Highfield Level 2 Foundation Apprenticeship for FA0006 Engineering and Manufacturing

Assessment Specification

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Assessment Specification

Contents

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Versions:

FA0006 / v1.0

FAEAM v1.1

How to use this Assessment Specification

Welcome to the Highfield Assessment Specification for the Engineering and Manufacturing foundation apprenticeship standard.

Highfield is an independent awarding organisation that has been approved to assess and quality assure the Level 2 Engineering and Manufacturing foundation apprenticeship standard.

The assessment specification is designed to outline all you need to know about the assessments for this foundation apprenticeship standard and will also provide an overview of the delivery requirements.

Highfield also offers the Highfield Level 2 Engineering and Manufacturing Foundation Apprenti-kit, a comprehensive learning resource, designed to be used on-programme.

For more information, please go to the Highfield Products website. Please note that the use of this learning resource is not a prerequisite for apprentices undertaking the Engineering and Manufacturing foundation apprenticeship.

Introduction

Standard overview

General engineering and manufacturing operatives are found in environments supporting, for example, production, maintenance, assembly of components and systems, machining operations, fabrication and welding and additive manufacturing functions. They may work across many sectors including automotive, aerospace, energy, advanced and general manufacturing. The apprentice will carry out general engineering and manufacturing tasks consistently using safe working practices, planning and organising resources and completing tasks within timeframes.

Off-the-job training

This foundation apprenticeship requires a minimum 187 hours off-the-job learning. Upon successful completion, the apprentice will be competent in the knowledge, skills and behaviours outlined in this standard. Someone who completes some or all of this content will be part-way through a journey to a more specialist occupation. Taking another apprenticeship after this one is one way of progressing. More information about the main occupations involved can be found via the Skills England website.

Entry requirements

The apprentice must normally be age 16 to 21 at the start of their apprenticeship. Exceptions to this are set out in the Department for Education Apprenticeship Funding Rules.

English and maths qualifications

Apprentices must follow the English and maths formal qualification requirements as set out in the Department for Education Apprenticeship funding rules.

Mandatory qualification

There are no mandatory qualifications or licence to practise requirements for this occupation.

Mapping to occupational standards

Coverage of each knowledge and skill statement must include each and every occupation it is mapped to, unless expressly stated otherwise. For instance, if skill S1 is mapped to occupation 1 and occupation 2, then the range of coverage must include elements of both 1 and 2 so the apprentice benefits from a broad experience. Competence is to the level described by this foundation apprenticeship's knowledge and skills and not the often higher level of the mapped occupations. Coverage will be a blend of on and off-the-job learning. More information can be found within the knowledge and skills coverage document on the Skills England website.

Assessment roadmap

There is no stipulated order of assessment methods. Apprentices may be assessed at appropriate points (or milestones) throughout their foundation apprenticeship. This will be agreed between the apprentice, provider and/or employer.

If the knowledge and skills mapped to AO1 are required to access the workplace, this assessment should happen early in the programme.

Highfield's approach to assessing this standard is:

- knowledge test (AO1 Knowledge statements)
- question and answer (AO1 Skill statements)
- practical assessment - Portfolio of evidence (PoE) (AO2/AO3)

To take the assessments, the apprentice must be registered with Highfield.

If you have any questions regarding these assessment components, please contact your Highfield customer engagement team.

Assessor and internal quality assurance (IQA) guidance

Assessors

Assessors for this apprenticeship **must** meet the following:

- have knowledge of the subject. Examples to demonstrate subject knowledge include, but are not limited to:
    - a current CV detailing sector experience
    - an up-to-date record of continuous professional development relevant to the sector

- holding a qualification at the same level or above as the apprenticeship being assessed

- possess or be working towards a recognised assessor qualification. Examples include, but are not limited to:

  - Level 3 Certificate in Assessing Vocational Achievement
  - A1 Assess Candidate Performance Using a Range of Methods and A2 Assessing Candidates' Performance through Observation
  - D32 Assess Learner Performance and D33 Assess Learner Using Different Sources of Evidence

IQA

Internal quality assurers for this apprenticeship **must** meet the following:

- have knowledge of the subject. Examples to demonstrate subject knowledge include, but are not limited to:

  - a current CV detailing sector experience
  - an up-to-date record of continuous professional development relevant to the sector
  - holding a qualification at the same level or above as the apprenticeship being assessed

- possess or be working towards a recognised internal quality assurance qualification. For example:

  - Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice (RQF)
  - Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice (RQF)
  - D34 or V1 Verifier Awards

It is **recommended** that IQAs hold an assessing qualification.

