CHAPTER I

Introduction to Sewing Machine, its various parts

Objectives:

At the end of the chapter, the students shall be able to:

- *Know about the different types of sewing machine*
- *Know about various parts of sewing machine*

A machine which controls the fabric with feeding devices, forms a perfect stitch is called a Sewing Machine. A sewing machine is a machine used to stitch fabric and other materials together with thread. Sewing machines were invented during the first Industrial Revolution to decrease the amount of manual sewing work performed in clothing companies. Since the invention of the first working sewing machine, generally considered to have been the work of Thomas Saint in 1790 the sewing machine has vastly improved the efficiency and productivity of fabric, clothing and needle industries.

1.1 Stages of Development of Sewing Machine:

The sewing machine was invented in stages:

1. English inventor Thomas Saint was the first to patent a design for a sewing machine in 1790 but he did not advertise his invention. It was meant for leather and canvas.
2. Josef Madersperger began developing the first sewing machine in 1807. He presented the first working machine in 1814.
3. In 1830 Barthélemy Thimonnier, a French tailor, patented a sewing machine that sewed straight seams using chain stitch.
4. Lockstitch sewing machine was invented by Walter Hunt in 1832. His machine used an eye-pointed needle carrying the upper thread and a falling shuttle carrying the lower thread. The curved needle moved through the fabric horizontally, leaving the loop as it withdrew.
5. John Greenough patented the first sewing machine in the United States in 1842. Elias Howe created his sewing machine in 1845, using a similar method to Hunt's, except the fabric was held vertically.

6. The first electric machines were developed by Singer Sewing Co. and introduced in 1889. At first these were standard machines with a motor strapped on the side. As more homes gained power, these became more popular and the motor was gradually introduced into the casing.

The following are the categories of sewing machines:

1. Domestic sewing machine
2. Industrial sewing machine

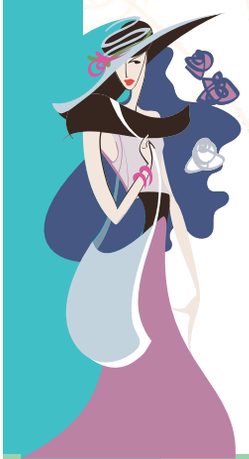
Domestic sewing machines are designed for one person to sew individual dress while using a single stitch type. Modern sewing machines are designed in such a way that the fabric easily glides in and out of the machine without the hassle of needles and thimbles and other such tools used in hand sewing, automating the process of stitching and saving time.

Industrial sewing machines are larger, faster, more complex, and more varied in their size, cost, appearance, and task.

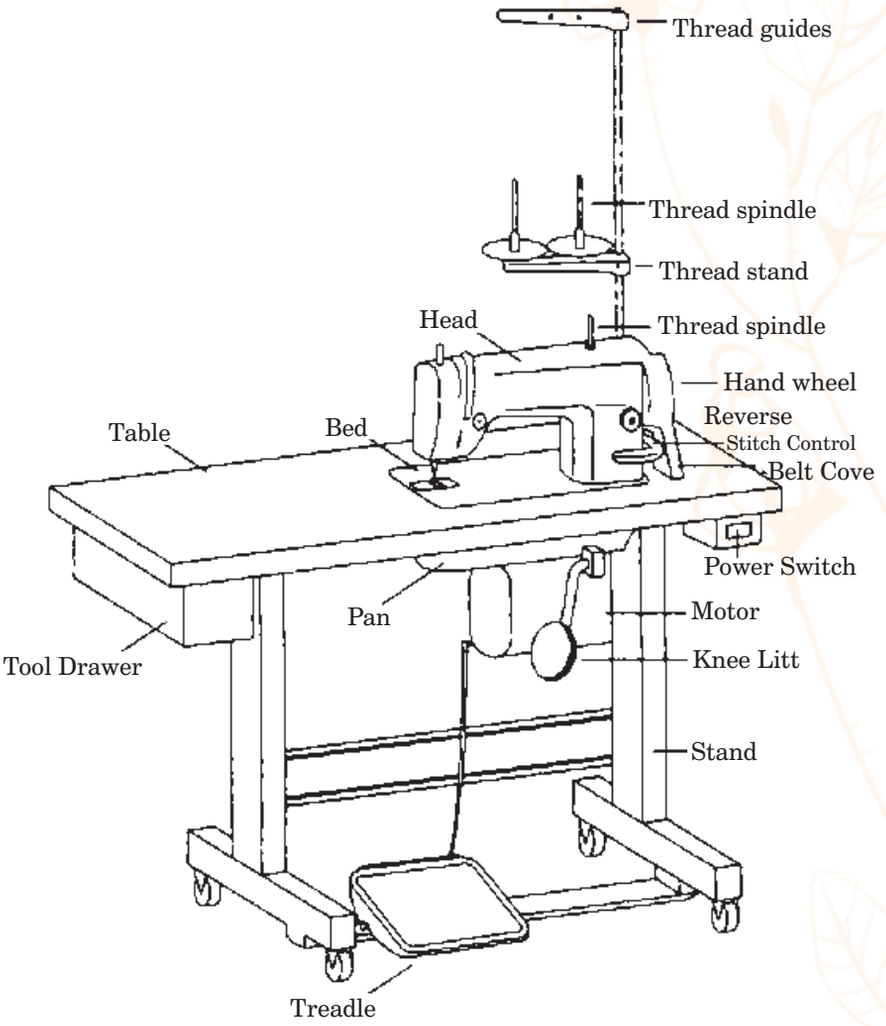
The following are the comparison between domestic and industrial sewing machines

