



Australian Government

MEA361 Maintain aircraft two stroke petrol engines

Release: 1

MEA361 Maintain aircraft two stroke petrol engines

Modification History

Release 1 - New unit of competency

Application

This unit of competency requires application of hand skills, the use of maintenance publications and knowledge of two stroke petrol engine and system theory to inspect, test and troubleshoot, remove and install aircraft two stroke petrol engines and engine system components during the performance of scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

Applications include aircraft two stroke petrol engines driving fixed pitch propellers. Where the engine is driving a constant speed propeller, MEA307 Remove and install propeller systems and components and MEA315 Inspect, test and troubleshoot propeller systems and components, will also be required.

The unit 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

MEA353 Maintain basic light aircraft engines and propellers

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.

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| 1. Inspect two stroke petrol engine and components/systems | 1.1 | Isolation tags already attached to the system or related systems are checked and aircraft/engine configured for safe system inspection and operation |
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			in accordance with applicable maintenance manual
		1.2	Two stroke petrol engine and components/systems are visually or physically checked for external and internal signs of defects in accordance with applicable maintenance manual 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)
2.	Test two stroke petrol engines	2.1	Aircraft and engine are correctly prepared in accordance with applicable maintenance manual
		2.2	Assistance is provided with engine and/or system operation during prescribed test procedures to establish serviceability and correct function in accordance with applicable maintenance manual
3.	Troubleshoot two stroke petrol engines	3.1	Available information from maintenance documentation and inspection and test results is used, where necessary, to assist in fault determination
		3.2	Maintenance manual fault diagnosis guide and logical processes are used to ensure efficient and accurate troubleshooting to line replacement level
		3.3	Specialist advice is obtained, where required, to assist with the troubleshooting process
		3.4	Two stroke petrol engine faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required
		3.5	Fault rectification requirements are determined to assist in planning the repair
4.	Remove two stroke petrol engine and engine system components	4.1	Aircraft is prepared and supported and rendered safe in accordance with the applicable maintenance manual and isolation tags are fitted, where necessary, to ensure the safety of personnel and freedom from damage during engine removal
		4.2	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

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| | 4.3 | Engine is tagged and prepared for transport or storage in accordance with the specified procedures |
| | 4.4 | Required maintenance documentation is completed and processed in accordance with standard enterprise procedures |
| 5. Install two stroke petrol engine and engine system components | 5.1 | Engine to be installed is checked to confirm correct part or model numbers, modification status and serviceability |
| | 5.2 | Installation 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 |
| | 5.3 | Support/safety equipment is removed at the appropriate time to ensure personnel safety and freedom from structural damage |
| | 5.4 | 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.

Two stroke engines and components/systems include:

- Two stroke petrol aircraft engines, main components, including reduction gearboxes and accessories/drives
- Ignition systems
- Control systems
- Starter systems
- Fuel and air systems
- Cooling systems (liquid or air as applicable to enterprise)
- Exhaust systems

- Testing of engines includes:**
- Testing of engines fitted to helicopters (where auxiliary drive is not available) shall be carried out through the applicant directing a pilot qualified on type
- Procedures and requirements include:**
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 1 – equivalent to MEA361A Maintain aircraft two stroke petrol engines

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 MEA361 Maintain aircraft two stroke petrol engines

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 PPE and MSDS
- using relevant maintenance documentation and aircraft manuals
- recognising external and internal signs of defects in two stroke petrol aircraft engines, components and system components through visual/physical inspection
- assisting with testing of two stroke petrol 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 two stroke petrol engines and engine systems, clearly record details and identify the required rectification actions
- correctly removing and installing two stroke petrol engine and engine components.

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 two stroke petrol aircraft engines and engine. It is essential that system testing procedures take into account all safety precautions associated with two stroke petrol engine system operation and that awareness be demonstrated of dual inspection requirements associated with work on engine controls. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical.

This shall be demonstrated through application across a number of engine systems or types.

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 maintenance, including lifting and handling of heavy objects and how to obtain PPE and MSDS
- fault diagnosis techniques
- two stroke petrol aircraft engine layout and operation:
 - principles of operation of two stroke engines

- component function, construction and materials
- engine operation
- engine power, efficiency and performance
- two stroke aircraft engine fuels, oils and fuel/oil mixing
- components, layout and operation of two stroke petrol aircraft engine:
 - fuel systems
 - ignition systems:
 - magneto
 - coil
 - spark plugs
 - ignition harnesses
 - switches
 - starting systems
 - induction systems
 - cooling systems (liquid and air)
 - exhaust systems
 - electrical and instrument system interfaces:
 - battery charging system
 - tachometer
- removal and installation procedures for two stroke petrol aircraft engines and engine components
- petrol two stroke aircraft engine maintenance requirements and troubleshooting
- relevant maintenance manuals
- relevant regulatory requirements and standard 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.
- The application of testing procedures and functional checks should indicate knowledge of system operation. 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 engine control system 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 the following groups:
 - two stroke petrol aircraft engines, main components, including reduction gearboxes and accessories/drives
 - ignition systems
 - control systems
 - starter systems
 - fuel and air systems
 - cooling systems (liquid or air as applicable to enterprise)
 - exhaust systems.
- 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

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