



Australian Government

Department of Education, Employment and Workplace Relations

MEA320B Test and troubleshoot aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components

Release: 1

MEA320B Test and troubleshoot aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit requires application of hand skills, standard trade practices and systems knowledge in the testing and troubleshooting of aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components. Applications include hydro-mechanical, mechanical, gaseous and landing gear systems and components fitted to fixed wing aircraft.
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Application of the Unit

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	MEA318B	Inspect aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components

Employability Skills Information

Employability skills	This unit contains employability skills.
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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

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for troubleshooting.	Relevant maintenance documentation and modification status, including system defect/ service difficulty reports where relevant, are interpreted to identify an unserviceability.
2. Test hydro-mechanical, mechanical, gaseous and landing gear systems and components.	2.1. The aircraft and hydro-mechanical, mechanical, gaseous and landing gear systems are correctly prepared, in accordance with specified procedures, for the application of power. 2.2. Power is applied and system and components 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. Troubleshoot hydro-mechanical, mechanical, gaseous and landing gear systems and components.	3.1. Available information from maintenance documentation and inspection and test results is used, where necessary, to assist in fault determination. 3.2. Maintenance manual fault diagnosis guide and logical processes are used to ensure efficient and accurate <i>troubleshooting</i>. 3.3. Specialist advice is obtained, where required, to assist with the troubleshooting process. 3.4. <i>Hydro-mechanical, mechanical, gaseous and landing gear system and component</i> faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required. 3.5. Fault rectification requirements are determined to assist in planning the repair or adjustment.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- Application of all relevant OH&S procedures
- The use of maintenance manuals to prepare the aircraft for testing and troubleshooting of hydraulic, fuel, gaseous, flight control, landing gear and mechanical systems and components
- Use of hand skills, tools and systems knowledge in the testing, adjustment and troubleshooting of hydraulic, fuel, gaseous, mechanical and landing gear systems
- Use of hand skills, tools and component knowledge in the adjustment and troubleshooting of hydraulic, fuel, gaseous and mechanical system components
- Jacking of the aircraft as required for landing gear system testing, rigging and troubleshooting
- Use of hand skills, tools and system/component knowledge in the adjustment and troubleshooting of landing gear components
- The effective use of maintenance documentation and relevant fault diagnosis guides in the troubleshooting process
- The recognition of external defects in hydro-mechanical, gaseous, mechanical and landing gear systems and components

Required knowledge

Look for evidence that confirms knowledge of:

- Hydraulic, fuel, gaseous, mechanical and landing gear system layout, operation and characteristics and system component operation and construction including electrical system interfaces
- How to configure the aircraft for testing and troubleshooting of hydraulic, fuel, gaseous, mechanical and landing gear systems and components

Evidence Guide

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 test and troubleshoot a range of hydraulic, fuel, gaseous and mechanical system and landing gear components in accordance with relevant maintenance manual instructions while applying all relevant OH&S 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 testing and troubleshooting applications (including the timely involvement of supervisors or other trades) associated with aircraft hydro-mechanical, gaseous, mechanical and landing gear 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 inter-relates 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 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 and on at least one component of each group listed in the Range Statement, as follows:

- Hydraulic systems - a system and at least one component from each of hydro-mechanical system

EVIDENCE GUIDE	
	components 3 and 5 • Fuel systems - a system and at least one component from each of 4 and 5 • Landing gear systems - each listed system 6 to 8 • Landing gear components - one each of 9 to 11 • Gaseous systems - each listed system 12 to 15 and at least one component from each of gaseous system components 16 to 19 • Mechanical systems - a system applicable to each of 20 and 21 and at least one component from each of mechanical system components 22 to 24 This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry .
Context of and specific resources for assessment	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.
Method of assessment	
Guidance information for assessment	

Range Statement

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.	
Note	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide.
Hydro-mechanical systems and components	<i>Hydro-mechanical systems include:</i> 1. Hydraulic systems 2. Fuel systems <i>Components of hydro-mechanical systems include:</i> 3. Hydraulic accumulators, filters, reservoirs, valves, pumps, motors, actuators, regulators, direct reading gauges 4. Fuel system filters, valves, pumps, rigid and flexible storage cells/tanks 5. Rigid and flexible pipelines, hoses and fittings
Landing gear systems and components (components of landing gear retraction, steering and braking systems are covered by hydro-mechanical and mechanical system components)	<i>Landing gear systems include:</i> 6. Retraction systems 7. Steering systems 8. Brake systems, including anti-skid where applicable <i>Landing gear components include:</i> 9. Wheel assemblies 10. Brake units 11. Struts/oleos
Gaseous systems and components	<i>Gaseous systems include:</i> 12. Pneumatic 13. Air cycle air conditioning 14. Pressurisation 15. Fire extinguishing <i>Gaseous system components include:</i> 16. Gauges (direct reading), temperature sensors, pressurisation controllers, temperature controllers 17. Heat exchangers, pressure vessels, condensers, compressors, expansion turbines, humidifiers, valves, actuators

RANGE STATEMENT	
	18. Rigid and flexible pipelines and fittings 19. Ducting
Mechanical systems and components	<i>Mechanical systems include:</i> 20. Mechanical operating and locking systems 21. Mechanical flight control systems or the mechanical elements of power-assisted flight control systems <i>Mechanical system components include:</i> 22. Cables, pulleys, guides, fairleads, tension regulators, chains, sprockets 23. Control rods, torque tubes, bellcranks, screwjacks, clutches, springs, bearings, gears 24. Control sticks, wheels, columns, trim wheels or handles, rudder pedals
Troubleshooting	<i>Troubleshooting</i> involves the use of fault finding charts or similar, to line replacement level.
Application	Application of this unit may relate to: • 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)

Unit sector	
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Competency field

Competency field	Aviation maintenance
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Co-requisite units

Co-requisite units		