

# Metal casting, foundry and patternmaking technician apprenticeship

## Level 3:

## End-point assessment plan

## Introduction and Overview

This document sets out the requirements for end-point assessment (EPA) for the metal casting, foundry and patternmaking technician apprenticeship. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to metal casting, foundry and patternmaking technician apprentices, their employers and training providers.

Full time apprentices will typically spend 27 to 33 months on-programme working towards the apprenticeship. The apprentice must spend at least 12 months on-programme and complete the required amount of off-the-job training in line with the apprenticeship funding rules.

The EPA should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the standard, the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPA organisation.

The gateway requirements prior to EPA:

- > successful completion of portfolio to support the technical interview
- > successful completion of English and mathematics in line with the apprenticeship funding rules

The EPA must be completed over a maximum total assessment time of 7.5 hours within a 6-month period, after the apprentice has met the EPA gateway requirements.

EPA must be conducted by an organisation approved to offer services against this standard, as selected by the employer, from the apprenticeship provider and assessment register (APAR).

The EPA consists of 2 distinct assessment methods:

- Technical interview supported by portfolio of evidence
- Practical observation and questioning

Performance in the EPA will determine the apprenticeship grade of fail, pass or distinction.

Diagram 1 below identifies the methods, order they need to be taken, gateway requirements and typical timelines.

On-programme - typically, 27 to 33 months	End-Point Assessment Gateway	End-Point Assessment - within 6 months	Professional recognition - optional
Training to develop the occupation standard's knowledge, skills and behaviours	Achieved English and mathematics qualifications in line with the apprenticeship funding rules	Technical interview supported by a portfolio of evidence	Registration as an Engineering Technician on the Engineering Council's Register of Professional Engineers - requires membership of a professional body such as the Institute of Cast Metals Engineers
Working towards English and mathematics qualifications in line with the apprenticeship funding rules	Completion of portfolio  Employer satisfied apprentice is consistently working at or above the level of the standard	Practical observation and questioning  Graded fail, pass or distinction	

**Metal casting, foundry and patternmaking technician apprenticeship standard**

Diagram 1. Typical metal casting, foundry and patternmaking technician apprenticeship summary

### End-point Assessment Gateway

The EPA should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the standard, the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPA organisation. Employers may wish to take advice from their apprentice's training provider(s).

Gateway requirements:

- Achieved English and mathematics qualifications in line with the apprenticeship funding rules.
- Completed portfolio to support technical interview.

### Portfolio Requirements

On commencement of the apprenticeship the apprentice must begin to retain a portfolio of evidence which must be finalised before passing through the gateway.

A completed portfolio or evidence is a **compulsory** EPA gateway requirement that underpins the EPA technical interview assessment method.

Employers and training providers are free to devise their own version of the portfolio of evidence, but the portfolio of evidence should typically contain the following information:

- the name of the apprentice
- details of the apprentice's workplace

- evidence is required to support the knowledge, skills and behaviours of the apprenticeship standard. Evidence can be provided through a range of sources, for example work reviews, employer feedback, work-based projects, reviews from trainers, photographs, trainer's observations
- evidence of problems encountered and how they were overcome
- confirmation from the line manager that the tasks were completed to the required standard of the organisation
- copy of English and mathematics certificates

It is recommended that the employer and apprentice signs off the portfolio of evidence, thereby authenticating that this is the apprentice's work and confirming the demonstration of competence against the knowledge, skills and behaviours (KSBs) across the standard and that the apprentice is ready to take the EPA.

The apprentice must submit their portfolio of evidence to their EPAO when applying for the EPA. An independent assessor will review the portfolio to glean personalised information that will assist the Technical Interview component of the EPA. The assessor will review the portfolio prior to the EPA in order to prepare questions. The portfolio itself is not assessed.

### **End-point Assessment Methods, Timescales and Location**

The end-point assessment consists of 2 distinct assessment methods:

- Technical interview supported by a portfolio of evidence.
- Practical observation and questioning

The end-point assessment must be completed within 6 months of the apprentice meeting the EPA gateway requirements.

