



Australian Government

MEA224 Inspect aircraft instrument systems and components

Release: 2

MEA224 Inspect aircraft instrument systems and components

Modification History

Release 2. Equivalent to MEA224 Inspect aircraft instrument 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 to inspect aircraft instrument 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 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
MEA292	Remove and install advanced aircraft instrument 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.	
1.	Inspect instrument systems and	1.1	Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with

components

the applicable maintenance manual

- 1.2 Instrument system components are visually or physically checked for external signs of defects in accordance with applicable maintenance manual while observing all relevant work health and safety (WHS) requirements
- 1.3 Defects are correctly identified and recorded in accordance with standard enterprise procedures

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.

Instrument systems and components include:

- Flight instruments, including pitot/static systems, airspeed indicators (ASIs), vertical speed indicators (VSIs), altimeters, altitude alerting and reporting, turn and bank and slip/turn coordinators, directional gyros (DGs) and artificial horizons (AHs) (air and electrically driven)
- Machmeters, air data systems, angle of attack, stall warning and avoidance systems
- Flight data recorders (FDRs)
- Engine indication systems
- Magnetic compasses and attitude and heading reference system (AHRS)
- Miscellaneous instrument systems, including pressure measurement, fuel quantity, fuel flow, position indication, voltage and frequency, current and power
- Ground proximity warning system (GPWS)
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Procedures and requirements include:

Unit Mapping Information

Release 2. Equivalent to MEA224 Inspect aircraft instrument 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 MEA224 Inspect aircraft instrument 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 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.

It is essential that inspection procedures, cleanliness requirements and safety precautions applicable to the instrument system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice (including the timely involvement of supervisors or other trades) 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 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
- 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 WHS practices
- instrument system maintenance requirements
- 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 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 a system and at least (1) one major system component/line replacement unit (LRU) from each of the following groups:
 - 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)
 - machmeters, air data systems, angle of attack, stall warning and avoidance systems
 - FDRs
 - engine indication systems
 - magnetic compasses and AHRS
 - miscellaneous instrument systems, including pressure measurement, fuel quantity, fuel flow, position indication, voltage and frequency, current and power
 - GPWS.
- 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.
- Individuals being assessed who have already attained MEA213 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 of Conditions variables. The Log of Industrial Experience and Achievement records relating to MEA213 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 MEA213 Inspect, test and troubleshoot advanced aircraft instrument systems and components, and MEA212 Inspect, test and troubleshoot basic aircraft instrument systems and components may also be taken into account where MEA212 Inspect, test and troubleshoot basic aircraft instrument systems and components has been attained, but not MEA213 Inspect, test and troubleshoot advanced aircraft instrument systems and components. Advice in MEA212 Inspect, test and troubleshoot basic aircraft instrument systems and components regarding the coverage of MEA275 Maintain basic light aircraft instrument systems and components, may also be taken into consideration where applicable.

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