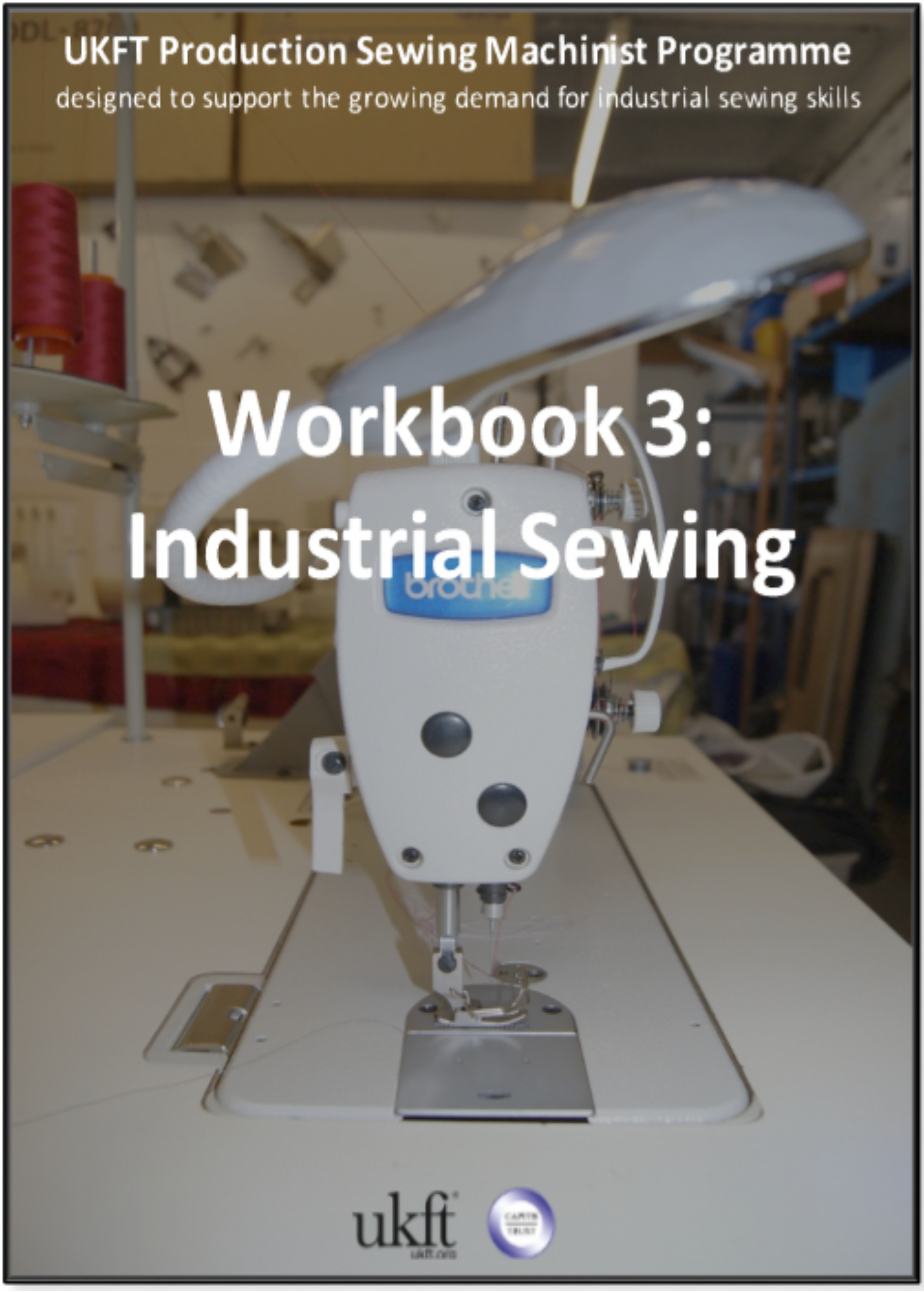
UKFT Production Sewing Machinist Programme

designed to support the growing demand for industrial sewing skills

Workbook 3: Industrial Sewing



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Course 3: Industrial Sewing

Welcome to course three of the UKFT Production Sewing Machinist Programme – Industrial Sewing.

This course covers industrial sewing methods and techniques based on lean manufacturing principles, including organising the workstation, managing your own work, and meeting quality and quantity requirements.

The content is designed to ensure you develop the skills to work quickly and efficiently, whilst meeting quality standards, with skills challenges that will help with machine control, material handling and speed.

