



# PARTICIPANT HANDBOOK



Apparel

Language:  
English

# INDUSTRIAL SEWING MACHINE OPERATOR

# **INDUSTRIAL SEWING MACHINE OPERATOR**



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## Welcome Note

Dear Participant,

Welcome to the "Industrial Sewing Machine Operator" training programme. After completion of the training, Participants would be able to:

- ✓ Walk, ride bicycles, drive vehicles, or use public conveyances in order to reach destinations to deliver messages or materials.
- ✓ Load vehicles with listed goods, ensuring goods are loaded correctly and taking precautions with hazardous goods.
- ✓ Unload and sort items collected along delivery routes.
- ✓ Receive messages or materials to be delivered, and information on recipients, such as names, addresses, telephone numbers, and delivery instructions, communicated via telephone, two-way radio, or in person.
- ✓ Plan and follow the most efficient routes for delivering goods.
- ✓ Deliver messages and items, such as newspapers, documents, and packages, between establishment departments, and to other establishments and private homes.
- ✓ Sort items to be delivered according to the delivery route
- ✓ Obtain signatures and payments, or arrange for recipients to make payments.
- ✓ Record information, such as items received and delivered and recipients' responses to messages.

Read each module, log your key learning, and attempt the worksheet questions in the end.

## **General Instructions to Trainee**

1. Greet your instructor and the other participants when you enter the class.
2. Always be punctual for every class.
3. Be regular. Candidates who fall short of the required attendance will not be certified.
4. Inform your instructor if, for any reason, you need to miss class.
5. Pay attention to what your instructor is saying or showing.
6. If you do not understand something, put up your hand and seek clarification.
7. Make sure you do all the exercises at the end of each module in this book. It will help you understand the concepts better.
8. Practice any new skills you have learnt as many times as possible. Seek the help of your Trainer or co-participant for practice.
9. Take all necessary precautions, as instructed by your Trainer, while working with electricity and with tools.
10. Make sure you are neatly attired and presentable at all times.
11. Participate actively in all the activities, discussions and games during training.
12. Always take bath, wear clean clothes and comb your hair before you come to class.

The three most important words you must always remember and use in your daily conversation are PLEASE, THANK YOU and SORRY.

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## CHAPTER - 1

# AN INTRODUCTION TO THE INDUSTRIAL SEWING MACHINE AND WORK AIDS

### LEARNING OUTCOMES:

- Understanding the sewing machine and its parts.
- Introducing the Industrial Sewing Machine.
- Learning the difference between the Industrial Sewing Machine and the Domestic Sewing Machine.
- Knowing the types of Industrial Sewing Machines.
- Knowing the work aids and its importance.
- Understanding the maintenance and care of sewing machines.

### PRE-SESSION ACTIVITY

- The Trainer will ask the Trainees whether they have any experience or knowledge about the Sewing machine and its operations. The interested Trainees will raise their hands to share their experiences.
- The Trainer will show some videos on sewing machine operations to the Trainees in the class.

### 1.1 Sewing Machine



The Sewing Machine is a machine with a mechanically attached needle for sewing or stitching clothes. It can be either operated by foot manually or by electricity. Although a wide variety of sewing machines is available in the market nowadays, they can be categorized mainly into two broad sections:

