



Australian Government

MEAAVI0049 Inspect, test and troubleshoot full authority digital engine control systems

Release: 1

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Modification History

Release 1. Application changed. Elements and 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 MEA279 Inspect, test and troubleshoot full authority digital engine control systems.

Application

This unit describes the skills and knowledge required to apply hand skills and use maintenance documentation and publications and test sets to inspect, test and troubleshoot full authority digital engine control (FADEC) systems of fixed and rotary wing aircraft during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

Skills and knowledge for maintaining components other than those listed in the Performance Evidence of this unit, such as spark plugs, ignition units, injectors and fuel control units, are covered by the applicable engine maintenance units (e.g. MEA313 Inspect, test and troubleshoot piston engine systems and components, MEA314 Inspect, test and troubleshoot gas turbine engine systems and components or MEA353 Maintain basic light aircraft engines and propellers) and do not apply to this unit.

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).

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

Pre-requisite Unit

MEA246 Fabricate and/or repair aircraft electrical hardware or parts

MEA293 Remove and install aircraft electronic system components

Competency Field

Aviation maintenance

Elements and Performance Criteria

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1. Inspect FADEC systems and components	1.1 Identify specific inspection requirements using maintenance documentation and modification status, including relevant system defect reports 1.2 Check isolation tags and configure aircraft for safe system inspection and operation in accordance with maintenance manual 1.3 Visually or physically check FADEC system for external signs of defects in accordance with maintenance manual while observing all relevant work health and safety (WHS) requirements 1.4 Identify and report defects in accordance with standard enterprise procedures
2. Test FADEC systems	2.1 Prepare aircraft and system for application of power or system operation in accordance with maintenance manual 2.2 Perform functional testing on FADEC system for evidence of serviceability or malfunction in accordance with maintenance manual
3. Troubleshoot FADEC systems	3.1 Use available information from maintenance documentation and inspection and test results to assist in fault determination of identified faults 3.2 Troubleshoot FADEC systems to line replacement level using maintenance manual fault diagnosis guides and logic processes, test sets, downloaded maintenance data and fault-finding charts or similar 3.3 Obtain required specialist or supervisory advice to assist with the troubleshooting process 3.4 Locate FADEC system faults and identify and record causes of faults in required maintenance documentation in accordance with standard enterprise procedures 3.5 Determine requirements for rectification of faults

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 manuals, inspection procedures and specifications (allowable limits).
- Writing skills to record and report on defects and faults and their causes.

- Numeracy skills to interpret and communicate technical information, take and interpret system measurements and readings, and interpret data from test sets.

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 MEA279 Inspect, test and troubleshoot full authority digital engine control systems.

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 MEAAVI0049 Inspect, test and troubleshoot full authority digital engine control systems

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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:

- perform inspection, testing and troubleshooting on full authority digital engine control systems during scheduled or unscheduled maintenance on the following full authority digital engine control (FADEC) systems and system components:
 - computers
 - sensors
 - interfaces
 - cockpit controls
 - data cables
 - wiring looms that comprise the electronic control system
- use test sets to download maintenance data from the FADEC system and interpret the data for the systems and components being maintained
- identify or locate airframe and engine, including propeller- or rotor-mounted FADEC system components for the systems and components being maintained
- recognise system and component defects, external damage, correct/incorrect installation, connection of plugs, terminations, attachment hardware (including cabling/harnesses) and security in airframe and engine-mounted FADEC system components for the systems and components being maintained
- perform function testing by applying logic processes, using test equipment and appropriate wiring diagrams and manuals to isolate FADEC system malfunctions and used built-in test features to confirm post-maintenance serviceability
- apply testing procedures, cleanliness requirements and safety precautions at all times, and as relevant to the system/s being maintained, including safe handling of electrostatic sensitive devices.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- component attachment methods
- connection of hardware and plugs

- digital electronic theory
- open and closed loop control
- the basic layout (block diagram level), function and operation of FADEC systems
- architecture of FADEC system computers, software and software management
- operation of sensors that input data to FADEC system computers
- built-in test system operation and downloading and interpretation of system data
- work health and safety (WHS) requirements for FADEC systems
- relevant regulatory requirements and standard procedures, including software management control
- maintenance requirements and troubleshooting procedures
- maintenance manuals for FADEC systems.

Assessment Conditions

The following conditions of assessment represent the requirements of the regulators (DASA and 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 inspecting, testing and troubleshooting FADEC systems and components:

- use of suitable facilities, equipment and resources, including:
 - workplace procedures, manufacturing specifications, codes, standards, manuals, and reference materials relevant to inspecting, testing and troubleshooting FADEC systems and components
 - tools and equipment specified in maintenance documentation
 - general-purpose tools and test equipment found in most routine.

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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