SEMMME3059

Setting power presses for production

Overview

This standard identifies the competences you need to prepare and set up single and multi-action power presses and associated equipment, in accordance with approved procedures. This involves selecting the appropriate press tools, and mounting and positioning them to the machine in the correct location for the type of operation being carried out. You will also be expected to set up and align all associated equipment, which will include material positioning mechanisms, workpiece ejection mechanisms, and all machine safety devices and guards.

You will need to set up the machine operating parameters to produce the workpiece to the required specification. You must produce trial pressings and prove the machine is working satisfactorily before declaring the installation ready for production. Making adjustments to settings to achieve specification, and solving machine-related problems during production, will also form part of your role.

Your responsibilities will require you to comply with organisational policy and procedures for the machine setting activities undertaken, and to report any problems with the machine, press tools, equipment or setting-up activities 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 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 setting-up procedures used. You will understand the power press used, and its application, and will know about the workholding devices, press tools, relevant materials, consumables and setting-up procedures, in adequate depth to provide a sound basis for setting up the equipment, correcting faults and ensuring that the work produced meets the required specification.

You will understand the safety precautions required when working with power operated presses and their associated tools and equipment, and the safeguards necessary for undertaking the activities safely and correctly. You will be required to demonstrate safe working practices throughout, and will understand the responsibility 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. select appropriate tooling for the operations to be performed
3. check that the tooling is in a safe and usable condition
4. mount and secure the tooling to the appropriate points on the machine
5. set and adjust the machine tool operating parameters to produce components to the specified requirements
6. check that all safety mechanisms are in place and that the equipment is set correctly for the required operations
7. confirm that the machine is producing components to the required specification
8. complete the required production documentation
9. 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. how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. the specific safety precautions to be taken when working with single and multiple action power presses and press tooling
3. the hazards associated with working with power presses (such as moving parts of machinery, material handling, material ejection, automatic processes, lifting and handling press tooling, using faulty or badly maintained equipment), and how to minimise them and reduce any risks
4. the correct protective clothing (PPE) and handling precautions to be taken when working with power presses and press materials
5. the correct methods of lifting and moving press tooling, and the types of equipment used
6. how to check that lifting equipment is within its current test dates
7. how to obtain the necessary drawings and forming specifications
8. how to extract and use information from engineering drawings and related specifications (to include symbols and conventions to appropriate standards) in relation to work undertaken
9. how to interpret first and third angle drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing
10. the various types of power press that are used, and their typical applications
11. how to prepare and set up the power press and its tooling for a range of different applications
12. the types of press tool that are used for the various operations, and how they are secured and set to the machine's tool holding device
13. the preparations to be carried out on the materials prior to using them
14. the basic characteristics of the materials with regard to the pressing operations undertaken
15. the need to take care of the press tools and equipment; how to recognise faulty or damaged press tools; how bending and forming tools should be stored
16. the problems that can occur with the bending and forming activities, and how they can be avoided
17. the organisational quality control procedures that are used, and how to

recognise defects in the components that are produced

18. how to make dimensional and forming inspection checks, and the tools and equipment that can be used
19. accuracy and limitations of processes
20. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out all of the following during the setting up activities:
   1.1 obtain and use the appropriate documentation (such as job instructions, drawings, quality control documentation)
   1.2 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
   1.3 ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
   1.4 check that the machine is appropriate for the operation being performed (such as tonnage, open height, stroke)
   1.5 ensure that the power press tool setters safety clutch lock, brakes, and emergency stop facilities operate correctly
   1.6 use appropriate and safe setting techniques and procedures
   1.7 check that the machine guards and safety devices function correctly
   1.8 check that press tools are undamaged and in a serviceable condition
   1.9 ensure that machine settings are suitable for the material thickness and operations to be performed
   1.10 hold components securely without distortion
   1.11 leave the work area and machine in a safe and appropriate condition on completion of the activities
2. Prepare and set up one of the following types of power press:
   2.1 single action
   2.2 multiple action
3. Select, prepare, mount and position press tools to the machine, to cover all of the following:
   3.1 preparing the press to receive the tooling
   3.2 setting workpiece feed and ejection systems
   3.3 positioning, aligning and securing press tools
   3.4 ensuring correct clamping of materials
   3.5 fitting and adjusting guards, interlocks and other safety mechanisms
   3.6 setting up press operating parameters (stroke, stroke speed, material feed mechanisms)
   3.7 carrying out tool try-outs of the complete cycle, using manual operation
4. Set up the press to carry out five of the following operations:
   4.1 blanking
   4.2 notching
   4.3 raising of first draw
   4.4 cupping
   4.5 piercing
   4.6 joggling
   4.7 forming of second draw
   4.8 embossing

4.9 cropping/shearing
4.10 compound operations
4.11 coining
4.12 bending/forming
4.13 planishing/flattening
4.14 progression tool
4.15 securing/assembling
4.16 other specific operations

5. Produce components from one of the following types of material:
5.1 ferrous materials
5.2 non-ferrous materials
5.3 deep drawing steels

6. Produce pressed components which comply with all of the following quality and requirements:
6.1 dimensional accuracy is within the specification tolerances
6.2 the form or sharpness of the profile conforms to best practice and/or specification, without deformation or cracking
6.3 the components produced conform to specification without defects

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