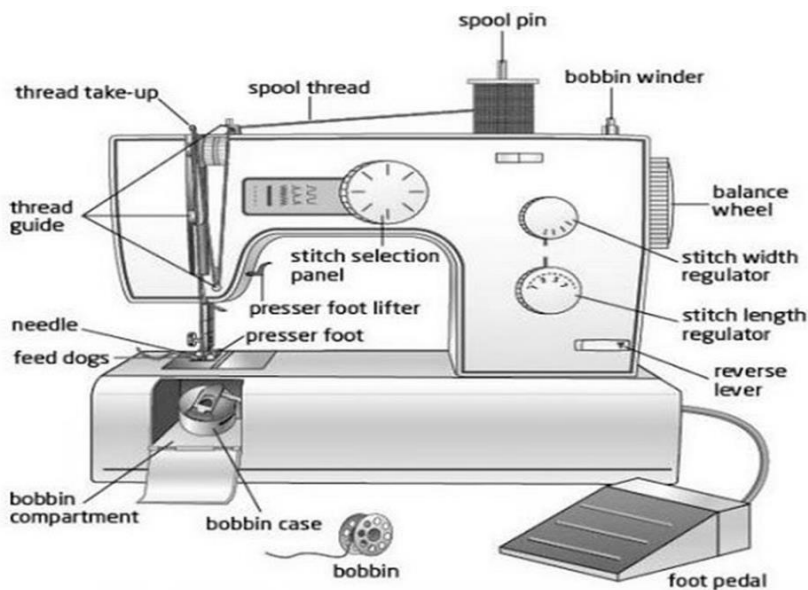
**Domestic Sewing Machines.**

**Industrial Sewing Machines.**

Simple hand or foot operated sewing machines, that we have seen our mothers and grandmothers use, were made mostly for domestic use. Fully automatic and computerized sewing machines are nowadays used in industries for bulk production in a limited period of time.

**1.2 Domestic Sewing machine and its parts**

In this section, we will learn about the various parts of a sewing machine and its functions.



**1.2.1 Needle Plate**

The Needle Plate, also known as Throat Plate, covers the area that holds the Bobbin. The needle plate consists of:

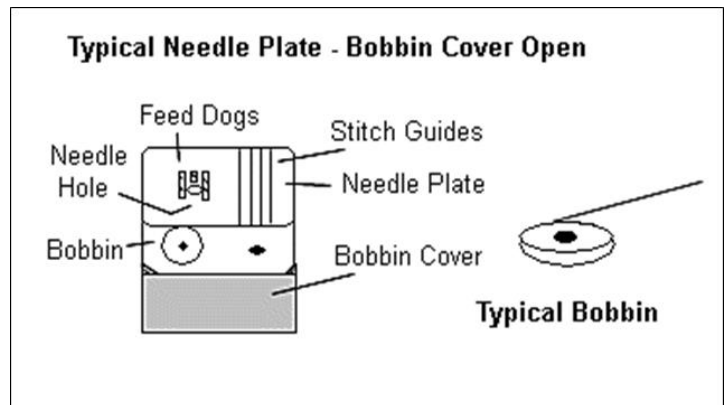
- An opening for the needle to pass through.
- Lines that serve as sewing guides.
- Openings for the feed dogs to fit through.





### 1.2.2 Bobbin

- The bobbin is housed by the needle plate.
- Bobbin thread stitches the fabric from the underside and locks the stitches in place.
- It is the thread that you see when you turn the sewn piece over and look at the backside.
- When you sew a line, the stitches on top come from the machine's spool of thread, while the stitches from underside come from the bobbin.
- The bobbin, housed under the needle plate, holds the bobbin thread, and is either set into the machine from the top or the front of the bobbin casing area.
- The bobbin is reached through a sliding door that opens in the front of the bobbin casing area. The bobbin is held safe with the bobbin latch as shown in the diagram.



### 1.2.3 Needle Hole



- The needle opening is a single hole, used for Straight Stitching, or an oblong hole, which allows the needle to make stitches that have width (such as zigzag stitches).
- Notice the needle plate on the right, below, has one small circular hole (near the middle of the plate) used for regular, straight stitching, such as quilting or stitching straight seams.
- The two long openings on the outer edges allow the feed dogs to come up (an explanation of feed dogs follows).

### 1.2.4 Feed Dogs

- On a sewing machine, the toothed mechanism that uses a forward, down, back, and up motion against the presser foot to advance the fabric through the machine evenly is called a feed dog.
- Feed dogs feed the fabric (keep the fabric moving) while the machine sews.

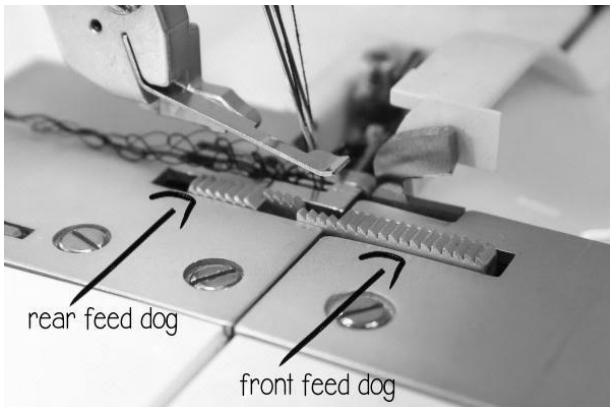




**Things to Remember**

- Never push or pull your fabric, the feed dog will feed through the fabric.
- Gently guide your fabric as it is being fed through while stitching.
- Place one hand on the fabric as it comes out the back and the other hand on the fabric that is being fed from the front.
- Use your hands to gently guide the fabric so that it goes straight.

