



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEA205C Remove and install advanced aircraft instrument system components**

**Revision Number: 2**

## **MEA205C Remove and install advanced aircraft instrument system components**

### **Modification History**

Minor formatting and editorial changes made. Additional assessment advice provided in the Evidence Guide.

### **Unit Descriptor**

This unit of competency is part of the Avionic Certificate IV AME training pathway. It covers the competencies required for the removal and installation of general instrument system components in the more advanced types of both 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 chosen Aircraft Maintenance Engineer 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 maintenance documentation/publications in the removal and installation of components of advanced instrument systems.

Applications include fixed and rotary wing aircraft that have advanced instrument systems.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

MEA201B	Remove and install miscellaneous aircraft electrical hardware/components
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## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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## Elements and Performance Criteria

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| <p>1. Remove advanced aircraft instrument system components</p>  | <p>1.1. System is rendered safe and prepared in accordance with the applicable manual and isolation tags are fitted where necessary to ensure personnel safety</p> <p>1.2. <b><i>Instrument component</i></b> removal is carried out in accordance with the applicable manual</p> <p>1.3. Required maintenance documentation is completed and processed in accordance with enterprise procedures</p> <p>1.4. Removed components are tagged and packaged in accordance with specific requirements</p>  |
| <p>2. Install advanced aircraft instrument system components</p> | <p>2.1. Instrument components to be installed are checked to confirm correct part number, modification status, serviceability and shelf life</p> <p>2.2. Physical installation of instrument components is performed in accordance with the applicable maintenance manual and regulatory requirements, ensuring appropriate adjustments are carried out</p> <p>2.3. System is reinstated to correct operational condition in preparation for testing</p> <p>2.4. Required maintenance documentation is completed and processed in accordance with enterprise procedures</p> |

## Required Skills and Knowledge

### Required skills

Look for evidence that confirms skills in:

- locating and identifying flight instrument system components comprising:
  - engine system temperature, pressure (including thermocouples, sensor units and transmitters), speed (including mechanical and electrical tachometers), thrust (fan, propeller, jet), torque, fuel flow and vibration
  - auxiliary systems, including hydraulic pressure and temperature, transmission pressure and temperature, fuel storage quantities, fuel remaining/used, component position, i.e. flaps, landing gear, speed brakes and door/pylon locking
  - flight systems, including attitude, altitude, air speed, OAT and GPWS
- locating and identifying direct reading compasses, remote compass system components (flux valve, gyro, amplifier and indicator), and AHRS components
- locating and identifying FDR system components
- correct handling procedures and maintenance precautions relating to gyroscopes, gimbals, pitot/static systems (connections, heating and protrusions)
- applying relevant OHS practices

### Required knowledge

Look for evidence that confirms knowledge of:

- component attachment methods
- connection of hardware and plugs
- handling precautions for electrostatic sensitive devices
- relevant OHS practices
- the use of approved maintenance documentation and aircraft publications relating to basic and advance instrument systems
- 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
  - temperature sensors
  - fluid quantity indication systems
- general layout and components of the following systems:
  - flight systems, including:
    - altitude (direct reading, servo and encoding altimeters)

- attitude, including DG and AH (both air and electrically driven) and turn and slip, and AHRS
- airspeed, including ASI, machmeters and air data systems
- VSI
- angle of attack and stall warning/avoidance
- OAT
- GPWS
- engine indication systems, 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
- remote compass systems
- FDR systems
- relevant OHS practices

## 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.

<p><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to remove and install the components of aircraft basic and advanced instrument systems while observing all relevant safety and component handling precautions.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>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.</p> <p>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 Range Statement. 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.</p> <p>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 at least one component from each of Groups 1 to 7 (Groups 6 and 7 may be omitted where not applicable to the enterprise) 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.</p>
<p><b>Context of and specific resources for assessment</b></p>	<p>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 situations would be used where appropriate.</p>
<p><b>Method of assessment</b></p>	
<p><b>Guidance information for</b></p>	<p>Individuals being assessed who have already attained</p>

<b>assessment</b>	MEA204C Remove and install basic aircraft instrument system components or MEA275A Maintain basic light aircraft instrument systems and components, will have covered a significant amount of the skill and knowledge requirements for this unit plus part of the Performance Criteria for Elements 1 and 2 and associated Range Statement items. Log of Industrial Experience and Achievement records relating to MEA204C Remove and install basic aircraft instrument system components or MEA275A Maintain basic light aircraft instrument systems and components, may be accepted as also meeting the evidence requirements for this unit in the applicable areas.
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## Range Statement

<p>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.</p>	
<b>Note</b>	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide
<b>Instrument components</b>	<p>Instrument components may be:</p> <ol style="list-style-type: none"> <li>1. Pitot/static system components, ASIs, VSIs, air data system components, machmeters, altimeters, including servo and encoding altimeters, angle of attack and stall warning/avoidance systems</li> <li>2. Turn and slip, DGs, AHs, AHRS components (where applicable to enterprise), remote reading gyro compass system components and direct reading compasses</li> <li>3. Turbine engine indication systems</li> <li>4. Transmitter/indicator measuring instrument systems (pressure, temperature, position)</li> <li>5. Fuel quantity indication and flow systems components</li> <li>6. GPWS</li> <li>7. FDR</li> </ol>
<b>Application</b>	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> <li>• scheduled or unscheduled maintenance activities</li> <li>• individual or team-related activities</li> </ul>
<b>Procedures and requirements</b>	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

## Unit Sector(s)

Aviation maintenance

## Competency field

## Co-requisite units

Not applicable