SEMMME3135

Setting and using a fly press for spring making activities

Overview

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This standard identifies the competences you need to set and use a fly press for bending and forming materials used in the manufacture of strip and coil springs, in accordance with approved procedures. In setting up the fly press, you will need to select the correct bending and forming tools for the operations being performed. You will mount, align and secure them to the appropriate points on the fly press bed and spindle. You will be required to set the fly press to perform the required operations, which will include punching holes, punching slots and profiles, bending, forming spring ends such as loops and setting/adjusting spacing in spring coils.

Your responsibilities will require you to comply with organisational policy and procedures for the fly press setting and operating activities undertaken, and to report any problems with the equipment, materials, tooling or spring making activities that you cannot resolve, or that 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 appropriate setting and operating methods and techniques for fly presses. You will have an understanding of the punching and 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 producing the spring components to the required specification.

You will understand the safety precautions required when working with fly presses, and the safeguards necessary for undertaking the activities safely and correctly. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.

Performance criteria

You must be able to:

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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 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

Knowledge and understanding

You need to know and understand:

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1. how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. the importance of wearing the appropriate protective clothing (PPE) and equipment and of keeping the work area clean and tidy
3. the hazards associated with setting and using fly presses for spring work and how to minimise them and reduce any risks
4. checks to be carried out to ensure that the fly press and its associated tooling are safe and are in a fit condition to use
5. the safe working practices and procedures required for operating the fly press
6. how to obtain the necessary drawings, specifications and job instructions
7. how to extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate standards) in relation to work undertaken
8. how to interpret first and third angle drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing
9. terminology used in fly press spring making operations in relation to the activities undertaken and types of spring produced
10. how to set up the fly press to produce the required form (such as bends and forms)
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, punching and forming tools and equipment, and how to recognise faulty or damaged tools
16. how bending and forming tools should be stored
17. the problems that can occur with the bending, punching 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 components that you produce

19. the inspection checks to be carried out, and the tools and equipment that are used for this

20. the accuracy that can be achieved by the punching, bending and forming process

21. the importance of completing all relevant documentation on conclusion of the spring making activities

22. the extent of your own authority and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

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1. Carry out all of the following in preparation for the fly press spring making activities:
    1.1 obtain and interpret correctly the documentation for the type of spring being made
    1.2 adhere to procedures or systems in place for risk assessment, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
    1.3 check that the fly press and tooling to be used is in a safe and usable condition
    1.4 ensure that the fly press used is suitable for the material thickness and operations to be performed
    1.5 carry out the setting-up activities, following good practice/approved procedures
    1.6 leave the machine and work area in a safe and clean condition on completion of the setting-up activities
2. Use a fly press to bend and form two of the following materials:
    2.1 carbon steel
    2.2 alloy steel
    2.3 nickel based alloys
    2.4 stainless steel
    2.5 copper based alloy
    2.6 titanium and other special material
    2.7 mild steel
    2.8 other specific material
3. Setup and operate a fly press to perform operations on one of the following types of spring:
    3.1 coil springs
    3.2 flat/strip springs
    3.3 wire forms
4. Set up a fly press, to include carrying out all of the following:
    4.1 selecting an appropriate size of press for the operations being performed
    4.2 selecting the correct tooling for the activities being carried out
    4.3 mounting the tooling to the fly press
    4.4 correctly setting and aligning the tooling (such as punch and die)
    4.5 setting the screw stop at the appropriate length of travel/stroke of the

spindle/adjusting ram movement
4.6 checking that the operation performed is to the specification requirements

5. Set up and operate a fly press to carry out four of the following activities:
5.1 punching/piercing holes
5.2 producing a round hook
5.3 punching slots
5.4 producing a round eye
5.5 blanking profiles
5.6 setting/adjusting coil pitch
5.7 cropping
5.8 setting/adjusting squareness
5.9 producing bends at 90°
5.10 pre-stressing springs
5.11 producing bends of various angles
5.12 other specific operation

6. Use four of the following whilst checking the quality of the spring components produced:
6.1 vernier callipers
6.2 vernier protractors
6.3 gauges
6.4 micrometers
6.5 squares
6.6 jigs
6.7 spring testing machines
6.8 electronic measuring equipment

7. Produce spring components which meet all of the following quality and accuracy standards:
7.1 bend position and dimensional accuracy is within the tolerances specified on the drawing/specification
7.2 the pressed/punched spring components conform to best practice and or specification, without uncontrolled deformation or cracking
7.3 the spring component conforms to the required shape/geometry

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