



Australian Government

MEA278 Inspect, test and troubleshoot instrument display systems and components

Release: 2

MEA278 Inspect, test and troubleshoot instrument display systems and components

Modification History

Release 2. Equivalent to MEA278 Inspect, test and troubleshoot instrument display systems and components with amended prerequisite codes.

Application

This unit of competency requires application of hand skills and the use of system/component knowledge and applicable maintenance publications and test equipment to inspect, test and troubleshoot electronic instrument display systems and components of fixed and rotary wing aircraft during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit is part of the small aircraft maintenance Certificate IV Mechatronics and the Avionic Certificate IV (Aircraft Maintenance Stream) training pathways.

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

MEA246	Fabricate and/or repair aircraft electrical hardware or parts
MEA293	Remove and install aircraft electronic system components

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 electronic aircraft instrument display systems and components | 1.1 | Relevant maintenance documentation and modification status, including system defect reports, where relevant, are used to identify specific inspection requirements |
| | | 1.2 | Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual while observing all relevant work health and safety (WHS) requirements |
| | | 1.3 | Electronic instrument display system components are visually or physically checked for external signs of defects in accordance with applicable maintenance manual |
| | | 1.4 | Defects are correctly identified and reported |
| 2. | Test/adjust electronic aircraft instrument display systems and components | 2.1 | Aircraft and system are prepared in accordance with applicable maintenance manual for the application of power/system operation |
| | | 2.2 | Electronic instrument display system is functionally tested in accordance with maintenance manual for evidence of serviceability or malfunction |
| | | 2.3 | System calibration or adjustments are performed in accordance with maintenance manual, as appropriate |
| 3. | Troubleshoot electronic aircraft instrument display systems | 3.1 | Available information from maintenance documentation, 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 | Electronic instrument display system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required, in accordance with standard enterprise procedures |
| | | 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.

Electronic instrument display systems include:

- Electronic flight instrument system (EFIS)
- Engine indicating and crew alerting system (EICAS)
- Electronic central aircraft monitoring (ECAM)
- Head-up display (HUD) (where applicable to the enterprise)
- Data linkage and transmission systems
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Procedures and requirements include:

Unit Mapping Information

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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 MEA278 Inspect, test and troubleshoot instrument display 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:

- using hand skills, tools and test equipment in the testing, adjustment and troubleshooting of instrument display systems and data transmission and linkage systems
- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses) for the range of systems listed in the Range of Conditions
- interpreting the information presented on instrument display systems
- applying logic processes and using appropriate wiring diagrams and manuals to isolate instrument display system malfunctions
- performing system functional tests and checks to isolate system faults and assess post-maintenance serviceability
- effectively using maintenance documentation and relevant fault diagnosis guides in the troubleshooting process
- applying standard procedures
- observing all relevant WHS procedures.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the instrument display 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 inspection, testing and troubleshooting is essential. This may be demonstrated through application across a range of aircraft instrument and display systems (where display systems are applicable to the enterprise) 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:

- standard trade practices relating to tool and test equipment usage and installation/securing of system components
- the basic layout (block diagram level) of the systems listed in the Range of Conditions

- the operating principles of the systems listed in the Range of Conditions and associated with:
 - electrical and instrument fundamentals relating to multi-function display systems
 - interpretation of display information and display screen symbol generation
 - the operation of each listed system and system components
- WHS procedures relating to instrument display systems and components
- relevant Aeronautical Radio Incorporated (ARINC) specifications (avionic data bus)
- relevant maintenance manuals
- maintenance requirements and troubleshooting procedures
- relevant regulatory requirements and standard procedures, including software management control.

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 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 this unit of competency are being achieved under routine supervision on a system and on at least one (1) major system component of each of the following:
 - EFIS
 - EICAS
 - ECAM
 - Data linkage and transmission systems
 - HUD (may be omitted if 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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Links

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