



Australian Government

MEA318 Inspect aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components

Release: 2

MEA318 Inspect aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components

Modification History

Release 2. Equivalent to MEA318 Inspect aircraft hydro-mechanical, mechanical, gaseous 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 of aircraft hydro-mechanical, mechanical, gaseous and landing gear systems and components of fixed 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 Aircraft Maintenance Engineer (AME) Certificate IV training pathways.

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

MEA303	Remove and install aircraft pneumatic system components
MEA305	Remove and install aircraft fixed wing flight control system components
MEA398	Remove and install aircraft hydro-mechanical and landing gear 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.
1. Inspect hydro-mechanical 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 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 items of PPE
3. Inspect gaseous systems and components	3.1 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 3.2 Gaseous 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
4. Inspect mechanical systems and components	4.1 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 4.2 Mechanical 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

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, and rigid and flexible storage cells/tanks• Rigid and flexible pipelines, hoses and fittings |
| Landing gear systems include:
(components of landing gear retraction, steering and braking systems are covered by hydro-mechanical and mechanical system components) | <ul style="list-style-type: none">• Retraction systems• Steering systems• Brake systems, including anti-skid, where applicable |
| Landing gear components include: | <ul style="list-style-type: none">• Wheel assemblies• Brake units• Struts/oleos |
| Gaseous systems include: | <ul style="list-style-type: none">• Pneumatic• Air cycle air conditioning• Pressurisation• Fire-extinguishing |
| Gaseous system components include: | <ul style="list-style-type: none">• Gauges (direct reading), temperature sensors, pressurisation controllers and temperature controllers• Heat exchangers, pressure vessels, condensers, compressors, expansion turbines, humidifiers, valves and |

	actuators
	• Rigid and flexible pipelines and fittings • Ducting
Mechanical systems include:	• Mechanical operating and locking systems • Mechanical flight control systems or the mechanical elements of power-assisted flight control systems
Mechanical system components include:	• Cables, pulleys, guides, fairleads, tension regulators, chains and sprockets • Control rods, torque tubes, bellcranks, screwjacks, clutches, springs, bearings and gears • Control sticks, wheels, columns, trim wheels or handles, and rudder pedals
Procedures and requirements include:	• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 2. Equivalent to MEA318 Inspect aircraft hydro-mechanical, mechanical, gaseous 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 MEA318 Inspect aircraft hydro-mechanical, mechanical, gaseous 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:

- applying all relevant WHS practices, including the use of MSDS and PPE
- using maintenance manuals and documentation to prepare the aircraft and identify requirements for inspection of hydraulic, fuel, gaseous, flight control, landing gear and mechanical systems and components
- using hand skills and tools in the inspection of hydraulic, fuel, flight control, gaseous and mechanical system components
- jacking of the aircraft, as required, for landing gear system inspection
- using hand skills and tools in the inspection of landing gear components
- recognising external defects in hydraulic, fuel, gaseous, flight control, landing gear and mechanical systems and components.

The underlying skills inherent in this unit should be transferable across a range of inspection 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/component inspection 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:

- how to recognise external defects in hydraulic, fuel, gaseous, flight control, landing gear and mechanical system components
- how to configure the aircraft for inspection of hydraulic, fuel, gaseous, flight control, landing gear and mechanical systems and components
- inspection and testing requirements for gears, springs and bearings

- standard trade practices relating to tool usage and installation/securing of aircraft hardware
- maintenance requirements
- relevant WHS practices relating to hydraulic, fuel, gaseous, flight control, landing gear and mechanical system components, including lifting and handling of heavy items
- how to obtain MSDS
- selection and use of PPE
- maintenance requirements
- 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 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 this unit of competency are being achieved under routine supervision on each type of system and on at least one (1) component of each group listed in the Range of Conditions, as follows:
 - hydraulic systems – a system and at least one (1) component from each of the following groups:
 - hydraulic accumulators, filters, reservoirs, valves, pumps, motors, actuators, regulators and direct reading gauges
 - rigid and flexible pipelines, hoses and fittings
 - fuel systems – a system and at least one (1) component from each of the following groups:
 - fuel system filters, valves, pumps, and rigid and flexible storage cells/tanks
 - rigid and flexible pipelines, hoses and fittings
 - landing gear systems – each system:
 - retraction systems
 - steering systems
 - brake systems, including anti-skid, where applicable
 - landing gear components – one (1) each of:
 - wheel assemblies
 - brake units
 - struts/oleos
 - gaseous systems – each listed system:

- pneumatic
- air cycle air conditioning
- pressurisation
- fire-extinguishing
- gaseous system components - at least one (1) component from each of the following groups:
 - gauges (direct reading), temperature sensors, pressurisation controllers and temperature controllers
 - heat exchangers, pressure vessels, condensers, compressors, expansion turbines, humidifiers, valves and actuators
 - rigid and flexible pipelines and fittings
 - ducting
- mechanical systems – a system applicable to each of system types:
 - mechanical operating and locking systems
 - mechanical flight control systems or the mechanical elements of power-assisted flight control systems
- mechanical system components - at least one (1) component from each of the following groups:
 - cables, pulleys, guides, fairleads, tension regulators, chains and sprockets
 - control rods, torque tubes, bellcranks, screwjacks, clutches, springs, bearings and gears
 - control sticks, wheels, columns, trim wheels or handles, and rudder pedals.
- 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.
- Individuals being assessed who have already attained the following related units will have met the Performance Criteria and Range of Conditions variables for Elements listed:
 - MEA309 Inspect, test and troubleshoot aircraft hydro-mechanical and landing gear systems and components, for Element 1
 - MEA309 Inspect, test and troubleshoot aircraft hydro-mechanical and landing gear systems and components, for Element 2, provided that the unit was attained on aircraft with retractable landing gear
 - MEA310 Inspect, test and troubleshoot aircraft pneumatic systems and components, for Element 3
 - MEA312 Inspect, test and troubleshoot aircraft fixed wing flight control systems and components, for Element 4.

- The Log of Industrial Experience and Achievement records relating to the listed units may be accepted as also meeting the evidence requirements for this unit in the applicable Elements. Advice in MEA310 Inspect, test and troubleshoot aircraft pneumatic systems and components regarding MEA355 Maintain light aircraft air cycle air conditioning systems, and MEA3000 Maintain small piston engine aircraft pressurisation systems, may also be taken into consideration where applicable.

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