-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **0084357** **-Session-1988-89**
-Superclass- **WH**

-Title- **MAINTENANCE OF CHAINSTITCH MACHINES - SINGLE AND TWO NEEDLE OVEREDGE**

-DESCRIPTION-

Purpose

This module is designed to provide students with skills in, and an in-depth understanding of the maintenance and operating procedures of chainstitch sewing machines producing BS stitch types 400 and 500.

It is intended that this module is taught in conjunction with other related modules to form part of a programme of study which should include complementary industrial experience.

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

Preferred Entry Level

84351 Maintenance of Chainstitch Machines - Single and Two Thread
84352 Stitchology and Thread Control
84354 Fabric Feeding Mechanisms

Learning Outcomes

The student should:

1. explain the methods of operation and practical applications of basic and high speed single and two needle overedge chainstitch sewing machines;

2. explain the methods of operation and interaction of the main stitch forming and fabric trimming components of machines producing overedge and combination stitches;

3. carry out service procedures on single and two needle overedge chainstitch sewing machines;

4. diagnose and rectify faults in selected machine types and test for correct stitch formation and sewing performance;

Content/ Context

Safety and safe working practices should form an integral part of the module activities during investigation of practical machine adjustments and the effects produced in relation to the actual sewing performance of the selected overedge and cup seam chainstitch machines.

Corresponding to Learning Outcomes 1-4:

1. Recognition and selection of appropriate machine type from the various side bed, cup feed, single and two needle overedge chainstitch machines for given sewing applications:

   (a) serging - curtains;
   (b) shirring - underwear - lingerie;
   (c) edge trim and cover - side seams;
   (d) break open seaming - stretch materials;
   (e) collarette seaming - light knit;
   (f) blind hemming - warp and ribbed knitwear;
   (g) zipper seams - gents and ladies trousers;
   (h) mock safety stitch - general woven fabrics;
   (I) true safety stitch - shirts and blouses;
   (j) raw edge cover - light and heavy knitwear;
   (k) cup seaming - collar, cuff and waistband-knitwear;
   (l) contour sewing - long seams;
   (m) butt ending - tubular knit.

Recognition of the mechanisms for handling and controlling the fabric during the overedge seaming listed above.

The function of the following component parts in relation to fabric handling:

(a) presser feet - floating, tractor etc;
(b) feed dogs - tandem, differential, intermittent and top;
(c) throat plates - varying chain fingers;
(d) puller feeds - incorporated and independent;
(e) special attachments - rucking etc;
(f) fabric trim mechanisms - incorporated;
(g) uncurling devices.

Recognition of the mechanisms for controlling and handling the thread during stitch formation in single and multi-thread overedge and cup seam chainstitch machines.

The function of the following components in relation to thread and fabric handling:

(a) needle thread pull-off systems:

(i) head controls - reciprocating lever;
(ii) slack thread regulators.

(b) looper thread pull-off systems:

(i) primary looper controls;
(ii) secondary looper controls;
(iii) safety stitch looper controls;
(iv) spreader controls.

(c) thread tension assemblies:

(i) passive and active controls;
(ii) thread guides and eyelets - stationary and moving;
(iii) pre-tension controls.

(d) chaining fingers:

(i) presser foot - replaceable;
(ii) throat plate - integral;
(iii) cup feed type - interchangeable.

(e) stitch forming implements upper and lower placements:

(i) primary looper - transverse - inline oscillating with avoid and non avoid motion;
(ii) secondary looper - non avoid motion independent and linked;
(iii) spreaders - single and dual function;
(iv) safety stitch looper - transverse oscillating with avoid motion.

(f) auxiliary thread controls:

(i) back-latching devices;
(ii) needle guards.

(g) thread trimming devices: chain cutting - incorporated and independent.

(h) fabric feeding: the effects of differential feed mechanisms on stitch density, seam structure and fabric behaviour during the sewing process.

2. Interaction and timing relationship of different stitch forming component assemblies; fabric feeding and trimming mechanisms; practice in removal and replacement of the components and the use of manufacturers' gauges and marks; use of jigs to sharpen knives; making adjustment to the synchronisation and relative position of the components required to produce BS 400 and 500 series stitch types.

3. Examination of machine lubricating system covering feed and filter return. Different machine lubricant requirements e.g. types and grades of oils and greases. Selection of appropriate lubricant for e.g. dissipation of heat.

4. Diagnosis of sewing, feeding and trimming fault with particular reference to machines with:

   (a) curved needle motion;
   (b) angular needle motion;
   (c) straight needle motion - vertical and horizontal;
   (d) tandem and block feed;
   (e) differential feed - constant and intermittent;
   (f) clutch feed;
   (g) quadrant leverage;
   (h) changeable eccentrics;
   (I) adjustable eccentrics;
   (j) straight knife action;
   (k) angled knife action.

Setting, adjustment and testing machines producing stitch types BS 400 and 500 series.

Determination of the correct thread for a selection of materials, seam types, sewing operations, machines and production situations, in order to demonstrate technique of safety operation with the ability to control stitch size and thread tension adjustment for producing test samples with balanced stitches.