Continuing professional development (CPD)

It is recommended that staff assessing and quality assuring this apprenticeship are supported to maintain up-to-date sector knowledge, including best practices and relevant legislative changes. CPD records can provide clear evidence of this practice.

Countersigning

While it is a minimum requirement for centres to have the appropriately qualified workforce in place, it is understood that centres may have new staff who are working towards those requirements. During this period, centres are required to have a robust countersigning strategy in place that supports and validates unqualified assessment and quality assurance decisions until the point where they meet the requirements as detailed above.

Use of artificial intelligence (AI)

Where AI is used as part of the apprentice's day-to-day work and forms part of a project report, presentation or artefact, it should be referenced as such within the work.

Where AI has been used as part of a portfolio, it should be fully referenced within it.

AI must not be used to produce the report or portfolio.

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Gateway to completion

Gateway to completion requirements

After apprentices have undertaken their assessment, employers and providers will need to complete the gateway to completion confirming the following:

- minimum duration has been met in line with the assessment plan.
- employability skills and behaviours have been suitably demonstrated.
  The employer is responsible for verifying that each employability skills and behaviour statement has been suitably demonstrated by the apprentice over the course of the programme. EB6 does not need to be confirmed by the employer but should form a key element of the apprentice's off-the-job training package.

The **gateway to completion** must be completed through the Highfield Assessment Hub.

If you require any support completing this section, please contact your customer engagement team at Highfield Assessment.

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The Engineering and Manufacturing foundation apprenticeship standard

Below are the assessment outcomes from the assessment plan. Learning and assessment will be based upon the knowledge and skills statements and the associated assessment outcomes are used to assess and grade the apprentice within each assessment method.

(*) Knowledge and skills statements which offer opportunities to develop functional skills English and maths are identified with an asterisk.

<table>
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<tr><td colspan="2">Knowledge Test, Question and Answer</td></tr>
<tr><td colspan="2">Assessment outcome
Demonstrates understanding of and compliance with health, safety, and regulatory requirements, including the understanding of appropriate sustainability practices, and waste disposal.</td></tr>
<tr><th>Knowledge</th><th>Amplification</th></tr>
<tr><td>K1 Employee responsibilities under relevant health, safety and welfare regulations.</td><td>Health, safety and welfare regulations
Health and Safety at Work etc. Act - following workplace policies and procedures, attending training and co-operating with employer instructions
Personal Protective Equipment at Work Regulations - wearing suitable protective equipment, such as helmets, gloves, masks, eye protection or ear defenders when required
Provision and Use of Work Equipment Regulations (PUWER) - using machinery, tools and equipment safely and not misusing or tampering with these
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) - reporting hazards, unsafe practices, accidents or near misses promptly</td></tr>
</table>

	• Workplace (Health, Safety and Welfare) Regulations - keeping work areas clean, tidy and free from obstruction, using welfare facilities responsibly and taking breaks appropriately • Management of Health and Safety at Work Regulations - co-operating with risk assessments, following safe systems of work and complying with control measures • Control of Substances Hazardous to Health (COSHH) Regulations - following safe procedures when handling hazardous materials, chemicals or substances • Regulatory Reform (Fire Safety) Order - taking part in fire drills and knowing evacuation routes and assembly points • Electricity at Work Regulations - following safe systems when working with or near electrical equipment • Lifting Operations and Lifting Equipment Regulations (LOLER) - using correct lifting equipment and inspections to ensure safety • Manual Handling Operations Regulations - using correct lifting techniques and avoiding unsafe manual handling • Control of Noise at Work Regulations - wearing hearing protection and following noise control measures • Control of Vibration at Work Regulations - using equipment safely and following control measures to reduce vibration exposure
K2 Sustainability principles and practices relevant to the role, including waste disposal and the impact of engineering and manufacturing on the environment.	**Sustainability principles and practices** • Energy efficiency by switching off equipment and minimising unnecessary use • Waste reduction through accurate measuring, cutting and reuse of off-cuts

