



Australian Government

**Assessment Requirements for MEA353
Maintain basic light aircraft engines and
propellers**

Release: 1

Assessment Requirements for MEA353 Maintain basic light aircraft engines and propellers

Modification History

Release 1 - New unit of competency

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 and aircraft manuals
- recognising external and internal signs of defects in piston engines, components and system components visual/physical inspection
- assisting with testing of piston engine and engine system operation, be able to operate systems, monitor indications, record parameters and recognise correct function
- compiling engine condition monitoring records
- rigging and adjusting engine controls and systems
- using fault diagnosis guides and equivalent data to accurately and efficiently troubleshoot the causes of unserviceabilities in piston engines and engine systems, clearly record details and identify the required rectification actions
- correctly removing and installing piston engine, engine components and fixed pitch propellers, including spinners
- inspecting propellers for security, damage and deterioration
- blending out metal propeller nicks and dents that are within maintenance manual limits.

The underlying skills inherent in this unit should be transferable across a range of inspection, testing, troubleshooting and removal and installation tasks (including the timely involvement of supervisor or other trades) associated with engines, engine systems and fixed pitch propellers. It is essential that system testing procedures take into account all safety precautions associated with piston engine system operation, and that awareness be demonstrated of dual inspection requirements associated with work on engine controls. This shall be demonstrated through application across a number of engine systems or types and propellers made from different materials. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical. The application of testing procedures and functional rigging checks should also indicate knowledge of system 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:

- WHS procedures associated with engine and propeller maintenance, including lifting and handling of heavy objects
- how to obtain MSDS
- use of PPE
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures
- fault diagnosis techniques
- piston engine and engine system layout and operation:
 - four stroke engine theory of operation and performance
 - cylinder configurations

- construction (components and materials)
- carburettors and air induction systems
- fuel injection systems
- fuels and their characteristics
- ignition systems
- lubricating systems and lubricants
- cooling systems
- exhaust systems
- accessory drives and mounts
- normally aspirated piston engine maintenance requirements and troubleshooting procedures
- system component operation. including electrical and instrument system interfaces:
 - magnetos and ignition harnesses
 - spark plugs
 - fuel pumps
 - fuel filters
 - oil pumps
 - oil filters
 - oil tanks
 - vacuum pumps
 - generators
 - starter motors
 - oil pressure gauges (direct reading)
 - temperature gauges (direct reading)
 - tachometers
 - manifold pressure gauges
 - maintenance requirements and troubleshooting procedures
- removal and installation procedures for piston engines and engine components:
 - removal procedures and handling
 - control linkages
 - electrical wiring
 - engine instrument connections
 - installation and rigging
 - ground running
 - system component removal, installation and system testing
- propellers, materials and damage and deterioration criteria:
 - fixed pitch propeller types, terminology and theory:
 - tractor/pusher
 - matching to engine and aircraft
 - leading edge/trailing edge
 - blade stations
 - forces acting on a propeller
 - propeller balance
 - materials and construction methods:
 - metal propeller metals, construction and surface protection
 - wooden propeller materials, construction and surface protection

- composite propeller materials, construction and surface protection
- damage and deterioration
- methods of blending out of minor damage to metal propellers
- propeller removal and installation procedures.

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.
- Engine system operation knowledge, the relationship of individual components and the links with other systems will be necessary to supplement evidence of ability to carry out rigging checks and troubleshoot the system 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 the unit of competency are being achieved under routine supervision on at least one (1) item from each of:
 - normally aspirated engine (all types), main components and accessories/drives
 - control system
 - starter system
 - fuel and air systems
 - exhaust system
 - oil system (if dry sump) (may be omitted where not applicable to the enterprise)
 - and on at least one (1) type of fixed pitch propeller.
- 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 in the CASR Part 147 Manual of Standards.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>