1. The industrial machine is faster, stitching from 3000 to 6000
2. stitches per minute; the fastest domestic machine stitch no more than 1500 stitches per minute
3. The basic industrial machine makes only a straight stitch; most domestic machines make straight and zigzag stitches.
4. The presser foot on a power machine is raised and lowered with a knee lift of special foot pedal. On domestic machines, it is generally operated manually using a lever at the back of the needle bar.
5. The throat plate on many industrial machines may not be marked with frequently used seam widths.
6. The presser foot has a narrow opening between two toes and holds the fabric more firmly than the all-purpose, zigzag foot on the home sewing machine.
7. Automatic lubrication is done in industrial sewing machine whereas it is done manually in domestic sewing machine.

Some machines can create embroidery-type stitches. Some have a work holder frame. Some have a work feeder that can move along a curved path, while others have a work feeder with a work clamp. Needle guards, safety devices to prevent accidental needle-stick injuries, are often found on modern sewing machines.

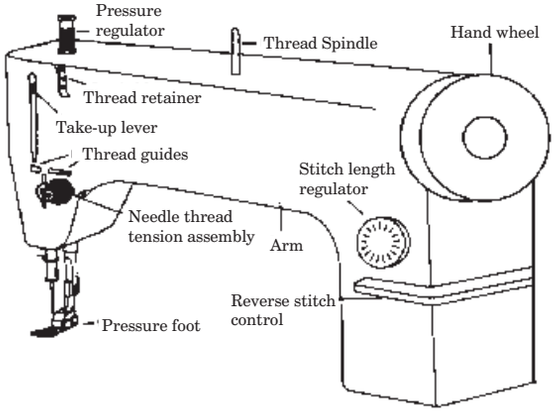


Sewing Machine



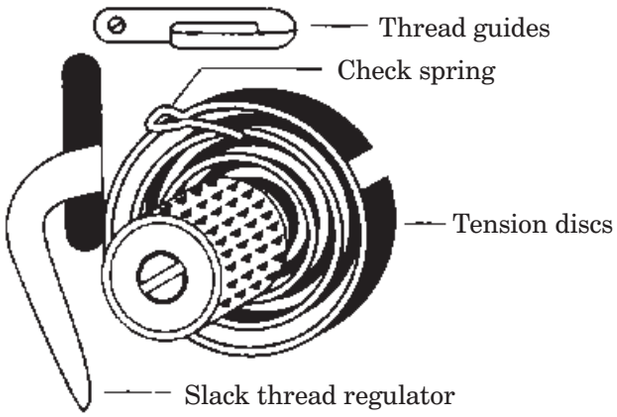
1.2 Parts and Functions of Sewing Machine

1. Machine Head

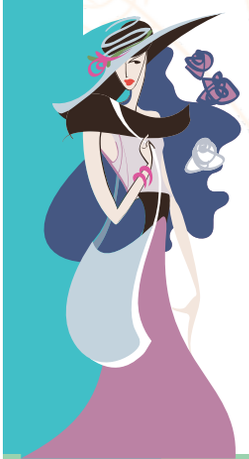


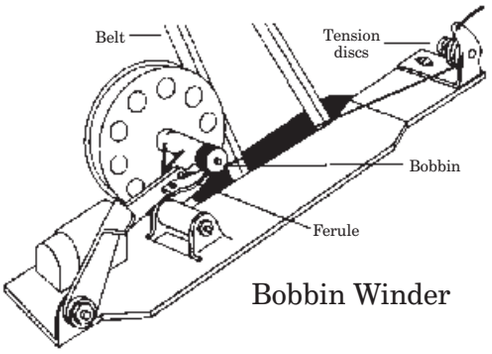
1. **Arm :** The horizontal part of the head that houses the drive shafts.
2. **Pressure regulator:** Control that regulates the amount of pressure on the presser foot.
3. **Hand wheel:** The part that controls the motion of the machine manually and electrically.
4. **Thread retainer:** A three - hole that applies a small amount of tension on the thread so it will flow into the tension discs uniformly.
5. **Take-up lever:** The part that first loosens the top thread during the stitch formation, then removes any slack to set or lock the stitch.
6. **Thread guides:** The parts that guide the thread from the thread cone to the needle. They smooth the thread and protect it from abrasion.
7. **Presser foot:** A device that holds the fabric in place for stitching.

