Australian Government

Department of Education, Employment and Workplace Relations

MEA284A Repair or overhaul aircraft instrument system components

Revision Number: 2

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Modification History

Minor formatting and editorial changes made. Minor clarification made in the unit descriptor.

Unit Descriptor

This unit of competency is part of the Avionic Certificate IV (Component Workshop Maintenance Stream) training pathway. It covers the competencies required to repair or overhaul aircraft instrument system components. Repair of circuit boards is covered by MEA262B Modify/repair aircraft component single layer printed circuit boards and MEA263B Modify/repair aircraft multi-layer printed circuit boards. This unit is used in workplace that operate under the airworthiness regulatory systems of the ADF and CASA.

Application of the Unit

This unit requires application of hand skills and knowledge of component repair and overhaul procedures relating to aircraft instrument system components.

Applications include fixed and rotary wing aircraft instrument system components repaired or overhauled in aviation maintenance workshops.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1. Determine requirements	1.1. Component defect reports (removal tags) or customer order are correctly interpreted and matched by part and serial numbers
	1.2. ***System components*** are inspected and/or operated through prescribed test procedures to establish serviceability or confirm defects, as required
	1.3. Modification status is clearly established to assist in determining the overhaul requirements for the components
	1.4. Extent of overhaul or repair is correctly identified and documented
2. Troubleshoot instrument system components	2.1. Available information from maintenance records and test results is used, where necessary, to assist in fault determination
	2.2. Logical processes are used to ensure efficient and accurate troubleshooting
	2.3. Specialist advice is obtained, where required, to assist with, or confirm, the fault and rectification requirement
	2.4. System component faults are located and the causes of the faults are clearly identified
	2.5. Fault rectification requirements are determined to assist in planning the repair
3. Dismantle and inspect instrument system components	3.1. System component parts are dismantled in accordance with maintenance manuals
	3.2. Component parts are assessed for serviceability in accordance with the relevant maintenance documentation
	3.3. Parts requiring specialist repair are tagged and repair instructions are accurately specified
	3.4. Parts lists are compiled and processed in accordance with standard enterprise procedures
4. Repair and/or modify instrument system components	4.1. System component parts are repaired or replaced in accordance with the relevant maintenance documentation
	4.2. Modification of components or parts is undertaken, where required, by relevant manufacturer's bulletins or procedures
5. Assemble, test and adjust instrument system components	5.1. Assembly of component parts is carried out within specified tolerances and in accordance with the appropriate maintenance documents
	5.2. System components are adjusted or calibrated to operate within prescribed specifications

5.3. Finished components are tagged, sealed and packaged in accordance with specified procedures

5.4. Required maintenance documentation and modification records are completed and processed in accordance with standard enterprise procedures

Required Skills and Knowledge

Required skills

Look for evidence that confirms skills in:

- applying relevant OHS practices
- using approved repair/overhaul procedures and processes relating to instrument system components
- recognising the serviceability state and repair or overhaul requirements for:
  - mechanical instruments
  - electro-mechanical instruments
  - instrument sensors
- applying logic processes, and using test equipment and appropriate wiring diagrams and manuals to isolate components faults
- performing component testing to isolate/confirm component fault and assess post-repair/overhaul serviceability
- correctly disassembling, inspecting component parts, repairing/ replacing/modifying component parts and assembling components listed above
- correctly interpreting instrument and display information, symbols and readings

Required knowledge

Look for evidence that confirms knowledge of:

- component and system operation
- explaining the basic function and operation of the following components to enable testing for fault isolation/confirmation, to determine repair or overhaul requirements, and serviceability status post-repair or overhaul:
  - mechanical instruments
  - electro-mechanical instruments
  - instrument sensors
- explaining basic principles/functions relating to the above components and associated with:
  - AC and DC synchronous systems
  - servomechanisms
  - gyroscopes
  - vacuum and pressure-based indication methods (pitot/static and pressurisation)
  - advanced analogue fundamentals
  - electro-mechanical sensor signal generation

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to repair and overhaul instrument system components in accordance with maintenance manuals and regulatory/industry procedures while observing all relevant safety precautions.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The underlying skills inherent in this unit should be transferable across a range of repair or overhaul applications associated with instrument system components. It is essential that the maintenance procedures are interpreted and applied to ensure quality and safety standards are fully observed, understood and complied with. Capability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical. Evidence of transferability of skills and knowledge related to repair is essential. This may be demonstrated through application across a representative range from within the components listed in the Range Statement. Ability to assess component serviceability and interpret parts requirements will be necessary to supplement the required evidence. The application of testing procedures should also clearly indicate knowledge of system operation before undertaking any action. The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards. A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of the unit of competency are being achieved under routine supervision on a representative range of the components listed in the Range Statement. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide.
Context of and specific resources for assessment	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 and special purpose tools

	and test equipment would be used where appropriate.
Method of assessment	
Guidance information for assessment	

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
System components	System components may include: • general instrument components, including mechanical instruments, electro-mechanical instruments and sensors
Application	Application of this unit may relate to: • scheduled or unscheduled maintenance • individual or team-related activities • complex testing and adjusting of components, and where this is undertaken, may be carried out under supervision at the appropriate level
Procedures and requirements	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Sector(s)

Aviation maintenance

Competency field

Co-requisite units

MEA260B	Use electrical test equipment
MEA261C	Use electronic test equipment