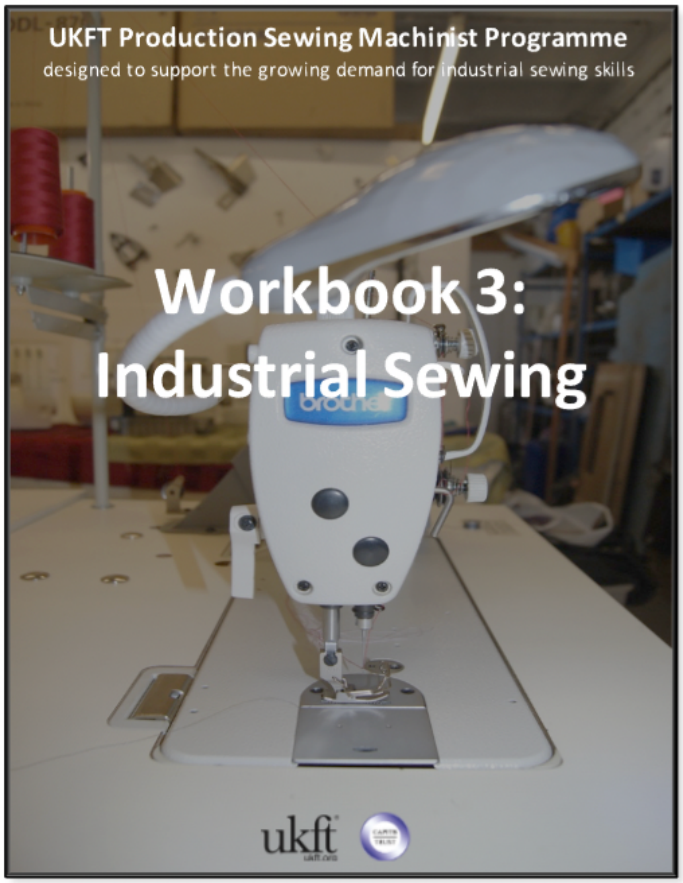
The course consists of thirteen lessons as follows:

3 Industrial Sewing Skills Introduction 3.1 Continuous Loop 3.2 Machine Control 3.3 Stop & Sew 3.4 Back Tack 3.5 Hems	3.6 Overlock 3.7 Seam Alignment 3.8 Sew & Turn 3.9 Change Direction 3.10 Curved Sew 3.11 Bundle Sew 3.12 Seam and Stitch Types

The table below details what you will understand and be able to do once you have completed each lesson. Your knowledge and understanding are assessed via the knowledge and skills challenges within the course content. Completing these challenges successfully will evidence your competence in each area.

Learning Outcomes On course completion you will…	**Assessment Criteria** The learner can…
1. understand the principles of lean manufacture in relation to production sewing including: o preparing the workstation o efficiency of movement o repetitive work rhythm	**1.1** Identify the principles of lean manufacture in relation to production sewing **1.2** explain how to prepare and organise an effective workstation **1.3** provide examples of how to minimise movement **1.4** describe repetitive work rhythm and why it is important
2. apply the principles of lean manufacture across sewing operations	**2.1** demonstrate operation and control of industrial sewing machines **2.2** demonstrate the correct handling methods when completing sewing operations **2.3** meet quality standards across sewing operations **2.4** meet target times across different sewing operations

3. know about a variety of different seam and stitch types and their suitability in relation to function and materials	**3.1** identify a minimum of three seam classifications **3.2** identify the function of three different seam types **3.3** identify a minimum of two different stitch types **3.4** identify the application and function of three different stitch types



About Your online workbook

To make the most of this online learning experience it is important that you fully understand the structure and format of your course and online workbook.

The course is split into thirteen lessons and your workbook is made up of five key elements that include technical information and activities as detailed below:

1. Course Introduction: A brief introduction that explains the subject covered and how it relates to your job. (In text and video format). The introduction includes the overall aims of the course and will tell you what you will know and be able to do when finished.

2.Key words: A set of key words and their meanings is provided at the beginning of the unit. These words are essential to your understanding of the subject area.

3.Subject: The bulk of the workbook is made up of technical information. The information is broken down into sections, each section contains, text, images and in some cases, videos.

4.Knowledge and Skills Challenges: These are self- assessments designed to help you with your learning. They are scattered across the

lessons to encourage bite size learning. These challenges need to be completed correctly to be awarded your UKFT digital badge and can be repeated as required.

