
Overview

This standard identifies the competences you need to set to work and test marine pneumatic systems, such as a multi-equipment ring main, single equipment main or a dedicated equipment ring main, in accordance with approved procedures. The equipment to be set to work and tested will include air start systems, air-to-weapon systems, breathing apparatus panels, waveguide supplies, reducers, isolating valves, air operated valves, pneumatic controls, compressors, strainers, filters, driers and tank instrumentation. You will be required to use appropriate drawings, specifications and test documentation to set up and test the various types of equipment. You will be expected to use the specified/appropriate techniques to carry out formal setting to work and testing, which will include charging, sampling, draining and re-filling systems, over a range of operational parameters, to establish that the equipment on test is functioning at optimal level and to specification.

Your responsibilities will require you to comply with organisational policy and procedures for the setting up and testing activities undertaken and to report any problems with these activities, or with the tools and equipment used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. 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.

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Your underpinning knowledge will provide a sound understanding of your work and will provide an informed approach to applying appropriate setting up and testing procedures to marine pneumatic systems. You will understand the equipment being worked on, any test equipment to be used and the various testing procedures, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the equipment functions to the required specification. In addition, you will be expected to review the outcomes of the tests, to compare the results with appropriate standards, to determine the action required and to record and report the results in the appropriate format.

You will understand the safety precautions required when carrying out the setting to work and testing of marine pneumatic systems, especially those relating to the risk of fire and explosion and for taking the necessary safeguards to protect yourself and others against 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, both in harbour and at sea.

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 setting up and operating specifications for the products or assets being configured
3. follow the defined procedures and set up the equipment correctly ensuring that all operating parameters are achieved
4. set to work and test marine pneumatic systems and equipment using appropriate methods and techniques
5. deal promptly and effectively with problems within your control and report those that cannot be solved
6. check that the configuration is complete and that the equipment operates to specification
7. complete relevant documentation in line with organisational procedures

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that you need to observe when carrying out the setting-up and testing activities on marine pneumatic equipment and systems (including any specific legislation, regulations and codes of practice for the activities, equipment or materials)
2. the health and safety requirements of the work area in which you are carrying out the setting-to-work and testing activities and the responsibility they place on you
3. the safety procedures that must be carried out before work is started on setting up and testing the marine pneumatic equipment (such as standby supplies/equipment failure backup devices, warning notices, notification of type of test to be conducted)
4. the hazards associated with testing marine pneumatic equipment and systems and with the tools and test equipment used and how they can be minimised
5. how to recognise and deal with emergencies (including methods of safely evacuating and closing down compartments in the case of fire or other major incident and methods of first aid, fire fighting and resuscitation of personnel)
6. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the setting-to-work and testing procedure
7. protection techniques for mechanical and electrical systems, to prevent risk from fire or flood
8. how to obtain and interpret system drawings, circuit and physical layouts, charts, specifications, manufacturers' manuals, history/maintenance reports, graphical symbols and other documents needed for the testing and setting-to-work process
9. how to carry out currency/issue checks of the specifications you are working with
10. the correct operating procedures of the equipment and system being set up and tested
11. the basic principle of operation of the pneumatic circuit being set to work and tested and the function of the various components within the system
12. the adjustments/corrections/tuning required to bring the equipment/system to operational standard through full range parameters
13. types of test equipment to be used and their selection for particular types of tests
14. how to calibrate the test equipment to be used, or the organisational procedures for ensuring that the test equipment is maintained

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- correctly calibrated
15. how to connect the appropriate test equipment for the measurement of the system or device to be set to work and tested
 16. the various testing methods and procedures, as recommended in approved operating manuals and how to apply them to different operating conditions
 17. displaying/recording test results and the documentation to be used
 18. how to interpret the test readings obtained and the significance of the readings gained
 19. how to recognise defects (such as under or over performance)
 20. the various fault finding techniques that can be used if the system fails the test
 21. how to analyse test results (using tables in approved codes of practice)
 22. the importance of ensuring that test equipment is used only for its intended purpose and within its specified range and limits
 23. potential problems or errors that could occur and which may affect the test results and how they can be avoided
 24. the environmental control and company operating procedures relating to the testing activities
 25. authorisation procedures for changes to test procedures
 26. the documentation required and the procedures to be followed on completion of the testing
 27. the extent of your own authority and whom you should report to if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out **all** of the following during the setting to work and testing of the marine pneumatic system and equipment:
 1. plan the set-to-work and test activities to cause minimal disruption to normal working
 2. use the correct issue of the company and/or manufacturers' setting and testing procedures and quality documentation
 3. adhere to risk assessment, COSHH and other relevant safety standards
 4. ensure the availability of equipment and check that it is in a safe and usable condition
 5. provide safe access and egress for the area containing the equipment to be set to work and tested
 6. shut down and make safe the system on completion of setting to work and testing
 7. complete the records and returns to ensure the setting to work and testing is correctly documented
 8. leave the work area in a safe condition and to the prescribed category of cleanliness
2. Carry out setting to work and testing on **two** marine pneumatic systems from the following:
 1. multi-equipment ring main (such as air to tools, diving air panels, other breathing apparatus charging panels, machinery air start, weapon system, vent suit system, waveguides, air operated valves, air operated doors, air storage bottles)
 2. single equipment main (such as air operated valves, pneumatic controls, laundry, machinery air start system, diving air panel, other breathing apparatus charging panel, air storage bottle)
 3. dedicated equipment ring main (such as pneumatic controls, ventilated suit, machinery air start, air to tools)
3. Carry out setting to work and tests using a range of test equipment, to include **ten** of the following:
 1. drier
 2. moisture indicator
 3. compressor
 4. visual inspection
 5. charging hose

6. pressure regulator
 7. pressure testing devices
 8. remote instrumentation
 9. local instrumentation
 10. local isolation valves
 11. remote isolation valves
 12. specialist tests (time to charge specific volume to specified pressure)
 13. flow measurement devices
 14. system drawing
 15. bleeding equipment
 16. blanking equipment
 17. connecting devices
 18. sampling devices
 19. sampling standards
 20. alignment equipment
4. Use appropriate test equipment to carry out **six** of the following tests:
1. system integrity
 2. system pressure test
 3. compressor performance
 4. air temperature
 5. air sampling
 6. charging period
 7. system cleanliness
 8. leak test
 9. operating range
5. Deal with **two** of the following complexities during the test activities:
1. equipment with fault
 2. equipment without fault
 3. equipment with intermittent fault
 4. system fault
6. Use **two** of the following fault finding techniques:
1. half-split technique
 2. input/output
 3. equipment self-diagnosis
 4. injection and sampling
 5. unit substitution
 6. emergent problem sequence

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7. Carry out **all** of the following checks to ensure the accuracy and quality of the tests carried out:
 1. the test equipment is correctly calibrated and in date for use
 2. test equipment used is appropriate for the tests being carried out
 3. test procedures used are as recommended in the appropriate testing and setting-to-work procedure
 4. test equipment is operated within its specification range
 8. Provide a record/report of the test outcomes, using **one** of the following:
 1. preventative maintenance log/report
 2. company specific reporting procedure
 3. acceptance documentation
 4. system log
 5. inspection schedule
 6. specific test report/test records
 7. job card/time sheet
 9. Set to work marine pneumatic equipment, in compliance with **one** of the following standards:
 1. BS or ISO standards and procedures
 2. customer (contractual) standards and requirements
 3. company standards and procedures
 4. specific equipment requirements/manufacture's data
 5. recognised compliance agency/body's standards
 6. other accepted international standards

Behaviours

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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Setting to work and testing marine pneumatic systems and equipment



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