



Australian Government

MEA397A Test aircraft piston engines after repair or overhaul

Release 1

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Modification History

Release 1 - New unit of competency. Covers components of MEA388A - Not equivalent

Unit Descriptor

This unit of competency is part of the Mechanical Certificate IV (Component Workshop Maintenance Stream) training pathway. It covers the competencies required to test aircraft piston engines that are not fitted to an airframe after repair or overhaul. 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).

Application of the Unit

This unit requires application of hand skills, theory knowledge and maintenance publication procedures and/or standard enterprise procedures to test run aircraft piston engines, adjust operating parameters and troubleshoot/rectify faults.

Applications include all types of aircraft piston engines that are not installed in an airframe.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEA392A Disassemble aircraft piston engines

MEA393A Repair and/or overhaul aircraft piston engine cylinder assembly components

MEA394A Repair and/or overhaul aircraft piston engine crankcase assembly components

MEA395A Reassemble aircraft piston engines

MEA396A Assemble aircraft piston engine quick engine change unit

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

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| 1 | Prepare piston engine for test run | 1.1 | Documentation is checked to ensure that engine is ready for testing |
| | | 1.2 | Engine is installed in test rig or test cell, including connection of fuel, oil and electrical supplies and instrumentation |
| | | 1.3 | Sump or external oil tank is filled with correct grade and type of lubricating oil |
| | | 1.4 | Test rig/cell fuel tank is filled with correct type and grade of fuel |
| | | 1.5 | Correct propeller or club is fitted to the engine |
| | | 1.6 | Test rig/cell is prepared for operation |
| 2 | Run and test piston engine performance | 2.1 | Engine is started and operating parameters are checked in accordance with maintenance manual and standard enterprise procedures |
| | | 2.2 | Engine performance is tested and adjusted, where applicable, in accordance with maintenance manual requirements and standard enterprise procedures |
| | | 2.3 | Engine operating parameters and test results are recorded in accordance with standard enterprise procedures |
| 3 | Troubleshoot piston engine faults | 3.1 | Available information from maintenance records and test results is used, where necessary, to assist in fault determination |
| | | 3.2 | Logical processes are used to ensure efficient and accurate troubleshooting |
| | | 3.3 | Specialist advice is obtained, where required, to assist with, or confirm, the fault and rectification |

requirement

- 3.4 Piston engine component faults are located and the causes of the faults are clearly identified
 - 3.5 Fault rectification requirements are determined to assist in determining if the engine must be returned to the workshop
- 4 Remove engine from test rig/cell
 - 4.1 Engine is removed from test rig/stand in accordance with maintenance manual requirements and standard enterprise procedures
 - 4.2 Serviceable engines are configured, inhibited and prepared, in accordance with maintenance manual requirements and standard enterprise procedures, for transport or storage
 - 4.3 Required maintenance documentation and modification records are completed and processed in accordance with standard enterprise procedures
 - 4.4 Unserviceable engines are returned to workshop in accordance with standard enterprise procedures for rectification or re-work

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- applying relevant work health and safety (WHS) procedures, including the use of material safety data sheets (MSDS) and items of personal protective equipment (PPE)
- using relevant maintenance manuals and standard enterprise procedures to:
 - prepare engines for test running
 - install engines in test rigs or test cells
 - selecting and installing the correct propeller or test club
 - test run and adjust engine parameters, where applicable
 - troubleshoot faults identified during the test run
 - record engine operating parameters
 - remove engines from the test rig or test cell
 - complete documentation
- configuring and inhibiting serviceable engines for transport or storage

Required knowledge

Required knowledge includes:

- 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
- test rig or test cell operation
- engine test requirements
- engine operating parameters and adjustment methods

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	A person who demonstrates competency in this unit must be able to apply hand skills and piston engine theory knowledge and use maintenance publications to test run, adjust and troubleshoot the operation of repaired or overhauled engines while applying all relevant safety precautions.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The underlying skills inherent in this unit should be transferable across a range of repair and/or overhaul applications associated with piston engines. It is essential that the maintenance procedures (including the use of correct fuels and lubricants) are interpreted and applied to ensure quality and safety standards are achieved. Evidence of transferability of skills and knowledge related to engine test running is essential. This may be demonstrated through application across a number of engine test runs. Capability to interpret test procedures and specifications (allowable limits) and apply them in practice is critical. The application of testing procedures should also clearly indicate knowledge of system operation. Knowledge of system operation and the relationship of individual components will be necessary to supplement evidence of ability to troubleshoot engine 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. 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 are being achieved under routine supervision on a representative range of engine test runs. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide.
Context of and specific resources for assessment	Competency should be assessed in the work environment or simulated work environment in an applicable engine test rig or test cell. It is also expected that general purpose tools and test equipment found in most routine situations would be used where appropriate.

Method of assessment	
Guidance information for assessment	

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Application	Application of this unit may relate to: • scheduled or unscheduled maintenance • individual or team-related activities • complex adjusting and testing of engine performance to be carried out under supervision
Procedures and requirements	Procedures and requirements refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Sector(s)

Aviation maintenance

Custom Content Section

Not applicable.