



Australian Government

MEA309 Inspect, test and troubleshoot aircraft hydro-mechanical and landing gear systems and components

Release: 2

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Modification History

Release 2. Equivalent to MEA309 Inspect, test and troubleshoot aircraft hydro-mechanical and landing gear systems and components with amended prerequisite codes.

Application

This unit of competency requires application of hand skills, standard trade practices and systems knowledge in the inspection, testing and troubleshooting of aircraft hydro-mechanical and landing gear systems and components of fixed and rotary wing aircraft during the performance of scheduled or unscheduled maintenance. Maintenance may be performed individually or as part of a team.

The unit is part of the Mechanical Certificate IV (Aircraft Maintenance Stream) training 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

MEA3 98 Remove and install aircraft hydro-mechanical and landing gear 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.

1. Inspect hydro-mechanical

1.1 Isolation tags already attached to the system or related systems are checked and aircraft configured for safe

systems and components		system inspection and operation in accordance with specified procedures
	1.2	Hydro-mechanical system and system components are visually or physically checked for external signs of defects in accordance with specified procedures while observing all relevant work health and safety (WHS) requirements, including the use of material safety data sheets (MSDS) and items of personal protective equipment (PPE)
2. Inspect landing gear systems and components	2.1	Isolation tags already attached to the system or related systems are checked and aircraft configured, including jacking where necessary, for safe system inspection and operation in accordance with specified procedures
	2.2	Landing gear system and system components are visually or physically checked for external signs of defects in accordance with specified procedures while observing all relevant WHS requirements, including the use of MSDS and PPE
3. Test hydro-mechanical and landing gear systems	3.1	The aircraft and hydro-mechanical systems are correctly prepared, in accordance with specified procedures, for the application of power
	3.2	Power is applied and system functionally tested, in accordance with specified procedures, for evidence of malfunction or leaks
	3.3	System calibration or adjustments are performed in accordance with specified procedures
4. Prepare for troubleshooting	4.1	Relevant maintenance documentation and modification status, including system defect/ service difficulty reports where relevant, are interpreted to identify an unserviceability
5. Troubleshoot hydro-mechanical and landing gear systems	5.1	Available information from maintenance documentation and inspection and test results is used, where necessary, to assist in fault determination
	5.2	Maintenance manual fault diagnosis guide and logical processes are used to ensure efficient and accurate troubleshooting to line replacement level
	5.3	Specialist advice is obtained, where required, to assist with the troubleshooting process

- 5.4 Hydro-mechanical and landing gear system faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required
- 5.5 Fault rectification requirements are determined to assist in planning the repair or adjustment

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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|---|---|
| Hydro-mechanical systems include: | <ul style="list-style-type: none">• Hydraulic systems• Fuel systems |
| Components of hydro-mechanical systems include: | <ul style="list-style-type: none">• Hydraulic accumulators, filters, reservoirs, valves, pumps, motors, actuators, regulators and direct reading gauges• Fuel system filters, valves, pumps, rigid and flexible storage cells/tanks• Rigid and flexible pipelines, hoses and fittings |
| Landing gear systems include: | <ul style="list-style-type: none">• Retraction systems• Steering systems• Brake systems, including anti-skid, where applicable |
| Landing gear components include:
(Components of landing gear systems are included in hydro-mechanical system components) | <ul style="list-style-type: none">• Wheel assemblies, skids and floats• Brake units• Struts/oleos |
| Procedures and requirements include: | <ul style="list-style-type: none">• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise |
| Electrical interface includes: | <ul style="list-style-type: none">• Associated electrical loom terminations and/or plugs |

Unit Mapping Information

Release 2. Equivalent to MEA309 Inspect, test and troubleshoot aircraft hydro-mechanical and landing gear 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 MEA309 Inspect, test and troubleshoot aircraft hydro-mechanical and landing gear systems and components

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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 must include:

- using hand skills and tools in the inspection, adjustment and troubleshooting of hydraulic, fuel and landing gear systems
- using hand skills and tools in the inspection, adjustment and troubleshooting of hydraulic and fuel system components
- jacking of the aircraft, as required, for landing gear system inspection, testing and troubleshooting
- using hand skills and tools in the inspection, adjustment and troubleshooting of landing gear components
- using maintenance manuals to prepare the aircraft for inspection, testing and troubleshooting of hydro-mechanical and landing gear systems and components
- effectively using maintenance documentation and relevant fault diagnosis guides in the troubleshooting process
- recognising external defects in hydro-mechanical and landing gear systems and components
- applying standard procedures
- observing all relevant WHS practices, including the use of MSDS and PPE.

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 hydro-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 interrelates to other systems being maintained.

Ability to interpret system performance specifications (allowable limits) and apply them in practice is critical and shall be demonstrated through application across the range of systems 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:

- standard trade practices relating to tool usage and installation/securing of aircraft hardware
- fluid power theory
- hydraulic system layout, operation and characteristics (including electrical system interfaces) and system component construction and operation for:
 - flight control systems including primary controls, flaps, speed brakes and spoilers
 - landing gear retraction systems
 - brake and anti-skid systems
 - nosewheel steering systems
- fuel system and component layout, operation and characteristics (including electrical system interfaces) and system component operation and construction
- construction and operation of landing gear components, including:
 - wheel assemblies
 - skids
 - floats
 - struts/oleos
 - uplocks and downlocks
 - mechanical linkages
- how to configure the aircraft for inspection, testing and troubleshooting of hydraulic, fuel and landing gear systems and components
- maintenance requirements and troubleshooting procedures
- relevant WHS practices relating to hydraulic systems, fuel systems and landing gear components, including lifting and handling of heavy items
- how to obtain MSDS
- selection and use of PPE
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

Assessment Conditions

- 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 applicable general-purpose tools, test and ground support equipment found in most routine situations 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 (including safe handling of heavy components) and quality requirements in accordance with the industry and regulatory standards.
- The level of troubleshooting is limited in its application to the use of fault diagnosis guides or other similar information.
- 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 this unit of competency are being achieved under routine supervision on each type of system:
 - hydraulic systems
 - fuel systems
 - retraction systems
 - steering systems
 - brake systems, including anti-skid, where applicable
- and on at least one (1) component from each of the following groups:
 - hydraulic accumulators, filters, reservoirs, valves, pumps, motors, actuators, regulators, direct reading gauges
 - fuel system filters, valves, pumps, rigid and flexible storage cells/tanks
 - rigid and flexible pipelines, hoses and fittings
 - wheel assemblies, skids and floats
 - brake units
 - struts/oleos.
- Where the aircraft is rotary wing and is fitted with skids or floats, coverage of retraction systems, steering systems and brake systems and their components is not required. Where a rotary wing aircraft is fitted with a fixed undercarriage with wheels, coverage of retraction and steering systems and their components is not required.
- 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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