



Australian Government

MEAAVI0010 Inspect, test and troubleshoot advanced aircraft instrument systems and components

Release: 1

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Modification History

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Range of Conditions removed, and relevant information moved to Assessment Requirements. Assessment Requirements clarified. Supersedes and is equivalent to MEA213 Inspect, test and troubleshoot advanced aircraft instrument systems and components.

Application

This unit describes the skills and knowledge required to apply hand skills and use system and component knowledge, maintenance publications and test equipment to inspect, test and troubleshoot aircraft advanced instrument systems and components of fixed and rotary wing aircraft during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit is used in workplaces that operate under the airworthiness regulatory systems of the Civil Aviation Safety Authority (CASA) and the Defence Aviation Safety Authority (DASA).

Any other relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MEA246 Fabricate and/or repair aircraft electrical hardware or parts

MEA292 Remove and install advanced aircraft instrument system components

Competency Field

Aviation maintenance

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1. Inspect aircraft advanced instrument systems and components	1.1 Identify specific inspection requirements using maintenance documentation and modification status, including relevant system defect reports 1.2 Check isolation tags and configure aircraft for safe system inspection and operation in accordance with maintenance manual 1.3 Visually or physically check instrument system components for external signs of defects in accordance with maintenance manual while observing all relevant work health and safety (WHS) requirements 1.4 Identify and report defects in accordance with standard enterprise procedures
2. Test or adjust aircraft advanced instrument systems and components	2.1 Prepare aircraft and system for application of power or system operation in accordance with maintenance manual 2.2 Perform functional testing of instrument system for evidence of serviceability or malfunction in accordance with maintenance manual 2.3 Perform required calibration or adjustments to system in accordance with maintenance manual
3. Troubleshoot aircraft advanced instrument systems	3.1 Use available information from maintenance documentation and inspection and test results to assist in fault determination of identified issues 3.2 Troubleshoot issues to line replacement level using maintenance manual fault diagnosis guides and logic processes 3.3 Obtain required specialist or supervisory advice to assist with the troubleshooting process 3.4 Locate instrument system faults and identify and record causes of faults in required maintenance documentation in accordance with standard enterprise procedures 3.5 Determine requirements for rectification of faults

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

- Reading skills to interpret maintenance manuals, inspection procedures and specifications (allowable limits).
- Writing skills to record and report on defects and faults and their causes.

- Numeracy skills to interpret and communicate technical information and take and interpret system measurements.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEA213 Inspect, test and troubleshoot advanced aircraft instrument 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 MEAAVI0010 Inspect, test and troubleshoot advanced aircraft instrument systems and components

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Performance Evidence

There must be evidence the candidate has completed all the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- perform inspection, testing and troubleshooting on advanced aircraft instrument systems and components on a system and at least one major system component or line replacement unit (LRU) from each of the following:
 - pitot/static system components; airspeed indicators (ASIs); vertical speed indicators (VSIs); air data systems and components; machmeters; altimeters, including servo and encoding altimeters; angle of attack and stall warning/avoidance systems
 - turn and slip indicators, directional gyros (DGs), artificial horizons (AHs), attitude and heading reference systems (AHRS) and components, remote reading gyro compass systems and components, and direct reading compasses
 - turbine engine indication systems and components (tachometers, pressure, temperature, engine performance and engine vibration)
 - transmitter/indicator measuring instrument systems (pressure, temperature and position)
 - fuel quantity indication and flow systems and components
 - ground proximity warning system (GPWS) where relevant to the enterprise
 - flight data recorders (FDRs) where relevant to the enterprise
- recognise system and component defects, external damage, correct/incorrect installation, connection of plugs, terminations, attachment hardware (including cabling/harnesses) and security in each of:
 - flight instruments
 - pitot/static systems
 - navigation systems – compasses and AHRS
 - GPWS (where applicable to the enterprise)
 - FDRs (where applicable to the enterprise)
 - position indicators, engine/auxiliary system indication systems and system components

- perform functional testing by applying logic processes, taking and interpreting system measurements, and using test equipment and appropriate wiring diagrams and manuals to isolate instrument and display system malfunctions and faults in the listed systems and assess post-maintenance serviceability
- apply testing procedures, cleanliness requirements and safety precautions at all times, and as relevant to the system/s being maintained.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- component attachment methods
- connection of hardware
- instrument system maintenance requirements and testing and troubleshooting procedures
- the basic layout (block diagram level), function and operation of:
 - flight instruments, including:
 - ASIs
 - VSIs
 - air data systems and components
 - machmeters
 - altimeters including servo and encoding altimeters
 - turn and slip indicators
 - AHs
 - DGs
 - angle of attack and stall warning/avoidance systems
 - pitot/static systems
 - navigation systems:
 - direct reading compasses
 - gyro compasses
 - AHRS
 - GPWS
 - turbine engine instruments, including:
 - temperature and pressure, including thermocouples, sensors and transmitters
 - speed, including mechanical and electric tachometers
 - thrust, including fan, propeller and jet
 - torque
 - fuel flow
 - vibration
 - auxiliary transmitter/indicator measuring systems, including:
 - hydraulic pressure and temperature
 - pneumatic pressure
 - transmission oil pressure and temperature

- fuel remaining/used
- fuel quantity indication
- component position (e.g. doors, flaps, speed brakes and landing gear)
- FDR systems
- the operating principles of the above-listed systems and associated with:
 - atmospheric conditions; properties and effects on aircraft instruments and systems
 - pressure and temperature sensing elements and their use in aircraft instruments
 - gyroscopes and their use in aircraft instrument and reference systems
- the various methods of navigation, and describing how they are used by both aircraft conventional and electronic navigational instruments and systems
- work health and safety (WHS) practices for advanced aircraft instrument systems and components
- maintenance manuals for the inspection, testing and troubleshooting of advanced aircraft instrument systems and components
- relevant regulatory requirements and standard procedures.

Assessment Conditions

The following conditions of assessment represent the requirements of the regulators (DASA and CASA) and maintenance stakeholders and must be rigorously observed.

Skills must have been demonstrated under routine supervision in the workplace or in a simulated environment that reflects workplace conditions and contingencies encountered in inspecting, testing and troubleshooting advanced aircraft instrument systems and components. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - workplace procedures, manufacturing specifications, codes, standards, manuals, and reference materials relevant to inspecting, testing and troubleshooting advanced aircraft instrument systems and components
 - tools and equipment specified in the maintenance manuals
 - general- and special-purpose tools and items of ground support and test equipment.

Evidence of tasks demonstrating competency must be recorded in a log of industrial experience and achievement.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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