



Australian Government

MEA389 Repair and/or overhaul propellers

Release: 2

MEA389 Repair and/or overhaul propellers

Modification History

Release 2. Equivalent to MEA389 Repair and/or overhaul propellers with amended prerequisite codes.

Application

This unit of competency requires application of hand skills, theory knowledge and maintenance publication procedures to repair and overhaul aircraft propellers and components during the performance of scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

Applications include piston and turbine engine propellers and components, excluding propeller blades that are made from materials other than metal.

The unit is part of the Mechanical Certificate IV (Component Workshop Maintenance Stream) training pathway. 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
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

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. Determine requirements | 1.1 Propellers and component defect reports (removal tags) or customer order are correctly interpreted and matched by part and serial numbers |
| | 1.2 Components are inspected and/or operated through prescribed test procedures to establish serviceability or confirm defects, as required |
| | 1.3 Modification status is clearly established to assist in determining the overhaul requirements for the components |
| | 1.4 Extent of overhaul or repair is identified and documented in accordance with standard enterprise procedures |
| 2. Troubleshoot propeller components | 2.1 Available information from maintenance records and test results is used, where necessary, to assist in fault determination |
| | 2.2 Logical processes are used to ensure efficient and accurate troubleshooting |
| | 2.3 Specialist advice is obtained, where required, to assist with, or confirm, the fault and rectification requirement |
| | 2.4 Propeller component faults are located and the causes of the faults are clearly identified |
| | 2.5 Fault rectification requirements are determined to assist in planning the repair |
| 3. Dismantle and inspect propeller parts | 3.1 Propeller component parts are dismantled in accordance with maintenance manuals 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) |
| | 3.2 Component parts are assessed for serviceability in accordance with the relevant maintenance documentation |

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| | 3.3 | Parts requiring specialist repair are tagged and repair instructions are specified in accordance with standard enterprise procedures |
| | 3.4 | Parts requiring non-destructive testing (NDT) are prepared for testing in accordance with the relevant maintenance documentation |
| | 3.5 | Parts lists are compiled and processed in accordance with standard enterprise procedures |
| 4. | Repair and/or modify propeller components or parts | <p>4.1 Component parts are repaired or replaced in accordance with the relevant maintenance documentation</p> <p>4.2 Modification of components or parts is undertaken, where required, by relevant manufacturers' bulletins or procedures</p> |
| 5. | Assemble, test and adjust propeller components | <p>5.1 Component parts are assembled within specified tolerances and in accordance with the appropriate maintenance documents while observing all relevant WHS requirements, including the use of MSDS and items of PPE</p> <p>5.2 Propeller components are adjusted, tested or calibrated to operate within prescribed specifications</p> <p>5.3 Finished components are tagged, sealed and packaged in accordance with standard enterprise procedures</p> <p>5.4 Required maintenance documentation and modification records are completed and processed in accordance with standard enterprise procedures</p> |

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.

Propellers and components include:	• Fixed pitch, constant speed, feathering and reversing propellers and spinners • Anti ice/de-ice equipment • Propeller blades – metal • Hardware
Repair of component parts includes:	• Finishing or re-finishing of metal surfaces through processes, such as polishing, lapping and blending of damage within maintenance manual limits • Removal of corrosion within maintenance manual limits • Replacement of seals and gaskets • Replacement of bearings • Application of surface treatments, such as alodining • Restoration of paint finishes
Power plant relationship:	• The repair and/or overhaul of propeller and components may, in the case of turboprops and some full authority digital engine control (FADEC) systems, be related to aircraft power plant control systems
Testing and adjustment:	• Complex testing and adjusting of components, where required, will be carried out under supervision at the appropriate level
Procedures and requirements include:	• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

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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 MEA389 Repair and/or overhaul propellers

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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 procedures, including the use of MSDS and PPE
- using relevant maintenance documentation, specifications and aircraft/component manuals to:
 - recognise state of serviceability and overhaul or repair requirements for propellers and propeller components as listed in the Range of Conditions
 - test and accurately and efficiently troubleshoot unserviceabilities and document the causes with regard to propeller components
 - dismantle and inspect propeller component parts for serviceability and identify repair requirements as applicable
 - repair/replace/modify propeller component parts
 - assemble, balance, test for correct operation and adjust propeller components and propellers
- correctly tagging, sealing and packaging completed components.

The underlying skills inherent in this unit should be transferable across a range of repair and/or overhaul applications associated with aircraft components. It is essential that the maintenance procedures are interpreted and applied to ensure quality and safety standards are achieved.

This shall be demonstrated through application across a number of different propeller components. Ability to assess component serviceability and interpret parts requirements will be necessary to supplement the required evidence. Capability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical.

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:

- how to obtain relevant MSDS
- the use of applicable items of PPE
- WHS procedures
- fault diagnosis techniques

- system and component operation
- repair and overhaul procedures and processes.

Assessment Conditions

- Competency should be assessed in the work environment, or simulated work environment, using tools and equipment specified in maintenance documentation. It is also expected that general-purpose tools and test equipment found in most routine situations would be used where appropriate.
- The application of testing procedures should clearly indicate knowledge of system operation. Knowledge of propeller, engine and constant speed unit operation, individually and as a system, will be necessary to supplement evidence of ability to troubleshoot component faults 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 performance criteria of the unit of competency are being achieved under routine supervision on at least one (1) item from each of the following groups:
 - fixed pitch, constant speed, feathering and reversing propellers and spinners
 - anti-ice/de-ice equipment
 - propeller blades – metal
 - hardware.
- This must include demonstration of the following repair processes:
 - finishing or re-finishing of metal surfaces through processes, such as polishing, lapping and blending of damage within maintenance manual limits
 - removal of corrosion within maintenance manual limits
 - replacement of gaskets, seals and backing rings
 - replacement of bearings
 - application of surface treatments, such as alodining
 - restoration of paint finishes.
- 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).

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