2. Needle - Thread Tension Assembly

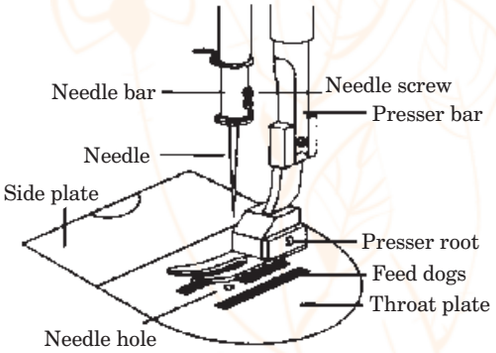


1. **Thread guides:** The parts that guide the thread from the thread cone to the needle. They smooth the thread and protect it from abrasion.
2. **Check spring:** A small wire spring behind or at the top of the tension discs. It provides a small amount of tension on the needle thread and acts as a shock absorber. On some machines, the check spring is mounted separately.
3. **Tension discs:** Two concave discs that control the delivery of the upper thread from the spool to the needle.
4. **Slack thread regulator:** A metal hook or bar near the tension discs.

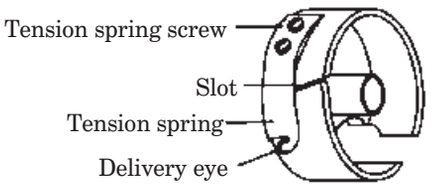




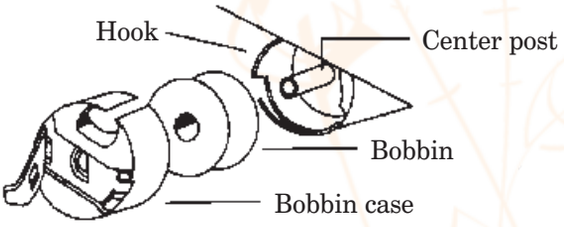
Bobbin Winder



Feeding Mechanism



Bobbin Case



Bobbin Mechanism

1.3 Types of Sewing Machines

There are three major types of sewing machines:

1) Mechanical sewing machines,

2) Electronic sewing machines,

3) Computerized sewing machines.

Mechanical sewing machines are less expensive and are the simplest type of sewing machine in terms of build.

Electronic sewing machines became popular during 1970s. There are more features in an electronic sewing machine than in a mechanical sewing machine.

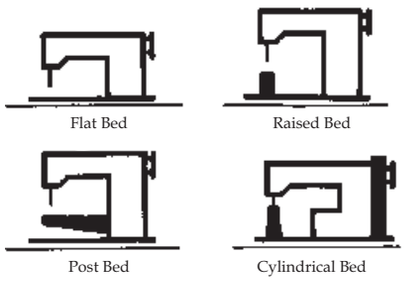
Another type is the computerized sewing machine, which is very fast and easy to use. Computerized sewing machines are similar to electronic sewing machines.

Types of sewing machine based on Bed are as follows:

1. Flat bed sewing machine (basic)

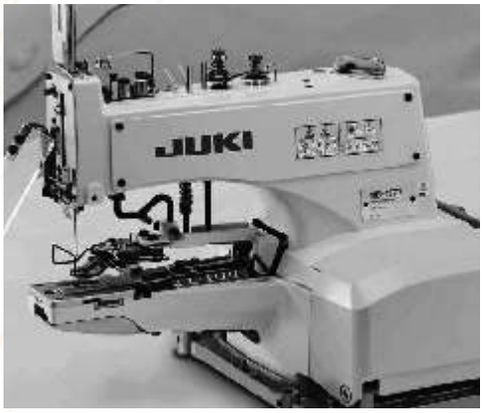
2. Raised Bed machine

3. Post Bed machine
4. Cylindrical Bed machine

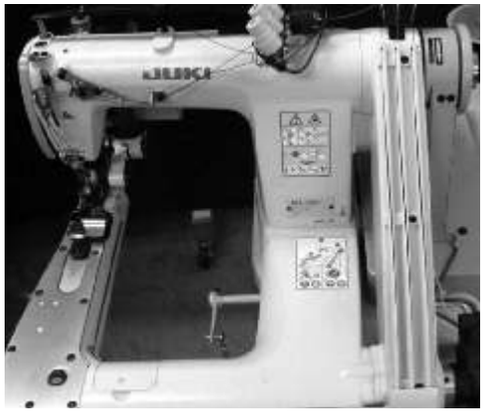


The following are the various types of sewing machines:

1. Lock stitch machine
2. Chain stitch machine
3. Double chain stitch machine
4. Button hole machine
5. Bar Tack Machine
6. Button stitch machine
7. Feed Off arm machine
8. Overlock machine



Button stitch machine



Feed of Arm

Double needle machine

Overlock machine

Questions

1. What are the two sewing method ?
2. What is a lock stitch machine?
3. What is the function of pressure foot?
4. What are the difference between single needle and double needle lock stitch machine?
5. What are the difference between industrial sewing machine and domestic sewing machine?

SUMMARY

The importance of sewing, its role in apparel industry, the latest trend in apparel Industries are illustrated in introduction chapter. It is a creative and interesting skill. Knowledge on sewing give a confident feeling when it is applied to the construction of garments. This part of the course introduces the students to the skills required for converting fabrics into a sewn garment.

A machine which forms a perfect stitch is called a Sewing Machine. Stages of development of sewing machine are explained in this chapter. Categories of sewing machine are illustrated here.