



Australian Government

MEA230 Test and troubleshoot fixed wing aircraft automatic flight control systems and components

Release: 2

MEA230 Test and troubleshoot fixed wing aircraft automatic flight control systems and components

Modification History

Release 2. Equivalent to MEA230 Test and troubleshoot fixed wing aircraft automatic flight control systems and components with amended prerequisite name.

Application

This unit of competency requires application of hand skills and the use of system/component knowledge and applicable maintenance publications to test and troubleshoot aircraft automatic flight control systems and components of fixed wing aircraft that have automatic flight control systems during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit of competency is part of the Avionic Certificate IV (Aircraft Maintenance Stream) training pathways and is an alternative unit to MEA231 Inspect, test and troubleshoot rotary wing aircraft automatic flight control systems and components.

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).

Where a 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

MEA225	Inspect fixed wing aircraft automatic flight control systems and components
MEA246	Fabricate and/or repair aircraft electrical hardware or parts

Competency Field

Aviation maintenance

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

essential outcomes.	demonstrate achievement of the element.
1. Prepare for troubleshooting	1.1 Relevant maintenance documentation and modification status, including system defect reports, where relevant, are used to identify an unserviceability
2. Test/adjust automatic flight control system	2.1 Aircraft and system are prepared in accordance with applicable maintenance manual for the application of power/system operation 2.2 Automatic flight control system is functionally tested in accordance with maintenance manual for evidence of serviceability or malfunction while observing all relevant work health and safety (WHS) requirements 2.3 System calibration or adjustments are performed in accordance with maintenance manual, as appropriate
3. Troubleshoot automatic flight control system	3.1 Available information from maintenance documents and inspection and test results is used, where necessary, to assist in fault determination 3.2 Maintenance manual fault diagnosis guides and logic 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 Automatic flight control system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required 3.5 Rectification requirements are determined

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.

Automatic flight control systems include:

- Automatic pilot
- Flight director
- Automatic trim
- Yaw damper
- Automatic throttle and automatic landing (where applicable to the enterprise)

Procedures and requirements include:

- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 2. Equivalent to MEA230 Test and troubleshoot fixed wing aircraft automatic flight control systems and components.

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 MEA230 Test and troubleshoot fixed wing aircraft automatic flight control systems and components

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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 practices
- using approved maintenance documentation and aircraft publications relating to the automatic flight control system being maintained
- recognition of system and component defects/external damage, correct installation, connection of plugs, terminations, and attaching hardware (including cabling/harnesses) and security in:
 - flight director components and interface
 - flight control components and interface
 - automatic throttle components and interface (where applicable to the enterprise)
 - automatic pilot system and interface
- applying logic processes, taking and interpreting system measurements, using test equipment and appropriate wiring diagrams and manuals to accurately and effectively isolate malfunctions in the above systems
- performing system testing to isolate system malfunctions and assess post-maintenance serviceability.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the automatic flight control system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) is critical.

Evidence of transferability of skills and knowledge related to testing and troubleshooting is essential. This is to be demonstrated through application across a range of aircraft automatic flight control systems and components listed in the Assessment Conditions.

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:

- component attachment methods
- explaining the basic layout (block diagram level), function and operation of:
 - flight director components and interface
 - flight control components and interface
 - automatic throttle components and interface
 - automatic pilot system and interface
 - flight management system interface
 - navigation system interfaces
- explaining basic principles/functions, relating to the above systems and associated with:
 - basic AC and DC circuit theory
 - digital fundamentals
 - analogue fundamentals
 - fixed wing flight theory
 - inner and outer loop control
 - fixed wing flight control system (mechanical, hydraulic and electro-mechanical types, trim and stabilisation)
 - flight control modes/channels
- WHS requirements
- system and component maintenance requirements and troubleshooting procedures
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

Assessment Conditions

- Competency should be assessed in the workplace or simulated workplace using tools and equipment specified in the maintenance manuals. It is also expected that applicable general and special purpose tools, and test and ground support equipment would be used where appropriate.
- The application of testing procedures should clearly indicate knowledge of system operation, the relationship of individual components and the links with other systems (if applicable) 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 item from each of the following groups:
 - automatic pilot
 - flight director
 - automatic trim
 - yaw damper

- automatic throttle and automatic landing (may be omitted where not applicable to the enterprise).
- 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.
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