Australian Government

Department of Education, Employment and Workplace Relations

# MEA356A Maintain light piston engine aircraft pressurisation systems

**Revision Number: 2**

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## Modification History

Minor formatting and editorial changes made. Unit version codes updated in unit application.

## Unit Descriptor

This unit of competency is part of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathway. It covers the competencies required to maintain light piston engine aircraft pressurisation systems and system components.

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, troubleshoot and replace components of light piston engine aircraft pressurisation systems.

Applications include all types of light fixed wing piston engine aircraft that have cabin pressurisation systems. Where aircraft types have pressurisation and air cycle air conditioning systems the applicable units are MEA208C Remove and install aircraft pressurisation control system components, MEA219C Inspect, test and troubleshoot aircraft pressurisation control systems and components, MEA303D Remove and install aircraft pneumatic system components and MEA310C Inspect, test and troubleshoot aircraft pneumatic systems and components.

## Licensing/Regulatory Information

Not applicable.

# Pre-Requisites

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| MEA201B | Remove and install miscellaneous aircraft electrical hardware and components |
| MEA246C | Fabricate and/or repair aircraft electrical hardware or parts |

# Employability Skills Information

This unit contains employability skills.

# Elements and Performance Criteria Pre-Content

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| 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. |

# Elements and Performance Criteria

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| 1. Inspect light piston engine aircraft pressurisation system | 1.1. Relevant maintenance documentation and modification status, including system defect reports, where relevant, are used to identify specific inspection requirements<br>1.2. Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual<br>1.3. ***Pressurisation system components*** are visually or physically checked for external signs of defects in accordance with applicable maintenance manual<br>1.4. Defects are correctly identified and reported |
| 2. Test/adjust light piston engine aircraft pressurisation systems and components | 2.1. Aircraft and system are prepared in accordance with applicable maintenance manual for the application of power/system operation<br>2.2. Pressurisation system is functionally tested in accordance with maintenance manual for evidence of serviceability or malfunction<br>2.3. System adjustment is performed in accordance with maintenance manual |
| 3. Troubleshoot light piston engine aircraft pressurisation systems | 3.1. Available information from maintenance documentation, inspection and test results is used, where necessary, to assist in fault determination<br>3.2. Maintenance manual fault diagnosis guides and logic processes are used to ensure efficient and accurate ***troubleshooting***<br>3.3. Specialist advice is obtained, where required, to assist with the troubleshooting process<br>3.4. Pressurisation system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required, in accordance with standard enterprise procedures<br>3.5. Rectification requirements are determined |
| 4. Remove and install light piston engine aircraft pressurisation system components | 4.1. System is rendered safe in accordance with the applicable maintenance manual and isolation tags are fitted, where necessary, to ensure personnel safety<br>4.2. Pressurisation system component removal is carried out in accordance with the applicable maintenance manual<br>4.3. Required maintenance documentation is accurately completed and correctly processed<br>4.4. Removed components are tagged, sealed and packaged in accordance with specified procedures<br>4.5. Components to be installed are checked to confirm correct part numbers, serviceability and modification |

status

4.6. Installation is carried out in accordance with the applicable maintenance manual

4.7. Required maintenance documentation is completed and processed in accordance with standard enterprise procedures

# Required Skills and Knowledge

## Required skills

Look for evidence that confirms skills in:

- using hand skills, tools and test equipment in the testing, adjustment and troubleshooting of light piston engine aircraft pressurisation systems and components, including system component removal and installation
- recognising pressurisation system and component defects/external damage, correct installation and security for the types of system components listed in the Range Statement
- performing system functional tests and checks to isolate system faults and assess post-maintenance serviceability
- effectively using maintenance documentation and relevant fault diagnosis guides in the troubleshooting process and for component removal and installation
- applying standard procedures
- observing all relevant OHS procedures, including use of MSDS and PPE

## Required knowledge

Look for evidence that confirms knowledge of:

- OHS precautions relevant to light piston engine aircraft pressurisation system maintenance and how to obtain MSDS and PPE
- physiological aspects relating to high altitude flight:
  - human oxygen requirements and hypoxia
  - human temperature requirements and hypothermia
- standard trade practices relating to tool and test equipment usage and installation/securing of system components
- sources of pressurised air (cabin supercharger, air pump or engine turbocharger)
- the relationship between cabin altitude and pressure differential and related structural limitations
- pressurisation system:
  - layout
  - operation and characteristics
  - system component operation and construction:
    - outflow valves
    - pressure controllers
    - safety valves
    - negative pressure relief valves
    - dump valves
    - ducting and outlets
  - electrical and instrument interfaces, including warning and cabin pressure indication systems
- interface with heating and air conditioning systems
- how to configure the aircraft for inspection, testing and troubleshooting of pressurisation

systems and components
- pressurisation system maintenance requirements and troubleshooting
- component attachment methods
- connection hardware and couplings
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures
- maintenance requirements and troubleshooting 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. | |
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| **Overview of assessment** | A person who demonstrates competency in this unit must be able to inspect, test and troubleshoot light piston engine aircraft pressurisation systems and remove and install a range of pressurisation system components that is representative of the scope of the listed variables in accordance with relevant maintenance manual instructions while applying all relevant OHS procedures and standard processes. |
| **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 light piston engine aircraft pressurisation systems and components. It is essential that relevant procedures, cleanliness requirements and safety precautions are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical.<br><br>Evidence of transferability of skills and knowledge related to inspection, testing, troubleshooting and component removal and installation is essential. This may be demonstrated through application across pressurisation systems and components as 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.<br><br>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 a pressurisation system and on a representative range of components as listed in Groups 1 to 5 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. |

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| **Context of and specific resources for assessment** | Competency should be assessed in the work environment or simulated work environment using tools and equipment specified in maintenance documentation. It is also expected that general purpose tools and test equipment found in most routine situations would be used where appropriate. |
| **Method of assessment** | |
| **Guidance information for assessment** | |

# Range Statement

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.

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| **Note** | Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide |
| **Pressurisation system components** | Pressurisation system components may include:<br>1. Pressure controllers<br>2. Outflow valves<br>3. Safety valves<br>4. Negative pressure relief valves<br>5. Ducting |
| **Troubleshooting** | Troubleshooting involves the use of test sets, downloaded maintenance data and fault-finding charts or similar, to line replacement level |
| **Application** | Application of this unit may relate to:<br>• scheduled or unscheduled maintenance<br>• 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

Not applicable