**A. Differential Feed and Walking Feet**



Feed dogs feed from the bottom only. While sewing through two layers of fabric, it is possible that one layer will be fed at a slightly different rate than the other.

Although your two layers can be perfectly lined up at the start of stitching, by the end of the stitching line the layers can be "off" (one shorter than the other).







This can be very difficult for the sampling tailor to work with.

To solve this issue, there are two different solutions.

**1. Differential feed:** The differential feed controls the movement of both the front and the rear feed dogs.

- |   |
|---|
| <ul style="list-style-type: none"><li>• Both layers of fabric are fed at the same rate.</li></ul>   |
| <ul style="list-style-type: none"><li>• You can use the differential feed if you are using a fabric that stretches or puckers.</li></ul>  |
| <ul style="list-style-type: none"><li>• With the front feed dog, taking the fabric in a little faster than exiting it helps to prevent your knits from stretching and becoming wavy.</li></ul>                              |
| <ul style="list-style-type: none"><li>• Another reason you may want to turn up your differential feed dial is that you can intentionally gather your fabric removing the rippling when stitching stretch fabrics.</li></ul> |

Differential feed adjustment

Feed ratio	Main feed (rear)	Differential feed (front)	Effect	Application
0.7 - 1.0			Material is pulled tight.	Prevents thin materials from puckering
1.0			Without differential feed.	Normal sewing
1.0 - 2.0			Material is gathered or pushed together.	Prevents stretch materials from stretching or puckering

- If your machine does not have differential feed, you can accomplish the same thing by using a **Walking Foot**.

It is an unusual looking extension used that is designed to provide an extra set of feed dogs for the top of the fabric being sewn.

To begin with, the Walking Foot does not look like other sewing machine feet. It is big and bulky and has an arm that attaches to the needle bar.

This extra bar now tells the sewing machine to pull the top fabric through the machine at the same rate it is pulling the bottom fabric.



- The Walking Foot makes managing unusual fabrics possible.
- It helps to match plaids or makes a specific design simpler.
- It makes the knits flow through your machine without growing or gathering.
- It prevents slippery fabrics from sliding all over the place and bulky products like quilts sew together effortlessly.

### 1.2.5 Presser Feet

A presser foot holds the fabric in place as the feed dogs guide the fabric being sewn. They also serve various specialized functions, depending on the type used.

Illustrated below are the various types of Presser Feet for different purposes.

**Example:**

Rolled hem foot causes the fabric to roll under for stitching, and the applique foot, which has an opening at the back, allows the bulk of the satin stitch to pass through. Other special feet that are commonly used include the zipper foot and buttonhole foot. Knowing what types are available, and when to use them, can make all the difference in the quality of your work. These special feet also reduce the causes of frustration during sewing.





**Test yourself**

**A. Draw lines to match the names of the correct presser feet:**



Zipper



Applique



Straight



Blindhem

**B. Fill in the blanks.**

1. The \_\_\_\_\_ is housed by the needle plate.
2. \_\_\_\_\_ feed the fabric while the machine sews.
3. \_\_\_\_\_ helps to match plaids or make a specific design simpler.
4. A \_\_\_\_\_ holds the fabric in place as the feed dogs guide the fabric being sewn.
5. \_\_\_\_\_ has openings for the feed dogs to fit through.
6. A \_\_\_\_\_ holds the fabric in place as the feed dogs guide the fabric being sewn

### 1.3 Industrial Sewing Machine

- The industrial sewing machine is a more advanced and heavy duty version of the standard home sewing machine.
- Industrial sewing machines are generally used for bulk production in garment and textile industries. A typical pocket industrial machine can sew 2,000 pockets in an eight-hour production cycle.
- An industrial sewing machine is designed to sew several layers of tough material, such as leather, canvas, and vinyl, at one time.
- The internal parts and motors in a standard commercial sewing machine are too delicate for the heavy loads.
- An industrial machine comes equipped with a clutch and large servo motor for mass production allowing major wear and tear in its internal parts.

