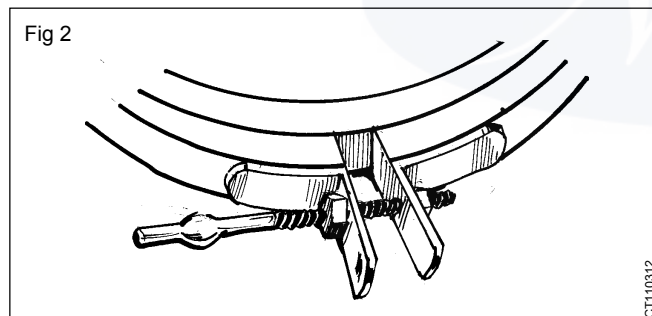
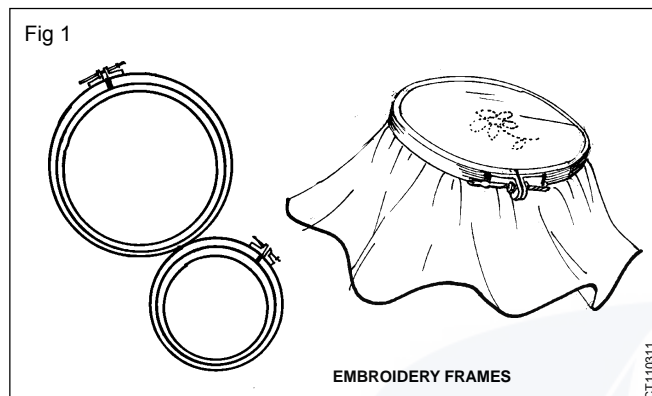


Embroidery accessories/embroidery stitches

Objectives: At the end of this exercise you shall be able to

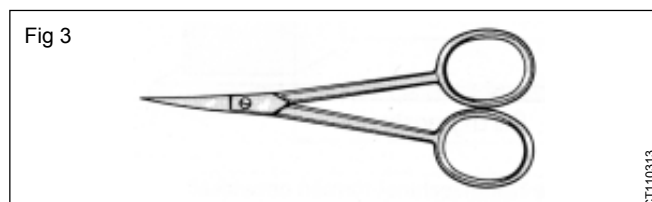
- name embroidery accessories and their features.
- explain the application of the main stitches.

Tools for embroidery work: Embroidery **frame** is usually in circular shape. It consists of two rings, one inner and one outer. The fabric is placed in between the rings (Fig 1) and kept in tight position with the help of an adjustable screw on the outer ring (Fig 2). The frame helps to keep the fabric in an uniformly stretched position. This maintains uniform tension of the embroidery work.



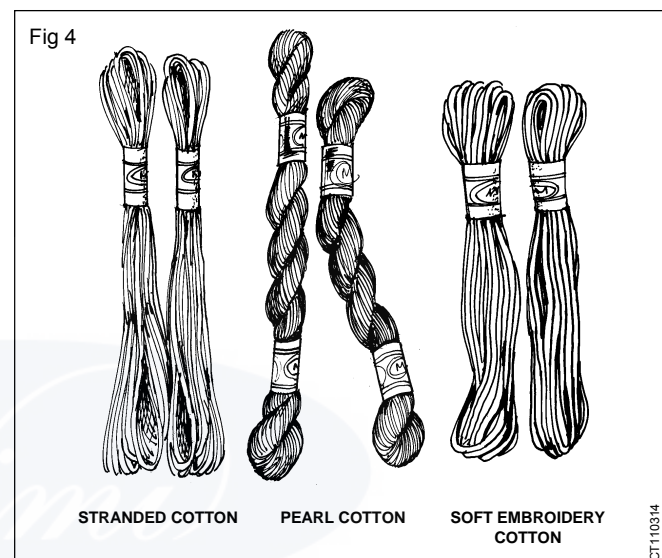
Round frames are available in 10 to 25 cm diameters. The larger sizes are generally made with clamps for attaching it to a table with a screw for adjusting.

