



Australian Government

MEA394 Repair and/or overhaul aircraft piston engine crankcase assembly components

Release: 2

MEA394 Repair and/or overhaul aircraft piston engine crankcase assembly components

Modification History

Release 2. Equivalent to MEA394 Repair and/or overhaul aircraft piston engine crankcase assembly components 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 piston engine crankcase assembly components.

Applications include components from fixed and rotary wing aircraft piston engines. Work can be performed individually or as a member of a team.

The unit is part of the Mechanical Certificate IV (Component Workshop 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).

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.	Determine requirements	1.1	Component defect reports (removal tags) or customer order are correctly interpreted and matched by part and serial numbers
		1.2	Crankcase assembly components are inspected and/or operated through prescribed test procedures to establish serviceability and confirm defects, if necessary, while observing relevant work health and safety (WHS) procedures, including the use of material safety data sheets (MSDS) and personal protective equipment (PPE)
		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.	Dismantle and inspect piston engine crankcase assembly components/parts	2.1	Crankcase assembly component parts are dismantled in accordance with maintenance manual and/or enterprise procedures while observing relevant WHS procedures, including the use of MSDS and PPE
		2.2	Component parts are assessed for serviceability in accordance with the relevant maintenance documentation
		2.3	Parts requiring specialist repair are tagged and repair instructions are specified in accordance with standard enterprise procedures
		2.4	Parts requiring non-destructive testing (NDT) are prepared for testing in accordance with the relevant maintenance documentation
		2.5	Parts lists are compiled and processed in accordance with standard enterprise procedures
3.	Repair and/or modify piston engine	3.1	Component parts are repaired or replaced in accordance with the relevant maintenance documentation

crankcase assembly components or parts	3.2	Modification of components is undertaken where required by reference to relevant manufacturer's bulletins or procedures, regulatory requirements and/or customer requirements while observing relevant WHS procedures, including the use of MSDS and PPE
4. Assemble, test and adjust piston engine crankcase assembly components	4.1	Crankcase assembly component parts are assembled within specified tolerances and in accordance with the appropriate maintenance documents while observing relevant WHS procedures, including the use of MSDS and PPE
	4.2	Components are tested, adjusted or calibrated to operate within prescribed specifications
	4.3	Crankcase assembly is prepared for engine reassembly
	4.4	Where components are not to be assembled into an engine the finished components are tagged, sealed and packaged in accordance with standard enterprise procedures
	4.5	Required maintenance documentation and modification records are 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.

Piston engine crankcase assembly components include:

- Crankshaft, gears, con rods and counterweights
- Camshaft, hydraulic tappets/cam followers and gears
- Propeller shaft, reduction drive gear and quill shaft
- Component gear drives/trains
- Crankcase castings, bearings, component mounting pads and studs
- Oil system components
- Supercharger and turbocharger components (where

- | | |
|---|--|
| Testing and adjustment: | <p>applicable to the enterprise)</p> <ul style="list-style-type: none">• Propeller governor (where applicable to the enterprise)• Complex testing and adjusting of components, where required, will be carried out under supervision at the appropriate level |
| Procedures and requirements include: | <ul style="list-style-type: none">• 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 MEA394 Repair and/or overhaul aircraft piston engine crankcase assembly components

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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 relevant 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 piston engine crankcase assembly components as listed in the Range of Conditions
 - dismantle and inspect crankcase assembly component parts for serviceability and identify repair requirements as applicable
 - repair/replace/modify crankcase component parts
 - assemble, test for correct operation and adjust crankcase assembly components
- correctly tagging, sealing and packaging completed components.

Evidence of transferability of skills and knowledge related to repair is essential. This shall be demonstrated through application across a number of different piston engine crankcase assembly 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. The application of testing procedures should also clearly indicate knowledge of crankcase assembly operation.

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
- component inspection and wear measurement procedures
- non-destructive testing methods and application
- component 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
- Knowledge of crankcase assembly operation and the relationship of individual components 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 of the unit of competency and the performance criteria are being achieved under routine supervision on at least one (1) item from each of the following groups:
 - crankshaft, gears, con rods and counterweights
 - camshaft, hydraulic tappets/cam followers and gears
 - propeller shaft, reduction drive gear and quill shaft
 - component gear drives/trains
 - crankcase castings, bearings, component mounting pads and studs
 - oil system components
 - supercharger and turbocharger components (may be omitted where not applicable to the enterprise)
 - propeller governor (may be omitted where 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).

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