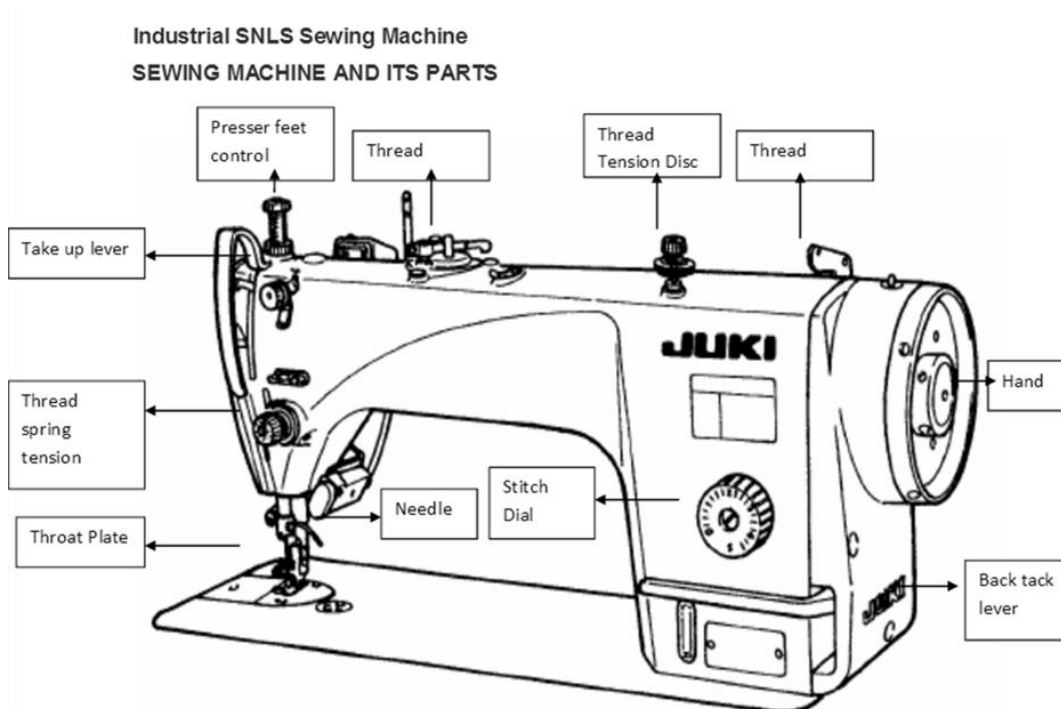
An industrial sewing machine is specifically built to resist long term wear and tear, and is therefore built with superior strength, parts and motors. Traditional sewing machines on the other hand might include nylon or plastic gears.

#### 1.3.1 Different Types of Sewing Machines with Technical Details

##### A. Single Needle Lock Stitch Machine (SNLS)

The Single Needle Lock Stitch Machine is the most popular and versatile sewing machine in the industry. The Lockstitch sewing machine forms precise and secured straight stitches on the top and the underside of the fabric.

##### A.1. Parts of a Single Needle Lockstitch Machine



## Industrial Sewing Machine Operator

### B. Over-lock Machine

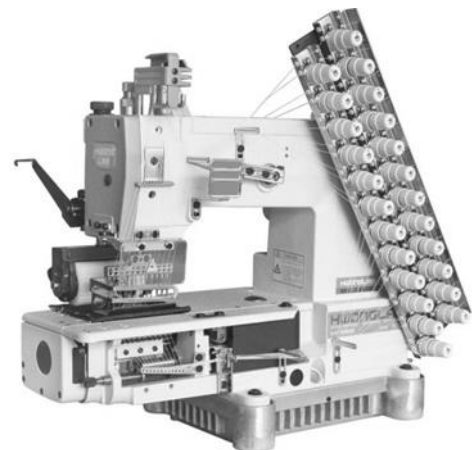
An Overlock / Over-edge machine is a high speed sewing machine. This machine is popular for stitching Over-edge stitches at a high speed. Overlock Machines are available in following Specifications.

