SEMAE3113

Overhauling aircraft armament release systems

Overview

This standard identifies the competences you need to carry out overhauling activities on aircraft armament release systems, in accordance with approved procedures. It covers both fixed wing and rotary winged aircraft. You will be required to overhaul a range of aircraft armament release systems, consisting of a variety of components such as mechanical controls (plungers, springs and rollers), electrical mechanisms (solenoids, indicators, motors and switches) and other specific release system equipment. This will involve dismantling, removing and replacing faulty equipment, at component or unit level, on a variety of different types of armament release system and sub-assembly. You will be expected to use methods and techniques such as setting, aligning, torque loading and adjusting components before functionally testing the completed system.

Your responsibilities will require you to comply with organisational policy and procedures for the overhauling activities undertaken and to report any problems with these activities, or with the tools and equipment used, that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You must ensure that all tools, equipment and materials used in the overhauling activities are removed from the work area on completion of the activities and that all necessary job/task documentation is completed accurately and legibly. You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying overhauling procedures to aircraft armament release systems. You will understand the dismantling and reassembly methods and procedures and their application. You will know how the equipment functions, the purpose of the individual components and associated defects, in adequate depth to provide a sound basis for carrying out the overhauling activities, identifying and correcting faults and ensuring that the overhauled equipment functions to the required specification. In addition, you will have sufficient in-depth knowledge of these components to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

You will understand the safety precautions required when carrying out the overhauling activities, especially those for isolating the equipment. You will also understand your

responsibilities for safety and the importance of taking the necessary safeguards to protect yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. follow the relevant maintenance schedules to carry out the required work
3. carry out the maintenance activities within the limits of your personal authority
4. carry out the maintenance activities, and replace components in the specified sequence and in an agreed timescale
5. report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
6. dispose of waste materials in accordance with safe working practices and approved procedures
7. complete the relevant documentation, in accordance with organisational requirements
8. leave the system in a safe and appropriate condition, free from foreign object debris on completion of the activities

Knowledge and understanding

You need to know and understand:

1. the health and safety requirements of the area in which the overhauling activity is to take place and the responsibility these requirements place on you
2. the specific health and safety precautions to be applied during the overhauling procedure and their effects on others
3. hazards associated with carrying out overhauling activities on aircraft armament release systems (such as handling oils and greases, release of stored pressure/force, misuse of tools, using damaged or badly overhauled tools and equipment, not following laid-down overhauling procedures) and how to minimise them and reduce any risks
4. the requirements and importance of understanding and applying human factors as defined by the regulatory requirements and the potential impact if these are not adhered to
5. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the overhaul
6. the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps)
7. what constitutes a hazardous voltage and how to recognise victims of electric shock
8. how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
9. how to obtain and interpret drawings, specifications, manufacturers' manuals and other documents needed in the overhauling process
10. how to carry out currency/issue checks on the specifications you are working with
11. the procedure for obtaining replacement parts, materials and other consumables necessary for the overhauling activities
12. company policy on the repair/replacement of components during the overhauling process
13. the sequence to be adopted for the dismantling/re-assembly of various types of

assembly
14. the methods and techniques used to dismantle/assemble equipment (such as release of pressures/force, extraction, alignment)
15. methods of checking that components are fit for purpose, how to identify defects and wear characteristics and the need to replace `lifed' items (such as seals, filters and gaskets)
16. the principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact
17. the identification and application of different types of locking device
18. the uses of measuring equipment (such as micrometers, verniers and other measuring devices)
19. how to make adjustments to components/assemblies to ensure that they function correctly (such as setting working clearance, setting travel)
20. how to check that tools and equipment are free from damage or defects, are in a safe and usable condition and are configured correctly for the intended purpose
21. why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the activities
22. the importance of completing the overhaul documentation and/or reports following the overhauling activity and how to generate them
23. the equipment operating and control procedures to be applied during the overhauling activity
24. how to use lifting and handling equipment in the overhauling activity
25. the problems associated with the overhauling activity and how they can be overcome
26. the organisational procedure(s) to be adopted for the safe disposal of waste of all types of material
27. the extent of your own authority and to whom you should report if you have a problem that you cannot resolve

Scope/range related to performance criteria

1.

Carry out all of the following during the overhauling of the aircraft armament release systems:

1.1 plan the overhauling activities to cause minimal disruption to normal working
1.2 obtain and use the appropriate documentation (such as job instructions, technical publication and overhauling documentation)
1.3 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
1.4 provide and maintain a safe working environment for the overhauling activities
1.5 ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
1.6 obtain the correct tools and equipment for the activity, and check that they are in a safe, tested and usable condition and within current certification/calibration date
1.7 carry out the overhauling activities, using appropriate techniques and procedures
1.8 dispose of waste items in a safe and environmentally acceptable manner
1.9 return all tools and equipment to the correct location on completion of the overhauling activities

2.

Carry out overhauling activities on armament release systems, covering five of the following:

2.1 control units
2.2 cylinders/actuating mechanisms
2.3 looms
2.4 electrical mechanisms (such as solenoids, indicators, motors and switches)
2.5 fusing units
2.6 firing units
2.7 mechanical controls (such as plungers, springs and rollers)
2.8 hydraulic units
2.9 pneumatic units
2.10 weapons carriers
2.11 other specific release system components

3.

Carry out all of the following overhaul activities, as applicable to the equipment being overhauled:

3.1 dismantling equipment to unit/sub-assembly level
3.2 dismantling units to component level

3.3 checking components for serviceability
3.4 replacing damaged/defective components
3.5 replenishing oils and greases
3.6 replacing all lifed items (such as seals, gaskets)
3.7 setting, aligning and adjusting components
3.8 tightening fastenings to the required torque
3.9 applying bolt locking methods (such as split pins, wire locking, lock nuts)
3.10 functionally testing the completed system
3.11 connecting and returning the system to service on completion of the activities

4.

Replace a range of armament release system components, to include eight of the following:

4.1 shafts
4.2 springs
4.3 cam followers
4.4 actuating mechanisms
4.5 valves
4.6 housings
4.7 levers
4.8 electrical connectors
4.9 valve seats
4.10 looms
4.11 linkages
4.12 shims
4.13 pistons
4.14 micro switches
4.15 structural components
4.16 locking and retaining devices
4.17 solenoids
4.18 slides
4.19 seals
4.20 rollers
4.21 cams
4.22 other specific component

5.

Overhaul aircraft armament release systems in accordance with one of the following standards:

5.1 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
5.2 Ministry of Defence (MoD)
5.3 Military Aviation Authority (MAA)
5.4 Aerospace Quality Management Standards (AS)
5.5 customer standards and requirements
5.6 Federal Aviation Authority (FAA)
5.7 company standards and procedures
5.8 BS, ISO or BSEN standards and procedures

5.9 specific system requirements
5.10 manufacturers standards and procedures

6.

Complete the relevant paperwork, to include one from the following and pass it to the appropriate people:

6.1 computer records
6.2 record/history cards
6.3 job cards
6.4 aircraft service/flight log
6.5 other specific recording method

Behaviours

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

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