The EPA must be completed over a maximum period of 7.5 hours.

The assessment methods can be completed in any particular order, allowing EPAOs flexibility in scheduling and cost-effective allocation of resources.

EPAOs must ensure that the technical Interview is conducted in a suitable controlled environment i.e., quiet room free from distraction and influence, with the necessary equipment for each assessment method e.g., computer if required by the apprentice. It is anticipated that EPAOs will use the apprentice's employer's premises wherever possible to minimise costs. They may be conducted face-to-face or via an online platform e.g., video-conferencing. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an online option be used.

Annex 1 shows which elements of the standard will be assessed by each assessment method within the end-point assessment.

Annex 2 shows the grading criteria for both methods.

Requirements for each assessment method are detailed below:

### **Method 1 – Technical interview supported by a portfolio of evidence**

- Apprentices must complete a technical Interview during the EPA period.
- The technical interview must assess apprentices against the standard's knowledge, skills and behaviours as shown in Annex 1.
- The technical interview will be conducted by an independent assessor.
- The interview will be based on the contents of the completed portfolio which the apprentice will have access to during the interview.
- The independent assessor will use standardised questions from an agreed set of questions developed by the assessment organisation who may consult with representative employers. Where they do this, measures should be put in place to protect the security and confidentiality of the questions.
- All apprentices will be asked 10 questions and follow up questions are allowed. Questioning must be completed within the total time allowed for the technical interview.
- Assessment organisations must develop 'question banks' of sufficient size to prevent predictability and review them regularly and at least once a year to ensure the questions they contain, are fit for purpose.
- The questions will be competency and scenario based.
- Apprentices must have a maximum of 1.5 hours, + or – 10%, to complete the technical interview.
- The technical interview will test the acceptance, validity and coverage of the evidence presented throughout the portfolio in relation to knowledge, skills and behaviours.
- Apprentices must be interviewed under controlled conditions.

### **Method 2 Practical observation and questioning**

- Apprentices must be observed by an independent assessor completing tasks relating to their specific role providing the opportunity to assess both core and their chosen option KSBs.
- Apprentices will be observed applying their knowledge of foundry operations, to safely perform operational activities with minimal supervision in the workplace wherever possible; simulation is allowed in exceptional circumstances for example, where for cost or health and safety reasons it is not appropriate to use the apprentice's workplace. The EPAO is responsible for ensuring the simulated environment is representative of the apprentice's workplace and can facilitate EPA.
- During or after the task completion, the independent assessor must ask 12 set open questions to assess related underpinning KSBs. They may ask follow-up questions where clarification is required. Questioning must be completed within the total time allowed for the observation.
- Assessment organisations must develop a bank of observation specifications, each including questions relating to underpinning KSBs and ensuring sufficient variation; observation

specifications must be reviewed annually to ensure that they are fit-for-purpose and reduce predictability.

- KSBs observed and answers to questions must be documented by the independent assessor.
- Apprentices must be provided with both written and verbal instructions on the tasks they must complete including timescales.
- Observations must be carried out over a maximum total assessment time period of 6 hours, + or -10%. There may be breaks during the observation to allow the apprentice to move from one location to another. It can also be carried out over more than one day, maximum of three, if that gives apprentices the best opportunity to demonstrate the KSBs, although in most cases it is anticipated that this will be completed in one day. If completed over more than one day, the technical interview must be carried out on one of those days to ensure the end-point assessment is cost effective.
- Independent assessors may observe up to a maximum of 3 apprentices at any one time, to allow for cost effective use of resources while maintaining quality and rigour.
- It is recommended that assessment organisations work together and with representative employers to standardise specifications.

## **Apprenticeship Grading**

Independent assessors must individually grade each assessment method, according to the requirements set out in this plan, see Annex 2. Restrictions on grading apply where apprentices re-sit or re-take an assessment method – see re-sit and re-take section below.