	• Recycling and reuse of materials such as metals, plastics and cardboard • Pollution prevention by handling oils, chemicals and hazardous substances safely • Resource management through careful planning and responsible material use • Sustainable sourcing of suppliers and materials that meet environmental standards • Carbon footprint awareness by recognising and reducing emissions from activities • Circular economy practices by supporting repair, reuse and recycling of parts • Compliance with environmental legislation and workplace rules on waste disposal • Personal responsibility by using resources wisely and following sustainability guidance
K3 Types, use and storage of **personal protective equipment (PPE)**.	**Personal protective equipment (PPE)** • Personal protective equipment (PPE) refers to the clothing and equipment worn to protect workers from hazards. Each type must be used correctly for its intended purpose and stored correctly to keep it effective. Examples could include: ○ safety helmets ○ safety glasses or goggles ○ hearing protection (ear defenders or ear plugs) ○ protective/insulating gloves and gauntlets ○ safety footwear (steel toe-capped boots or shoes)

	○ respiratory protective equipment (masks or respirators) ○ high-visibility clothing ○ protective clothing (overalls, aprons, leather aprons or flame-resistant clothing) ○ arc-flash face shields or visors ○ knee pads or cushioned mats ○ hair nets and hair ties
K5 Workplace safety and operating procedures. What they are and why they are important.	**Workplace safety and operating procedures** • These are the agreed methods, rules and systems used to complete tasks safely, legally and efficiently while protecting people, equipment and the work environment, such as: ○ safe systems of work with step-by-step instructions to reduce risks ○ lockout/tagout procedures to isolate machinery before maintenance ○ manual handling techniques for lifting, carrying and moving safely ○ use of warning signs and barriers to highlight hazards and protect others ○ emergency procedures for evacuation, spill response and first aid ○ tool and equipment check before use to confirm they are safe ○ personal protective equipment procedures for correct use and care of PPE ○ housekeeping standards to keep walkways clear and workspaces safe

	○ incident reporting procedures to record accidents, near misses or hazards ○ compliance with regulations to meet legal duties and prevent harm ○ storage of dangerous substances and tools
Skills	**Amplification**
S1 Comply with **employee responsibilities** under health, safety and welfare regulations.	**Employee responsibilities** • Following health and safety procedures in line with training and workplace rules • Using personal protective equipment (PPE) correctly and reporting defects • Operating tools and machinery safely and not tampering with safety devices • Reporting hazards, accidents, near misses and unsafe practices to supervisors • Maintaining a clean and tidy workspace free from obstacles or spillages • Attending health, safety and welfare training and applying learning in daily tasks • Co-operating with risk assessments and following control measures • Knowing evacuation routes, taking part in fire drills and responding in emergencies • Protecting own welfare by working safely and taking breaks as required • Working responsibly to ensure colleagues, visitors and contractors are not put at risk

S2 Dispose of waste safely and sustainably. **Segregate resources** for reuse and recycling.	**Dispose of waste safely and sustainably** • Disposing of waste safely and sustainably refers to handling, separating and removing waste in a way that protects individuals, maintains a safe workplace, meets legal requirements and reduces environmental impact. Examples could include: ○ separating hazardous and non-hazardous waste by placing chemicals, oils or solvents in designated containers ○ recycling scrap materials by sorting metals, plastics, paper and cardboard into the correct streams ○ reusing off-cuts and spare materials by keeping suitable leftovers for future tasks ○ following workplace disposal procedures in line with company rules ○ using spill kits for liquid waste to clean up and dispose of oils or chemicals safely ○ minimising general waste by reducing landfill and maximising recycling and reuse ○ storing waste safely before collection in suitable containers and locations ○ complying with environmental legislation when disposing of waste **Segregate resources** • Segregating resources for reuse and recycling refers to separating different types of materials and components, so that those which

	can be reused in future tasks or recycled through appropriate processes are kept apart from general waste
S3 Use and store PPE.	**Use and store PPE** • Wearing items, such as helmets, gloves, masks or goggles, as instructed • Checking PPE for damage or defects, such as cracks, tears or dirt • Using PPE for its intended purpose, for example, masks for dust or fumes • Following procedures for requesting PPE if required and checking equipment out • Cleaning reusable items, such as safety glasses or ear defenders, after use • Storing PPE in clean, dry designated areas, such as lockers or cases • Avoiding unsafe storage, such as leaving items on the floor or in direct sunlight • Following manufacturer instructions for correct use and storage • Reporting unsafe or damaged PPE so it can be replaced

