



Australian Government

MEA222C Inspect, test and troubleshoot aircraft oxygen systems and components

Revision Number: 2

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Modification History

Minor formatting and editorial changes made.

Unit Descriptor

This unit of competency is part of the Avionic (Aircraft Maintenance Stream) training pathways and is also part of the Mechanical Aircraft Maintenance Engineer licensing pathway. It covers the competencies required to inspect, test and troubleshoot oxygen 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 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 system/component knowledge and applicable maintenance publications and test equipment to inspect, test and troubleshoot aircraft oxygen systems and components.

Applications include fixed and rotary wing aircraft that have oxygen systems.

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.
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Elements and Performance Criteria

1. Inspect oxygen system components
 - 1.1. Relevant maintenance documentation and modification status, including system defect reports, where relevant, are used to identify specific inspection requirements
 - 1.2. Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual
 - 1.3. **Oxygen system components** are visually or physically checked for external signs of defects in accordance with applicable maintenance manual
 - 1.4. Defects are correctly identified and reported
2. Test/adjust oxygen systems
 - 2.1. Aircraft and system are prepared in accordance with applicable maintenance manual for the application of power/system operation
 - 2.2. Oxygen system is functionally tested, in accordance with maintenance manual, for evidence of serviceability or malfunction
 - 2.3. System calibration or adjustments are performed in accordance with maintenance manual, as appropriate
3. Troubleshoot oxygen systems
 - 3.1. Available information from maintenance documentation, inspection and test results is used, where necessary, to assist in fault determination
 - 3.2. Maintenance manual fault diagnosis guides and logic processes are used to ensure efficient and accurate **troubleshooting**
 - 3.3. Specialist advice is obtained, where required, to assist with the troubleshooting process
 - 3.4. Oxygen system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required
 - 3.5. Rectification requirements are determined

Required Skills and Knowledge

Required skills

Look for evidence that confirms skills in:

- applying appropriate OHS practices
- using approved maintenance documentation and aircraft publications relating to aircraft oxygen systems and components for the purpose of system testing
- general application of logical fault-finding and use of truth tables during troubleshooting
- interpreting oxygen system instruments, gauges, warning annunciators and test equipment, i.e. leak detectors
- applying the methods used to locate, identify and access oxygen system components for inspection, testing and troubleshooting
- demonstrating the procedure to replenish a dry breathing oxygen system, including:
 - correct identification of oxygen ground trolleys
 - maximum charging pressures for low and high pressure systems
 - safety precautions to be adhered to during replenishment
 - correct order of procedural replenishment steps
- demonstrating the procedure to purge a dry breathing oxygen system, including:
 - reasons for the requirement to undertake a purging operation
 - identification of acceptable system purging gases
 - safety precautions to be adhered to during purging
 - correct techniques to be employed when purging oxygen storage cylinders or systems

Required knowledge

Look for evidence that confirms knowledge of:

- component attachment methods, connection of hardware and couplings and their physical security within the aircraft
- oxygen system isolation
- properties of aircraft oxygen and requirements for aircrew/passengers
- properties of the atmosphere and how they vary.
- defining terms and units of measurement relating to aircraft altitude and system pressures
- layout of low and high-pressure dry breathing oxygen systems and components
- operation of oxygen systems and components, including:
 - pressure demand regulators
 - passenger service regulators
 - altitude sensing barometers
- methods by which gaseous dry breathing oxygen is stored in both the aircraft and within the workplace environment. Reference to storage trolleys, aircraft cylinders and chemical oxygen cylinders is required
- oxygen system maintenance requirements and troubleshooting procedures
- relevant OHS practices

- relevant maintenance manuals
- relevant regulatory requirements and standard procedures

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>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to inspect, test and troubleshoot aircraft oxygen systems and components while observing all relevant safety precautions.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The underlying skills inherent in this unit should be transferable across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) associated with aircraft oxygen systems and components. It is essential that system testing procedures, 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.</p> <p>Evidence of transferability of skills and knowledge related to inspection, testing and troubleshooting is essential. This is to be demonstrated through application across a range of aircraft oxygen systems and components listed in the Range Statement. The application of testing procedures should clearly indicate knowledge of system operation, the relationship of individual components and the links with other systems (if applicable) within the limits of the aircraft/system fault finding guide before undertaking any action. The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards.</p> <p>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 item from each of Groups 1 and 2 in the Range Statement (Groups 3 and 4 may be omitted where they are not applicable to the enterprise). 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>Context of and specific resources for</p>	<p>Competency should be assessed in the workplace or</p>

assessment	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	

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>	
Note	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide
Oxygen system components	<p>Oxygen system components include:</p> <ol style="list-style-type: none"> 1. Oxygen pressure cylinders, valves and gauges 2. Regulators, masks (including other integrated systems), pipes, hoses and fittings 3. Chemical generators 4. LDBO converters
Troubleshooting	Troubleshooting involves the use of fault-finding charts or similar, to line replacement level
Application	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> • 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

Competency field

Co-requisite units

MEA209C Remove and install aircraft oxygen system components