

## Producing aircraft detail assemblies

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### Overview

This standard identifies the competences you need to assemble components to produce aircraft detail assemblies, in accordance with approved procedures. It covers both fixed wing and rotary winged aircraft. You will be required to select the appropriate tools and equipment to use, based on the assembly operations required and to check that they are in a safe and usable condition. In carrying out the assembly operations, you will be required to follow laid-down procedures and specific assembly techniques, in order to assemble the various components into detail assemblies. Typical assemblies to be produced will include stringers, frames, panels, trays, skins, ribs, tanks and other small assemblies.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken and to report any problems with the assembly activities, materials or equipment that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will need to ensure that all tools, equipment and materials used in the assembly are correctly accounted for on completion of the activities and you must complete all necessary job/task documentation 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 assembly techniques and procedures. You will understand the structure being assembled and its application and will know about the relevant materials and fastening devices, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the work is to the required specification.

You will understand the safety precautions required when carrying out the assembly activities. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to 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 instructions, assembly drawings and any other specifications
3. ensure that the specified components are available and that they are in a usable condition
4. use the appropriate methods and techniques to assemble the components in their correct positions
5. secure the components using the specified connectors and securing devices
6. check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification
7. deal promptly and effectively with problems within your control and report those that cannot be solved
8. complete the relevant documentation, in accordance with organisational requirements
9. leave the work area 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 specific safety precautions to be taken whilst carrying out the detail assembly operations (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
2. the health and safety requirements of the work area in which you are carrying out the detail assembly activities and the responsibility these requirements place on you
3. the personal protective equipment and protective clothing (PPE) to be worn during the detail assembly activities
4. the hazards associated with producing aircraft assemblies and with the tools and equipment used and how to minimise them and reduce any risks
5. how to identify the components to be used; component identification systems; codes used and component orientation indicators
6. preparations to be undertaken on the components prior to fitting them into the assembly
7. the assembly methods and procedures to be used and the importance of adhering to these procedures
8. how the components are to be aligned and positioned and the tools and equipment that are used (including jigs and fixtures)
9. the methods used to hold the components in their correct position prior to securing them with the appropriate fasteners
10. the various mechanical fasteners that will be used and their method of installation (such as open and blind rivets, threaded fasteners, special securing devices)
11. the importance of using the specified fasteners for the particular assembly and why you must not substitute others.
12. what to do if the components or fastening devices are not assembled correctly, are damaged, or have other faults
13. the application of sealants and adhesives within the assembly activities and the precautions that must be taken when working with the various adhesives and sealants
14. why electrical bonding is critical and why it must be both mechanically and electrically secure
15. the quality control procedures to be followed during the assembly operations
16. how to conduct any necessary checks to ensure the accuracy and quality of the assemblies produced
17. how to check that the tools and equipment to be used are correctly calibrated and are in a safe, tested and useable condition
18. the importance of using all tools in the correct manner and within their permitted operating range

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19. 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
20. the importance of ensuring that the completed assembly is free from dirt, swarf and foreign objects
21. the problems that can occur with the assembly operations and how these can be overcome
22. the extent of your own authority within the assembly activities and to whom to report if you have problems that you cannot resolve

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### Scope/range related to performance criteria

1. Carry out all of the following activities during assembly:
  1. obtain and use the appropriate documentation (such as job instructions, aircraft assembly drawings, planning and quality control documentation, specifications)
  2. 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
  3. provide and maintain a safe working environment for the assembly activities
  4. obtain the correct tools and equipment for the activity and check that they are in a safe, tested and usable condition and within current calibration date
  5. follow safe practice/approved assembly techniques and procedures at all times
  6. return all tools and equipment to the correct location on completion of the activities
  7. dispose of waste materials in accordance with approved procedures
2. Produce aircraft detail assemblies which include three of the following:
  1. skins
  2. frames
  3. ribs
  4. tanks
  5. stringers
  6. panels
  7. trays
  8. other specific small assemblies
3. Apply all of the following assembly methods and techniques:
  1. welding (if appropriate)
  2. applying sealants/adhesives
  3. drilling and riveting
  4. electrical bonding of components
  5. ensuring that correct part numbers are used
  6. ensuring that correct hand of components used (left or right handed)
  7. positioning and aligning components for cosmetic appearance

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and skin lines

- 8. securing components, using mechanical fasteners and threaded devices
- 9. applying bolt locking methods (split pins, wire locking, lock nuts, stiff nuts)

4. Assemble components which include four of the following:

- 1. cleats
- 2. skins
- 3. pipes, unions and joints
- 4. brackets
- 5. stringers
- 6. jumper braids, bonding clips, earthing straps
- 7. angles
- 8. ribs
- 9. aircraft general supplies

5. Carry out quality and accuracy checks which include three from:

- 1. cosmetic appearance
- 2. freedom from damage
- 3. electrical bonding and continuity
- 4. accuracy of skin lines
- 5. torque loading checks

6. Produce assemblies which comply with one of the following standards:

- 1. Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
- 2. Ministry of Defence (MoD)
- 3. Military Aviation Authority (MAA)
- 4. Aerospace Quality Management Standards (AS)
- 5. customer standards and requirements
- 6. Federal Aviation Authority (FAA)
- 7. company standards and procedures
- 8. BS, ISO or BSEN standards and procedures
- 9. manufacturers standards and procedures

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

- 1. build records
- 2. log cards
- 3. job cards
- 4. aircraft log
- 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

## Producing aircraft detail assemblies

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