AO2 - Preparation, interpretation and quality	
Portfolio of Evidence	
Assessment outcome **Demonstrates knowledge and skills in operational responsibilities, work area preparation, and use of technical documentation to support effective preparation and quality outcomes.**	
Knowledge	**Amplification**
K4 The engineering and manufacturing function and **role and responsibilities of the operative**.	**Role and responsibilities of the operative** • Following instructions and work specifications to meet quality and safety standards • Using tools, equipment and machinery correctly in line with training and procedures • Complying with health, safety and welfare regulations, including wearing personal protective equipment and reporting hazards • Maintaining a clean and organised work area to reduce risks and support efficiency • Contributing to teamwork to achieve production targets and smooth workflow • Monitoring quality of own work and reporting defects or issues • Handling materials responsibly to ensure safe and sustainable use and storage • Following workplace policies on attendance, conduct, security and confidentiality • Supporting continuous improvement by suggesting safer or more efficient practices

	• Taking responsibility for personal development through training and applying new skills
K6 Work area preparation and maintenance techniques.	**Work area preparation and maintenance techniques** • Clearing the workspace by removing unnecessary items and obstacles • Checking tools, equipment and safety devices are in good working order • Setting out raw materials, parts and components neatly and within reach • Cleaning benches and floors to prevent contamination or hazards • Marking or labelling areas to identify storage zones and keep items organised • Storing tools, personal protective equipment, hazardous substances and other materials in designated places after use • Maintaining housekeeping standards by keeping aisles, exits and emergency equipment clear • Disposing of scrap, packaging and hazardous materials safely and sustainably • Carrying out routine inspections to spot hazards or maintenance needs early • Restocking consumables, such as fasteners, lubricants and cleaning products
K7 Use and characteristics of **job specifications**, **engineering and manufacturing drawings**, and **technical information**. *	**Job specifications** • Job specifications are documents that describe the requirements of a task, including materials, dimensions, processes, standards and safety considerations, such as:

	○ stating materials, dimensions, tolerances and finish ○ giving instructions or methods to complete tasks correctly ○ setting standards for inspection and approval ○ identifying risks, required personal protective equipment and safe practices ○ helping schedule work, allocate resources and manage time ○ confirming tasks meet company, customer and legal standards ○ providing a reference for inspections and quality checks ○ linking work to a specific version or reference ○ acting as a common reference for team members ○ minimising mistakes with accurate, consistent instructions **Engineering and manufacturing drawings** • Engineering and manufacturing drawings are technical diagrams that provide detailed visual instructions for making, assembling or checking components and products, such as: ○ reading measurements to ensure correct size ○ recognising acceptable dimensional variations ○ using standard weld, surface finish or circuit symbols ○ reading front, side, top and sectional perspectives ○ using diagrams or exploded views for assembly ○ identifying required materials ○ comparing work against drawing requirements ○ providing a shared visual reference ○ confirming the latest revision is being used ○ preparing tools and processes from the drawing

	Technical information
	• Technical information is the supporting documents that provide guidance on processes, materials, equipment, safety and quality requirements, such as:
	  ○ instructions for safe use, servicing and maintenance
	  ○ approved methods for specific tasks
	  ○ guidance on handling, storage and disposal of substances
	  ○ information on properties, performance and limitations
	  ○ recording measurements and compliance results
	  ○ recognised requirements for processes and safety
	  ○ covering health, safety, quality and environment
	  ○ guidance on selecting and using tools and consumables
	  ○ identifying hazards and control measures
	  ○ using computer-aided design (CAD) files, software guides or online databases

K13 Techniques to **carry out simple quality checks**: visual inspections and basic operational testing.	**Carry out simple quality checks** • Visually inspecting materials and parts for cracks, dents, rust, scratches or contamination • Measuring with a rule, Vernier caliper or gauge to confirm specified dimensions • Checking parts fit together correctly without gaps or misalignment • Inspecting surface finish for rough edges, burrs or poor paint application • Confirming identification numbers, safety labels or instructions are present and legible

	• Running equipment briefly to confirm it operates safely and as intended • Ensuring moving parts rotate, slide or lock smoothly without sticking or excess play • Using electrical testing equipment, such as multimeters or socket testers • Listening and feeling for unusual sounds or vibrations during operation • Verifying all components, fasteners and fittings are present and correctly installed • Recording inspection results and reporting any faults or non-conformances
Skills	**Amplification**
S4 Prepare and maintain the work area.	**Prepare and maintain the work area** • Clearing the workspace of unnecessary tools, materials and obstructions • Setting out tools and materials neatly and within easy reach • Checking machines, hand tools and PPE are in good condition before use • Cleaning benches and floors to prevent contamination or hazards • Returning tools, materials and PPE to designated storage after use • Keeping walkways, exits and emergency equipment clear at all times • Disposing of scrap, packaging and hazardous waste safely and sustainably • Restocking consumables, such as fasteners, lubricants or cleaning products