- 2T Over-lock machine.
- 3T Over-lock Machine.
- 4T Over-lock Machine.
- 5T Over-lock Machine.
- 6T Over-lock Machine.



### C. Flat lock Machine

- Flat lock Machines are specialized high speed machines.
- In this machine, the stitch is formed by two or more needle threads passing through the material, inter looping on the underside and interlocking on the upper side.
- These machines are mainly used for Knitting.

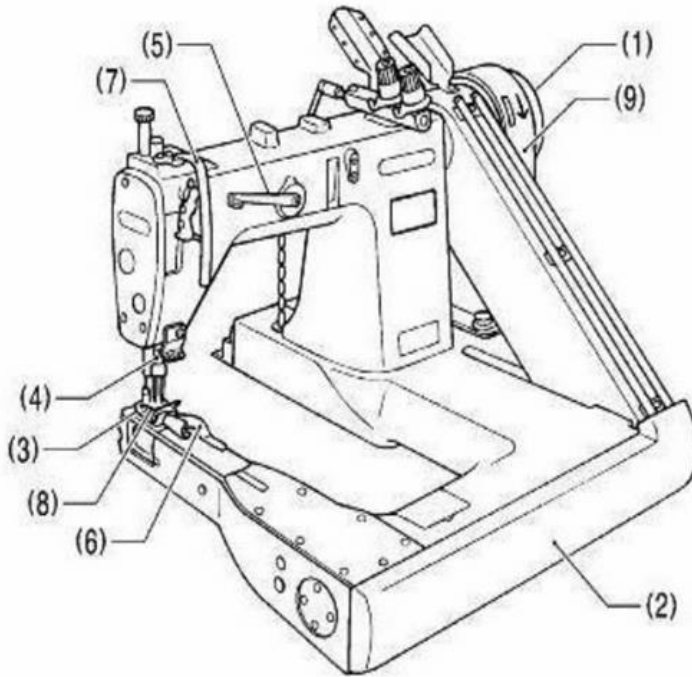


### D. Feed of the Arm Machine



Arm Machine is largely used for attaching sleeves and making complex circular stitches while attaching different parts of the garment.

