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## Overview

This standard identifies the competences you need to produce/finish wooden and manufactured board structural components for yachts or boats using hand tools, in accordance with approved procedures. You will be required to interpret the drawings and work instructions and to select the appropriate tools to use, based on the type of operations to be performed, the size of the components to be produced and the materials to be used. The size and complexity of the components produced will vary and it is anticipated that the production of the components will involve roughing out the components using fixed or portable machine tools and finishing/making them fit, using hand tools. The components produced will include such items as hull frames, keel/backbone, stem, bulk heads, hull and deck planks, transom, cabin/coach roof, rudder, tiller and wheel, mast, windows/ports, hatch covers and other similar structural components.

Your responsibilities will require you to comply with organisational policy and procedures for the woodworking activities undertaken and to report any problems with these activities, or with the tools, equipment and materials used, that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to ensure that all tools, equipment and materials used are correctly maintained and accounted for. You will need to complete all necessary job/task documentation accurately and legibly, to work with a minimum of supervision and to take 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 the production of yacht or boat wooden structural components using hand woodworking tools and procedures. You will understand the equipment being used and its application and will know about the cutting tools, their function and maintenance requirements, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the work output is to the required specification. You will be able to identify blunt and damaged cutting tools and will know how to sharpen and adjust them in use, in order for them to work efficiently.

You will understand the safety precautions required when carrying out the hand shaping activities, especially when using sharp tools. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace.

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### 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 follow relevant specifications for the component to be produced
  - P3 obtain the appropriate tools and equipment for the shaping operations and check they are in a safe and usable condition
  - P4 shape the materials using appropriate methods and techniques
  - P5 check that all the required shaping operations have been completed to the required specification
  - P6 deal promptly and effectively with problems within your control and report those that cannot be solved

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### Knowledge and understanding

*You need to know and understand:*

- K1 the specific safety precautions to be taken whilst using hand tools to cut and shape the yacht or boat wooden structural components (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
- K2 the health and safety requirements of the work area in which you are carrying out the wood working activities and the responsibility they place on you
- K3 the personal protective equipment and clothing (PPE) to be worn during the woodworking activities
- K4 the hazards associated with cutting and shaping wood and composite materials and with the tools and equipment that is used and how they can be minimised
- K5 precautions to be observed in the handling and lifting long lengths of timber and sheet materials
- K6 how to obtain the necessary job instructions, drawings and specifications that are used during the woodworking activities and how to interpret their information
- K7 how to carry out currency/issue checks of the specifications you are working with
- K8 the various hand tools that are used to cut and shape the materials and the range of operations they are capable of performing (such as rip saws, tenon saws, fret/bow saws; smoothing planes, jack planes, rebating planes; chisels and gouges; spokeshaves)
- K9 the capabilities and limitations of the hand cutting equipment to be used
- K10 how to check that the cutting tools are in a usable and safe condition; and the procedure for sharpening and adjusting these when required
- K11 the various types of structural components that are to be made and their function within the structure of the yacht or boat
- K12 the terminology that is used for the structural components
- K13 how to identify the wood to be used (to include type, colour, grain structure, size)
- K14 the common defects that occur in the wood to be used
- K15 the types of defects that would render the materials unfit for use
- K16 the importance of colour matching and grain convention when using wood and wood-based materials
- K17 the various methods used to hold the components that are being shaped, formed or dressed by hand
- K18 why you need to consider grain direction and construction when cutting and shaping wood and wood composites
- K19 the approved methods of removing material to avoid damaging or distorting the finished components

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- K20 the methods used to cut square, angular and circular/curved profiles
- K21 how to conduct any necessary checks to ensure the accuracy and quality of the components produced and the type of equipment that is used
- K22 recognising defects in the components (which may be material defects or those produced through the cutting and shaping activities)
- K23 the care of hand tools and the importance of keeping them sharp and in good condition; and the effects that this has on the finished product
- K24 why it is important to keep the tools and equipment clean and free from damage, to practice good housekeeping of tools and equipment and to maintain a clean and unobstructed working area
- K25 the standards to be attained and the company/customer quality control procedures
- K26 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
- K27 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 shaping/finishing of the yacht or boat structural components:
  - 1.1. obtain all the necessary information to carry out the hand shaping/fitting activities (such as job instructions, drawings, 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 the hand tools are fit for purpose and are in a safe and usable condition
  - 1.4. ensure that the work area is free from hazards
  - 1.5. use safe and approved hand shaping techniques at all times
  - 1.6. maintain the cutting tools in a serviceable condition
  
2. Use **eight** of the following hand tools to cut and shape the materials to specification:
  - 2.1. rip saws
  - 2.2. tenon saws
  - 2.3. fret/bow/coping saws
  - 2.4. jack or smoothing planes
  - 2.5. rebating planes
  - 2.6. spokeshaves
  - 2.7. chisels/gouges
  - 2.8. drills/braces
  - 2.9. files/rasps
  - 2.10. sanding blocks/paper
  - 2.11. portable powered hand tools
  - 2.12. other specific tool
  
3. Shape yacht or boat wooden structural components which combine different features and cover **eleven** of the following profiles:
  - 3.1. flat faces
  - 3.2. parallel faces
  - 3.3. square faces
  - 3.4. angular/tapered faces
  - 3.5. rebates

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- 3.6. curved profiles
  - 3.7. concave profiles
  - 3.8. convex profiles
  - 3.9. circular/round profiles
  - 3.10. chamfers and radii
  - 3.11. drilled holes
  - 3.12. mortise and tenon joints
  - 3.13. scarph joints
  - 3.14. halving joints
  - 3.15. housing joints
  - 3.16. mitres
  - 3.17. slots/grooves
  - 3.18. other specific joints (such as dovetail, combed)
4. Shape components for **eight** of the following yacht or boat structural components:
- 4.1. hull frames
  - 4.2. keel/backbone
  - 4.3. stem
  - 4.4. moulds
  - 4.5. horn timber
  - 4.6. hull planks/strakes
  - 4.7. deck beams
  - 4.8. deck planks
  - 4.9. transom
  - 4.10. bulkhead
  - 4.11. bulwarks
  - 4.12. floors
  - 4.13. stringers
  - 4.14. carlins
  - 4.15. cabin
  - 4.16. coach roof
  - 4.17. windows/ports
  - 4.18. rudder
  - 4.19. tiller
  - 4.20. wheel
  - 4.21. mast
  - 4.22. hatch/hatch covers
  - 4.23. engine/machinery bearers
5. Shape components made from **all** of the following materials:
- 5.1. hard woods
  - 5.2. soft woods
  - 5.3. manufactured boards

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6. Use appropriate measuring equipment and tools to check **all** of the following:
  - 6.1. dimensions
  - 6.2. flatness
  - 6.3. squareness
  - 6.4. angles
  - 6.5. alignment
  - 6.6. position
  - 6.7. profile
  - 6.8. distortion/straightness
  
7. Shape yacht or boat wooden structural components which meet **all** of the following requirements:
  - 7.1. dimensionally accurate within specification tolerances
  - 7.2. free from false tool cuts and material defects
  - 7.3. interlocking components (joints) are secure
  - 7.4. have an appropriate surface texture
  - 7.5. meet the drawing requirements
  - 7.6. meet company and customer requirements
  
8. Complete the relevant paperwork, to include **one** from the following and pass it to the appropriate people:
  - 8.1. work authorisation documents
  - 8.2. acceptance documentation
  - 8.3. craft/vessel log
  - 8.4. job cards
  - 8.5. other specific recording method

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### Producing/finishing wooden structural components for yachts and boats using hand tools

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