

## Proving patterns, coreboxes or models

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## Overview

This standard identifies the competencies you need to check and prove patterns, coreboxes or model components, in accordance with approved procedures. This will involve proving the equipment by either having castings or cores produced in the foundry or by producing cast resin negatives or models. You will then be expected to check that the castings, cores or models comply with the specification for dimensional accuracy, shape/profile, freedom from flash, cross joints and thick or thin sections. This will require you to select the appropriate method, tools and equipment to use, based on the type, size and requirements of the equipment to be proved. The complexity of the equipment to be proved will vary, and it is anticipated that originals and duplicates will be used in the checking process. You will prove either new equipment or existing equipment that has been altered, modified or repaired.

Your responsibilities will require you to comply with organisational policy and procedures for the proving activities undertaken, and to report any problems with the activities, tools and equipment used which you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with minimum 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 pattern, corebox or model proving procedures. You will understand the procedures and techniques used, and their application, and will know about the casting and resin casting methods, in adequate depth to provide a sound basis for carrying out the activities and identifying any irregularities in the samples produced by the different methods.

You will understand the safety precautions required when carrying out the proving 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.

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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. follow and make appropriate use of the specifications for the product or asset being checked
3. use all the correct tools and inspection equipment and check that they are in a useable condition
4. produce samples for inspection
5. carry out the checks in an appropriate sequence using approved methods and procedures
6. identify and assess any defects or variations from the specification and take appropriate action
7. report completion of compliance activities in line with organisational procedures

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## Knowledge and understanding

## You need to know and understand:

1. the specific safety precautions to be taken whilst carrying out the pattern or model proving activities (such as any specific legislation, regulations or codes of practice relating to the activities, equipment or materials used)
2. the health and safety requirements of the work area in which you are carrying out the proving activities, and the responsibility they place on you
3. COSHH regulations with regard to the substances used in the proving process
4. the hazards associated with checking and proving castings and cast resin masters/negatives, and how they can be minimised
5. the personal protective equipment and clothing (PPE) to be worn during the checking and proving activities
6. how to use and extract information from pattern drawings, specifications and work instructions (to include symbols and conventions to appropriate BS or ISO standards in relation to the work undertaken)
7. how to interpret first and third angle drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing
8. the use of British, European and international standards in determining if components and products are fit for purpose
9. the general principles of quality assurance and control systems and procedures
10. any preparations of the castings that need to be undertaken before the castings are checked
11. the application of the various tools and equipment used to check the castings
12. the importance of ensuring tools and equipment are set up correctly and are in a safe and useable condition
13. the procedure and methods used to check tools and equipment are within calibration date
14. the quality control procedures that need to be followed when checking the castings
15. how to conduct any necessary checks to ensure the dimensional accuracy, position of cored holes, completeness of the casting and freedom from defects
16. the type of defects that can be found on the castings, and why they occurred
17. the factors that have to be considered to determine if the castings are acceptable or if the equipment needs to be modified or scrapped
18. the documentation that needs to be completed to confirm the

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- equipment has been checked, and that the results of the findings have been recorded
- 19. the importance of ensuring all tools and equipment are returned to their correct location on completion of the checking and proving activities
- 20. the identification of defects which relate directly to the pattern equipment or models
- 21. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

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### Scope/range related to performance criteria

1. Carry out all of the following during the proving activities:
  - 1.1. use the correct issue of drawings, specifications and material data sheets
  - 1.2. use copies of relevant COSHH sheets and risk assessment standards
  - 1.3. obtain all tools and equipment to be used and check that they are fit for purpose
  - 1.4. use approved and safe casting procedures at all times
  - 1.5. return all tools and equipment to the correct location on completion of the activities
  - 1.6. leave the work area in a safe and tidy condition
2. Produce samples for inspection to include two of the following:
  - 2.1. sample castings
  - 2.2. sample cores
  - 2.3. cast resin masters
  - 2.4. cast resin negatives
3. Carry out all of the following checks on the sample castings produced, and record the results:
  - 3.1. visual checks for defects
  - 3.2. dimensional checks using instruments
  - 3.3. checks using profile gauges
  - 3.4. freedom from excessive flash
  - 3.5. cross joints
  - 3.6. thick or thin sections
  - 3.7. other sub-standard features
4. Complete pattern or model proving activities by carrying out all of the following:
  - 4.1 confirming equipment is acceptable for production
  - 4.2 reporting sub-standard equipment for rectification or replacement
  - 4.3 completing all relevant paperwork/documentation

## 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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