An independent assessor must combine the grades of the two assessment methods to determine the EPA grade. To achieve an EPA pass, apprentices must achieve a minimum of a pass in both assessment methods. Due to the importance of the practical observation and questioning, to achieve an EPA distinction, apprentices must achieve a distinction in the practical observation and questioning and a pass in the technical interview assessment method. See grading combinations in the table below.

Where more than one independent assessor is involved, the assessor responsible for the assessment method completed last will be responsible for combining the grades.

Independent assessors' decisions must be subject to moderation by the EPAO – see Internal Quality Assurance section below. Decisions must not be confirmed until after moderation.

The apprenticeship will be graded distinction, pass, or fail. The final grade will be determined by the collective performance in the two assessment tools in the end-point assessment.

<b>Practical observation and questioning</b>	<b>Technical interview supported by portfolio of evidence</b>	<b>Overall EPA grade</b>
Any grade	Fail	Fail
Fail	Any grade	Fail
Pass	Pass	Pass
Distinction	Pass	Distinction

### **Grading Combinations**

#### **Re-sit and re-take information**

Re-takes and re-sits will be available to apprentices who fail one or more end-point assessment methods. Apprentices may re-take or re-sit one or more elements within a timescale agreed between the EPAO and employer.

A re-sit does not require further learning, whereas a re-take does. The apprentice's employer will need to agree that a re-sit or re-take is an appropriate course of action. Apprentices must have a supportive action plan to prepare for a re-take or re-sit. Resits and retakes must not be offered to apprentices who pass and wish to achieve a higher grade. The maximum grade awarded to an assessment method re-sit or re-take will be pass, unless the EPAO identifies exceptional circumstances accounting for the original fail.

Further re-takes or re-sits would be at the discretion of the employer, who would review the suitability of further testing with the apprentice.

#### **Final Grade Decision**

An independent assessor will combine the moderated grades from the practical observation and questioning and technical interview to determine the overall apprenticeship grade in line with the grading criteria shown in Annex 2.

#### **Professional Body Recognition**

Completion of the Apprenticeship is designed to be recognised by the Institute of Cast Metals Engineers to meet the requirements set out in the Engineering Council's Specification for Engineering Technician to allow professional registration. For more details on the requirements and application process go to the Engineering Council website at [www.engc.org.uk](http://www.engc.org.uk)

#### **End-point Assessment Organisations**

Employers must choose an independent EPAO approved to deliver the EPA for this apprenticeship from the apprenticeship provider and assessment register (APAR).

EPAOs must:

- Provide end-point assessment guidance where required and appropriate to apprentices and employers, in relation to the requirements of the assessment methods and marking the end point assessment element and their components.
- Ensure independent assessors make consistent and reliable assessment and grade judgements through moderation activity involving observations and examination of assessment records.
- Develop technical interviews to meet the needs of each specialised role. Assessment organisations must ensure that there is consistency and comparability in terms of each technical interview, to ensure assessments are reliable, robust and valid, as well as ensuring competency across the industry.
- Develop compensatory assessment for learners with special needs and requirements to allow reasonable adjustments to be made to the knowledge, skills, and competence of the apprentice through alternative assessment techniques. They must be designed to ensure judgements maintain the validity, reliability and integrity of the assessment methods and are not compromised to health and safety, and legal requirements.
- Appoint and approve independent assessors for the purposes of conducting the assessments and grading based on a check of knowledge, experience, and independence.
- Provide training for independent assessors in terms of the requirements of the operation and marking of the assessment tools and grading.
- Provide training for independent assessors in undertaking fair and impartial assessment, and making judgements about performance and the application of knowledge and behaviours within a workplace setting.
- Provide documentation and guidance in relation to the end-point assessment i.e., making reasonable adjustment, eligibility to enter end-point assessment, and conflict of interest
- Hold bi-annual standardisation events for independent assessors to ensure consistent application of the guidance.
- Ensure assessment organisation moderators are trained in assessment and assurance processes and undertake regular continuing professional development
- Develop and manage complaints and appeals procedure.

