

Bending and forming plate using power operated machines

Overview

This standard identifies the competencies you need for bending and forming plate (of 3mm and above) for 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 personally resolve, or are outside your personal authority, to the relevant people. You will be expected to work to instructions, 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 power pressing procedures required. 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 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.

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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. 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 bend and 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

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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 or/and bending machines in a fabrication environment (general workshop and site safety, appropriate personal protective equipment (PPE), accident procedure; statutory requirements, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations; safe disposal of waste materials)
2. the correct protective clothing, 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 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-operated bending machines
6. how to obtain the necessary drawings and bending specifications
7. how to use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate British, European or relevant International standards in relation to work undertaken)
8. marking out conventions applicable to the bending process (such as centre lines; bending lines)
9. the various types of power-operated bending machines that are used, and their typical applications
10. the ways of limiting distortion, marking and creases in the finished workpiece
11. the preparations to be carried out on the materials prior to bending them
12. the basic characteristics of the materials with regard to the bending operations undertaken
13. the need to take care of the bending tools and equipment; how to recognise faulty or damaged forming tools; how bending and forming tools should be stored
14. the problems that can occur with the bending and forming activities, and how they can be avoided

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15. the organisational quality control procedures that are used, and how to recognise defects in the bends that you produce
16. how to make dimensional and forming inspection checks, and the tools and equipment that can be used
17. the accuracy and limitations of processes
18. the extent of your own authority and whom you should report to if you have problems that you cannot resolve
19. reporting lines and procedures, line supervision and technical experts

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**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. the appropriate machine is selected for the operation being performed
 2. the machine guards and safety devices are in position and function correctly
2. Operate one of the following types of power-operated bending equipment:
 1. press brakes
 2. powered bending machine
 3. power press
 4. rolls
3. Perform operations that produce all of the following:
 1. bends at 90°
 2. bends of various angles using various bend radii
 3. set plate ends
 4. box, square and rectangular sections
 5. curved plates
4. Bend and form metal plate of 3mm or greater thickness, for one appropriate material and two thicknesses:
 1. mild steel
 2. stainless steel
 3. aluminium
 4. special metals
 5. other specific material
5. Produce components that conform to all of the following quality and accuracy standards:
 1. bend position and dimensional accuracy is within the specification tolerances
 2. the form or sharpness of the bend conforms to best practice and or specification, without deformation or cracking
 3. the bend conforms to the required shape/geometry (to the template profile)

Behaviours

Additional Information

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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