Sharp pointed embroidery scissors are essential. The handles are longer. They have narrow and pointed blades. They are used for cutting fine and short threads. (Fig 3)

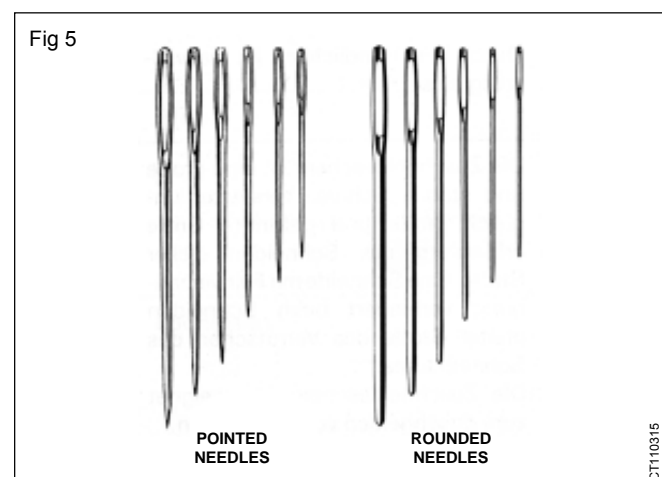


Embroidery **threads** are comparatively thicker than fabric threads. The best threads have a fairly smooth texture, which enhances the crisp character of the embroidery. Stranded cotton is lustrous thread made of six strands easy to separate. A single strand can be used for fine work and several strands for bolder effects. The threads

are available in hundreds of colours. Pearl cotton thread is short with two plies, which are twisted to produce a beaded or pearl effect. Soft embroidery cotton thread is a thick thread, used on coarse fabric. Silk threads give a luxurious quality to the stitching, but are more expensive than the cotton threads. (Fig 4)



Embroidery needles have large eyes, to allow the stranded threads to pass through. They are shaped with pointed and round tips and the sizes are denoted by numbers from 14 to 24. (Fig 5)



Transferring the design: After selecting the design for the embroidery work, the markings for the design should be transferred to the right side of the material without spoiling it. There are several ways of doing this besides the method shown in practical lessons. Some of them are Direct Method, Tacking Method, Transfer by Ironing.

Direct method: Fabric such as organdy, nylon, muslin, nyllex, voile, etc., can be laid over the design and traced directly with pencil.

Tacking method: This method is used on velvet, dark coloured cloth materials and all knitted fabrics. This method is worked by tracing the design on a thin tissue paper and tacking the design with the fabric by fine running stitch and then tearing the rest of the paper.

Transfer by ironing: Readymade paper pattern can be transferred onto the material by ironing. The transfer has the design outline in wax or ink on thin paper. The printed design is laid onto the material and moderately hot iron is applied to the back of the transfer. When the paper is removed, it is found that the design is transferred onto the material.

Embroidery stitches: Besides weaving and printing techniques, embroidery work gives an ornamental look to the fabric. There are different kinds of embroidery stitches, which are known by special names. For successful embroidery work, it is essential that you learn to work the basic stitches. In addition, you should acquire the ability to choose the right kind of stitches, designs and colour combinations suited to the type of fabric and for the purpose and use of garment or article, on which the embroidery is to be made. The stitches must be sufficiently taut, so as not to make loops and yet loose enough not to pucker the material. While beginning embroidery, the design must be outlined first. The outlining must always be done correctly or otherwise the design would lose its shape.

There are different kinds of embroidery stitches, for example;

Stem stitch is often used. It is one of the simplest stitches. It is worked on the traced line. It is a line stitch used for outlining designs, especially stems and leaves. It can also be used for filling small designs by working several lines side by side.

Blanket stitch is used as a decorative edging for blankets and other articles or as part of a design for which the blanket stitch makes up the border.

Closed blanket stitch is used mainly for scallop. The beauty of a scallop lies in the regularity of the stitches, which must be as close together as possible.

Buttonhole stitch is similar to blanket stitch. The difference is the stitches are close together and are of same height.

Fishbone stitch is used for large motifs. It is made by gathering the cloth slightly with the stitches.

The working of **straight feather stitch** is similar to that of blanket stitch, but the stitches slant towards a centerline from either side. You can make **double or triple feather stitch** by making two or three slanting on one side and then a similar number on the other side. It is used for border patterns.