## Requirements for Independent Assessors

Independent assessors must meet the following requirements:

- Be independent of the apprentice, their employer and training provider(s) i.e., there must be no conflict of interest.
- Hold or be working towards an assessor qualification e.g. A1 and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading.
- Must have recent experience working in a foundry or patternmaking company as a supervisor or manager, within 3 years, and have completed a minimum of 3-days continuing professional development (CPD) relevant to casting, foundry or patternmaking within the last year; they do not necessarily still need to be employed in a casting, foundry, or patternmaking company.
- Undertake a minimum of 1-day's EPAO standardisation training per year.

## Internal Quality Assurance

Internal quality assurance refers to the requirements that EPA organisation must have in place to ensure consistent, reliable and accurate (valid) assessment decisions. EPA organisations for this EPA must undertake the following:

- Appoint independent assessors that meet the requirements as detailed in this plan – see above.
- Provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading.
- Have quality assurance systems and procedures that support fair, reliable, and consistent assessment across organisation and over time.
- Operate regular standardisation events that enable assessors to attend a minimum of 1 event per year.
- Operate moderation of assessment activity and decisions, through examination of documentation and observation of activity, with a minimum of 10 percent of each independent assessors' assessments moderated.

## Assessment Tools and Materials

EPAOs must produce assessment tools and supporting materials for the EPA that follow best assessment practice, as follows:

- sample questions for practical observation and questioning
- sample questions for technical interview
- documentation for recording assessment evidence and decisions
- guidance for independent assessors on conducting the EPA
- guidance for apprentices, their employers and training providers on the EPA

## Implementation

### Affordability

The following factors should ensure the EPA is affordable:

- Employers premises should be used for EPA venues where possible.
- Remote assessment is permissible, reducing travel costs.
- Wherever possible both methods should be conducted on the same day. A maximum of 3 apprentices can be assessed at the same time, where possible during the practical observation.

### Management and Feasibility of the Standard and Assessment Plan

It is anticipated that there will be 12-36 starts per year on this apprenticeship and 48 per year, once established.

It is not expected that there will be any significant differences in the volume of apprentices in different regions.

Employers have technical expert capability and are able to provide a pool of independent experts from which assessment organisations can recruit.

## Annex 1 – Assessment Method by Element of the Standard - Metal Casting, Foundry and Patternmaking Technician.

<b>Assessment method</b>	<b>Key</b>
<b>Practical observation and questioning</b>	<b>PO</b>
<b>Technical interview</b>	<b>TI</b>

<b>KSB reference</b>	<b>Core Technical Knowledge</b>	<b>Assessment method</b>
C/K1	Relevant statutory, quality, environmental compliance procedures and systems, organisational and health and safety regulations relating to manufacturing operations.	TI
C/K2	Their individual roles and responsibilities within the organisation and the limits of their own authority and the implications of operating outside of this.	TI
C/K3	How to interpret relevant engineering and manufacturing data and documentation to execute their job role i.e., how to understand a 2- dimensional engineering drawing and use this to produce a 3- dimensional model.	TI
C/K4	The general Metal Casting, Foundry and Patternmaking manufacturing mathematical and scientific principles, methods, techniques, graphical expressions, symbols formulae and calculations used by this engineering environment. i.e., how to understand contraction allowances in the calculation of technical drawings for specific pattern production or the temperature specifications of casting liquid metal.	TI
C/K5	The structure, properties and characteristics of common materials used in the sector for example: Pattern Making materials like different woods, metals and plastics, Foundry Sand, Binders, Coatings, Feeding and Filtration Systems, Refractories, Various Metal Alloys, Additives, Waxes and Lubricants. Laboratory Testing including: Sand and Binder Properties, Chemical Composition and Mechanical Testing i.e. Tensile and Hardness Testing.	TI
C/K6	The full process of producing castings from a technical drawing to a finished casting and they must have knowledge of the manufacturing practices, processes and procedures.	TI

