



Australian Government

MEA224C Inspect aircraft instrument systems and components (Release 1)

Release: 1

MEA224C Inspect aircraft instrument systems and components

Modification History

Knowledge statements expanded - equivalent to previous unit.

Unit Descriptor

This unit of competency is part of the Avionic Certificate IV (Aircraft Maintenance Stream) training pathways. It covers the competencies required to inspect instrument systems and components of fixed and rotary wing aircraft. The unit is used in workplaces that operate under the airworthiness regulatory systems of the ADF and CASA.

Where a CASA licensing outcome is sought this unit forms part of the CASA requirement for the granting of the B2 maintenance certification licence under CASR Part 66, in accordance with the licensing provisions in Section 3, Assessment Guidelines.

Application of the Unit

This unit requires application of hand skills and the use of system/component knowledge and applicable maintenance publications to inspect aircraft instrument systems and components. Applications include fixed and rotary wing aircraft.

Licensing/Regulatory Information

Refer to unit descriptor

Pre-Requisites

MEA246C Fabricate and/or repair aircraft electrical components or parts

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.
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Elements and Performance Criteria

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| 1 Inspect instrument systems and components | <p>1.1 Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual</p> <p>1.2 <i>Instrument system components</i> are visually or physically checked for external signs of defects in accordance with applicable maintenance manual</p> <p>1.3 Defects are correctly identified and recorded in accordance with standard enterprise procedures</p> |
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Required Skills and Knowledge

Look for evidence that confirms knowledge of:

- component attachment methods
- connection of hardware
- instrument system maintenance requirements
- the basic layout (block diagram level), function and operation of:
 - flight instruments, including:
 - ASIs
 - VSIs
 - air data systems and components
 - machmeters
 - altimeters, including servo and encoding altimeters
 - turn and slip indicators
 - AHs
 - DGs
 - angle of attack and stall warning/avoidance systems
 - pitot/static systems
 - navigation systems:
 - direct reading compasses
 - gyro compasses
 - AHRS
 - GPWS
 - turbine engine instruments, including:
 - temperature and pressure, including thermocouples, sensors and transmitters
 - speed, including mechanical and electric tachometers
 - thrust, including fan, propeller and jet
 - torque
 - fuel flow
 - vibration
 - auxiliary transmitter/indicator measuring systems, including:
 - hydraulic pressure and temperature
 - pneumatic pressure
 - transmission oil pressure and temperature
 - fuel remaining/used
 - fuel quantity indication
 - component position (e.g. doors, flaps, speed brakes and landing gear)
 - FDR systems
- relevant OHS practices
- instrument system maintenance requirements

- relevant maintenance manuals
- relevant regulatory requirements and standard procedures

Look for evidence that confirms skills in:

- applying relevant OHS practices
- using approved maintenance documentation and aircraft publications relating to the instrument 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:
 - pitot/static systems and associated instruments and systems
 - flight instruments
 - GPWS and FDR
 - stall warning, angle of attack and stall avoidance systems
 - navigation systems (compasses and AHRS)
 - pressure measurement, position indicators, engine/auxiliary system indication systems, including fuel quantity and flow

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 inspect, test and troubleshoot aircraft instrument systems and components 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 inspection applications (including the timely involvement of supervisors or other trades) associated with aircraft instrument systems and components. It is essential that cleanliness requirements and safety precautions applicable to the system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical. Evidence of transferability of skills and knowledge related to inspection is essential. This is to be demonstrated through application across a range of aircraft instrument systems and components listed in the Range Statement. 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 system and at least one major system component/LRU from each of Groups 1 to 7 (Group 7 may be omitted where it is not applicable to the enterprise) 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 workplace or simulated workplace using tools and equipment specified in the maintenance manuals. It is also expected that general and special purpose tools, test and ground support equipment would be used where appropriate.
Method of assessment	

Guidance information for assessment

Individuals being assessed who have already attained MEA213C Inspect, test and troubleshoot advanced aircraft instrument systems and components, will have covered a significant proportion of the Performance Criteria for Element 1 and will have covered many of the Range Statement variables. Log of Industrial Experience and Achievement records relating to MEA213C Inspect, test and troubleshoot advanced aircraft instrument systems and components, may be accepted as also meeting the evidence requirements for this unit in the applicable areas.

The relationship between MEA213C Inspect, test and troubleshoot advanced aircraft instrument systems and components, and MEA212C Inspect, test and troubleshoot basic aircraft instrument systems and components may also be taken into account where MEA212C Inspect, test and troubleshoot basic aircraft instrument systems and components has been attained, but not MEA213C Inspect, test and troubleshoot advanced aircraft instrument systems and components. Advice in MEA212C Inspect, test and troubleshoot basic aircraft instrument systems and components regarding the coverage of MEA275A Maintain basic light aircraft instrument systems and components, may also be taken into consideration where applicable.

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.

Note	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide
Instrument systems and components	Instrument systems and components may include: 1. Flight instruments, including pitot/static systems, ASIs, VSIs, altimeters, altitude alerting and reporting, turn and bank and slip/turn coordinators, DGs and AHs (air and electrically driven) 2. Machmeters, air data systems, angle of attack, stall warning and avoidance systems 3. FDRs 4. Engine indication systems 5. Magnetic compasses and AHRS 6. Miscellaneous instrument systems, including pressure measurement, fuel quantity, fuel flow, position indication, voltage and frequency, current and power 7. GPWS
Application	Application of this unit may relate to: • scheduled or unscheduled maintenance activities • individual or team-related activities
Procedures and requirements	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Sector(s)

Aviation maintenance

Co-requisites

MEA205C Remove and install advanced aircraft general instrument system components