
Overview

This standard identifies the competences you need to line off the position of yacht or boat wooden components and assemblies, in accordance with approved procedures. You will be required to select the required lining-off tools and equipment, based on the information presented to you and the accuracy to be achieved. Lining-off will be the preparation required for assembly and erection of structural timbers and sub-assemblies and the positioning and alignment of other yacht or boat components and will include establishing and lining off workpiece datums, centre lines, angles, regular and irregular details.

Your responsibilities will require you to comply with organisational policy and procedures for the lining-off activities undertaken and to report any problems with the materials, equipment or lining-off activities that you cannot resolve yourself, 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 produce.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying lining-off procedures in a yacht or boat building environment. You will understand the lining-off process and its application and will know about the materials as well as the care and use of tools, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the work is carried out to the required specification.

You will understand the safety procedures required when working in a yacht or boat building environment and when carrying out the lining-off activities. You will be required to demonstrate safe working practices throughout and will understand the responsibilities you owe to yourself and others in the workplace.

**Performance
criteria**

You must be able to:

- P1 work safely at all times, complying with health and safety legislation, regulations, directives and other relevant guidelines
- P2 obtain and use the correct information for marking out
- P3 obtain the appropriate marking out equipment and check that it is in a usable condition
- P4 prepare suitable datum's and marking out surfaces
- P5 mark out using appropriate methods
- P6 check that the marking out complies with the specification
- P7 deal promptly and effectively with problems within your control and report those that cannot be resolved

Knowledge and understanding

You need to know and understand:

- K1 the specific safety precautions to be taken when carrying out lining-off activities in a yacht or boat building environment (including general workshop and site safety, appropriate personal protective equipment, accident procedure; statutory regulations, risk assessment procedures and COSHH regulations)
- K2 how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down of compartments in the case of fire or other major incident, first aid, fire fighting and resuscitation of personnel)
- K3 the personal protective clothing and equipment (PPE) to be worn when carrying out the lining-off activities
- K4 the hazards associated with lining-off yacht or boat structural components (such as working in a boat building environment, lifting and handling fabricated components, slivers on sheet materials, using laser marking out equipment, working at height) and how they can be minimised
- K5 the procedures to be adopted to obtain the necessary drawings and job instructions
- K6 how to extract information from boat building drawings and related specifications (to include symbols and conventions to appropriate BS or ISO standards) in relation to work undertaken
- K7 how to interpret first and third angle drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing
- K8 how to carry out currency/issue checks of the specifications you are working with
- K9 principles of lining-off
- K10 the importance of datum lines and why all measurements must be taken from these datums (including accumulation of errors and how this can effect the overall assembly)
- K11 the various lining-off tools and equipment that can be used for the lining-off activities
- K12 use of marking out conventions, datum edges/lines and centre lines
- K13 lining-off and transferring information from templates
- K14 the importance of using tools only for the purpose intended; the care that is required when using the equipment and tools; the proper way of preserving and storing tools and equipment between operations
- K15 the need for clear and dimensional accuracy in lining off to specifications/drawings
- K16 the problems that can occur in lining off the yacht or boat components and how these can be avoided

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K17 the extent of your own responsibility and whom you should report to if
you have problems that you cannot resolve

Additional Information

Scope/range related to performance criteria

You must be able to:

1. Carry out **all** of the following during the lining off of the yacht or boat assemblies:
 - 1.1. obtain and use appropriate arrangement drawings/plans, job instructions and specifications
 - 1.2. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
 - 1.3. check that all tools and equipment used during the lining-off are in a safe and usable condition
 - 1.4. ensure that the work area is free from hazards and that there is sufficient room to complete the lining-off and boat building assemblies
 - 1.5. return all tools and equipment to the correct location on completion of the lining off activities
 - 1.6. leave the work area in a safe condition and to the prescribed category of cleanliness
2. Interpret drawings and line-off to the required dimensions for **two** of the following:
 - 2.1. positional lines/alignment
 - 2.2. structural datum/centre lines
 - 2.3. final unit dimensional sizes
3. Line off required locations/positions for **three** of the following:
 - 3.1. bulkheads/partitions
 - 3.2. hull planking
 - 3.3. gunwhales
 - 3.4. windows/ports
 - 3.5. deck beams/planking
 - 3.6. stringers
 - 3.7. carlins
 - 3.8. fitted furniture
 - 3.9. major unit erection
 - 3.10. sub-assembled units
 - 3.11. access/penetration openings
 - 3.12. engine/machinery bearers/seatings
 - 3.13. other specific units

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4. Line-off from drawings, using **six** of the following tools and instruments:

- 4.1. tape
- 4.2. straight edge
- 4.3. square
- 4.4. chalk line
- 4.5. laser device (where applicable)
- 4.6. protractor
- 4.7. templates
- 4.8. spirit levels
- 4.9. plumb bob
- 4.10. water gauge

5. Ensure the completed lining-off meets **all** of the following requirements:

- 5.1. dimensionally accurate (to arrangement drawing/plans)
- 5.2. clearly defined for required processes
- 5.3. uses recognised lining-off conventions
- 5.4. meets company/client standards

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