	• Inspecting the work area regularly to identify hazards or maintenance needs • Following workplace housekeeping procedures to keep the area safe and efficient
S5 Interpret engineering and manufacturing information for example, job specifications, engineering and manufacturing drawings, and technical information. *	**Interpret engineering and manufacturing information** • Interpretating engineering and manufacturing information refers to understanding and applying details from job specifications, drawings and technical documents to complete tasks accurately, safely and to the required standard. This could include: ○ reading job specifications to identify materials, dimensions, tolerances, finishes and safety needs ○ using engineering drawings to interpret views, symbols and scales for correct assembly or manufacture ○ checking revision details to ensure the latest version of documents is used ○ recognising technical symbols, such as weld marks, surface finish notations and electrical circuit symbols ○ comparing completed work to specifications and drawings to confirm accuracy and quality ○ referring to material data sheets for properties, handling and safe use ○ following standard operating procedures (SOPs) for processes, inspection and testing ○ applying safety data sheets (SDS) for safe use and storage of hazardous substances

	○ combining information sources to carry out tasks correctly and efficiently ○ communicating findings or clarifying uncertainties with supervisors or colleagues
S10 Carry out simple **quality checks of own work**.	**Quality checks of own work** • Checking for visible defects, such as swarf, scratches, dents, cracks, burrs or missing parts, and are safe to handle • Measuring with a rule, Vernier caliper or gauge to confirm specified sizes are met • Ensuring parts assemble and align correctly without gaps or distortion • Inspecting surfaces to confirm edges are smooth, coatings are even and free from contamination • Testing that moving parts operate smoothly and mechanisms function correctly • Verifying that all components, features or fasteners are present and in the correct position • Checking markings, labels or reference numbers are clear and accurate • Recording inspection results in line with workplace procedures • Correcting minor defects within own responsibility, such as removing burrs or tightening fasteners • Reporting issues that cannot be corrected to a supervisor for further action

AO3 - Components, tools and techniques	
Portfolio of Evidence	
Assessment outcome **Demonstrates knowledge and skills in the use of common components, and relevant tools and techniques for hand and machine engineering and manufacturing tasks.**	
Knowledge	**Amplification**
K8 Use, basic **maintenance and storage techniques** of tools, equipment and machinery associated with engineering and manufacturing tasks.	**Maintenance and storage techniques** • Maintenance and storage refer to the basic care, checking, cleaning, repair and correct placement of tools, equipment and machinery to keep them safe, effective and ready for use. Examples could include: ○ wiping down hand tools and removing debris after use ○ applying oil or grease to moving parts to reduce wear ○ inspecting tools and equipment for cracks, blunt edges, loose parts or electrical faults ○ replacing consumables, such as drill bits, cutting blades or filters when required ○ sharpening cutting edges on tools, such as chisels or drill bits to maintain performance ○ returning tools and equipment to racks, cupboards or toolboxes after use ○ storing equipment in cases, covers or protective storage when not in use ○ coiling cables correctly and keeping them away from liquids or heat ○ following manufacturer instructions in manuals or data sheets for care and storage

	○ recording maintenance checks or repairs in workplace systems
K9 Types and use of **common components, connections and fastenings** associated with engineering and manufacturing tasks. *	**Common components, connections and fastenings** • Components are the individual parts used within assemblies or systems that perform a specific function, such as alignment, support or movement. Examples could include: ○ washers ○ pins, for example, split pins and dowel pins ○ springs • Connections are methods or devices that join two or more parts, materials or systems together, either mechanically, electrically or chemically. Examples could include: ○ electrical connectors ○ couplings ○ clips and clamps ○ adhesives and sealants • Fastenings are the fixings that hold materials or parts in place, either temporarily (removable) or permanently. Examples could include: ○ nuts and bolts ○ screws ○ rivets
K10 Techniques to carry out **basic hand-based engineering and manufacturing tasks**, including measuring and marking out, bench fitting and hand tool tasks. *	**Basic hand-based engineering and manufacturing tasks** • These are practical activities carried out using hand tools to measure, mark, shape, fit and assemble materials or components. They form the foundation of engineering and manufacturing skills,

	developing accuracy, control and safe working practices. Examples could include: ○ measuring materials accurately with a rule, Vernier caliper or micrometer to confirm sizes ○ marking out workpieces using scribers, centre punches or gauges before cutting or drilling ○ cutting materials by hand with hacksaws, snips or files to shape components ○ filing edges and surfaces to remove excess material and create a smooth finish ○ drilling simple holes in materials using hand-operated or bench drills ○ tapping or threading to create internal or external screw threads with taps and dies ○ deburring workpieces to remove sharp edges or burrs after cutting or drilling ○ assembling parts using spanners, screwdrivers, pliers or other hand tools ○ checking fit and alignment of components to ensure parts assemble correctly ○ maintaining hand tools by cleaning, sharpening and storing them correctly after use ○ ensuring the appropriate tool for the task is used

