



Australian Government

MEA352 Maintain basic rotary wing aircraft systems

Release: 2

MEA352 Maintain basic rotary wing aircraft systems

Modification History

Release 2. Equivalent to MEA352 Maintain basic rotary wing aircraft systems with amended prerequisite codes.

Application

This unit of competency requires application of hand skills and the use of 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 the performance of scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

Applications include rotary wing aircraft that have mechanical control systems, either skids or floats and a normally aspirated engine.

This unit of competency is part of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathway.

Where a Civil Aviation Safety Authority (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

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.	
1.	Inspect rotor and rotor control systems and components	1.1	Isolation and warning signs are fitted/installed to the system or related systems and the aircraft configured for safe system inspection and operation in accordance with relevant aircraft publications/maintenance regulations orders and standards and practices
		1.2	Rotor and rotor control system is visually or physically checked/inspected 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 (MSDS) and items of personal protective equipment (PPE)
		1.3	Defects are identified and recorded in accordance with standard enterprise procedures
2.	Inspect basic rotary wing airframe systems	2.1	Relevant maintenance documentation and modification status, including system defect reports, where relevant, are used to identify specific inspection requirements
		2.2	Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual
		2.3	Airframe system components are visually or physically checked for external signs of defects in accordance with applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDS and items of PPE
		2.4	Defects are correctly identified and reported
3.	Ground test rotor and rotor control systems	3.1	Aircraft and system are prepared in accordance with relevant aircraft publications/maintenance regulations orders and standards and practices for the operation of engine and rotor system
		3.2	Rotor and rotor control system are functionally tested in accordance with relevant aircraft publications maintenance regulations/orders and standards and

			practices for evidence of malfunction
		3.3	System calibration or adjustments are performed in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices
4.	Test/adjust basic rotary wing airframe systems and components	4.1	Aircraft and system are prepared in accordance with applicable maintenance manual for the application of power/system operation
		4.2	Airframe system is functionally tested in accordance with maintenance manual for evidence of serviceability or malfunction
		4.3	System adjustment is performed in accordance with maintenance manual
5.	Troubleshoot rotor and rotor control systems	5.1	Available information from aircraft maintenance documentation, inspection and test results is used to assist in fault determination
		5.2	Relevant aircraft publication fault diagnosis guide and logical processes are used to ensure efficient and accurate troubleshooting to line replacement level
		5.3	Specialist advice is obtained to assist with the troubleshooting process
		5.4	Rotor and rotor control system faults are located and the causes of the faults are clearly identified and recorded in aircraft maintenance documentation in accordance with standard enterprise procedures
		5.5	Fault rectification requirements are determined
6.	Troubleshoot basic rotary wing airframe systems	6.1	Available information from maintenance documentation, inspection and test results is used, where necessary, to assist in fault determination
		6.2	Maintenance manual fault diagnosis guides and logic processes are used to ensure efficient and accurate troubleshooting
		6.3	Specialist advice is obtained, where required, to assist with the troubleshooting process
		6.4	Airframe system faults are located and the causes of the faults are clearly identified and correctly recorded in

			maintenance documentation, where required, in accordance with standard enterprise procedures
		6.5	Rectification requirements are determined
7.	Remove and install rotary wing rotor and rotor system components	7.1	System is rendered safe and prepared in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices, and isolation and warning signs are installed/fitted to ensure personnel safety
		7.2	Rotor and rotor system component removal is carried out 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	Required aircraft maintenance documentation is completed and processed in accordance with standard enterprise procedures
		7.4	Removed components are labelled, sealed and packaged in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices
		7.5	Rotor or rotor system component to be installed is checked to confirm correct part or model numbers, modification status and serviceability
		7.6	Mass balance of rotor blades/head is checked in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices
		7.7	Installation is carried out in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices
		7.8	Support/safety equipment is removed at the appropriate time to ensure personnel safety and freedom from structural damage
8.	Remove and install rotor control system components	8.1	System is rendered safe and prepared in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices, and isolation and warning signs are installed/fitted to ensure personnel safety

