



Australian Government

MEA204 Remove and install basic aircraft instrument system components

Release: 2

MEA204 Remove and install basic aircraft instrument system components

Modification History

Release 2 - Remote reading gyro compasses and gas turbine engine indication system components added to Range of Conditions

Release 1 - New unit of competency

Application

This unit of competency requires application of hand skills and the use of maintenance documentation/publications in the removal and installation of basic aircraft instrument system components of fixed and rotary wing aircraft that have basic instrument systems 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 pathway.

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

MEA201 Remove and install miscellaneous aircraft electrical hardware/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. Remove basic aircraft instrument system | 1.1 System is rendered safe and prepared in accordance with the applicable maintenance manual and isolation tags are |
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components	fitted, where necessary, to ensure personnel safety
	1.2 Instrument component removal is carried out in accordance with the applicable maintenance manual while observing all relevant work health and safety (WHS) requirements
	1.3 Required maintenance documentation is completed and processed in accordance with standard enterprise procedures
	1.4 Removed components are tagged and packaged in accordance with specified procedures
2. Install basic aircraft instrument system components	2.1 Instrument components to be installed are checked to confirm correct part numbers, modification status, serviceability and shelf life
	2.2 Physical installation of instrument components is performed in accordance with the applicable maintenance manual and regulatory requirements, ensuring appropriate adjustment/alignment is carried out
	2.3 System is reinstated to correct operational condition in preparation for testing, as necessary
	2.4 Required maintenance documentation is completed and processed 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 components include:

- Pitot/static system components, airspeed indicators (ASIs), vertical speed indicators (VSIs) and counter pointer altimeters
- Directional gyros (DGs) and artificial horizons (AHs),

- both air and electrically driven
- Turn and bank and slip/turn coordinators
 - Direct reading compasses
 - Remote reading gyro compasses (where applicable to the enterprise)
 - Piston engine indication system components (direct reading measuring instruments and temperature indication)
 - Gas turbine engine indication system components (where applicable to the enterprise)
 - Outside air temperature gauges (OAT)
 - Electrical systems indication (voltage, current, power and frequency)
 - Basic fuel quantity indication system components
 - Pneumatic/vacuum indication system components
- Procedures and requirements include:**
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 2 – Remote reading gyro compasses and gas turbine engine indication system components added to Range of Conditions and Assessment Requirements. No change in outcome

Release 1 – equivalent to MEA204C Remove and install basic aircraft instrument system 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 MEA204 Remove and install basic aircraft instrument system components

Modification History

Release 2 - Remote reading gyro compasses and gas turbine engine indication system components added to Assessment Requirements

Release 1 - New unit of competency

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:

- locating and identifying flight instrument system components comprising:
 - piston engine system temperature, pressure, speed (including mechanical and electrical tachometers), manifold pressure/boost (including aneroid type, sylphon bellows and dual compartment type)
 - gas turbine engine indicating system temperature, pressure, speed, torque, fuel flow and vibration (may be omitted if not relevant to the enterprise)
 - auxiliary direct reading systems, including hydraulic pressure, pneumatic pressure and vacuum, and fuel storage quantities
 - flight systems, including attitude, altitude, air speed and OAT
- locating and identifying direct reading compasses
- locating and identifying remote reading gyro compass system components (may be omitted if not relevant to enterprise)
- correct handling and observance of maintenance precautions relating to gyroscopes, gimbals, pitot/static systems (connections, heating and protrusions)
- applying relevant WHS practices.

It is essential that cleanliness requirements and safety precautions applicable to the system being maintained are fully observed, understood and complied with, as well as work practices associated with electrostatic sensitive devices.

Evidence of transferability of skills and knowledge related to removal and installation is essential. This is to be demonstrated by application across a range of aircraft instrument system components as 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 and plugs
- handling precautions relating to:

- electrostatic sensitive devices
- gyroscopes and gimbals
- basic instrument system and component operating principles:
 - atmospheric and barometry
 - terminology and unit of measurement conversion
 - aircraft instrumentation requirements
 - instrument panel layout
 - pressure sensing elements
 - pitot static systems and testing requirements
 - gyroscopic principles
 - direct reading compasses
 - remote reading gyro compasses
 - temperature sensors
 - fluid quantity indication systems
- general layout and components of the following systems:
 - flight systems, including:
 - altitude (direct reading altimeters)
 - attitude, including directional gyros and artificial horizons (both air and electrically driven), turn and slip and turn coordinator
 - airspeed
 - OAT
 - remote reading gyro compass system
 - piston engine indication systems, including:
 - direct reading temperature
 - direct reading pressure (e.g. oil pressure)
 - speed, including mechanical and electric tachometers
 - manifold pressure/boost, including aneroid, siphon bellows and dual compartment types
 - gas turbine engine indication systems, including:
 - temperature and pressure
 - speed, including mechanical and electric tachometers
 - torque
 - fuel flow
 - vibration
 - auxiliary direct reading systems, including:
 - electrical
 - hydraulic pressure
 - pneumatic pressure and vacuum
 - basic fuel quantity indication
- relevant WHS practices

- 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 maintenance manuals. It is also expected that general-purpose tools, test and ground support equipment found in most routine maintenance situations would be used where appropriate.
- An understanding of the attachment methods, connection of hardware, and the need for adjustment or calibration and system operation as they relate to the work must be demonstrated 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 (1) component from each of:
 - pitot/static system components, ASIs, VSIs and counter pointer altimeters
 - DGs and AHs, both air and electrically driven
 - turn and bank and slip/turn coordinators
 - remote reading gyro compass system (may be omitted if not relevant to the enterprise)
 - direct reading compasses
 - piston engine indication system components (direct reading measuring instruments and temperature indication)
 - gas turbine engine indication system components (may be omitted if not relevant to the enterprise)
 - electrical systems indication (voltage, current, power and frequency)
 - basic fuel quantity indication system components
 - pneumatic/vacuum indication system components.
- 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 MEA275 Maintain basic light aircraft instrument systems and components will have met all of the criteria for this unit. The Log of Industrial Experience and Achievement records relating to MEA275 Maintain basic light aircraft instrument systems and components may be accepted as also meeting the evidence requirements for this unit.

Links

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