



Australian Government

MEA222 Inspect, test and troubleshoot aircraft oxygen systems and components

Release: 1

MEA222 Inspect, test and troubleshoot aircraft oxygen systems and components

Modification History

Release 1 - New unit of competency

Application

This unit of competency 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 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 (Aircraft Maintenance Stream) training pathways and is also part of the Mechanical Aircraft Maintenance Engineer licensing 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

MEA209 Remove and install aircraft oxygen 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.

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| 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 |
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| | 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 while observing all relevant work health and safety (WHS) requirements |
| | 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 to line replacement level |
| | 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 |

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.

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| Oxygen system components include: | <ul style="list-style-type: none">• Oxygen pressure cylinders, valves and gauges• Regulators, masks (including other integrated systems), pipes, hoses and fittings• Chemical generators (where applicable to the enterprise)• Liquid dry breathing oxygen (LDBO) converters (where applicable to the enterprise) |
| Troubleshooting includes: | <ul style="list-style-type: none">• The use of fault-finding charts or similar, to line replacement level |
| Procedures and requirements include: | <ul style="list-style-type: none">• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise |

Unit Mapping Information

Release 1 – equivalent to MEA222C Inspect, test and troubleshoot aircraft oxygen 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 MEA222 Inspect, test and troubleshoot aircraft oxygen systems and components

Modification History

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 include:

- applying appropriate WHS 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
- employing correct techniques when purging oxygen storage cylinders or systems.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the oxygen system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) is critical.

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 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 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 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 the maintenance manuals. It is also expected that general and special purpose tools, and test and ground support equipment would be used where appropriate.
- 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.
- 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) item from each of:
 - oxygen pressure cylinders, valves and gauges
 - regulators, masks (including other integrated systems), pipes, hoses and fittings
 - chemical generators (may be omitted if not applicable to the enterprise)
 - LDBO converters (may be omitted if 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 (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.
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