K11 Techniques to carry out **basic machine-based engineering and manufacturing tasks**: drilling, milling, turning, grinding, basic Computer Numerical Control (CNC) operations, and additive manufacturing. *	**Basic machine-based engineering and manufacturing tasks** • These are fundamental operations carried out using workshop and production machinery. These tasks involve shaping, joining, finishing or producing components to given specifications, using conventional machines and entry-level automated processes. Examples could include: ○ drilling holes in materials using pillar drills or computer numerical control (CNC) drilling machines to specified sizes ○ milling flat surfaces, slots or grooves on a workpiece using a milling machine ○ turning cylindrical components on a lathe to produce accurate diameters or lengths ○ grinding surfaces to achieve a smooth finish or precise dimensions using a bench or surface grinder ○ operating computer numerical control (CNC) machines to run pre-programmed instructions for cutting, shaping or finishing parts ○ loading and unloading workpieces into computer numerical control (CNC) machines safely and securely ○ carrying out basic adjustments or tool changes on machine tools to maintain accuracy ○ monitoring machine operations to check for correct speed, feed and performance ○ using additive manufacturing equipment, such as 3D printers, to produce simple components from digital designs

	○ finishing additive manufactured parts by removing support structures or smoothing surfaces
K12 Methods of assisting in tasks, for example preparatory work, pre-assembly, monitoring equipment, lifting, holding and positioning materials and components.	**Methods of assisting in tasks** • Preparing the work area by clearing obstructions, setting out tools and checking equipment is ready for use • Carrying out pre-assembly tasks, such as organising fasteners, cleaning parts and applying lubricants • Monitoring equipment during operation to check temperatures, pressures or performance indicators • Assisting with lifting operations by using trolleys, hoists or following safe manual handling techniques • Holding materials or components steady while a colleague performs fitting, tack welding or fastening tasks • Positioning parts accurately in jigs, vices, fixtures or machines to support correct alignment and/or accurate machining • Passing tools, equipment or components to colleagues to maintain workflow and efficiency • Supporting quality checks by helping measure, compare or record basic information • Cleaning down equipment and returning tools after tasks to maintain readiness for future use • Restocking consumables, such as fasteners, lubricants or cleaning products to support ongoing work

Skills	Amplification
S6 Use and store tools, equipment and machinery associated with engineering and manufacturing tasks, including carrying out basic maintenance.	**Use and store tools, equipment and machinery** • Selecting the correct hand tools, such as spanners, screwdrivers or pliers, for the task being carried out • Operating machinery, such as drills, lathes or milling machines in line with training and safety procedures • Using measuring equipment, such as Vernier calipers, micrometers or gauges, to check accuracy of work • Following manufacturer instructions for the safe use of power tools and equipment • Cleaning tools and machinery after use to prevent damage and maintain performance • Lubricating moving parts of machines to reduce wear and extend service life • Storing tools in toolboxes, racks or cupboards to keep them organised and prevent loss or damage • Keeping machinery in designated areas with guards and safety devices correctly fitted • Inspecting equipment for damage or wear before and after use and reporting faults • Returning all tools and equipment to designated storage areas after completing a task

S7 Assist co-workers in engineering and manufacturing activity when required. For example, holding and positioning work-piece assembly.	**Assist co-workers** • Holding materials, components or assemblies steady while a colleague fastens, tack welds or drills • Positioning workpieces accurately in jigs, fixtures or machines to support correct alignment and/or accurate machining • Passing tools, fasteners or components to co-workers to maintain workflow and efficiency • Helping lift or move heavy parts safely by using correct manual handling techniques or lifting aids • Supporting set-up by arranging materials, preparing surfaces or applying lubricants • Monitoring equipment while a co-worker completes a task, such as watching gauges or indicators • Keeping the work area clear of obstructions and removing waste so colleagues can work safely • Checking measurements alongside a co-worker to confirm accuracy of components or assemblies • Holding safety barriers, guards or screens in place while others carry out work • Assisting in final inspections by handling parts, recording results or comparing against specifications
S8 Apply techniques to carry out **basic hand-based engineering and manufacturing tasks**. *	**Basic hand-based engineering and manufacturing tasks** • These are practical activities carried out using hand tools to measure, mark, shape, fit and assemble materials or components. They form the foundation of engineering and manufacturing skills,

