
Overview

This standard identifies the competences you need to outfit marine steelwork components/structural units, in accordance with approved procedures. You will be required to use appropriate installation drawings, specifications and documentation to install the various components and sub-assemblies.

You will be expected to select the appropriate equipment and outfitting/installation techniques, based on the operations to be carried out and the components to be installed. The marine steelwork components/structural units to be installed will include flat plate and bar, pipes and tubes, rolled plate and section frames, pressed plates and fabricated units, lifeboat davits, hatch/deck covers and other appropriate outfit work. The steelwork outfitting activities will include making all necessary checks and adjustments, to ensure that components are correctly positioned, aligned, locked and fastened and that correct sealants are used, as and when appropriate.

Your responsibilities will require you to comply with organisational policy and procedures for the steelwork outfitting activities undertaken and to report any problems with the outfitting activities, equipment or components 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.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying marine steelwork outfitting techniques and procedures. You will understand the marine steelwork being installed and its application and will know about the outfitting/installation techniques, tools and methods, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the completed installation is to the required specification.

You will understand the safety precautions required when carrying out the marine steelwork outfitting 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, both ashore and afloat.

**Performance
criteria**

- You must be able to:*
- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
 - P2 follow all relevant drawings and specifications for the installation being carried out
 - P3 use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
 - P4 install, position and secure the equipment and components in accordance with the specification
 - P5 ensure that all necessary connections to the equipment are complete
 - P6 deal promptly and effectively with problems within your control and report those that cannot be solved
 - P7 check that the installation is complete and that all components are free from damage

Knowledge and understanding

You need to know and understand:

- K1 the specific safety practices and procedures that you need to observe when undertaking the outfitting of marine steelwork, both on land and on board vessels (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
- K2 the health and safety requirements of the work area where you are carrying out the outfitting activities and the responsibility they place on you
- K3 the hazards associated with outfitting marine steelwork and with the tools and equipment used and how these can be minimised
- K4 the personal protective equipment (PPE) that you need to use whilst carrying out the outfitting activities
- K5 the interpretation of drawings, standards, quality control procedures and specifications used for the outfitting activities and the symbols and terminology used in outfitting
- K6 how to carry out currency/issue checks of the specifications you are working with
- K7 the steelwork components to be installed and their function within the particular structure
- K8 methods of positioning, aligning and adjusting the outfit steelwork, without damage and the tools and equipment that are used
- K9 methods of lifting, handling and supporting the components/equipment during the outfitting activities
- K10 the various mechanical fasteners that will be used and their method of installation (including threaded fasteners, special securing and locking devices)
- K11 the importance of using the specified fasteners and locking devices for the particular installation and why you must not substitute others
- K12 the torque loading requirements on the fasteners and what to do if these loadings are exceeded or not achieved
- K13 the quality control procedures to be followed during the steelwork outfitting operations
- K14 procedures for ensuring that you have the correct tools and equipment for the activities
- K15 how to conduct any necessary checks to ensure the accuracy and quality of the installation
- K16 how to recognise outfitting defects (such as misalignment, ineffective fasteners and damage or distortion)
- K17 the importance of ensuring that the completed installation is free from foreign object debris, and that any exposed components or pipe ends are correctly covered/protected
- K18 the problems that can occur with the outfitting operations and how these can be overcome
- K19 the procedure for the safe disposal of waste materials

- K20 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
- K21 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 steelwork outfitting activities:
 - 1.1. interpret the drawings and identify and obtain the correct parts/components to outfit
 - 1.2. correctly prepare the component for positioning
 - 1.3. use safe and approved installation/outfitting techniques and procedures at all times
 - 1.4. mark off positions of steelwork parts/components, using datum lines
 - 1.5. correctly position and align components, as required from the drawing
 - 1.6. assemble the steelwork parts/components to the specified build strategy
 - 1.7. use the appropriate fixing methods to secure the various parts
 - 1.8. check that the finished steelwork assembly meets the required specifications

2. Position and install **six** of the following steelwork units:
 - 2.1. lifeboat davits
 - 2.2. exhaust/uptake units
 - 2.3. auxiliary seatings
 - 2.4. guards
 - 2.5. bollards
 - 2.6. tanks
 - 2.7. hatch/deck covers
 - 2.8. doors/jalousies
 - 2.9. masts
 - 2.10. deck cranes
 - 2.11. platforms
 - 2.12. ladders
 - 2.13. gratings
 - 2.14. hand rails
 - 2.15. racks and storage assemblies
 - 2.16. other specific outfitting items

3. Use **four** of the following types of components during the outfitting process:
 - 3.1. plates/flat bar
 - 3.2. tubes/pipes

SEMME3062 – HY1D 04

Outfitting marine steelwork

- 3.3. section/bar frames
 - 3.4. rolled plates
 - 3.5. pressed plates
 - 3.6. pre-fabricated units
4. Use **three** of the following installation methods and techniques:
 - 4.1. levelling and aligning
 - 4.2. sealing
 - 4.3. securing and locking
 - 4.4. torque loading
5. Position and secure the outfit steelwork, using **three** of the following:
 - 5.1. tack welding
 - 5.2. threaded fasteners
 - 5.3. fairing aids
 - 5.4. lifting equipment
 - 5.5. clamps and jigs
 - 5.6. support frames
6. Produce steelwork outfit installations which comply with **one** of the following standards:
 - 6.1. all outfit units are correctly assembled and aligned, in accordance with the specification
 - 6.2. overall dimensions are within specification tolerances
 - 6.3. installed units meet geometric tolerances (square, straight, angles, free from twist)
 - 6.4. where appropriate, the pitches of erection holes meet specification
 - 6.5. completed units have secure joints and are clean and free from burrs
7. Complete the relevant paperwork, to include **one** from the following and pass it to the appropriate people:
 - 7.1. installation/outfitting record
 - 7.2. acceptance documentation
 - 7.3. work authorisation documents
 - 7.4. job cards
 - 7.5. time sheets
 - 7.6. other specific recording method

SEMME3062 – HY1D 04
Outfitting marine steelwork

Developed by	SEMTA
Version number	2
Date approved	February 2014
Indicative review date	February 2017
Validity	Current
Status	Original
Originating organisation	SEMTA
Original URN	SEMME3062
Relevant occupations	Marine Engineering Trades
Suite	Marine engineering suite 3
Key words	engineering; marine; outfitting; steelwork; components; structures; install; tanks; safety; equipment; platforms