal and installation is essential. This is to be demonstrated by application across a range of aircraft major electrical system components encompassing electrical with mechanical interface, installations which require alignment and/or adjustment (mechanical or electrical).

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:

- component attachment methods
- connection of hardware and plugs
- relevant WHS practices
- the use of approved maintenance documentation and aircraft publications relating to DC electrical systems
- properties of permanent magnets

- precautions for the care and storage of permanent magnets
- general construction, operating characteristics and applications for:
 - aircraft DC generators
 - alternator/rectifier DC generators
 - DC starter/generators
 - DC motors, including starter motors
 - DC rotary and linear actuators
 - batteries
- how to locate and identify components of:
 - DC power regulation and distribution systems
 - piston engine ignition and starting systems
 - gas turbine engine igniter systems, including specific WHS precautions
 - gas turbine engine starting systems
 - DC electrical systems, such as flaps and landing gear retraction
 - lighting systems
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

Assessment Conditions

- Competency should be assessed in the workplace or simulated workplace using tools and equipment specified in maintenance manuals. It is also expected that general-purpose tools, test and ground support equipment found in most routine maintenance situations would be used where appropriate.
- An understanding of the attachment methods, connection of hardware, and the need for adjustment or rigging and system operation as they relate to the work must be demonstrated before undertaking any action.
- 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 the performance criteria of the unit of competency are being achieved under routine supervision on at least one (1) component from each of:
 - DC generators, and alternator/rectifier generators, and components of related single generator regulation and distribution systems
 - motors
 - actuators
 - piston engine ignition and starting system components
 - aircraft batteries
 - specific components of DC electrical systems, such as flaps, landing gear
 - aircraft lighting

- gas turbine engine igniter and starting systems (may be omitted when not applicable to the enterprise).
- 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).
- 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
- Individuals being assessed who have already attained MEA274 Maintain basic light aircraft electrical systems and components will have satisfied the requirements of this unit with regard to common range of conditions variables. The Log of Industrial Experience and Achievement records relating to MEA274 Maintain basic light aircraft electrical systems and components may be accepted as also meeting the evidence requirements for this unit in the applicable common areas.

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