- 8.2 Rotary wing flight control system component removal is carried out 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
 - 8.3 Required aircraft maintenance documentation is completed and processed in accordance with standard enterprise procedures
 - 8.4 Removed components are labelled, sealed and packaged in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices
 - 8.5 Rotary wing flight control system components to be installed are checked to confirm correct part or model numbers, modification status and serviceability
 - 8.6 Installation is carried out in accordance with relevant aircraft publications/maintenance regulations/orders and standards and practices
 - 8.7 Support/safety equipment is removed at the appropriate time to ensure personnel safety and freedom from structural damage
 - 8.8 Required aircraft maintenance documentation is completed and processed in accordance with standard enterprise procedures
9. Remove and install basic rotary wing airframe system components
 - 9.1 System is rendered safe in accordance with the applicable maintenance manual and isolation tags are fitted, where necessary, to ensure personnel safety
 - 9.2 Airframe system component removal is carried out in accordance with the applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDS and items of PPE
 - 9.3 Required maintenance documentation is accurately completed and correctly processed
 - 9.4 Removed components are tagged, sealed and packaged in accordance with specified procedures
 - 9.5 Components to be installed are checked to confirm

- correct part numbers, serviceability and modification status
- 9.6 Mass balance of control surfaces to be installed is checked in accordance with the applicable maintenance manual, if required
- 9.7 Installation is carried out in accordance with the applicable maintenance manual
- 9.8 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.

- | | |
|---|--|
| Rotor and rotor control system components include: | <ul style="list-style-type: none"> • 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 |
| Engine and rotor system operation: | <ul style="list-style-type: none"> • Must be performed by a qualified pilot |
| Airframe systems include: | <ul style="list-style-type: none"> • Fuel systems • Cabin heating systems |
| Airframe system components include: | <ul style="list-style-type: none"> • Rigid or flexible fuel tanks, selector/shutoff valves and rigid or flexible plumbing • Cabin heater ducting and control valves |
| Procedures and | <ul style="list-style-type: none"> • Industry standard procedures specified by manufacturers, |

requirements include: regulatory authorities or the enterprise

Unit Mapping Information

Release 2. Equivalent to MEA352 Maintain basic rotary wing aircraft systems

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 MEA352 Maintain basic rotary wing aircraft systems

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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:

- using hand skills, tools and test equipment in the testing, adjustment and troubleshooting of:
 - rotary wing mechanical control systems
 - helicopter airframe systems and components, including rotors and rotor system
- recognising system and component defects/external damage, correct installation and security for the range of airframe systems listed in the Range of Conditions
- removing, installing and rigging of rotor systems and rotor/flight controls
- removing and installing the range of airframe components listed in the Range of Conditions
- checking rotor mass balance
- performing system functional tests and checks to isolate system faults and assess post-maintenance serviceability
- effectively using maintenance documentation and relevant fault diagnosis guides in the troubleshooting process and for component removal and installation
- applying standard procedures
- observing all relevant WHS procedures, including the use of PPE and MSDS.

The underlying skills inherent in this unit should be transferable across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) associated with the, rotors, rotor control systems, airframe systems and components of basic rotary wing aircraft. It is essential that relevant procedures, cleanliness requirements and safety precautions are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical.

This shall be demonstrated through application across a range of rotors, rotor control systems, airframe systems and components as listed in the Assessment Conditions.

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:

- WHS precautions relevant to airframe system maintenance, including the lifting and handling of heavy components and how to obtain PPE and MSDS
- standard trade practices relating to tool and test/rigging equipment usage and installation/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
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures, including requirements for engine and rotor system operation.

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 applicable 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, the relationship of individual components and the links with other systems (if applicable) within the limits of the aircraft/system fault-finding guide 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 this unit of competency are being achieved under routine supervision on groups listed in the Range of Conditions, as follows:
 - at least one (1) component from each of:
 - 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
 - a representative range of components from:
 - rigid or flexible fuel tanks, selector/shutoff valves and rigid or flexible plumbing
 - cabin heater ducting and control valves.
- 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

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