



**Australian Government**

# **MEAAVI0009 Inspect, test and troubleshoot basic aircraft instrument systems and components**

**Release: 1**

# MEAAVI0009 Inspect, test and troubleshoot basic aircraft instrument systems and components

## Modification History

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Assessment Requirements clarified. Supersedes and is equivalent to MEA212 Inspect, test and troubleshoot basic aircraft instrument systems and components.

## Application

This unit describes the skills and knowledge required to apply hand skills and use system and component knowledge and applicable test equipment to inspect, test and troubleshoot basic aircraft 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

MEAAVI0004 Remove and install basic aircraft instrument system components

MEA246 Fabricate and/or repair aircraft electrical hardware or parts

## 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 basic aircraft instrument systems and components        | <p>1.1 Identify specific inspection requirements using maintenance documentation and modification status, including relevant system defect reports where relevant</p> <p>1.2 Check isolation tags and configure aircraft for safe system inspection and operation in accordance with maintenance manual</p> <p>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</p> <p>1.4 Identify and report defects in accordance with standard enterprise procedures</p>                |
| 2. Test or adjust basic aircraft instrument systems and components | <p>2.1 Prepare aircraft and system for application of power or system operation in accordance with maintenance manual</p> <p>2.2 Perform functional testing of instrument system for evidence of serviceability or malfunction in accordance with maintenance manual</p> <p>2.3 Perform required calibration or adjustments to system in accordance with maintenance manual</p>                                                                                                                                                                                                                                                     |
| 3. Troubleshoot basic aircraft instrument systems and components   | <p>3.1 Use available information from maintenance documentation and inspection and test results to assist in fault determination of identified issues</p> <p>3.2 Troubleshoot issues to line replacement level using maintenance manual fault diagnosis guides and logic processes</p> <p>3.3 Obtain required specialist or supervisory advice to assist with troubleshooting process</p> <p>3.4 Locate instrument system faults and identify and record causes of faults in required maintenance documentation in accordance with standard enterprise procedures</p> <p>3.5 Determine requirements for rectification of faults</p> |

## 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 MEA212 Inspect, test and troubleshoot basic 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 MEAAVI0009 Inspect, test and troubleshoot basic aircraft instrument systems and components**

## **Modification History**

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Assessment Requirements clarified. Supersedes and is equivalent to MEA212 Inspect, test and troubleshoot basic aircraft instrument systems and components.

## **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 basic aircraft instrument systems and components, comprising a system and at least one major system component or line replaceable unit (LRU) from each of:
  - pitot or static systems and components, air speed indicators (ASIs), vertical speed indicators (VSIs), outside air temperature (OAT), and counter-pointer altimeters
  - directional gyros (DGs) and artificial horizons (AHs) (air and electrically driven)
  - turn and bank and slip or turn coordinators
  - direct reading compasses
  - remote reading gyro compass system components (may be omitted if not relevant to the organisation)
  - piston engine indication system components (direct reading measuring instruments and temperature indication)
  - gas turbine engine indication system components (may be omitted if not relevant to the organisation)
  - electrical systems indication (voltage, current, power and frequency)
  - basic fuel quantity indication systems and components
  - pneumatic or vacuum indication components
- recognise system and component defects, external damage, correct/incorrect installation, connection of plugs, terminations, attachment hardware (including cabling/harnesses) and security in each of the following:
  - flight instruments
  - pitot or static systems
  - direct reading compasses
  - remote reading gyro compass systems (where relevant to the enterprise)
  - piston engine indication systems
  - gas turbine engine indication systems (where relevant to the enterprise)
  - electrical systems indication
  - basic fuel quantity indication systems
  - pneumatic or vacuum indication systems

- perform functional testing by applying logic processes, taking and interpreting system measurements, using test equipment and appropriate wiring diagrams and manuals to isolate instrument 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.
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## Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the basic layout (block diagram level), function and operation of:
  - flight systems, including:
    - altitude (direct reading altimeters)
    - attitude including DGs and AHs (both air and electrically driven), turn and slip and turn coordinator
    - airspeed
    - OAT
  - remote reading gyro compass systems
  - piston engine indication systems, including:
    - direct reading temperature
    - direct reading pressure (e.g. oil pressure)
    - speed, including mechanical and electric tachometers
    - manifold pressure/boost, including aneroid, sylphon bellows and dual compartment types
  - gas turbine engine indication systems, including:
    - temperature and pressure
    - speed, including mechanical and electric tachometers
    - torque
    - fuel flow
    - vibration
  - auxiliary direct reading systems, including:
    - electrical
    - hydraulic pressure
    - pneumatic pressure and vacuum
    - basic fuel quantity indication
- basic instrument system maintenance and testing requirements, and troubleshooting procedures
- work health and safety (WHS) practices for the inspection, testing and troubleshooting of instrument system maintenance
- the operating principles of the above 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 systems
- electrical fundamentals
- direct reading compass installations and calibration
- calibration of remote reading gyro compass systems
- maintenance manuals for the inspection, testing and troubleshooting of basic 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 basic aircraft instrument system 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
  - 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.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>