Suggested Learning and Teaching Approaches

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

This module should be presented in the sewing room/workshop where the tutor should carefully explain and demonstrate the various techniques using a programme of exercises related to a theme for vocational bias which will interest the student.

The student should follow an activity based learning approach to become familiar with the 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 should be introduced in the context of the exercises.

Information charts, posters and mechanics manuals relating to machines, threads and fabrics should be displayed to assist the students with the exercises.

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

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

Assessment Procedures

Acceptable performance in the module will be satisfactory achievement of the performance criteria specified for each Learning Outcome.

The following abbreviations are used below:

LO Learning Outcome
IA Instrument of Assessment
PC Performance Criteria

LO1 EXPLAIN THE METHODS OF OPERATION AND PRACTICAL APPLICATIONS OF BASIC AND HIGH SPEED SINGLE AND TWO NEEDLE OVEREDGE CHAINSTITCH SEWING MACHINES

PC The student:

(a) identifies the chainstitch BS stitch types of the 400 and 500 stitch types from prepared samples of sewing;
(b) lists sewing operations for which each basic and high speed chainstitch machine type is used;
(c) explains the basic operation principles of overedge chainstitch machinery;
(d) lists the advantages and disadvantages of the specialised high speed overedge chainstitch for given operations;
(e) identifies specified components of chainstitch machinery;
(f) states the function of the main components.

IA Objective Questions

The student should be set a test of objective questions to test the recall of knowledge relating to the methods of operation and practical applications of basic and high speed single and two needle overedge chainstitch machines.

Samples, diagrams and photographs may be used in the test.

The test will consist of 12 questions allocated as follows:

(a)	identification of stitch types	2 questions
(b)	sewing operations	2 questions
(c)	basic operation principles	2 questions
(d)	advantages and disadvantages	2 questions
(e)	identification of components	2 questions of machinery
(f)	functions of main components	2 questions

Satisfactory achievement of the Learning Outcome will be demonstrated by the student producing 9 correct responses including one from (a)-(f).

LO2 EXPLAIN THE METHODS OF OPERATION AND INTERACTION OF THE MAIN STITCH FORMING AND FABRIC TRIMMING COMPONENTS OF MACHINES PRODUCING OVEREDGE AND COMBINATION STITCHES

PC The student:

(a) identifies the specific areas related to thread control and stitch forming action of different types of overedge chainstitch machines;
(b) explains the oscillating action of the looper/spreader in relation to the angled motions of the needle carrier/bar.
(c) explains the interaction of the spreader/looper.
(d) describes stitch forming action and thread control of the loopers and spreaders.
(e) explains the action of the feed mechanism in relation to the needle motion.

IA Restricted Response Questions

The student should be set questions to test the understanding of knowledge relating to the methods of operation and interaction of the thread control, loopers, spreaders, needle carriers/bar of single and two needle overedge machines.

Samples, diagrams and photographs may be used in the test.

The test will consist of 10 questions allocated as follows:

(a)	identification of specific areas	2 questions
(b)	oscillating action of looper/spreader	2 questions
(c)	interaction of spreader	2 questions
(d)	stitch forming action	2 questions
(e)	feed mechanism	2 questions

Satisfactory achievement of the Learning Outcome will be demonstrated by the student producing 8 correct responses including one from (a), (b), (c), (d) and (e).

LO3 CARRY OUT SERVICE PROCEDURES ON SINGLE AND TWO NEEDLE OVEREDGE CHAINSTITCH SEWING MACHINES

PC The student:

(a) adjusts and sets components in correct timing relationships according to manufacturer's specifications;
(b) adjusts and replaces components to produce correct feeding action to permit machines to feed fabric;
(c) checks that the lubricating system functions during machine operation;
(d) works in a safe manner and wears appropriate safety clothing and equipment relative to the task.

IA Practical Exercise

The student should be presented with a practical exercise set under workshop conditions to test the application of knowledge and skills required to carry out service procedures on single and two needle overedge chainstitch sewing machines.

The servicing will be carried out on one sewing machine and should include synchronisation of components, adjustment of feeding mechanism and examination of lubricating bearing and gearing system.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student meeting all performance criteria.

LO4 DIAGNOSE AND RECTIFY FAULTS IN SELECTED MACHINE TYPES AND TEST FOR CORRECT STITCH FORMATION AND SEWING PERFORMANCE

PC The student:

(a) diagnoses faults related to sewing fabric including slipping stitches, incorrect feed, malformed stitches, damage to fabric, needle deflection, incorrect depth of penetration;
(b) rectifies the diagnosed faults;
(c) sets up machine for testing and producing samples of stitch types;
    (i) selects and fits the appropriate needle into each machine type;
    (ii) selects the correct thread for a selection of materials;
    (iii) threads the machine correctly;
(d) works in a safe manner and wears safety clothing and equipment appropriate to the task.

IA Practical Exercise

The student should be presented with a practical exercise set under workshop conditions to test the application of knowledge and skills required to diagnose and rectify faults in the machine and test for correct stitch operation.

The exercise will be carried out on one machine containing 6 previously inserted faults.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student meeting all performance criteria.