



Australian Government

MEAMEC0048 Maintain aircraft diesel engines

Release: 1

MEAMEC0048 Maintain aircraft diesel engines

Modification History

Release 1. Application changed. Performance Criteria changed. Foundation Skills made explicit. Range of Conditions removed, and relevant information moved to Assessment Requirements. Assessment Requirements clarified. Supersedes and is equivalent to MEA360 Maintain aircraft diesel engines.

Application

This unit describes the skills and knowledge required to apply hand skills and use maintenance publications and knowledge of diesel engine and system theory to inspect, test and troubleshoot, remove and install aircraft diesel engines and engine system components during the performance of scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

This unit applies to diesel engines fitted to light aircraft and 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 used in workplaces that operate under the airworthiness regulatory systems of the Civil Aviation Safety Authority (CASA) and the Defence Aviation Safety Authority (DASA).

Where a CASA or DASA licensing outcome is sought this unit forms part of the requirement for the granting of the chosen maintenance certification licence under the relevant Aviation Safety Regulations, in accordance with the licensing provisions in the MEA Aeroskills Companion Volume Implementation Guide.

Any other relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MEAMEC0042 Maintain basic light aircraft engines and propellers

Competency Field

Aviation maintenance

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Inspect diesel engine	1.1 Check isolation tags already attached to the system or related

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and components and systems	systems and aircraft or engine configured for safe system inspection and operation in accordance with applicable maintenance manual 1.2 Visually or physically check diesel engine and engine system components 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 (MSDSs) and items of personal protective equipment (PPE)
2. Test diesel engine	2.1 Prepare aircraft and engine in accordance with applicable maintenance manual 2.2 Activate built-in system test functions and status displays, where applicable, and record and interpret outputs to inform troubleshooting process 2.3 Provide assistance with engine or system operation during prescribed test procedures to establish serviceability and correct function in accordance with applicable maintenance manual
3. Troubleshoot diesel engine	3.1 Use available information from maintenance documentation and inspection and test results, when required, to assist in fault determination 3.2 Use maintenance manual fault diagnosis guide, applicable downloaded maintenance data and logical processes to ensure efficient and accurate troubleshooting to line replacement level 3.3 Obtain specialist advice, when required, to assist with the troubleshooting process 3.4 Locate diesel engine faults and identify and record the causes of the faults in maintenance documentation, when required 3.5 Determine fault rectification requirements to assist in planning the repair
4. Remove diesel engine and engine system components	4.1 Prepare and support aircraft and render safe in accordance with the applicable maintenance manual including fitting required isolation tags to ensure the safety of personnel and freedom from damage during engine removal 4.2 Carry out removal in accordance with the applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDSs and items of PPE 4.3 Tag and prepare engine for transport or storage in accordance with the specified procedures 4.4 Complete required maintenance documentation and process in

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	accordance with standard enterprise procedures
5. Install diesel engine and engine system components	5.1 Check engine to be installed to confirm correct part or model numbers, modification status and serviceability 5.2 Carry out installation in accordance with the applicable maintenance manual while observing all relevant WHS requirements, including the use of MSDSs and items of PPE 5.3 Remove support or safety equipment at the appropriate time to ensure personnel safety and freedom from structural damage 5.4 Complete required maintenance documentation and process in accordance with standard enterprise procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

- Reading skills to interpret maintenance documentation, specifications (allowable limits) and procedures.
- Writing skills to complete maintenance documentation.
- Numeracy skills to interpret and communicate technical information.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEA360 Maintain aircraft diesel engines.

Links

Companion Volume implementation guides are found in VETNet –

<https://vetnet.gov.au/Pageshttps://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEAMEC0048 Maintain aircraft diesel engines

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Performance Evidence

There must be evidence the candidate has completed all the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- maintain at least one item from each of the following groups:
 - two- and four-stroke diesel aircraft engines, main components and accessories or drives
 - super or turbo charging systems
 - control system, including full authority digital engine control (FADEC) (where applicable to enterprise)
 - starter system
 - fuel and air systems
 - cooling system (liquid or air as applicable to enterprise)
 - exhaust system
 - oil system (if dry sump)
- recognise external and internal signs of defects in aircraft diesel engines, components and system components through visual and physical inspection
- assist with testing of diesel engine and engine system operation, be able to operate systems, monitor indications, record parameters and recognise correct function
- compile engine condition monitoring records
- rig and adjust engine controls and systems, including FADEC systems apply system testing procedures that take into account all safety precautions associated with diesel engine system operation (including interfaces with FADEC systems), and awareness of dual inspection requirements associated with work on engine controls.
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Knowledge Evidence

There must be evidence the candidate has knowledge of:

- work health and safety (WHS) procedures associated with engine and propeller maintenance, including lifting and handling of heavy objects and how to obtain personal protective equipment (PPE) and material safety data sheets (MSDSs)
- fault diagnosis techniques

- two and four stroke diesel aircraft engines and engine system layout and operation:
 - principles of operation of two and four stroke diesel engines
 - component function, construction and materials
 - engine operation
 - engine power, efficiency and performance
- diesel aircraft engine super or turbo charging systems
- diesel aircraft engine fuels and lubricating oils
- diesel fuel injection systems
- FADEC operation
- diesel aircraft engine induction systems
- diesel aircraft engine cooling systems (liquid and air)
- diesel aircraft engine exhaust systems
- system component operation, including electrical and instrument system interfaces
- dry sump lubrication systems
- removal and installation procedures for diesel aircraft engines and engine components
- diesel aircraft engine maintenance requirements and troubleshooting
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.
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Assessment Conditions

The following conditions of assessment represent the requirements of the regulators Defence Aviation Safety Authority (DASA) and Civil Aviation Safety Authority (CASA) and maintenance stakeholders and must be rigorously observed.

Skills must have been demonstrated under routine supervision in the workplace or in a simulated environment that reflects workplace conditions and contingencies encountered in maintaining aircraft diesel engines. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - workplace procedures, manufacturing specifications, codes, standards, manuals, and reference materials relevant to maintaining aircraft diesel engines
 - tools and equipment specified in maintenance documentation
 - general-purpose tools and test equipment found in most routine situations.

Testing of engines fitted to helicopters (where auxiliary drive is not available) shall be carried out through the individual directing a pilot qualified on type.

Evidence of tasks demonstrating competency must be recorded in a log of industrial experience and achievement.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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