## Annex 1 continued

KSB reference	Core Skills	Assessment method
C/S 1	Apply safe systems of work, complying with health and safety legislation, regulations, environmental compliance procedures and systems and other relevant guidelines.	PO
C/S 2	Demonstrate clear and effective communication skills which include oral, written, electronic and visual displays.	PO
C/S 3	Plan and obtain all the resources and documentation required to undertake the manufacturing process, i.e. a technician would plan and prepare the process to produce prototype castings. All elements and steps would be required to be planned, resources would need to be briefed and all stages of production recorded.	PO
C/S 4	Undertake the work using the correct processes, procedures and equipment, i.e. the final inspection of a complete casting prior to despatch to ensure it complies with customer specifications.	PO
C/S 5	Perform safety, quality and compliance checks, using the correct processes, procedures and equipment, i.e. ensuring the gravity die assembly is safe and ready to start production.	PO
C/S 6	Complete appropriate documentation in an accurate, efficient and legible way by using the correct terminology.	TI
C/S 7	Maintain a positive working relationship with a range of people working within the manufacturing environment.	TI
C/S 8	Deal promptly and effectively with Casting, Foundry or Patternmaking problems within the limits of their responsibility using approved diagnostic methods and techniques and report those which cannot be resolved.	TI
C/S 9	Work efficiently and effectively, maintaining workplace organisation and minimising waste.	PO and TI

## Annex 1 continued

<b>KSB reference</b>	<b>Core Behaviours</b>	<b>Assessment method</b>
C/B 1	Comply with the health and safety guidance and procedures, be disciplined and have a responsible approach to risk. Work diligently regardless of the level of supervision, accept responsibility for managing time and workload and stay motivated and committed when facing challenges.	TI
C/B 2	Integrate and contribute with the team, support other people, consider implications of their own actions on other people and the business whilst working effectively to get the task completed.	TI
C/B 3	An open and honest communicator, communicates clearly using appropriate methods, listens well to others and has a positive and respectful attitude.	TI
C/B 4	Follow instructions and guidance, demonstrate attention to detail, follow a logical approach to problem solving and seek opportunities to improve quality, speed and efficiency.	PO and TI
C/B 5	Reflect on skills, knowledge, behaviours and seek opportunities to develop, adapt to different situations, environments or technologies and have a positive attitude to feedback and advice.	TI

## Annex 1 continued

<b>KSB reference</b>	<b>Specific Skills Pattern and Model Making Technician</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/PMMT 1	Read and interpret data from technical drawings and specifications in a Pattermaking context.	PO
K/PMMT 2	Select the correct medium, like wood, metal, plastic or composite for the production of patterns and models, considering the economics and end use environment.	TI
	<b>Skills</b>	
S/PMMT 3	Use mechanical and hand tools combined with specialist equipment, which is likely to include machinery such as Vertical Milling Centres, to produce components with minimum supervision.	TI
S/PMMT 4	Comply with the specification and quality requirements as defined on suitable technical drawings for wood, metal and plastics materials.	TI

<b>KSB reference</b>	<b>Specific Skills - Methods Development Technician</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/MDT 1	All the relevant physical processes and characteristics of the production process in metal casting foundries.	PO
K/MDT 2	How to use simulation technology to predict (quantitatively) all properties relevant to meet customers' specification and importantly, to produce a sound casting in the most economical way.	TI
	<b>Skills</b>	
S/MDT 3	Manually calculate and produce a complete simulation including, runner, gating design and feeding options to ensure a quality casting using the economical production method in various metals and production processes.	PO
S/MDT 4	Evaluate and solve production issues and casting failures in various metals by using problem solving techniques related to the running, gating and feeding of castings.	TI

<b>KSB reference</b>	<b>Specific Skills - Foundry Material and Process Control</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/FMPC 1	Analytical testing procedures and how to create informative reports.	PO
K/FMPC 2	Must be able to refer to published 'standards' and understand their relevance to the materials and processes.	PO
	<b>Skills</b>	
S/FMPC 3	Organise, evaluate and report outcomes using the appropriate testing equipment to validate that materials and processes are to international and national specifications as well as customer requirements.	TI
S/FMPC 4	Be able to evaluate, monitor and manage technical specifications of production processes, casting alloy compositions and finished casting components.	TI