5.Groundwork: These are recommended optional activities. Completing them will help you to better understand your role, your company, and internal processes and procedures. We recommend you create a folder to record and keep your groundwork activities in, this will provide you with a reference tool that will help inform your learning and job role responsibilities. Also, for those undertaking an apprenticeship these activities will help you gather information relevant to the End Point Assessment. Alternative groundwork activities suitable for independent learners, are also included.

Online learning is a very flexible way to study, it is important however to structure your learning, so you get the most out of it. Think about the following:

Plan: Set aside the time to study and try and get into a regular routine. But don't overdo it, keep your sessions short and sharp (max 30 minutes)
Set targets: Set yourself realistic targets and stick to them
Where: You need to be able to concentrate, find some where quiet where you won't be distracted
Prepare: Organise your work area, have a pad and pen to hand for notes and keep a file for print outs
Be active: Learning using this workbook does not simply mean reading content. You must be active in your study, watch the videos a few times, make notes, enjoy the activities, and apply your learning in the workplace
Keep going: Don't be disheartened if you get the knowledge challenges incorrect, keep trying and remember the answers are in the content.

Key words

Here are some words, and their meanings. You may come across within this unit. They are specific to the subject area, and you may not have heard them before.

Word/term	Meaning
Industrial sewing	Production techniques and processes used to manufacture sewn products for market.
Workflow	Series of steps/sewing operations that are necessary to complete a task/product
Total output	The sum of operations or final products after at the end of a set time e.g. working hour, day or week
Work and method study	The study of manufacturing operations to determine the best possible manufacturing procedure which involves the least time and causes minimum fatigue
Sewing sequence	The successive order of two or more sewing tasks that form one operation.
Workstation	The work area where sewing operations are carried out. This could include a sewing machine, a bench, an assembly table etc
Workstation layout	How your work and work area is set out and organised
Component	One of the parts of the product to be sewn, each component makes the whole sewn product
Production line	Work operations, operatives and work components arranged in a way that will

	ensure optimum progress through each sewing operation/task
Repetitive work rhythm	A regular, repeated pattern of movement whilst carrying out a sewing operation
Lean Manufacturing	Production methods aimed primarily at reducing the time and effort required to perform an operation or make a product to quality standards
Sew a foots Width	Sewing using the presser foot as a guide, aligning the edge of the fabric to the edge of the presser foot
Seam Alignment	Preparing to two materials for sewing, by bringing them together, evenly, and straight
Stitch Alignment	Sewing with the edge of the presser foot in line with the previous row of stitching
Seam Classification	The name allocated to different seam types by standard setting authorities

It is now time to get started, work through your online workbook and complete the challenges, enjoy your learning!

Lesson 3: What is industrial sewing?

Industrial sewing" is the term used to describe the production sewing methods,

techniques and processes used to manufacture clothing, bedding, soft furnishing, and other goods that are created by sewing different components together.

Unlike home sewing or sewing done by tailors, dressmakers or designer makers, speed teamed with quality is of the essence when carrying out industrial sewing.

Most factories will arrange their skilled machinists and machines into a logical sequence that makes it possible to assemble the different parts of the product in succession, this may incorporate lean manufacturing methods, with the last step being inspection, where the finished goods are checked and considered ready for distribution.

