

## Overview

This standard identifies the competences you need to carry out mechanical component replacement on commercial, military and light aircraft, both fixed wing and rotary, in accordance with approved procedures. You will be required to select the appropriate tools and equipment to use, based on the maintenance activities to be carried out, and to check that they are in a safe and serviceable condition. You will be required prepare the aircraft for work, and this will involve obtaining permission to work on the aircraft, ensuring that all safety pins and warning notices are in place, and ensuring that the relevant systems are in a suitable condition for work to be undertaken. The maintenance activities to be carried out will involve the replacement of aircraft mechanical system components, which will include components from the following systems: undercarriage, brakes, hydraulics, pneumatics, fuel/oil, air/oxygen, environmental, de-icing, flying control and engine change units (ECU's).

Your responsibilities will require you to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with these activities that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work either with a high level of supervision or as a member of a team, and you will take personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. You must demonstrate a significant personal contribution during the team activities, in order to satisfy the requirements of this standard, and competency in all the areas required by the standard must be demonstrated.

Your underpinning knowledge will be sufficient to provide a sound basis for your work and will provide an informed approach to applying the appropriate mechanical maintenance techniques and procedures. You will have a basic understanding of the systems being maintained, and their application, and will know about the maintenance equipment and fastening devices, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

You will understand the safety precautions required when carrying out the aircraft maintenance operations, especially those for isolating and depressurising equipment, and for protecting yourself and others from injury. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace.

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## Performance criteria

### *You must be able to:*

- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
- P2 follow the relevant maintenance schedules and prepare to carry out the required work
- P3 carry out the maintenance activities within the limits of your personal authority
- P4 carry out the maintenance activities and component replacements in the specified sequence and in an agreed timescale
- P5 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
- P6 complete and store all relevant documentation in accordance with organisational requirements
- P7 dispose of waste materials in line with organisational and environmentally safe procedures

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## Knowledge and understanding

### *You need to know and understand:*

- K1 how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines-
- K2 the authorisation you require to commence work on the aircraft
- K3 the hazards associated with working on aircraft systems and how they can be minimised
- K4 the importance of wearing the appropriate personal protective equipment (PPE), and of keeping the work area clean and tidy
- K5 the maintenance schedules and servicing specifications that are used during servicing and maintenance, and the importance of following the procedures listed in these documents
- K6 the components to be replaced, and the method of replacement
- K7 electrical bonding/earthing specifications, and their importance
- K8 how to identify the components to be used, and how to ensure that systems are not contaminated
- K9 the quality control procedures to be followed during the maintenance procedures
- K10 how to conduct any necessary checks to ensure the system integrity and functionality
- K11 the issues that can occur with the aircraft maintenance activities, and how these can be overcome
- K12 the importance of correct securing and locking of connections
- K13 the importance of tool control, and company tool control procedures
- K14 the methods and equipment used to maintain aircraft systems
- K15 the tools and equipment used in the maintenance activities, and their

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calibration/care and control procedures

K16 the importance of ensuring that, when the maintenance is completed, the aircraft is free from dirt, swarf and foreign objects (FOD)

K17 the disposal methods for waste oil, fuel, other liquids and waste

K18 issues with the maintenance procedures, and the importance of informing appropriate people of defects

K19 the recording documentation to be completed for the activities undertaken and, where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation

K20 the extent of your own responsibility, and to whom you should report if you have problems that you cannot resolve

## Scope/range related to performance criteria

1. Carry out all of the following during the aircraft maintenance activities:
  - 1.1 use the correct issue of the aircraft servicing or maintenance schedule
  - 1.2 adhere to procedures or systems in place for risk assessment, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
  - 1.3 check the calibration dates of tools and equipment to be used
  - 1.4 return all tools and equipment to the correct location on completion of the activities
  - 1.5 leave the work area in a safe and tidy condition
2. Prepare the aircraft for work, by carrying out all of the following:
  - 2.1 obtain clearance to work on the aircraft, and observe the power isolation and safety procedures
  - 2.2 identify defects for maintenance and ensure the aircraft is fit for maintenance from the aircraft documentation
  - 2.3 ensure that relevant safety warnings are in place
  - 2.4 ensure that appropriate safety locks/pins are in place
  - 2.5 check that the relevant systems are in a condition for work and for component replacement to take place
3. Carry out component replacements on three of the following aircraft systems:
  - 3.1 engine change unit
  - 3.2 fuel/oil
  - 3.3 oxygen supply
  - 3.4 transmission
  - 3.5 undercarriage
  - 3.6 flying control surfaces
  - 3.7 hydraulic
  - 3.8 mechanical controls
  - 3.9 pneumatic
  - 3.10 environmental control
  - 3.11 de-icing
4. Carry out ten of the following maintenance techniques, as applicable to the equipment being maintained:
  - 4.1 removing excessive dirt and grime
  - 4.2 re-assembling the equipment/system
  - 4.3 isolating and/or de-pressurising system
  - 4.4 making all required pipe connections
  - 4.5 draining system fluids
  - 4.6 carrying out leak checks on all connections
  - 4.7 dismantling equipment to unit/sub-assembly level
  - 4.8 setting and adjusting replaced components
  - 4.9 dismantling units to component level
  - 4.10 re-connecting electrical connections
  - 4.11 monitoring component condition/deterioration
  - 4.12 tightening fastenings to the required torque

- 4.13 proof-marking/labelling of components/units
- 4.14 applying gaskets and sealant/adhesives
- 4.15 replacing 'lived' consumable items (such as seals, bearings, gaskets)
- 4.16 replenishing system fluids
- 4.17 replacing all damaged or defective units/components
- 4.18 replenishing oils and greases
- 4.19 securing components using mechanical fasteners and threaded devices
- 4.20 applying bolt locking methods (such as split pins, wire locking, lock nuts, stiff nuts, swage nuts)
- 4.21 making static, functional or operational checks of the completed system
- 5. Replace a range of components, involving the disconnection and reconnection of eight of the following:
  - 5.1 mechanical units
  - 5.2 actuating mechanisms
  - 5.3 valves
  - 5.4 brake units
  - 5.5 clamps
  - 5.6 microswitches and stops
  - 5.7 quick release fasteners
  - 5.8 springs
  - 5.9 control rods
  - 5.10 pipes and unions
  - 5.11 chains and sprockets
  - 5.12 free electrical connectors
  - 5.13 panels
  - 5.14 cables and pulleys
  - 5.15 cylinders/actuators
  - 5.16 filters
  - 5.17 levers and linkages
  - 5.18 seals and gaskets
  - 5.19 threaded fasteners
  - 5.20 shims and packing
  - 5.21 other specific components
- 6. Carry out maintenance work which complies with one of the following standards:
  - 6.1 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
  - 6.2 Ministry of Defence (MoD)
  - 6.3 Military Aviation Authority (MAA)
  - 6.4 Aerospace Quality Management Standards (AS)
  - 6.5 customer standards and requirements
  - 6.6 Federal Aviation Authority (FAA)
  - 6.7 organisational standards and procedures
  - 6.8 BS, ISO or BSEN standards and procedures
  - 6.9 manufacturers standards and procedures
- 7. Complete the relevant paperwork, to include one from the following, and pass it to the appropriate people:
  - 7.1 maintenance schedule/log

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- 7.2 job cards
  - 7.3 aircraft service/flight log
  - 7.4 other specific recording method

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