

**-SQA- SCOTTISH QUALIFICATIONS AUTHORITY**

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**NATIONAL CERTIFICATE MODULE DESCRIPTOR**

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<b>-Module Number-</b>	<b>2140080</b>	<b>-Session-1990-91</b>
<b>-Superclass-</b>	<b>WH</b>	

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<b>-Title-</b>	<b>MAINTENANCE OF CUTTING ROOM EQUIPMENT AND MACHINERY (X<sup>1</sup>/<sub>2</sub>)</b>
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**-DESCRIPTION-**

Purpose                      This module is designed to develop an understanding of and the skills associated with the maintenance and operating procedures of industrial cutting room machinery.

It is intended that the module is taught in conjunction with other related modules and forms part of a course of study which should include complementary industrial experience.

It is aimed at those following a career in clothing machine engineering.

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Preferred Entry Level	64003	Fundamentals of Technology: Electrical
	64002	Fundamentals of Technology: Mechanical
	2140060	Maintenance of High Arm Lockstitch Blindstitch Machines (x 1/2)
	2140010	Clothing Machining: Manufacturing Technology 1 (x 1/2)
	2140020	Clothing Machining: Manufacturing Technology 2

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Outcomes	The student should:
	1. outline the basic principles of equipment and its practical application when used in the cutting room;
	2. outline the methods of operation and service requirements of equipment and machinery used in the cutting room;
	3. undertake service procedures on specified equipment;

4. identify the components, fittings and safety regulations for conversion of a cutting machine for a given cutting room application;
5. diagnose and rectify various cutting room machine faults to effect correct and safe operation.

Assessment  
Procedures

Acceptable performance in this module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria  
IA Instrument of Assessment

**Note:** The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

**OUTCOME 1**

**OUTLINE THE BASIC PRINCIPLES OF EQUIPMENT AND ITS PRACTICAL APPLICATION WHEN USED IN THE CUTTING ROOM**

PCs

- (a) The identification of cutting room operations is correct for different types of machines.
- (b) The identification of the materials, machines and equipment is correct for specified operations.
- (c) The identification of advantages and disadvantages of specific types of spreading, marking and cutting machines is correct.
- (d) The identification of the cutting room procedures to be altered is correct to suit a given operation.

IA Objective Test

The student will be set an exercise consisting of objective items to test knowledge of the basic principles of equipment and its application when used in the cutting room.

The exercise will consist of 10 questions related to cutting room operations of industrial spreading, marking and cutting machines and allocated as follows:

- |     |   |   |
|-----|---|---|
| (a) | identification of cutting room operations           | 3 |
| (b) | identification of materials, machines and equipment | 3 |
| (c) | advantages and disadvantages                        | 3 |

- (d) cutting room procedures 1

The questions should be based on cutting room operations for which the use of each type of spreading, marking and cutting machine is stated.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student producing 2 correct responses to each of (a), (b) and (c) and 1 correct response to (d).

## OUTCOME 2

### OUTLINE THE METHOD OF OPERATION AND SERVICE REQUIREMENTS OF EQUIPMENT AND MACHINERY USED IN THE CUTTING ROOM

PCs

- (a) The identification of the machines used for cutting operations is correct for specific types of lay.
- (b) The identification of the specific areas relating to the spreading/cutting control of the fabric is correct for laying/cutting machines.
- (c) The identification of the types of die press cutting operations which can be successfully used is correct for specific types of fabric.

#### IA Objective Test

The student will be set an exercise consisting of objective items to test knowledge of the method of operation and service requirements of equipment and machinery used in the cutting room.

The exercise will consist of 9 questions based on the Performance Criteria and allocated as follows:

- |  |   |
|--|---|
| (a) types of machine used for cutting operations                               | 3 |
| (b) component areas of spreading/cutting machines                              | 3 |
| (c) the machine and dies required to achieve correct die press cutting results | 3 |

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the student producing at least 2 correct responses to each of (a), (b) and (c).

**OUTCOME 3                    UNDERTAKE SERVICE PROCEDURES ON SPECIFIED EQUIPMENT**

- PCs
- (a) The adjustment and setting of machine controls ensure correct relationship and accordance to manufacturer's specifications.
  - (b) The adjustment and replacement of components produce correct cutting action to permit machines to cut fabric to the given specifications.
  - (c) Working practices and procedures followed are safe.

IA    Practical Exercise

The student will be set a practical exercise to test application of knowledge and skills required to undertake service procedures on specified equipment.