### D.1. Parts of a Feed of the Arm Machine

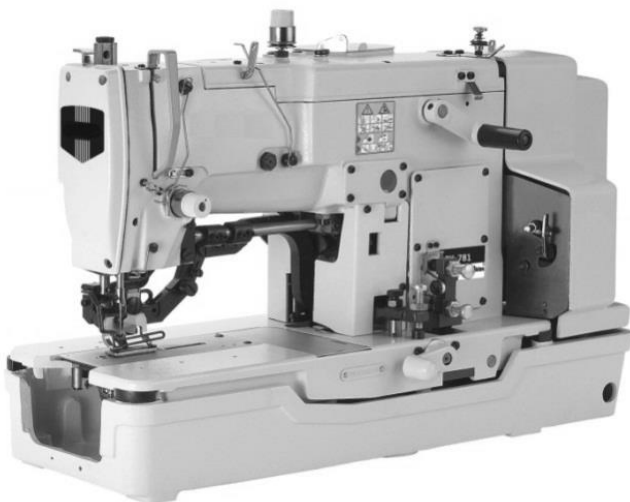


#### PARTS NAME –

1. Machine pulley
- 2 Front cover
- 3 Presser foot
4. Needle bar
5. Upper thread guide
6. Lapper

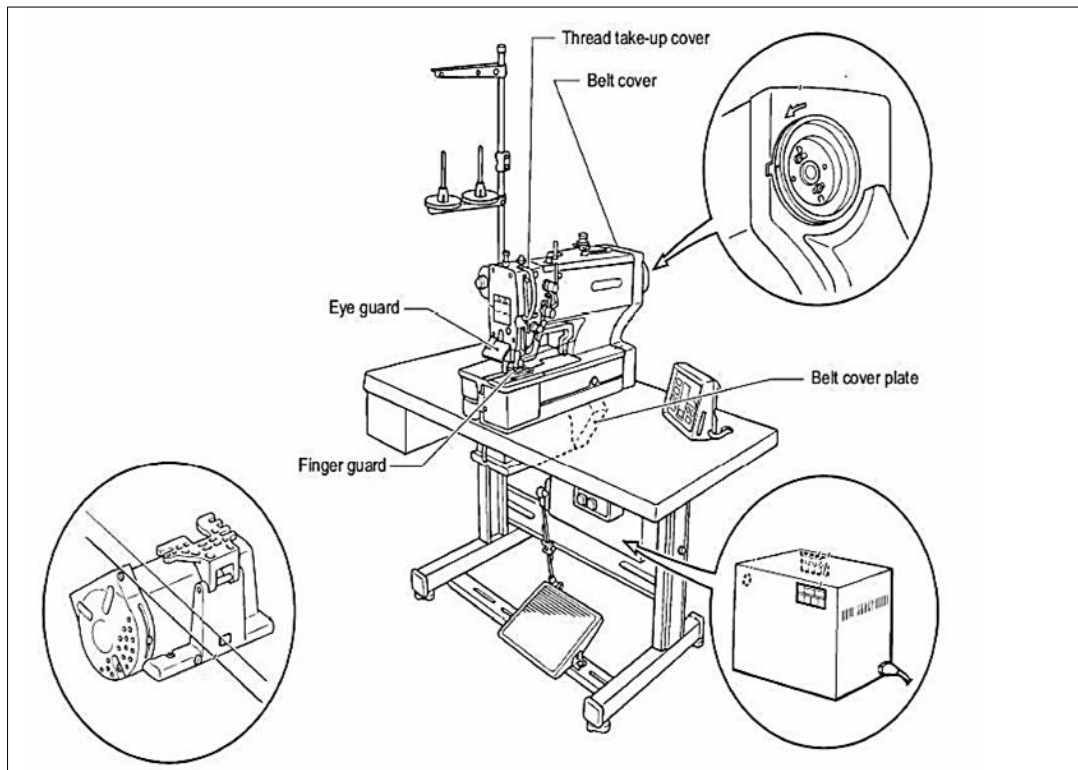
### E. Button Hole Machine

Button Hole Machine is used for sewing buttons in the garment.





### E.1. Parts of a Buttonhole Machine



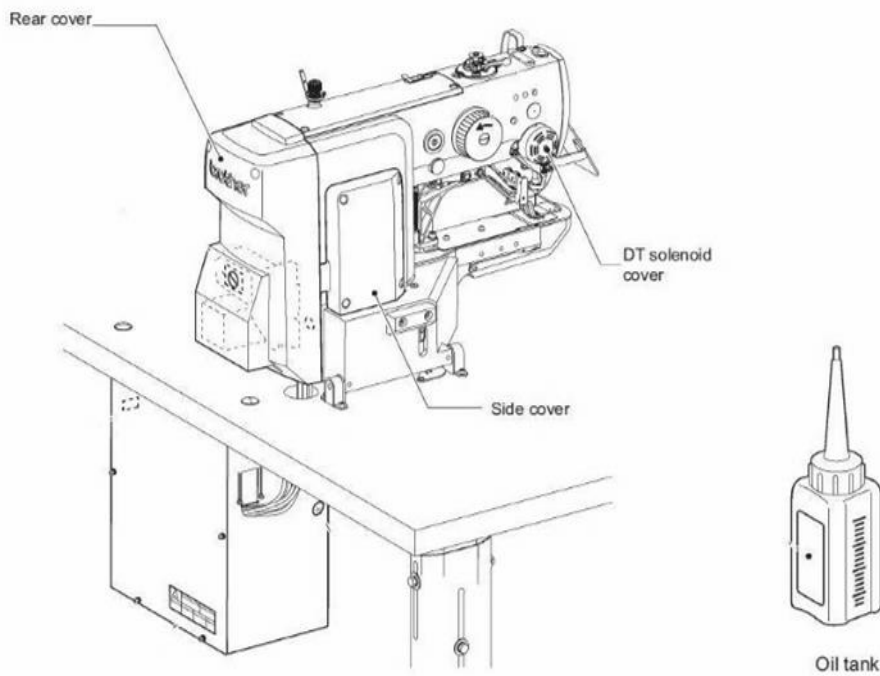
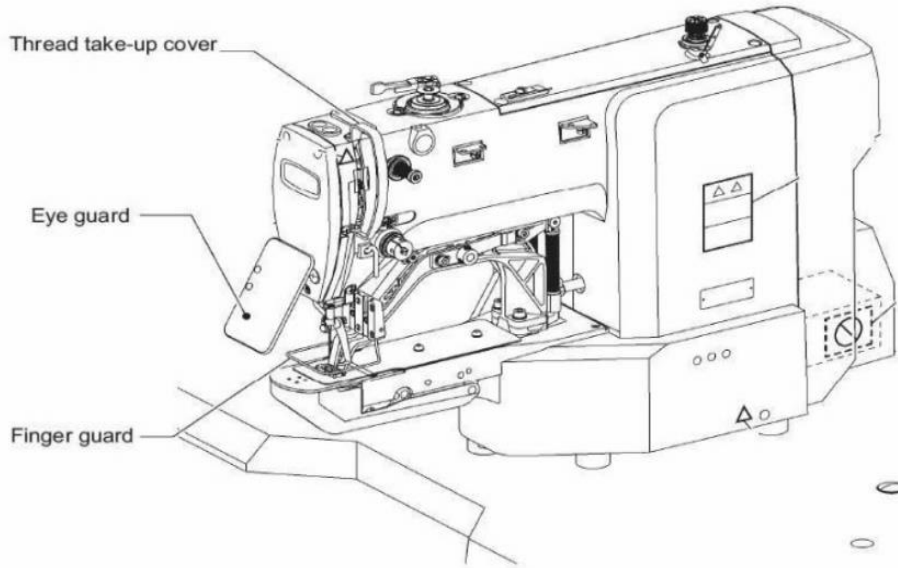
### F. Bartack Machine

