



Australian Government

MEAMEC0041 Maintain basic rotary wing aircraft systems

Release: 1

MEAMEC0041 Maintain basic rotary wing aircraft systems

Modification History

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Assessment Requirements clarified. Supersedes and is equivalent to MEA352 Maintain basic rotary wing aircraft systems.

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 rotor, rotor control systems and airframe systems of basic rotary wing aircraft during scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

This unit applies to rotary wing aircraft that have mechanical control systems, either skids or floats and a normally aspirated engine. Note that engine and rotor systems must be operated by a qualified pilot.

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

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Inspect rotor and	1.1 Fit or install isolation and warning signs to the system or related

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rotor control systems and components	systems and configure the aircraft for safe system inspection and operation in accordance with relevant aircraft publications or maintenance regulations orders and standards and practices 1.2 Visually or physically check or inspect rotor and rotor control system for external signs of defects in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices 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) 1.3 Identify and record defects in accordance with standard enterprise procedures
2. Inspect basic rotary wing airframe systems	2.1 Use relevant maintenance documentation and modification status, including system defect reports, when required, to identify specific inspection requirements 2.2 Check isolation tags and configure aircraft for safe system inspection and operation in accordance with the applicable maintenance manual 2.3 Visually or physically check airframe system components for external signs of defects in accordance with applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDSs and items of PPE 2.4 Identify and report defects in accordance with standard enterprise procedures
3. Ground test rotor and rotor control systems	3.1 Prepare aircraft and system in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices for the operation of engine and rotor system 3.2 Functionally test rotor and rotor control system in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices for evidence of malfunction 3.3 Calibrate or adjust system in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices
4. Test and adjust basic rotary wing airframe systems and components	4.1 Prepare aircraft and system in accordance with applicable maintenance manual for the application of power or system operation 4.2 Functionally test airframe system in accordance with maintenance manual for evidence of serviceability or malfunction 4.3 Adjust system in accordance with maintenance manual

Elements	Performance Criteria
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5. Troubleshoot rotor and rotor control systems	5.1 Use available information from aircraft maintenance documentation, inspection and test results to assist in fault determination 5.2 Use relevant aircraft publication fault diagnosis guide and logical processes to ensure efficient and accurate troubleshooting to line replacement level 5.3 Obtain specialist advice to assist with the troubleshooting process 5.4 Locate rotor and rotor control system faults and identify and record the causes of the faults in aircraft maintenance documentation in accordance with standard enterprise procedures 5.5 Determine fault rectification requirements in accordance with aircraft maintenance documentation, inspection and test results
6. Troubleshoot basic rotary wing airframe systems	6.1 Use available information from maintenance documentation, inspection and test results, when required, to assist in fault determination 6.2 Use maintenance manual fault diagnosis guides and logical processes to ensure efficient and accurate troubleshooting 6.3 Obtain specialist advice, when required, to assist with the troubleshooting process 6.4 Locate airframe system faults and identify and record the causes of the faults in maintenance documentation, when required, in accordance with standard enterprise procedures 6.5 Determine rectification requirements in accordance with aircraft maintenance documentation, inspection and test results
7. Remove and install rotary wing rotor and rotor system components	7.1 Render system safe and prepare in accordance with relevant aircraft publications, maintenance regulations, orders, standards and practices, and install or fit isolation and warning signs to ensure personnel safety 7.2 Carry out rotor and rotor system component removal in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices while observing all relevant WHS requirements, including the use of MSDS and items of PPE 7.3 Complete required aircraft maintenance documentation and process in accordance with standard enterprise procedures 7.4 Label, seal and pack removed components in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices 7.5 Check rotor or rotor system component to be installed to confirm

