



Australian Government

MEA310C Inspect, test and troubleshoot aircraft pneumatic systems and components

Release 3

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Modification History

Release 3 – Range of Variables Group 3 and assessment requirements amended to allow omission where pressurisation systems are not applicable to the enterprise - equivalent.
Release 2 - Minor formatting and editorial changes made. Prerequisite unit version code updated. Additional assessment advice provided in the Evidence Guide.

Unit Descriptor

This unit of competency is part of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathway. It covers the competencies required to inspect, test and troubleshoot aircraft pneumatic systems and components. This 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 extension 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, standard trade practices and systems knowledge in the inspection, testing and troubleshooting of aircraft pneumatic systems and components.

Applications include pneumatic systems and components fitted to both fixed and rotary wing aircraft.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEA303D Remove and install aircraft pneumatic system components

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

1. Inspect pneumatic systems and components
 - 1.1. Isolation tags already attached to the system or related systems are checked and aircraft configured for safe system inspection and operation in accordance with specified procedures
 - 1.2. **Pneumatic system** is visually or physically checked for external signs of defects in accordance with specified procedures
2. Test pneumatic systems
 - 2.1. The aircraft and pneumatic systems are correctly prepared in accordance with specified procedures for the application of power
 - 2.2. Power is applied and system functionally tested in accordance with specified procedures for evidence of malfunction or leaks
 - 2.3. System calibration or adjustments are performed in accordance with specified procedures
3. Prepare for troubleshooting
 - 3.1. Relevant maintenance documentation and modification status, including system defect/service difficulty reports, where relevant, are interpreted to identify an unserviceability
4. Troubleshoot pneumatic systems
 - 4.1. Available information from maintenance documentation and inspection and test results is used, where necessary, to assist in fault determination
 - 4.2. Maintenance manual fault diagnosis guide and logical processes are used to ensure efficient and accurate **troubleshooting**
 - 4.3. Specialist advice is obtained, where required, to assist with the troubleshooting process
 - 4.4. Pneumatic system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required
 - 4.5. Fault rectification requirements are determined to assist in planning the repair or adjustment

Required Skills and Knowledge

Required skills

Look for evidence that confirms skills in:

- using hand skills and tools in the inspection, adjustment and troubleshooting of pneumatic systems
- using hand skills and tools in the inspection, adjustment and troubleshooting of pneumatic system components
- using maintenance manuals to prepare the aircraft for inspection, testing and troubleshooting of pneumatic systems and components
- effectively using maintenance documentation and relevant fault diagnosis guides in the troubleshooting process
- recognising external defects in pneumatic systems and components
- applying standard procedures
- observing all relevant OHS practices

Required knowledge

Look for evidence that confirms knowledge of:

- standard trade practices relating to tool usage and installation/securing of aircraft hardware
- pneumatic system:
 - layout
 - operation and characteristics
 - component operation and construction
 - electrical and instrument system interfaces
- how to configure the aircraft for inspection, testing and troubleshooting of pneumatic systems and components
- pneumatic system maintenance requirements and troubleshooting procedures
- OHS procedures relating to pneumatic systems and components
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures, including those relating to the handling and control of halon fire-extinguishers

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.

Overview of assessment

A person who demonstrates competency in this unit must be able to apply hand skills and use maintenance publications to inspect, test and troubleshoot a range of pneumatic systems and components while applying all relevant OHS procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

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 pneumatic systems and their components. It is essential that system test procedures take into account all safety precautions applicable to the system being maintained, especially where system operation/switching interrelates to other systems being maintained. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical.

Evidence of transferability of skills and knowledge related to inspection, testing and troubleshooting is essential. This may be demonstrated through application across a number of aircraft systems or aircraft types. 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.

A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of this unit of competency are being achieved under routine supervision on each type of system (Groups 1 to 4 - Group 3 may be omitted where it is not applicable to the enterprise)) and on at least one component from each of Groups 5 to 9, as listed 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>Context of and specific resources for assessment</p>	<p>Competency should be assessed in the work environment or simulated work environment, using procedures, tools and equipment specified in maintenance documentation. It is also expected that general purpose tools, test and ground support equipment found in most routine situations would be used where appropriate. The level of troubleshooting is limited in its application to the use of fault diagnosis guides or other similar information.</p>
<p>Method of assessment</p>	
<p>Guidance information for assessment</p>	<p>Individuals being assessed who have already attained MEA355A Maintain light aircraft air cycle air conditioning systems, and/or MEA356A Maintain light piston engine aircraft pressurisation systems, will have satisfied the requirements of this unit with regard to common Range Statement variables. Log of Industrial Experience and Achievement records relating to MEA355A Maintain light aircraft air cycle air conditioning systems, and MEA356A Maintain light piston engine aircraft pressurisation systems, may be accepted as also meeting the evidence requirements for this unit in the applicable common areas.</p>

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>	
<p>Note</p>	<p>Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide</p>
<p>Pneumatic systems and components</p>	<p>Pneumatic systems include:</p> <ol style="list-style-type: none"> 1. De-icing 2. Air cycle air conditioning 3. Pressurisation (may be omitted if not applicable to enterprise) 4. Fire-extinguishing <p>Components of pneumatic systems include:</p> <ol style="list-style-type: none"> 5. Filters, valves, pumps, motors, actuators, regulators 6. Gauges (direct reading), temperature sensors, pressurisation controllers, temperature controllers 7. Heat exchangers, pressure vessels, condensers, compressors, expansion turbines, humidifiers 8. Rigid and flexible pipelines, hoses and fittings 9. Ducting
<p>Troubleshooting</p>	<p>Troubleshooting involves the use of fault-finding charts or similar, to line replacement level</p>
<p>Electrical interface</p>	<p>The work can include associated electrical loom terminations and/or plugs</p>
<p>Application</p>	<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
<p>Procedures and requirements</p>	<p>Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise</p>

Unit Sector(s)

Aviation maintenance

Competency field

Not applicable.

Co-requisite units

Not applicable