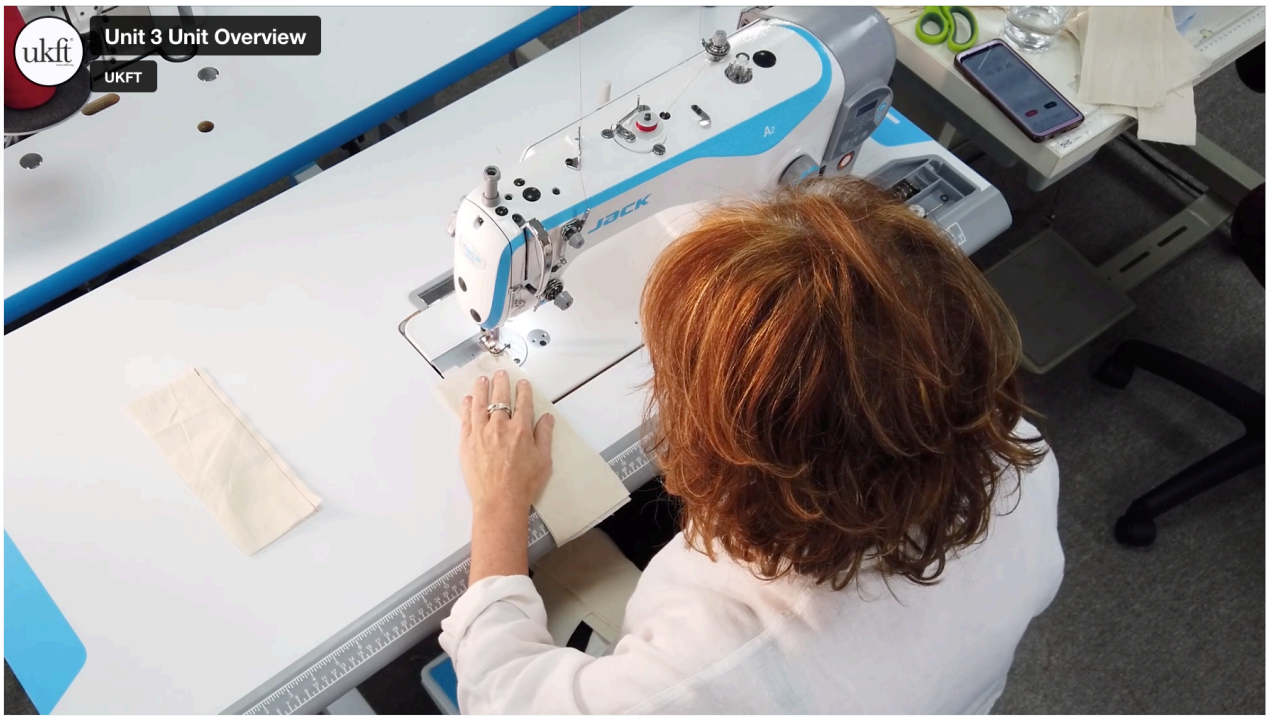
To keep up with demand your company will aim to turn out a challenging number of finished products that meet quality standards per hour/day. Inspections are often included in the working day, making it possible to quickly pull a malfunctioning machine or sewing error out of the production line so it does not affect the workflow cycle or the total output for the day.

As a part of the production team, your sewing skills, speed, and eye for quality is valued. Your status as a production sewing machinist means, organising and managing your own work, checking that you have

everything you need to do the job and using your own initiative to make sure the workflows through your workstation quickly and efficiently.

Understanding and putting into practice the basic principles of work and method study, as detailed below, will help to achieve this, and help you to learn how to work with ease and speed.

Watch this video to find out more about the course content watch the video below:



Unit 3 Unit Overview

https://vimeo.com/580217959/764dabbcb0

Knowledge Challenge 3.1

1. The points below are all important, but what are the two **key** elements of effective industrial sewing?

    - Attention to detail and rest breaks
    - Speed teamed with quality
    - Organisational skills and reliability

Prepare to sew

Preparing yourself and your workstation before the job is important because if you are well prepared you won't waste valuable time later. You need to prepare at the beginning of each day and at the start of a new job (especially of there are style, fabric, or process changes)

Organise your workstation

Organising and managing your own work, checking that you have everything you need to do the job and using your own initiative will help to ensure the workflows through your workstation quickly and efficiently. But you also need to consider your movements, try to eliminate as much movement as possible, by doing this you will be following lean manufacturing principles that will quickly develop your skills and help you to work with ease and speed.

Your movements will depend heavily on the position of your work, machine, and resources. Can your workstation layout be improved to reduce handling time? Consider the following:

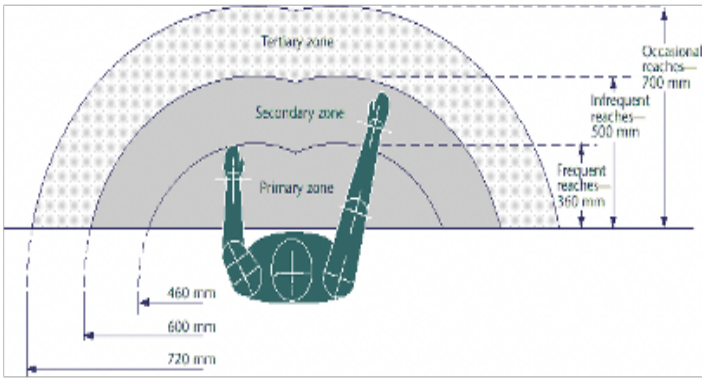
- Identifying the tools that are used most frequently and place them in the immediate work area so that they can be reached without stretching
- Ensuring the tools and parts are always in the same place so the method becomes habitual

