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NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**STATEMENT OF STANDARDS****UNIT NUMBER:** 2211013**UNIT TITLE:** PRODUCING COMPONENTS FROM PROCURED MATERIALS (POWERED AND NON-POWERED TOOLS)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME (ELEMENT OF COMPETENCE)

1. INTERPRET TECHNICAL INFORMATION FOR PRODUCING COMPONENTS

PERFORMANCE CRITERIA

- (a) Accurate and relevant selection and interpretation is made of technical information from given sources in relation to producing components.
- (b) Corrective actions are implemented against deviation from setting out specifications.
- (c) Instructions given to the candidate are correctly interpreted and implemented.

RANGE STATEMENT

Information sources: drawings; specifications; schedules; marking out; manufacturers' technical information; simple isometric and orthographic (first angle) drawings; product and component specifications and schedules; oral or written instructions; statutory regulations.

Corrective actions: liaison with line manager/supervisor.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in taking off dimensions, and types and quantities of materials and components.

Oral or written evidence of knowledge and understanding of:

- (i) types and purposes of information sources;
 - simple written product specifications and schedules;
 - simple written component specifications and schedules;
 - oral or written instructions;
- (ii) calculating, from given information sources, linear measurements and quantities using simple multiplication, division, addition and subtraction;
- (iii) cutting speeds, thread cutting and drill size charts.

All the performance criteria must be met and all items in the range statement covered.

OUTCOME (ELEMENT OF COMPETENCE)**2. SELECT MATERIALS FOR PRODUCING COMPONENTS****PERFORMANCE CRITERIA**

- (a) The selection of materials complies with the specification in terms of quantity, quality and types.
- (b) Corrective actions are implemented to establish utility of materials.

RANGE STATEMENT

Information sources: drawings; schedules; specifications; simple isometric and orthographic (first angle) drawings; written product or component specifications and schedules; cutting lists or charts; oral or written instructions.

Corrective actions: liaison with line manager or supervisor.

Materials: engineering materials; metals; plastics.

Statutory regulations: personal protection legislation; HASWA (Health and Safety at Work Act); COSHH (Control of Substances Hazardous to Health) Regulations.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in selecting materials for producing components.

Oral or written evidence of knowledge and understanding of:

- (i) different types and purposes of information sources;
- (ii) characteristics, uses and limitations of the materials in the range;
- (iii) types of ferrous and non-ferrous metals;
- (iv) types of plastics;
- (v) standard sizes and lengths of materials in the range;
- (vi) methods of handling materials and equipment;
- (vii) application and suitability of tools and equipment;
- (viii) responsibilities regarding statutory regulations.

All the performance criteria must be met and all items in the range statement covered.

OUTCOME (ELEMENT OF COMPETENCE)

- 3. POSITION AND SECURE TOOLING TO PRODUCE COMPONENTS

PERFORMANCE CRITERIA

- (a) The tooling is identified appropriate to the work.
- (b) The tooling is positioned appropriate to the work.
- (c) The tooling is secured appropriate to the work.
- (d) Corrective actions are implemented against deviations from setting out specifications.
- (e) Instructions given to the candidate are correctly interpreted and implemented.
- (f) Work methods and activities are correct in terms of:
 - (i) minimising damage to the built environment;
 - (ii) not endangering oneself or others.

RANGE STATEMENT

Information sources: drawings; schedules; specifications; manufacturers' technical information; oral or written instructions.

Corrective actions: liaison with line manager or supervisor.

Tools and equipment: tool holding and work holding equipment.

Tooling: hacksaws; power saws; taps; dies; reamers; drills.

Preparation process: removing and replacing tooling and positioning guards.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in:

- (i) selection and positioning of tooling for hand tools;
- (ii) selection and positioning of work holding equipment;
- (iii) selection and positioning of tooling for air or electric power tools:
 - pedestal drills;
 - portable drills;
 - saws;
- (iv) positioning and securing guards.

Oral or written evidence of knowledge and understanding of:

- (i) types and purposes of information sources in the range;
- (ii) processes for forming and cutting materials;
- (iii) procedures for removing, positioning and securing guards;
- (iv) application and suitability of tools and equipment in the range;
- (v) responsibilities regarding statutory regulations;
- (vi) characteristics, uses and limitations of tooling in the range.

All the performance criteria must be met and all items in the range statement covered.

OUTCOME (ELEMENT OF COMPETENCE)

4. SHAPE MATERIALS TO FORM PROFILED COMPONENTS

PERFORMANCE CRITERIA

- (a) Instructions given to the candidate are correctly interpreted and implemented.
- (b) Corrective actions are implemented to problems with tools and materials.
- (c) Components are profiled from materials to conform with specification.
- (d) Surface finish of components conform with specification.
- (e) The selection of tools and equipment is appropriate to the work.
- (f) Work methods and activities are correct in terms of:
 - (i) minimising damage to the built environment;
 - (ii) not endangering oneself or others.

RANGE STATEMENT

Information sources: drawings; schedules; specifications; marking out; size charts for drills and taps; manufacturers' operating instructions; statutory regulations.

Corrective actions: liaison with line manager or supervisor.

Tools and equipment: hand tools; work holding equipment; tool holding equipment; measuring and marking instruments; measuring and marking equipment.

