

Overview

This standard identifies the competences you need for bending and forming plate (of 3mm and above) for marine fabrications, using power operated equipment such as press brakes, bending machines and power presses, in accordance with approved procedures. You will be required to operate the appropriate bending and forming equipment, in accordance with the instructions for the operations being performed. You will need to ensure that all the required safety devices are operating correctly and that the machine guards are in place and correctly adjusted.

Items to be bent and formed may include ferrous and non-ferrous materials and tasks will include producing bends of various angles, setting plate ends for rolling operations and producing curved sections. This will call for care in selecting the right tools, so as to avoid damage to the tools and danger to oneself.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken and to report any problems with the equipment, materials, tooling or bending activities that you cannot resolve, or are outside your 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 be sufficient to provide a good understanding of your work and will provide an informed approach to applying the required power pressing procedures. You will have an understanding of the bending processes and will know about the equipment and its application, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the completed work is to the required specification.

You will understand the safety precautions required when working with power operated presses and the safeguards necessary for undertaking the activities safely and correctly. You will be required to demonstrate safe working practices and procedures throughout and will understand the responsibilities you owe to yourself and others in the workplace.

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. confirm that the equipment is set up correctly and is ready for use
3. manipulate the machine controls safely and correctly in line with operational procedures
4. produce formed components to the required specification
5. carry out quality sampling checks at suitable intervals
6. deal promptly and effectively with problems within your control and report those that cannot be solved
7. shut down the equipment to a safe condition on conclusion of the machining activities
8. complete relevant documentation in line with organisational procedures

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken when working with power-operated bending and forming equipment such as press brakes and/or bending machines in a marine fabrication environment, both on land and on board vessels (including general workshop and site safety, appropriate personal protective equipment, accident procedure; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations)
2. the correct personal protective equipment (PPE) and handling precautions to be taken when working with heavy platework
3. the correct methods of moving or lifting sheet or plate materials
4. the hazards associated with power operated bending and forming processes (such as handling heavy sheet plate materials and components, operating moving equipment, using faulty or badly maintained tools and equipment) and how they can be minimised
5. the safe working practices and procedures required for operating power presses and bending machines
6. how to obtain the necessary drawings and bending specifications
7. how to extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate BS or ISO standards) in relation to work undertaken
8. how to carry out currency/issue checks of the specifications you are working with
9. marking out conventions applicable to the bending process (including centre lines and bending lines)
10. the various types of power-operated bending machines that are used and their typical applications
11. the methods and techniques that are used to obtain the required shape and size
12. ways of limiting distortion, marks and creases in the finished workpiece
13. the preparations to be carried out on the materials, prior to bending them
14. the basic characteristics of the materials with regard to the bending operations undertaken
15. the need to take care of the bending tools and equipment and how to recognise faulty or damaged forming tools
16. how bending and forming tools should be stored

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17. the problems that can occur with the bending and forming activities and how they can be avoided
18. the organisational quality control procedures that are used and how to recognise defects in the bends that you produce
19. how to make dimensional and forming inspection checks and the tools and equipment that can be used
20. accuracy and limitations of processes
21. the procedure for the safe disposal of waste materials
22. 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.

Confirm that the equipment is safe to use and fit for purpose, by carrying out **all** of the following checks:

- 1.1 the press is appropriate for the material used and operation being performed
- 1.2 the machine guards and safety devices are in position and function correctly
- 1.3 the press is in a safe and serviceable condition
- 1.4 press settings are suitable for the material thickness and operation to be performed
- 1.5 equipment for supporting the plate at the start of the pressing operations is in place

2.

Use **one** of the following types of power operated bending equipment:

- 2.1 press brakes
- 2.2 powered bending machine
- 2.3 power press
- 2.4 variable power press

3.

Perform operations that produce **four** of the following:

- 3.1 bends at 90°
- 3.2 bends of various angles, knuckles, cambers or strakes
- 3.3 set plate ends for rolling
- 3.4 box, square and rectangular sections, bulkheads
- 3.5 swaging bulkheads, walls or partitions
- 3.6 multi-bend platework, bulkheads or walls
- 3.7 curved plates, bollards, hawse-pipes

4.

Bend and form metal plate (of 3mm or greater thickness), for **one** appropriate material and **two** thicknesses:

- 4.1 carbon steel
- 4.2 stainless steel
- 4.3 aluminium
- 4.4 special metals

5.

Produce pressed components that conform to **all** of the following standards:

- 5.1 bend position and dimensional accuracy is within the specification tolerances
- 5.2 the pressed plate conforms to best practice and or specification, without deformation or cracking

5.3 the component conforms to the required shape/geometry (to the template profile)

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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