- Attaching tools such as snips and scissors to the sewing machine or bench by cord – this minimises the time spent
- Keeping items such as pins (if they are allowed by your company) in one place by using magnets attached to the case of a machine or a pin cushion. Other small accessories/ trimmings such as buttons, hooks, labels etc., can be kept in small, clearly labelled boxes within easy
- Using containers for material inputs and outputs - the containers should not be too deep, and they should be mobile for faster transport to the next
- Aiming for rhythm - The body naturally adjusts to counterbalance any movement of its parts. Ideally one useful movement should be matched by another, so that they are balanced.

You must never make any major changes to your workstation without asking your supervisor or manager first. But you do need to think about your workstation. Can it be improved to reduce handling time? See this example of an effective workstation layout, everything is to hand and laid out to ensure minimum movement and effort. So, making the job easier and quicker. You need to make sure -

- Components are placed as close as possible to the operator for easy
- Work is presented in the correct way for easy unbundling and quick pick up
- No barriers are stopping pick up and disposal of components

- The bin or other means to dispose of finished work is close
- There is enough space on the table to handle the products parts. If required add table extension
- There is enough space in-between machines for operator movement
- Attachments i.e. (Jig and folders) are attached if necessary
- Your chair is adjusted to the right height



Efficiency of movement

Try to perform the tasks with as little unnecessary movement as possible to stay within, what is called, the normal working range.

Beware of developing unnecessary and impractical movement such stretching to reach components.

Repetitive work rhythm

Ensure you have everything as close to hand as possible and aim to get into a smooth, repetitive work rhythm, this will help develop habitual movement and a smooth, efficient workflow

Use both hands

If you're only using one hand to perform the main tasks, you will tire extremely quickly. Devise a method of always using both hands to balance out the work. For example, in the process of attaching sleeves, try to use both hands at the same time, holding the bodice on the left side with the left hand, while simultaneously grasping the right side with the right hand.

Ensure easy quick access to tools & materials

Small tools which are often used, such as snips, awl, measure etc. need to be kept in the machine drawer or if in use within easy reach and returned to the same area when you've used them. In addition, think about the best place for finished work (close, easy access)

Arrange work components

Arrange work components a progressive line so you point have to twist around to reach things as you need them.

Movement of items horizontally or making use of gravity

It's moving the material up and down that uses the most energy. Whilst working on a product try to devise a method which will allow you to slide it horizontally on the work area or let it slide down naturally, using the weight of the material's own gravity (i.e. crates by side of machine)

Combine the same kinds of jobs with each other

Some companies will issue a set process to be followed, but if you are in control of your own workflow think about combining jobs of the same type. This way you can reduce movements.

Keep the work areas clean and tidy

This not only helps you to work more efficiently but will also prevent contamination. You need to get rid of waste promptly following the correct company procedure

By following these principles, you will:

Reduce the handling time: During any operation, only about 20% of your time is spent stitching, the remaining 80% is handling time. If handling time is reduced to a minimum productivity and your performance increases.

Save Energy: You will reduce the physical effort you out in when carrying out the job

Your manger will decide where your workstation fits into the production sequence, how work arrives and leaves and, in some cases, supply a standard operation procedure/process which you must follow when carrying out the job. But you may still need to consider:

- Where you are in the work area
- Where will you put your work around you
- What sequence you will work in

Remember the best arrangement is the one that needs the least effort in movement and handling. But you also need to be comfortable, ensuring your chair gives adequate back support and is at the right height to reduce strain. Watch this video to find out more:

Unit 3A Prepare to sew

https://vimeo.com/580217100/e987df7a4d

Knowledge Challenge 3.2

1. From the list below identify three characteristics of a good workstation layout
    - All components are placed as close as possible to the operator
    - Finished work is to be placed in the quality inspection area
    - Bundles of work are tied tightly and need to be sorted
    - There are no barriers that may hinder pick up and disposal of components
    - There is a table extension to give space for sorting and handling
    - There is little space for operator movement
    - Work is not placed for easy pick up

2. The key to effective industrial sewing is to minimise movement whilst carrying our sewing operations. How can you do this? Identify two actions from the list below that could minimise your movement whilst sewing.
    - Keep tools where they can be reached without stretching
    - Leave any label/button/trimming collection until you need them
    - Position trays/baskets/containers as close to you as possible without hindering the workflow
    - Use deep input/output containers that can be heavy and difficult to manage

