

Overview

This standard identifies the competences you need to install aircraft fuel systems, in accordance with approved procedures and covers both fixed wing and rotary winged aircraft. It includes the installation of fuel system components, such as main and auxiliary fuel tanks, fuel manifolds, fuel pipes (flexible and rigid), fuel pumps, change-over valves, flow control valves, bleed valves, fuel flow regulators, fuel filters, fuel and de-fuelling connections and in-flight refuelling booms, as appropriate to the aircraft type. You will be required to select the appropriate tools and equipment to use, based on the installation operations required and components to be installed and to check that they are in a safe and usable condition. In carrying out the installation operations, you will be required to follow laid-down procedures and specific installation techniques, in order to install the various components and systems. The installation activities will include making all necessary checks and adjustments to ensure the components are correctly orientated, positioned and secured according to specification and that the installation is free from contamination and damage.

Your responsibilities will require you to comply with organisational policy and procedures for the installation activities undertaken and to report any problems with these activities 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 installation are correctly accounted for on completion of the activities and 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 installation techniques and procedures. You will understand the aircraft fuel system being worked on, and its application, and will know about the various components, tools and equipment used and the installation techniques, 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 working on the aircraft fuel system and with its associated tools and equipment. 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 all relevant drawings and specifications for the installation being carried out
3. use the correct tools and equipment for the installation operations and check that they are in a safe, tested and usable condition
4. install, position and secure the fuel system equipment and components in accordance with the specification
5. check that all necessary connections to the equipment are complete
6. deal promptly and effectively with problems within your control and report those that cannot be solved
7. check that the installation is complete and that all components are free from damage
8. complete the relevant documentation, in accordance with organisational requirements
9. leave the aircraft and 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 practices and procedures that you need to observe when working with aircraft fuel systems (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
2. the health and safety requirements of the work area where you are carrying out the activities and the responsibility these requirements place on you
3. the hazards associated with installing aircraft fuel systems (such as pressurised systems, flammable fluids, mechanisms) and with the tools and equipment used and how to minimise them and reduce any risks
4. the protective equipment that you need to use for both personal protection (PPE) and protection of the aircraft
5. the interpretation of drawings, standards, quality control procedures and specifications used for the installation (including BS, ISO or BSEN schematics, symbols and terminology)
6. how to carry out currency/issue checks on the specifications you are working with
7. the components to be installed and their function within the particular aircraft fuel systems (such as fuel flow, pipe work installation, gravity feed and other related systems)
8. the various mechanical fasteners that will be used and their method of installation (such as open and blind rivets, threaded fasteners, special securing devices)
9. the importance of using the specified fasteners for the particular installation and why you must not substitute others
10. why securing devices need to be locked and labelled, and the different methods that are used
11. the torque loading requirements of the fasteners and what to do if these loadings are exceeded or not achieved
12. the quality control procedures to be followed during the installation operations
13. the procedures for ensuring that you have the correct tools, equipment, components and fasteners for the activities
14. the techniques used to position, align, adjust and secure the components to the aircraft without damage
15. the methods of lifting, handling and supporting the components/equipment

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during the installation activities

16. the use of seals, sealant, adhesives and anti-electrolysis barriers, and the precautions to be taken

17.

why electrical bonding is critical and why it must be both mechanically and electrically secure

18.

the procedure for the safe disposal of waste materials

19. how to conduct any necessary checks to ensure the system integrity, functionality, accuracy and quality of the installation

20. how to recognise installation defects (such as leaks, poor seals, misalignment, ineffective fasteners, foreign object damage, or contamination)

21. the importance of ensuring that the completed installation is free from dirt, swarf and foreign object damage, and of ensuring that any exposed components or pipe ends are correctly covered/protected

22. the tools and equipment used in the installation activities and their calibration/care and control procedures

23. 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

24. the problems that can occur with the installation operations and how these can be overcome

25. 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

26. 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 installation activity:

- 1.1 obtain and use the appropriate documentation (such as job instructions, installation drawings, planning and quality control documentation, aircraft standards and specifications)
- 1.2 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
- 1.3 provide and maintain a safe working environment for the installation activities
- 1.4 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
- 1.5 follow safe practice/approved installation techniques and procedures at all times
- 1.6 return all tools and equipment to the correct location on completion of the installation activities
- 1.7 dispose of waste materials in accordance with approved procedures

2.

Install aircraft fuel system components to include six from the following:

- 2.1 main fuel tanks
- 2.2 auxiliary fuel tank
- 2.3 flexible and rigid pipes
- 2.4 fuel manifold
- 2.5 fuel flow regulators
- 2.6 fuel filters
- 2.7 in-flight refuelling boom
- 2.8 fuel and de-fuel connections
- 2.9 drain valve
- 2.10 bleed valve
- 2.11 change-over valves
- 2.12 pressure and return lines
- 2.13 other specific components

3.

Apply six of the following installation methods and techniques:

- 3.1 achieving required torque
- 3.2 left and right handing
- 3.3 positioning and aligning
- 3.4 setting travel or clearance
- 3.5 correct orientation
- 3.6 use of sealants
- 3.7 using threaded devices

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- 3.8 earth bonding
- 3.9 material treatment
- 3.10 checking direction of flow
- 3.11 bolt locking methods (split pins, wire locking, lock nuts, stiff nuts)
- 3.12 checking/testing the installed system (such as visual, dry leak or pressure tests)

4.

Carry out installations in compliance with one of the following standards:

- 4.1 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
- 4.2 Ministry of Defence (MoD)
- 4.3 Military Aviation Authority (MAA)
- 4.4 Aerospace Quality Management Standards (AS)
- 4.5 customer standards and requirements
- 4.6 Federal Aviation Authority (FAA)
- 4.7 company standards and procedures
- 4.8 BS, ISO or BSEN standards and procedures
- 4.9 manufacturers standards and procedures

5.

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

- 5.1 build records
- 5.2 log cards
- 5.3 job cards
- 5.4 aircraft flight log
- 5.5 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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Developed by Enginuity

Version Number 3

Date Approved 30 Mar 2021

Indicative Review Date 01 Mar 2024

Validity Current

Status Original

Originating Organisation Enginuity

Original URN SEMAE3044

Relevant Occupations Engineer, Engineering, Engineering and Manufacturing Technologies, Engineering Technicians

Suite Aeronautical Engineering Suite 3

Keywords engineering; aeronautical; installing; fuel system; main fuel tank; auxiliary fuel tank; fuel manifolds; fuel pipes; fuel pumps; fuel valves
