

J4.10 Produce advanced components by wax casting SQA Unit Code H9TN 04

Unit Summary

This unit covers the skills and knowledge involved in lost wax casting activities. You will be required to produce complicated castings from complicated rubber moulds. During, and on completion of, the casting process, you will be expected to check the quality of your work. You will need to be able to recognise casting defects, to determine the appropriate action to rectify them, and to ensure that the finished work meets the required standard. In producing lost wax casting you will be required to work to instructions and make advanced waxes, build complicated trees, invest and finally cast using the correct temperatures and techniques, appropriate to the type of metal being used.

Performance Indicators

You will be able to:

- a) Carry out all the necessary preparatory work prior to waxing and casting
- b) Follow the correct techniques and procedures for wax injecting
- c) Produce a range of complicated **castings**
- d) Assemble multiple wax components using the correct technique
- e) Carry out the correct techniques and procedures for investing
- f) Apply the correct burnout times
- g) Carry out all activities safely and correctly, and in a manner that does not cause risk of injury to yourself or others, or damage to components and equipment

Knowledge and Understanding

You will know and understand:

- 1) The specific safety practices and procedures to be observed when casting
- 2) The specific materials to be used, quantities and mixing ratios to be applied, working life of materials and mixes
- 3) How to clean, maintain and use wax injection equipment
- 4) The reasons for using releasing agents
- 5) The significance of re-crystallization, sprue placement and reservoirs
- 6) The importance of assembling wax trees, and calculations and formulae required
- 7) The methods used to determine the amount of metal
- 8) How to clean, maintain and use vacuum processing equipment
- 9) How to mix investment by manual and automated methods, and the investment proportions to be used
- 10) The impact of air bubble removal, and methods of achieving a bubble free state
- 11) The importance of ensuring the correct duration and temperatures for burnout
- 12) Other methods of removing wax prior to casting
- 13) How to clean, maintain and use casting equipment
- 14) Alternative methods of casting (from basic to highly advanced commercial techniques)
- 15) The methods and techniques for the removal of work from investment
- 16) How to apply cleaning and finishing techniques
- 17) How to recognise faulty castings, typical defects and how to rectify the problems

Range

You are required to:

- A. Produce at least three **castings** as follows:
 - (i) Casting of varying size
 - (ii) Some components to include colour combination of the same alloy (no solder)