<b>KSB reference</b>	<b>Specific Skills - Foundry Production Technician</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/FPT 1	Production processes including moulding, core production, die casting, investment casting and what is required to maintain these.	TI
K/FPT 2	How to optimise performance and how to react if things go wrong and the correct level of authority.	TI
	<b>Skills</b>	
S/FPT 3	Optimise the production process to improve the performance of the manufacturing process for complex moulds, dies and assemblies taking into account quality and economic factors.	TI
S/FPT 4	Ensure that the importance of commercial principles are recognised in the production process for cost effective production of fit for purpose castings.	TI

<b>KSB reference</b>	<b>Specific Skills - Metal Casting Furnace and Ladle Technician</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/CFLT 1	How to calculate the charge formulation, the effects of alloy or other metal treatments and additive additions.	PO
K/CFLT 2	The various melting options and molten metal control and transportation techniques to achieve the required final casting specification.	PO
	<b>Skills</b>	
S/CFLT 3	Optimise the production process to improve the performance of the melting, melt transfer and casting process, taking into account the quality and energy efficiency, to achieve continuous improvement in performance.	TI
S/CFLT 4	Control the economics and technical capability within the melting, melt transfer and casting production environment.	TI

<b>KSB reference</b>	<b>Specific Skills - Foundry Post Cast Technician</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/FPCT 1	The principles of key 'Post Casting' operations which include, casting removal from the mould, rough fettling, post metal casting heat treatment i.e. stress relieving, annealing, normalising, quenching and tempering or solution treatment and aging, casting repair, final fettling and machining.	PO
	<b>Skills</b>	
S/FPCT 2	Evaluate and calculate the correct cooling rate, cleaning process, heat treatment type, temperature and duration, plus the fettling and casting cleaning process.	TI
S/FPCT 3	When required, identify parts that require repair and detail the process and method to undertake the repair.	TI
S/FPCT 4	Calculate machining criteria and the correct machining processes for metal castings that require machining.	TI

<b>KSB reference</b>	<b>Specific Skills - Inspection and Quality Assurance Technician</b>	<b>Assessment method</b>
	<b>Knowledge</b>	
K/IQAT 1	The importance of quality throughout the casting production process.	PO
K/IQAT 2	The knowledge of Non-Destructive and Destructive testing equipment and techniques and the capabilities and limitations of these techniques to quality assure castings.	PO
	<b>Skills</b>	
S/IQAT 3	Undertake detailed inspection and testing activities using specified methods and equipment.	PO
S/IQAT 4	To report findings relating to quality and compliance to management and to customer specifications and standards.	TI

## Annex 2 - Grading Criteria

EPAOs should focus on assessing the apprentice against the higher order descriptors outlined in the Pass and Distinction columns rather than the lower order knowledge, skills and behaviours referenced in the left hand column. By showing competence against the higher order descriptors, it can be assumed that the apprentice is working at or above the level outlined in the standard.

### Practical observation and questioning

**Fail criteria – The apprentice does not meet the requirements for a pass.**

KSB reference as shown in Annex 1	Area of standard	Distinction	Pass
C/S 1 C/S 5 C/S 9	Health and Safety	In addition to all the pass criteria.  Proactively identifies health and safety improvements.	Adopts effective and safe working practices and maintains tidy work area.  Works within the limits of own influence, ensures self and all personnel are safe.  A full understanding of health and safety legislation and regulations.  Demonstrates knowledge of safe working procedures and processes, takes a responsible approach to avoid risk and understand the implications of non-compliance.  Minimises waste whilst maintaining workplace organisation and environment.  Adheres to company standards in PPE.
C/S 4 C/B 4 K/IQAT 1 S/IQAT 3 K/FMPC 1 K/FMPC 2	Quality and Governance	In addition to all the pass criteria.  Actively promotes the importance of high standards of quality and can explain ways to ensure that product quality is maximised.	Follows company quality control procedures and processes to achieves quality standards.  Identifies and complies with customer specifications.