Machines: power drills; power saws; grinders.

Preparation processes: sawing; filing; drilling; reaming; grinding; assembling.

Materials: ferrous and non-ferrous metals.

Profiled components: straight; flat; curved; bevelled; chamfered; angled; drilled; threaded and reamed.

EVIDENCE REQUIREMENTS

Performance evidence of competence under working conditions in:

(i) shaping and forming materials using tools and equipment:

- sawing straight and to shape;
- filing to size and to finish;
- drilling to size;
- cutting internal and external threads;
- reaming to size;
- chiselling;
- grinding to shape;
- assembling to specification;

(ii) operating machinery:

- fixed and portable power saws;
- portable and benchmounted or pedestal grinders;
- portable and benchmounted or pedestal power drills.

Oral or written evidence of knowledge and understanding of:

- (i) types and purposes of information sources;
- (ii) simple isometric and orthographic (first angle) drawings;
- (iii) simple written product specifications and schedules;
- (iv) simple written component specifications and schedules;
- (v) characteristics, application and limitation of tools, equipment and machines in the range;
- (vi) characteristics, properties and limitations of materials in the range;
- (vii) processes for shaping, forming, cutting and surface finishing materials in the range;
- (viii) procedures in machinery operation;
- (ix) responsibilities regarding statutory regulations.

All the performance criteria must be met and all items in the range statement covered.

ASSESSMENT RECORDS

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of Support Notes.

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NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**SUPPORT NOTES**

UNIT NUMBER 2211013

UNIT TITLE PRODUCING COMPONENTS FROM PROCURED MATERIALS (POWERED AND NON-POWERED TOOLS)

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 80 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE This unit is designed to enable the candidate to develop skills and knowledge related to producing components from procured materials with the aid of powered and non-powered tools. It is suitable for operatives working in the construction industry or a services or installation industry related to construction.

SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

This module will help you to acquire the skills and knowledge necessary to produce components of regular and irregular form from a range of materials. You will also learn how to select materials and use a range of powered and non-powered tools in compliance with statutory regulations.

CONTENT/CONTEXT The candidate successfully completing this module will require underpinning knowledge and skills relating to the interpretation of technical information, selection of materials and on the positioning and security of tooling for the production of regular and irregular components.

The unit would be offered to candidates from the construction and related services industries. The skills are transferable within different working environments but the unit is primarily aimed at candidates whose normal place of work would be a site or similar environment.

The range statement is applicable to all areas of construction and other related or similarly structured industries. The competencies and underpinning knowledge gained in successfully completing this unit would be transferable across a range of disciplines within the built environment.

The unit deals with producing components from procured materials and is complemented by units dealing with related aspects of work in construction plant occupations.

It should be delivered as part of a structured programme of training and orientated to the context of the candidate's work and area of responsibility.

APPROACHES TO GENERATING EVIDENCE The achievement of the underpinning knowledge required for this unit would be assisted by the use of slides and videos, and hands-on experience.

Tutors/trainers should demonstrate practical elements step by step until the candidate feels confident enough to attempt them on his/her own, and the safety factors should be thoroughly emphasised.

Supervisors and employers could also play an important part in assisting candidates to generate evidence.

ASSESSMENT PROCEDURES Candidates will be able to provide evidence of performance using a variety of methods. These will include:

- Performance at work (recorded in Candidate's Assessment and Evidence Record or other methods).
- Performance in training (recorded in Candidate's Assessment and Evidence Record or other methods).
- Simulated exercises (skills/progress test results).
- Past achievement/experiences e.g. letters of endorsement; past certificates.

Evidence gathering from the workplace will be the preferred method; however there may be situations where this is inappropriate or the evidence is insufficient. Supplementary evidence will also be required to demonstrate the underpinning knowledge related to the competences in the unit.

For detailed guidance on assessment, reference should be made to the publications listed at the end of the Support Notes and to the Assessment Guidance Notes available for the delivery of the Scottish Vocational Qualification of which this module is a component.

PROGRESSION This unit forms part of the level I SVQ in Plant Occupations.

Each module is a separate unit and the modules are not necessarily taken in a prescribed order, although there is a logical sequence to the acquisition of the skills and knowledge concerned.

To gain the award, the candidate must successfully complete all of the following modules:

2211013	Producing Components from Procured Materials (Powered and Non-powered Tools) (x 2)
2211023	Loading and Unloading Materials and Components (Plant Occupations) (x 0.5)
2211033	Servicing and Repairing Plant and Equipment (Lubricants and Fluids)
2211043	Preparing Components (Cleaning and Applying Protective Coatings) (x 0.5)
2211053	Operating Plant and Equipment (Forward Tipping Dumper) (x 2)
4120332	Contributing to Health and Safety in the Workplace (x 0.5)
4120342	Contributing to the Efficiency of the Workplace (x 0.5)
4120282	Working with People in Construction and Related Services (x 0.5)

Progression from the level I SVQ will normally be to the level II SVQ in the appropriate discipline (Plant Maintenance or Plant Occupations).

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised and Recommended Groupings'.

REFERENCES

1. Guidelines for Module Writers.
2. SQA's National Standards for Assessment and Verification.
3. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment.
4. Procedures for special needs statements are set out in SQA's guide 'Students with Special Needs'.

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