Chain stitch is used for filling. It can be done side by side to fill large shapes or to work single lines. The result of this stitch is a loop, which will then form a link. The link can be of varied lengths, shorter the prettier.

Hem stitch is used as a decorative stitch on borders. Different designs can be created by working either single or double hem. Suitable fabric for this type of stitch is linen or even weave.

Lazy daisy stitch is done in the same way as chain stitch, the only difference being that the loop is held by a stitch taken across the end. It can be used to portray flowers and leaves.

Herring bone stitch is used as a decorative stitch as well as for finishing hems and raw edges of seams. On the wrong side, two rows of running stitches are seen. When worked closely on the wrong side, this stitch can be used to do shadow work.

Cross stitch is composed of two slanting stitches which cross in the middle. This stitch does not require any great experience. The beauty of the work depends mainly on regularity and the good choice of colour. Choose a fairly thick material in which the thread can be counted or used as a temporary canvas. It is commonly used for filling of a third design,

Satin stitch is used for solid embroidery. It is worked on a design with filling or padding. Satin stitch makes the embroidery stand out and gives it a richer effect.

Sewing machine : types - parts - maintenance

Objectives: At the end of this lesson you shall be able to

- **identify the parts of the machine and name their function**
- **explain the required maintenance work for the proper functioning of the machine.**

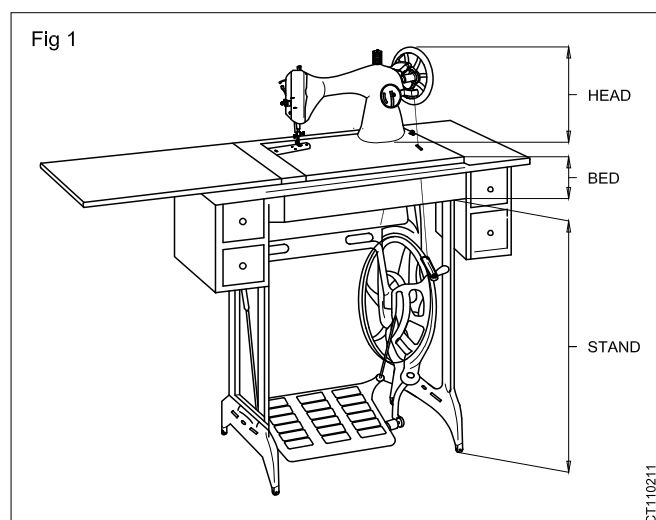
Types of sewing machines: Sewing machines are various models such as domestic model, tailor model, industrial model, portable model and cabinet model are available in the market. When you buy a sewing machine, select one that is made by a well-known manufacturer. They may be operated by hand, treadle or electric motor. Good work can be done in a hand machine but it is slower than a treadle, which leaves also both hands free to manipulate the fabric. An electric sewing machine is ideal, being less strenuous and quicker to use because the hands are free to manipulate the fabric. If you are interested in fancy sewing, you may select the new models with decorative stitching attachments. A beginner will find the foot or treadle machine easier to handle, since it is easier to control the speed.

The invention of the sewing machine was a great progress in dress making since sewing became faster, seams were more durable, stitches were more even. Main feature of sewing with machine is the use of top and lower thread which are inter-linked in stitching progress.

If you have a hand machine, you need practice to turn the wheel smoothly with your right hand and guide the fabric with the left hand.