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	correct part or model numbers, modification status and serviceability 7.6 Check mass balance of rotor blades or head in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices 7.7 Carry out installation in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices 7.8 Remove support or safety equipment at the appropriate time to ensure personnel safety and freedom from structural damage
8. Remove and install rotor control system components	8.1 Render system safe and prepare in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices, and install or fit isolation and warning signs to ensure personnel safety 8.2 Remove rotary wing flight control system component in accordance with relevant aircraft publications, maintenance regulations, orders, standards and practices while observing all relevant WHS requirements, including the use of MSDSs and items of PPE 8.3 Complete required aircraft maintenance documentation and process in accordance with standard enterprise procedures 8.4 Label, seal and pack removed components in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices 8.5 Check rotary wing flight control system components to be installed to confirm correct part or model numbers, modification status and serviceability 8.6 Carry out installation in accordance with relevant aircraft publications, maintenance regulations, orders and standards and practices 8.7 Remove support or safety equipment at the appropriate time to ensure personnel safety and freedom from structural damage 8.8 Complete required aircraft maintenance documentation and process in accordance with standard enterprise procedures
9. Remove and install basic rotary wing airframe system components	9.1 Render system safe in accordance with the applicable maintenance manual and fit isolation tags, when required, to ensure personnel safety 9.2 Remove airframe system component in accordance with the applicable maintenance manual while observing all relevant WHS

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	requirements, including the use of MSDSs and items of PPE 9.3 Complete required removal maintenance documentation and process in accordance with standard enterprise procedures 9.4 Tag, seal and pack removed components in accordance with specified procedures 9.5 Check components to be installed to confirm correct part numbers, serviceability and modification status 9.6 Check mass balance of control surfaces to be installed in accordance with the applicable maintenance manual, when required 9.7 Carry out installation in accordance with the applicable maintenance manual 9.8 Complete required installation 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, inspection procedures, specifications (allowable limits) 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 MEA352 Maintain basic rotary wing aircraft systems (Release 2).

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 MEAMEC0041 Maintain basic rotary wing aircraft systems

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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 at least one component from each of the following groups:
 - main rotor blades and tail rotor blades
 - rotor heads, swash plates and tail rotor pitch control assemblies
 - mechanical flight control components (collective and cyclic pitch levers, rudder pedals, cables, pulleys, guides, fairleads, bellcranks, rods, torque tubes, chains and sprockets)
 - main rotor, intermediate or tail rotor gearboxes
 - drive shafts and couplings
 - fuel systems
 - cabin heating systems
- rigid or flexible fuel tanks, selector or shutoff valves and rigid or flexible plumbing
- cabin heater ducting and control valves.
- use hand skills, tools and test equipment to test, adjust and troubleshoot the following on at least one occasion:
 - rotary wing mechanical control systems
 - helicopter airframe systems and components, including rotors and rotor system
- recognise system and component defects, external damage, correct/incorrect installation and security on at least one occasion for each of fuel systems and cabin heading systems
- remove, install and rig rotor systems and rotor or flight controls
- perform system functional tests and checks to isolate system faults
- apply procedures, cleanliness requirements and safety precautions at all times, and as relevant to the systems being maintained.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- work health and safety (WHS) precautions for airframe system maintenance, including the lifting and handling of heavy components and how to obtain personal protective equipment (PPE) and material safety data sheets (MSDSs)

- standard trade practices relating to tool and test or rigging equipment usage and installation or securing of system components
- theory of flight:
 - airflow
 - conditions of flight
 - lift and forces
 - drag
- rotary flight principles:
 - terminology relating to:
 - aerofoils
 - main rotor blades
 - rotor discs
 - rotors (main and tail)
 - aerodynamic characteristics:
 - aerofoil design
 - forces
 - rotor thrust and power requirements
 - vortex ring
 - autorotation
 - helicopter stability
- helicopter dynamic components:
 - main rotors:
 - blades
 - heads
 - linkages
 - tail rotors
 - swash plates
 - transmissions and drive shafts
- helicopter structure and airframe systems:
 - structure and layout
 - engine and transmission
 - flight control system layout and operation
 - cabin heater system layout and operation
 - fuel system layout and operation
- helicopter maintenance procedures and troubleshooting
- airframe system maintenance manuals
- relevant regulatory requirements and standard procedures, including requirements for engine and rotor system operation.

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 rotary wing aircraft systems. 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 rotary wing aircraft systems
 - tools and equipment specified in maintenance documentation.
 - general-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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<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>