The exercise should be based on a service which should include examination of cutting blades, adjustment of sharpening mechanism and fittings and changing of stones/belts.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

**OUTCOME 4                    IDENTIFY THE COMPONENTS, FITTINGS AND SAFETY REGULATIONS FOR CONVERSION OF A CUTTING MACHINE FOR A GIVEN CUTTING ROOM APPLICATION**

- PCs
- (a) The identification of fittings to be replaced is correct in terms of name and function.
  - (b) The identification of components to be changed to accomplish an alternative operation is correct in terms of name and function.
  - (c) The identification of safety regulations pertaining to conversion of cutting machines is correct in terms of machine function.

IA    Structured Question

The student will be set an exercise consisting of one structured question to test the knowledge required to identify the components, fittings and safety regulations for conversion of a cutting machine for a given cutting room application.

The structured question should be based on the description of a cutting machine which has to be converted from one cutting room application to another.

The question will be sub-divided into 3 parts based on the Performance Criteria as follows:

- (a) identification of fittings to be replaced
- (b) identification of replacement components
- (c) identification of safety regulations

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

## **OUTCOME 5**

### **DIAGNOSE AND RECTIFY VARIOUS CUTTING ROOM MACHINE FAULTS TO EFFECT CORRECT AND SAFE OPERATION**

#### PCs

- (a) The identification of mechanical problems and machine handling problems is correct for the faults being experienced.
- (b) The rectification of faults ensure safe and effective operation of the machine.
- (c) The setting up and adjustment of the machine ensures effective and safe operation for future tasks.
- (d) Working practices and procedures followed are safe.

Range: blade/die machine selection, cutting selection, removal of blade/die, relationship of machine, blade/die and fabrics.

#### IA Practical Exercise

The student will be set a practical exercise to test the application of knowledge and skills required to diagnose and rectify various cutting room machine faults to effect correct safe operation.

The exercise will be set under workshop conditions and will involve the servicing of a standard pressing machine into which 4 faults in accordance with the range statement have previously been built in.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met.

**The following sections of the descriptor are offered as guidance.  
They are not mandatory.**

### CONTENT/CONTEXT

Corresponding to Outcomes 1-5:

1. Recognition and selection of appropriate cutting room layout, machine type and equipment from the available range for given cutting applications.
2. Determination and recognition of the basic cutting room techniques and selection of suitable cutting room equipment and machinery used for fabric cutting applications.
  - (a) Appropriate fabric types for chosen garment: cottons; synthetics; worsted; twills; denims; woollens; denim; cords; knitted; linings, interlinings and trimmings; pile fabrics.
  - (b) Laying-up (spreading) tables: air flotation special features; systems; vacuum systems; belt feed systems.
  - (c) Machines: purpose; special features; principles of operation; application.
  - (d) Laying-up (Spreading) machines: non-automatic - manual control; turntable systems; attachments - drive methods; spreading systems; clamping and cutting.
  - (e) Cutting machinery and systems:
  - (f) Points to consider: fabric type cutting height or depth - work flow; table space - accuracy - die press - band knife - portable knife cutting.
  - (g) Efficiency rating type of cutting required by garment fabric; effect of: stretch, pressure, time, humidity, vacuum and cutting stresses; handling time of operation.
3. Practice in removal and replacement and adjustment of specified basic cutting machine component assemblies and control systems eg. con-rods, standards etc. in order to achieve a given cutting operation.

Example:

Straight Knife Cutting Machine: covering maintenance procedures relating to: blades; sharpening mechanisms; safety guards; dual speed switching mechanism.

4. Recognition and selection of appropriate components, fittings to demonstrate the ability to convert the machine for selected cutting operations or production situations.

5. Diagnose and rectification of faults (problems) with particular reference to:
- (a) Laying up (spreading) tables:
  - (b) Laying-up (spreading) machines:
  - (c) Band, round knife, straight knife and die press cutting machines - machine areas (sections):

Setting adjustments and testing machine for producing test samples, for spreading/cutting operations and production situations in order to demonstrate techniques of safe operation.

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### SUGGESTED LEARNING AND TEACHING APPROACHES

Safety, safe working practices, care and use of cutting machinery and equipment should be an integral part of all module activities.

The modules should be presented in the cutting room/workshop where the tutor should carefully explain and demonstrate the various techniques using a programme of exercises related to a theme or vocational bias which will interest the student.

The student should follow an activity based learning approach to become familiar with the spreading, marking and cutting machines in question. Students could work singly or in pairs.

In the initial stages the tutor should fully explain and demonstrate each tool, gauge, operation or process. Terminology and principles relating to spreading, marking and cutting machines, fittings, knives, dies and fabrics should be explained to assist the student with the exercise.

Student activities should be essentially centred on practical exercise assignments and the tutor would be expected to prepare precise briefs for each assignments exercise.

A set of completed exercises should be available for the students to relate and compare standards.

NOTE: Factory visits should be an integral part of this module.

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