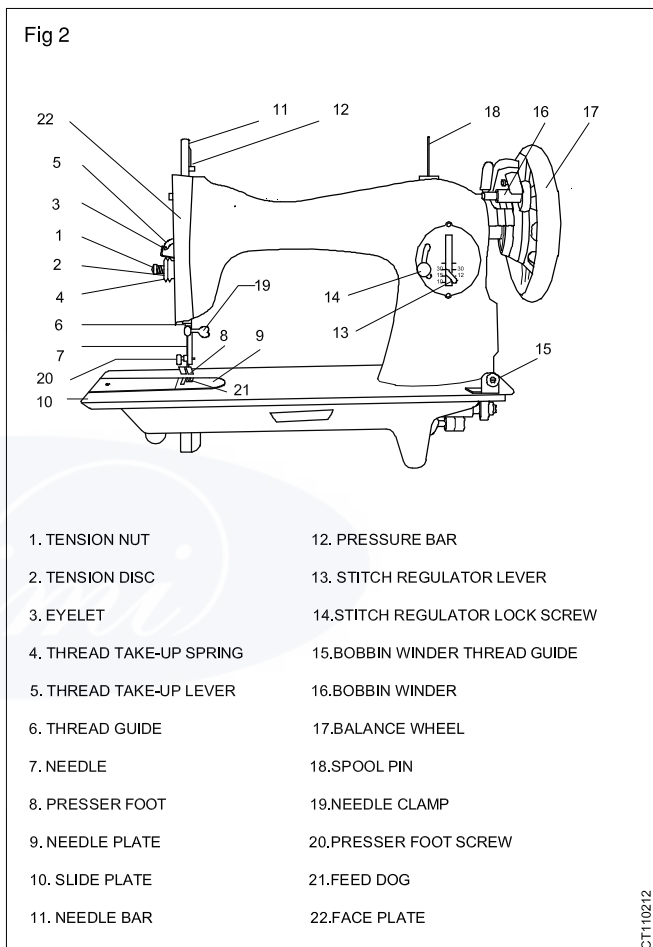
An electric sewing machine is operated by knee or foot control of an electric motor. A little practice is required to control the pressure needed to operate the machine at any desired speed with an even regular rhythm.

The treadle sewing machine and its parts: Most of the parts are common in all sewing machines. Each machine has a so called machine head and machine bed, while the stand and its part is a typical feature of the treadle sewing machine. (Fig 1)



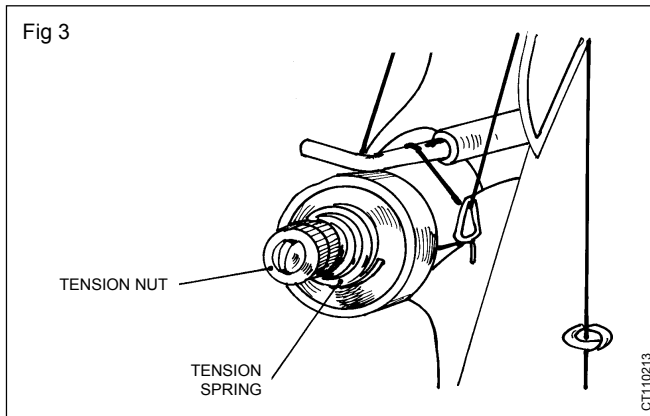
The parts of the head are as follows. (Fig 2)

Spool pin (No 18) holds the spool of thread.



Thread guide (No 6) holds the thread in position from the spool to the needle.

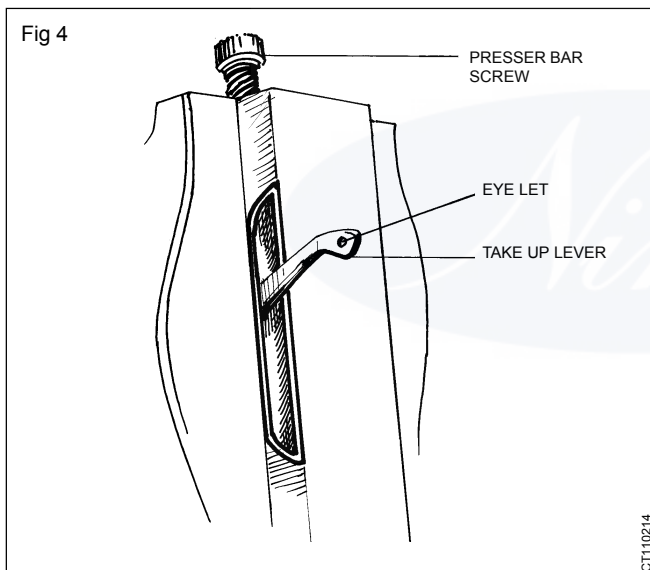
Tension disc is a simple mechanism, where two concave discs are put together with the converse sides facing each other. The thread passes between the two. The tension of the thread is adjusted by a spring and a nut, which increases or decreases the pressure on the disc, i.e. the thread. (Fig 3)



