

Overview

This standard identifies the competences you need to test aircraft fuel systems, in accordance with approved procedures. It covers both fixed wing and rotary winged aircraft. You will be required to test aircraft fuel systems, including fuel tanks, fuel manifolds, fuel pipes (flexible and rigid) and fuel filters. You will be required to select the appropriate tools and equipment to use, based on the operations to be performed and the systems to be tested. The complexity of tests involved will include fuel flow test operations, functional testing of fuel transfer procedures, system flushing, systems with and without faults and sampling of fuel oil for test.

Your responsibilities will require you to comply with organisational policy and procedures for the aircraft fuel system tests undertaken and to report any problems with the testing activities that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will be expected to work with a minimum of supervision and instruction, 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 aircraft fuel system test procedures. You will understand the aircraft fuel system under test and its application and will know about aircraft fuel system testing, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the tested system functions to the required specification.

You will understand the safety precautions required when carrying out the testing operations. 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 appropriate procedures for use of tools and equipment to carry out the required tests
3. set up and carry out the tests using the correct procedures and within agreed timescales
4. record the results of the tests in the appropriate format
5. review the results and carry out further tests if necessary
6. leave the aircraft and 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 testing 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 safety procedures that must be carried out before work is started on the aircraft
4. the protective clothing and equipment (PPE) to be worn
5. hazards associated with testing aircraft fuel systems and with the tools and equipment used and how to minimise them and reduce any risks
6. the correct operating procedures of the system being tested
7. electrical bonding specifications and their importance
8. how to obtain the required test schedules and specifications for the aircraft fuel system being tested and how to check their currency and validity
9. how to read and interpret the specifications and from whom you can seek assistance if you have problems or issues regarding the test schedules or specifications
10. the methods and procedures to be used to carry out the various fuel system tests
11. test equipment to be used and its selection for particular tests; calibration of test equipment (where applicable) and the currency/issue checks to be done
12. the methods of breaking down the system and how to ensure that ingress and contamination of the system are avoided
13. the procedure for reconnecting system equipment when testing is completed
14. the need to apply pressure tests in incremental stages and to check all readings and pressures at each stage
15. the fault finding techniques to be used if the system fails the tests
16. how to record the results of each individual test and the documentation that must be used
17. from whom to seek authorisation if you need to alter or change the test procedures
18. how to analyse the test results and make valid decisions about the acceptability of the fuel system

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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. problems that can occur with the testing activities and how they can be overcome
21. the items that may cause errors or discrepancies in/with the test results and how to avoid this
22. any required environmental controls relating to the testing
23. the documentation to be completed at the end of the testing activities
24. 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 testing of the aircraft fuel systems:

- 1.1 obtain and use the appropriate documentation (such as job instructions, aircraft fuel equipment test procedures, quality control documentation, history sheets, flight logbook, 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 testing 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 obtain clearance to work on the aircraft and observe all relevant safety procedures
- 1.6 ensure that isolation procedures are followed and that safe working distance procedures are set up
- 1.7 carry out the tests, using the specified techniques and procedures
- 1.8 return all tools and equipment to the correct location on completion of the testing activities

2.

Test two of the following aircraft fuel systems:

- 2.1 full system fuel flow
- 2.2 bleed valve
- 2.3 fuel and de-fuel connections
- 2.4 reduced system fuel flow
- 2.5 fuel filters
- 2.6 fuel jettison system
- 2.7 crossover/change-over tanks
- 2.8 fuel drain systems
- 2.9 auxiliary fuel tank
- 2.10 in-flight refuelling boom

3.

Test aircraft fuel systems equipment, using tools or test equipment which include three from:

- 3.1 fuel pumps
- 3.2 blanking equipment
- 3.3 fuel testing rigs
- 3.4 flushing equipment
- 3.5 sampling devices
- 3.6 connecting equipment
- 3.7 bleeding equipment
- 3.8 pressure devices

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4.

Carry out three of the following types of test:

- 4.1 pressure line pressure test
- 4.2 reduced system flush
- 4.3 system fuel flow functional test
- 4.4 leak test
- 4.5 system flush
- 4.6 fluid sampling/taking results
- 4.7 fuel/de-fuel test

5.

Deal with two of the following complexities during the testing activities:

- 5.1 system with no faults
- 5.2 system with faults
- 5.3 system with intermittent faults

6.

Use three of the following fault finding techniques during tests:

- 6.1 six point
- 6.2 input-to-output
- 6.3 equipment self-diagnostics
- 6.4 injection and sampling
- 6.5 half-split
- 6.6 function testing
- 6.7 emergent problem sequence
- 6.8 unit substitution

7.

Review and record fault symptoms and history of problems using four of the following:

- 7.1 data sheets
- 7.2 log cards/history sheet
- 7.3 fault records
- 7.4 calibration records
- 7.5 aircraft documentation
- 7.6 maintenance records
- 7.7 other specific recording method

8.

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

- 8.1 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
- 8.2 Ministry of Defence (MoD)
- 8.3 Military Aviation Authority (MAA)
- 8.4 Aerospace Quality Management Standards (AS)
- 8.5 customer standards and requirements
- 8.6 Federal Aviation Authority (FAA)
- 8.7 company standards and procedures
- 8.8 BS, ISO or BSEN standards and procedures

- 8.9 specific equipment requirements
- 8.10 manufacturers standards and procedures

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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