Bartack machine is used for giving secure Bartack stitches.







## Industrial Sewing Machine Operator

### F.1. Parts of a Bartack machine



### 1.3.2 Types of Industrial Sewing Machine Beds

Industrial sewing machines can also be categorized based on the design of the arm and needle post. These four types are:

Industrial Sewing Machine Beds	
<p><b>Flatbed:</b> Flatbed sewing machine is the most common type of industrial sewing machine used in factories. It is typically used to sew flat pieces of fabrics together.</p>	<p style="text-align: center;">FLAT BED</p> 
<p><b>Cylinder-bed:</b> The base of Cylinder-bed machines is a narrow, horizontal column instead of a flat base. The fabric can pass around and under the column. The diameter of the cylinder-bed varies from 5 cm to 16 cm.</p>	<p style="text-align: center;">CYLINDER BED</p> 
<p><b>Post-bed:</b> The distinguishing feature of these machines is a column that rises above the flat base. The bobbins, feed dogs and/or loppers are installed in that raised column. The height of this column ranges from 10 cm to 45 cm.</p>	<p style="text-align: center;">POST BED</p> 
<p><b>Off-the-arm:</b> This is the most uncommon type of sewing used in factories. These machines require the material to be fed along the axis of a horizontal column. The design limits the length of the seam sewn to the length of the column.</p>	





Test yourself

A. Identify the sewing machines below and state one characteristic of each:



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**Industrial Sewing Machine Operator**

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## Industrial Sewing Machine Operator

### 1.4 Tools and Materials

Below are some of the various tools and materials required in the garment making process. We will study about them in details, in the next section.

#### Tools



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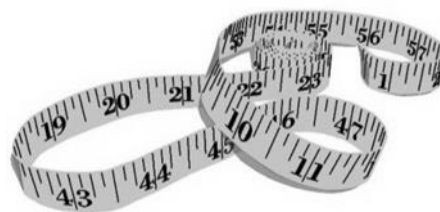
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#### Fabric Scissors



**Seam Ripper**



**Measuring Tape**

**Industrial Sewing Machine Operator**

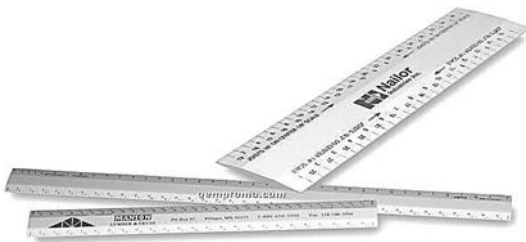
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**Thread Snips**



**Tracing Wheel**



**Measuring Scales**



**Pencil & Eraser**



**Notcher**