Take up lever is fitted to the body of the arm which receives its up and down motion from the front. At the outside end of the lever, there is a small hole through which the thread passes. There are two functions of this lever:

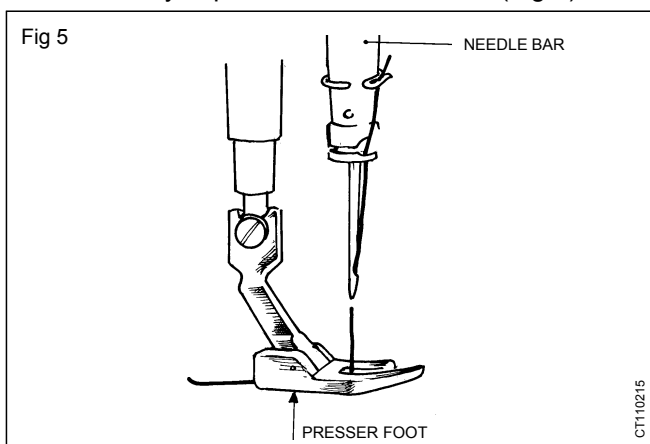
- to feed the thread to the needle
- to tighten the loop formed by the shuttle (Fig 4)

Face plate is a removable side cover which gives access to the oiling points on needle bar, pressure bar and thread take-up. (Fig 4)

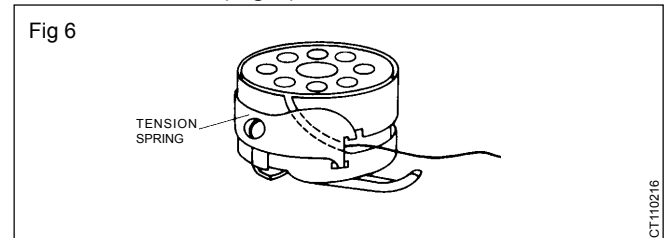


Needle bar is a steel rod, which holds the needle at one end with the help of the clamp. (Fig 5)

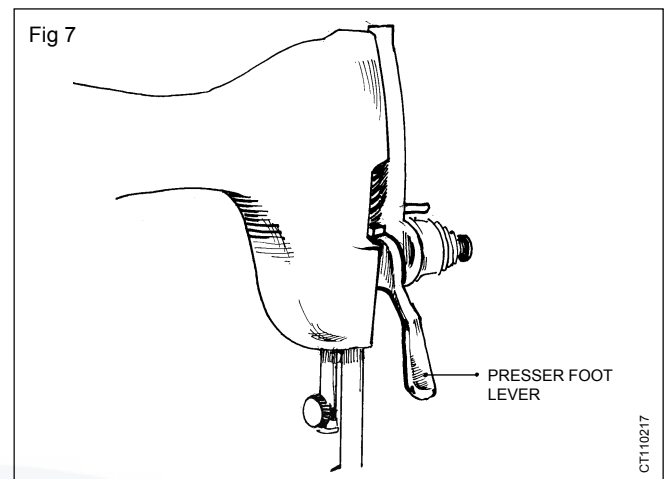
Presser foot is attached to the presser bar and it holds the cloth firmly in position, when lowered. (Fig 5)



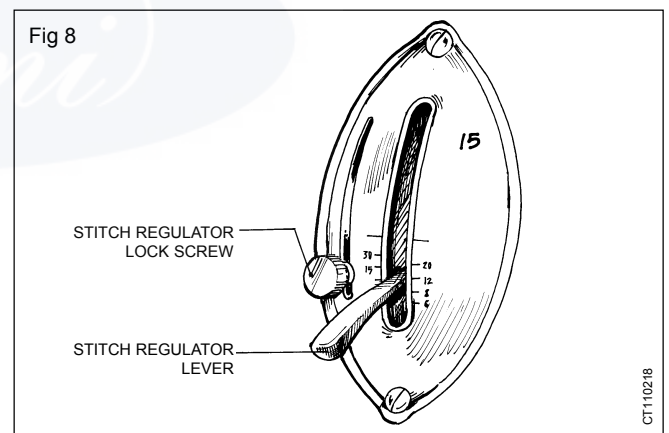
Bobbin case moves into position to catch the top thread and forms the stitch, as the needle is lowered into the bobbin chamber. (Fig 6)