	developing accuracy, control and safe working practices. Examples could include: ○ measuring materials accurately with a rule, Vernier caliper or micrometer to confirm sizes ○ marking out workpieces using scribers, centre punches or gauges before cutting or drilling ○ cutting materials by hand with hacksaws, snips or files to shape components ○ filing edges and surfaces to remove excess material and create a smooth finish ○ drilling simple holes in materials using hand-operated or bench drills ○ tapping or threading to create internal or external screw threads with taps and dies ○ deburring workpieces to remove sharp edges or burrs after cutting or drilling ○ assembling parts using spanners, screwdrivers, pliers or other hand tools ○ checking fit and alignment of components to ensure parts assemble correctly ○ maintaining hand tools by cleaning, sharpening and storing them correctly after use
S9 Apply techniques to carry out **basic machine-based engineering and manufacturing tasks**. *	**Basic machine-based engineering and manufacturing tasks** • These are fundamental operations carried out using workshop and production machinery. These tasks involve shaping, joining, finishing or producing components to given specifications, using

	conventional machines and entry-level automated processes. Examples could include: ○ drilling holes in materials using pillar drills or computer numerical control (CNC) drilling machines to specified sizes ○ milling flat surfaces, slots or grooves on a workpiece using a milling machine ○ turning cylindrical components on a lathe to produce accurate diameters or lengths ○ grinding surfaces to achieve a smooth finish or precise dimensions using a bench or surface grinder ○ operating computer numerical control (CNC) machines to run pre-programmed instructions for cutting, shaping or finishing parts ○ loading and unloading workpieces into computer numerical control (CNC) machines safely and securely ○ carrying out basic adjustments or tool changes on machine tools to maintain accuracy ○ monitoring machine operations to check for correct speed, feed and performance ○ using additive manufacturing equipment, such as 3D printers, to produce simple components from digital designs ○ finishing additive manufactured parts by removing support structures or smoothing surfaces

Employability skills and behaviours
Behaviours
EB1 Communicate and share information using verbal, non-verbal, written and digital methods.
EB2 Act in a professional manner including good time keeping and conduct.
EB3 Apply new learning and feedback to everyday practice.
EB4 Complete own work tasks and ask for help when needed.
EB5 Work with colleagues to contribute to team outcomes.
EB6 Seek ways to manage own financial, health and wellbeing needs using available resources.
EB7 Overcome challenges and adapt to changes at work.
EB8 Work in line with health, safety and environmental requirements.
Behaviours must be confirmed by the employer and confirmed on the gateway to completion section in the Highfield Assessment Hub.
EB6 does not need to be confirmed by the employer but should form a key element of the apprentice's off-the-job training package.

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Assessing AO1 - knowledge test and question and answer

Knowledge test

The test consists of **20 questions** including multiple-choice questions and will last **60 minutes**. The **pass** mark is 12 out of 20.

The multiple-choice test may be delivered online or paper-based and should be taken in controlled conditions in line with Highfield's invigilation policy. The test is closed-book which means that the apprentice cannot refer to reference books or materials. The test must be marked by Highfield.

The knowledge test will cover knowledge statements within AO1 as stipulated in this specification.

In each paper, questions will cover each of the knowledge statements, however, not every aspect of every area will be covered in every test.

Question and answer

There will be a minimum of **three questions** asked by an assessor in **30 minutes**.

The question and answer will assess the skill statements within AO1 as stipulated in this specification.

The question and answer may be delivered online or in person and should be taken in controlled conditions in line with Highfield's invigilation policy.

The questions can be asked by the provider and the answers recorded and submitted to Highfield. Alternatively, the questions can be asked by a Highfield Assessor. In both cases the responses will be marked by Highfield. Further guidance can be found in the Highfield Support Pack.

Before the assessment

Employers/providers should:

- brief the apprentice on the areas that will be assessed by the knowledge test and question and answer.
- in readiness for the assessment, set the apprentice a mock knowledge test and question and answer. A mock knowledge test and questions are available to download from the Highfield Assessment website. The mock tests are available as paper-based tests and also on the mock e-assessment system.

Grading the knowledge test and question and answer assessment

Apprentices will be marked against statements included in the tables on the following pages.