3. Why should you aim to develop a repetitive rhythm when carrying out industrial sewing? Select the statement below that answers this question.
    - I should aim to develop a repetitive work for rhythm when carrying out industrial sewing as this will mean i can rest between work loads
    - I should aim to develop a repetitive work rhythm when carrying out industrial sewing as this will result in habitual movement and a smooth, efficient workflow
    - I should aim to develop a repetitive work rhythm when carrying out industrial sewing as this will help to improve the quality of my work

4. As explained within this unit your performance when industrial sewing depends heavily on your workstation layout. Can it be improved to reduce handling time?

    To complete this task,

    - Take and upload photograph of your current workstation layout.
    - Study the picture and think about potential improvements.
    - List these improvements in a word document saying what they are and why they are needed

    If you are allowed to make these improvements, do it and take a second photograph of the improved workstation layout. If you are not allowed to make improvement just list what you would like to do

    Download an evidence file containing your photographs and word document. If these improvements have helped to increase your performance record this also.

Operating Industrial Sewing Machines

Once sitting comfortably and correctly at your machine, locate the ON/OFF switch, usually on your right just below the machine bed. Press this button to power your machine and note that the machine will not sew unless the pedal is pressed, even if it's switched ON. Also, it is important to turn the machine off when not in use – get into the habit of turning OFF the machine every time you leave it.

When using a lockstitch machine, you need to ensure the position of your feet on the pedal is correct, this is important because you control the start, stop and speed of the machine using this pedal. Also, on some machines, you can also control the presser foot lift and use auto thread trim. Remember, always wear flat shoes that cover the whole foot and position your feet and make sure your feet feel comfortable on the pedal as demonstrated below:

Position the right foot slightly forward to the back of the pedal
Position the heel of your left foot to the front if the pedal

NOTE: You might want to adjust this if you are left-handed

As the start, stop, and speed adjustment is operated via the pedal it is of utmost importance to know your machine, some are more sensitive than others. Familiarise yourself following the process below:

1. Low speed (start) – Slightly press the toe of your right foot down
2. Increase sewing speed – Press the toe of your right foot further

Note that the further down the pedal is pressed, the faster the stitching.

3. Stop – Lightly press the heel of the left foot down, returning the pedal to the original position

4. Thread trimming (if appropriate) – Press the heel of the left foot a bit further down, this will activate the thread trimming device and the machine will stop with the needle in the upper position

When operating, a new machine take time to practice this a few times and get to know your machine!

Operating an Overlocker

You need to ensure the position of your feet on the pedals is correct, this is important because you control the start, stop, speed and presser foot lift of the machine using these pedals. Remember, always wear flat shoes that cover the whole foot and position your feet and make sure your feet feel comfortable on the pedal as demonstrated.

Position the right foot slightly forward to the back of the pedal
Position the heel of your left foot to the front if the pedal
Use the right foot to release the presser foot

NOTE: You might want to adjust this if you are left-handed

As start, stop and speed adjustment is operated via the pedal it is of utmost importance to know your machine, some are more sensitive than others. Familiarise yourself following the process below:

1. Low speed (start) – Slightly press the toe of your right foot down
2. Increase speed – Press the toe of your right foot further
3. Stop – Lightly press the heel of the left foot down, returning the pedal to the original position
4. Release the presser foot – Press the right foot down

Note: The further down the pedal is pressed, the faster the stitching. When operating, a new machine take time to practice this a few times and get to know your machine!

Knowledge Challenge 3.3

1. This knowledge challenge is all about how you can control your machine with your feet. Firstly, you must position your feet correctly, on a lockstitch machine this means positioning the right foot slightly forward to the back of the pedal and the left foot to the front if the pedal. On an overlocker position the right foot slightly forward to the back of the pedal and the heel of your left foot to the front if the pedal and use the left foot to lift the presser foot. But how do you control your machine from here? Match the action with the result:

Release presser foot (overlocker only)	Slightly press the toe of your right foot down
Low speed start	Press the toe of your right foot further down
Increase the sewing speed	Press the heel of the left foot down, returning the pedal to the original position
Thread trim	Press the heel of the left foot a bit further down
Stop sewing	Press the right pedal down with the right foot

Now you are prepared let go onto Lesson 3.1 to get started on industrial sewing.