			<p>Identifies and recognises quality problems within the limit of their responsibility and reports those that cannot be resolved.</p> <p>Interprets and analyses customer specifications to ensure all quality standards are met.</p> <p>Applies the correct diagnostic methods and procedures to solve quality problems within the limit of their responsibility.</p>
<p>S/MDT 3 K/CFLT 1 K/FPCT 1 K/CFLT 2 K/IQAT 2 K/ PMMT 1</p>	<p>Technical Specification</p>	<p>Explains the limitations of production processes and how this impacts on quality.</p>	<p>Understands technical specifications and how to achieve them.</p> <p>Interprets and calculates data to achieve the required specification.</p>
<p>C/S 3 K/MDT 1</p>	<p>Planning and Preparation</p>	<p>In addition to all the pass criteria.</p> <p>Analyses and evaluates risk implications and builds in contingency plans when undertaking a task.</p>	<p>Demonstrates an ability to plan and organise a task for themselves.</p> <p>Identifies the resources and documentation required to complete the task.</p> <p>Explains how they use their knowledge of production processes to plan effectively.</p>
<p>C/S 2</p>	<p>Workplace Communication</p>	<p>In addition to all the pass criteria.</p> <p>Proactively engages and applies changes of style and method to suit target audience.</p>	<p>Demonstrates communication using a variety of methods to Technical and Non-Technical personnel.</p>

## Technical Interview supported by a portfolio of evidence

Fail criteria – The apprentice does not meet the requirements for a pass.

KSB reference as shown in Annex 1	Area of standard	Pass
C/K 1 C/K 2 C/B 4 C/S 9	Health, safety and compliance in a business environment	<p>Recognises, follows, understands and is able to review and relate the applicability of industrial health and safety regulations with regard to working practices.</p> <p>Identifies the regulations and working practices within the boundaries of their own authority, including assessing risk.</p> <p>Employs correct procedures to health and safety regulations relating to manufacturing operations.</p> <p>Seeks out opportunities to improve quality, speed and efficiency.</p>
C/K 3 S/FPCT 3 C/K 4 S/FPCT 4 C/K 5 K/PMMT 2 C/K 6 S/PMMT 3 S/PMMT 4 S/MDT 4 S/CFLT 3 S/CFLT 4 K/FPT 1 K/FPT 2 S/FPT 3 S/FPT 4 K/MDT 2 S/FMPC 3 S/IQAT 4 S/FMPC 4 S/FPCT 2	Technical and Customer specification	<p>Understands and adheres to technical customer specification.</p> <p>Interprets and calculates data to achieve the required specification.</p> <p>Takes steps to optimise production processes.</p> <p>Describes the importance of ensuring work is conducted in a cost effective manner and how they take this into account in the production process.</p> <p>Describes the limit of their own authority relating to quality and compliance.</p> <p>Can provide an example of when the work they have been involved in has contributed to sustainable development.</p> <p>Describes how they have made use of problem solving techniques to review and solve problems effectively and efficiently, escalating problems appropriately.</p>

		<p>Explain how they use tools and equipment appropriately.</p> <p>Explain how they use simulated technology to meet customer needs.</p> <p>Describe how they have applied their knowledge of production processes and use testing equipment to monitor outcomes, confirm that specifications have been adhered to and report findings.</p>
<p>C/S 6 C/S 7 C/S 8 C/B 2 C/B 3 C/B 1 S/IQAT 4</p>	<p>Effective communication and interpersonal skills</p>	<p>Communicates clearly and legibly using the correct terminology.</p> <p>Able to describe with an example the successful exchange of information with staff in other parts of the organisation and the ability to provide advice.</p> <p>Explains their responsibilities in the team and how they achieve positive outcomes.</p> <p>Accurately completes all required records.</p> <p>Demonstrates how they respect others.</p> <p>Demonstrate how they work responsibly and stay motivated and positive during challenging times.</p>
<p>C/B 5</p>	<p>Personal development</p>	<p>Demonstrates they have taken steps to develop own skills, knowledge and behaviours through a range of activities.</p> <p>Responds positively to feedback and advice.</p>