

Assisting in the assembly of marine steelwork components

Overview

This standard identifies the competences you need to assist in producing marine steelwork plate (3mm and above) and rolled section assemblies, in accordance with instructions and approved procedures. You will be required to identify and select the correct components, lay out and follow the build strategy procedures, bring together, prepare for joining and assemble, in the right order, platework and rolled section components, in order to construct completed marine minor sub-assemblies. The steelwork assemblies produced could cover such items as deck components, shell/cover plates, girders/beams/transverses, seating/platforms, tanks, tube/pipe trusses, guards/uptakes, floor components, brackets and stiffener structures, posts/pillars/columns and cylindrical structures. You will be required to lay out and secure the various component parts of the structure, using mechanical fastenings, temporary tack welding or adhesive bonding techniques, in the correct order, ensuring that they are assembled in a manner that is fit for purpose.

Your responsibilities will require you to comply with organisational policy and procedures for the marine steelwork assembly activities to be undertaken and to report any problems with the activities, tools, equipment or materials that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with either a high level of supervision or as a member of a team. You will take personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. When working in a team, you must demonstrate a significant personal contribution to the team activities in order to satisfy the requirements of the standard and competence in all the areas required by the standard must be demonstrated.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will provide an informed approach to applying assembly techniques to marine steelwork. You will have an understanding of the assembly techniques used, the requirements of the manufacturing and assembling procedures and their application. You will know about the methods of assembly and the role of the components, in adequate depth to provide a sound basis for carrying out the activities, correcting/reporting faults and ensuring that the sub-assemblies are produced to the required specification.

You will understand the safety precautions required when lifting and handling marine steelwork components and when using the 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.

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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 relevant instructions, assembly drawings and any other specifications
3. ensure that the specified components are available and that they are in a usable condition
4. assist in the assembly of the components in their correct positions using appropriate methods and techniques
5. secure the components using the specified connectors and securing devices
6. check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification
7. deal promptly and effectively with problems within your control and report those that cannot be solved

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken when working in a marine steelwork environment and when producing marine steelwork assemblies (to include general workshop and site safety, accident procedures, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations)
2. the personal protective clothing and equipment (PPE) to be worn when carrying out the sub-assembly activities (including leather gloves, eye protection, safety helmets and ear protection)
3. safe working practices and procedures for producing marine steelwork assemblies
4. the correct methods of moving or lifting bulky and heavy components and fabrications
5. the hazards associated with marine steelwork assembly activities (such as using dangerous or badly maintained tools and equipment; lifting and handling long and heavy components; cuts, slips, trips and falls) and how they can be minimised
6. how to obtain and interpret information from job instructions, drawings and assembly specifications, in relation to the work undertaken
7. how to interpret marking out conventions (such as cutting lines, centre lines)
8. the preparations to be carried out on the components, prior to assembling them
9. the various methods of securing the assembled components (including threaded fasteners; tack welding methods and techniques; riveting; adhesive bonding of components)
10. how to set up and align the various components and the tools and equipment to be used
11. methods of temporarily holding the joints together to aid the assembly activities (such as jigs, clamps, rivet clamps, jacks and wedges)
12. the importance of using tools or equipment only for their intended purpose
13. the care that is required when using the tools or equipment and the proper way of preserving tools or equipment between operations
14. 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
15. the problems that can occur when producing marine steelwork assemblies and how these can be avoided
16. inspection techniques that can be applied to check that shape (including straightness) and dimensional accuracy is to specification and within acceptable limits
17. 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 assembly of the marine steelwork:
 1. correctly prepare and set up the components and faces to be joined
 2. use the correct datum faces
 3. correctly align the components and faces to be joined
 4. assemble/fabricate the platework components, in the correct order or manner
 5. produce an assembly which meets the required specification
2. Assist in producing three of the following steelwork assemblies:
 1. deck assemblies
 2. tube/pipe trusses
 3. shell and cover plates
 4. guards/uptakes
 5. girders/beams/transverses
 6. floor/bracket/stiffener structures
 7. seating/platforms
 8. posts/pillars/columns
 9. tanks
 10. cylindrical structures
 11. bulkhead
 12. other specific marine assembly
3. Use three of the following types of components in the steelwork assemblies produced:
 1. rolled sections
 2. flat plates
 3. tubes/pipes
 4. pressed plates
 5. stiffeners
 6. rolled plates
 7. brackets/beam knees
 8. pre-fabricated components
4. Assist in the Assembly of platework components, using two of the following methods:
 1. temporary tack welding
 2. mechanically fastened (threaded devices)
 3. pin-table jig

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4. adhesive bonding
 5. panel line fabrication
 6. fairing aids
 7. riveting
 8. other specific method
5. Produce marine sub-assemblies which meet all of the following quality and accuracy requirements:
 1. all components are correctly assembled and aligned, in accordance with the specification
 2. overall dimensions are within specification tolerances
 3. assemblies meet appropriate geometric tolerances (square, straight, angles, free from twists)
 4. where appropriate, the pitch of erection holes meets specification requirements
 5. completed assemblies have secure and firm joints and are clean and free from burrs or flash

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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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