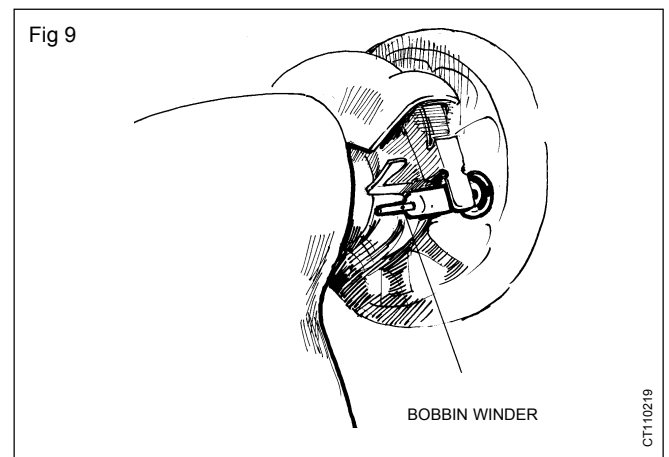
Presser foot lifter is a lever attached to the presser bar for raising and lowering the presser foot. (Fig 7)



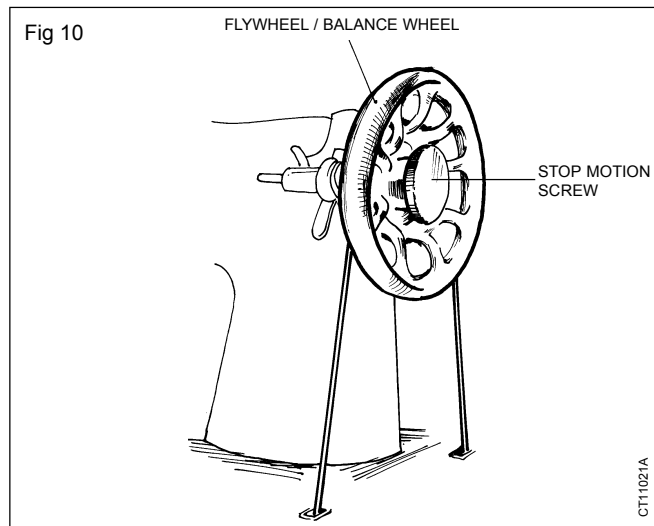
Stitch regulator controls the length of the stitch. Some regulators can be set to stitch in reverse. (Fig 8)



Bobbin winder facilitates the winding of thread on the bobbin. Some are made to stop automatically when the bobbin is full. (Fig 9)

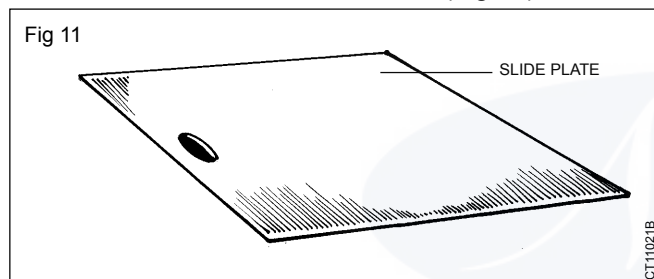


When the **flywheel** is made to rotate, it works the mechanism of the machine. (Fig 10)