- To achieve a **pass**, apprentices must achieve all of the knowledge and skills statements
- **Unsuccessful** apprentices will have not achieved all of the knowledge and skills statements

Knowledge test criteria
K1 Employee responsibilities under relevant health, safety and welfare regulations.
K2 Sustainability principles and practices relevant to the role, including waste disposal and the impact of engineering and manufacturing on the environment.
K3 Types, use and storage of personal protective equipment (PPE).
K5 Workplace safety and operating procedures. What they are and why they are important.

Question and answer criteria
S1 Comply with employee responsibilities under health, safety and welfare regulations.
S2 Dispose of waste safely and sustainably. Segregate resources for reuse and recycling.
S3 Use and store PPE.

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Assessing AO2 and AO3 - portfolio of evidence

Portfolio of evidence

The apprentice must compile a portfolio of evidence that is mapped against the knowledge and skills (KSs) assessed by a portfolio of evidence.

Evidence may be used to demonstrate more than one knowledge and skill as a qualitative approach is suggested as opposed to a quantitative approach.

Evidence sources for the portfolio may include:

- work-based observation
- expert witness testimonies
- photographs
- images
- diagrams
- evidence of ongoing professional development
- reflective accounts, countersigned by a manager

This is not a definitive list and other evidence sources are possible.

The portfolio can include reflective accounts and employer contributions should focus on direct observation of performance (for example, witness statements) rather than opinions.

Expert witness testimonies can be completed where observations cannot be conducted due to:

- logistical and operational barriers
- confidentiality and privacy restrictions
- health and safety concerns

Expert witness testimonies must be completed by an individual with:

- direct knowledge of the subject area
- clear understanding of the assessment criteria

The portfolio must be compiled alongside a Portfolio Matrix. This can be downloaded from our website. The portfolio matrix must be fully completed including a declaration by the apprentice to confirm that the portfolio is valid and attributable to the apprentice.

Before the assessment

Employers/providers should:

- ensure the apprentice knows which areas will be assessed (outlined on the following pages)
- ensure the apprentice is aware of evidence permitted to form part of the portfolio of evidence

Grading the portfolio of evidence

Apprentices will be marked against the statements included in the tables on the following pages. The portfolio of evidence can be marked by Highfield or the provider.

- To achieve a **pass**, apprentices must achieve all of the knowledge and skills statements
- **Unsuccessful** apprentices will not have achieved all of the knowledge and skills statements

Portfolio of evidence
To pass, the following must be evidenced.
K4 The engineering and manufacturing function and role and responsibilities of the operative.
K6 Work area preparation and maintenance techniques.
K7 Use and characteristics of job specifications, engineering and manufacturing drawings, and technical information. *
K8 Use, basic maintenance and storage techniques of tools, equipment and machinery associated with engineering and manufacturing tasks.
K9 Types and use of common components, connections and fastenings associated with engineering and manufacturing tasks. *
K10 Techniques to carry out basic hand-based engineering and manufacturing tasks, including measuring and marking out, bench fitting and hand tool tasks. *
K11 Techniques to carry out basic machine-based engineering and manufacturing tasks: drilling, milling, turning, grinding, basic Computer Numerical Control (CNC) operations, and additive manufacturing. *
K12 Methods of assisting in tasks, for example preparatory work, pre-assembly, monitoring equipment, lifting, holding and positioning materials and components.
K13 Techniques to carry out simple quality checks: visual inspections and basic operational testing.
S4 Prepare and maintain the work area.
S5 Interpret engineering and manufacturing information for example, job specifications, engineering and manufacturing drawings, and technical information. *

Portfolio of evidence
To pass, the following must be evidenced.
S6 Use and store tools, equipment and machinery associated with engineering and manufacturing tasks, including carrying out basic maintenance. **S7** Assist co-workers in engineering and manufacturing activity when required. For example, holding and positioning work-piece assembly. **S8** Apply techniques to carry out basic hand-based engineering and manufacturing tasks. * **S9** Apply techniques to carry out basic machine-based engineering and manufacturing tasks. * **S10** Carry out simple quality checks of own work.

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Grading

The apprenticeship is graded pass or fail.

To achieve a pass, the apprentice is required to pass each of the assessment methods.

The overall grade for the apprentice is determined using the matrix below.

Knowledge test	Question and answer	Portfolio of evidence	Overall grade awarded
Fail any of the assessment methods			**Fail**
Pass	Pass	Pass	**Pass**

Reattempt information

If a reattempt is required for Highfield marked methods, please call the Highfield scheduling team to arrange the reattempt.

If you have any questions, please contact the Highfield customer engagement team or refer to the Highfield Support Pack.

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