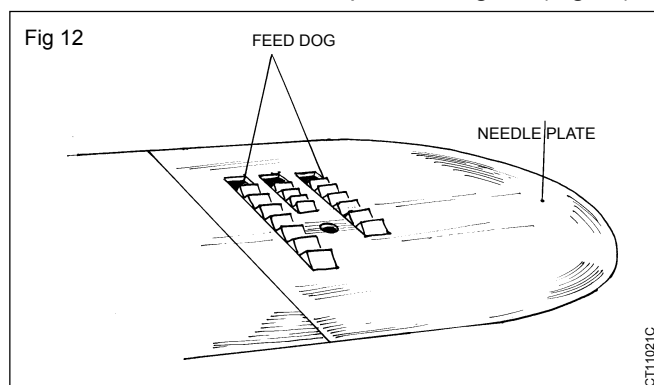


Stop motion screw is in the centre of the flywheel and it engages and disengages the stitching mechanism. (Fig 10)

Slide plate is a rectangular plate that can be slide open to remove or insert the bobbin case. (Fig 11)

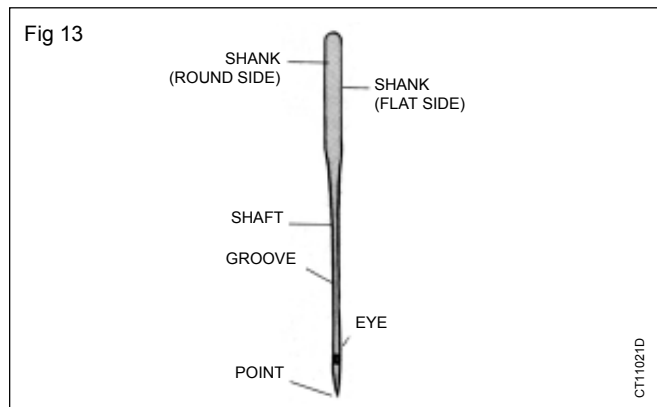


Needle plate or **throat plate** is a semi circular plate with a hole to allow the needle to pass through it. (Fig 12)

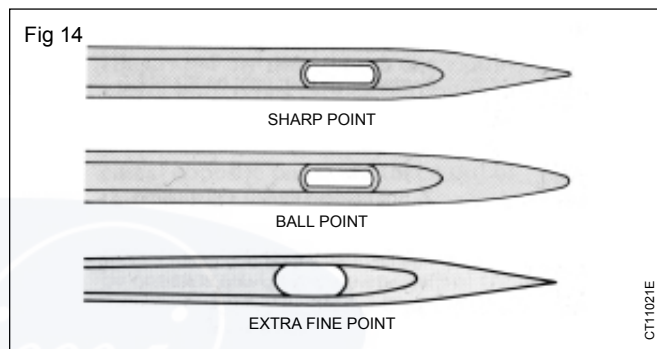


Feed dog consists of a set of teeth fitted below the needle plate. It helps to move the cloth forward while sewing. (Fig 12)

Sewing machine needles are of various types. Needles are selected according to their application. The sizes mainly depend on the structure of the fabric and the sewing threads used. The upper part of the needle is called the shank. The lower part is called the shaft. One side of the shank is flat and the other side is round. On the round side is the groove, which guides the thread while forming the stitch and protects it against excessive friction. (Fig 13)



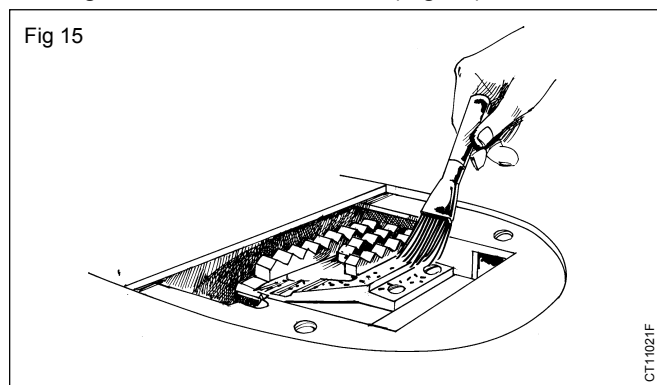
The eye of the needle is just above the sharp point. It is always extended in its length because the needle thread has to pass diagonally through the needle in the lengthwise direction. The needles have different points; each designed for a particular type of fabric. The most commonly used are **sharp points** for woven fabric, **extra fine points** for twill, denim and heavy leather fabric and **ball point** for knit and stretch fabrics. (Fig 14)



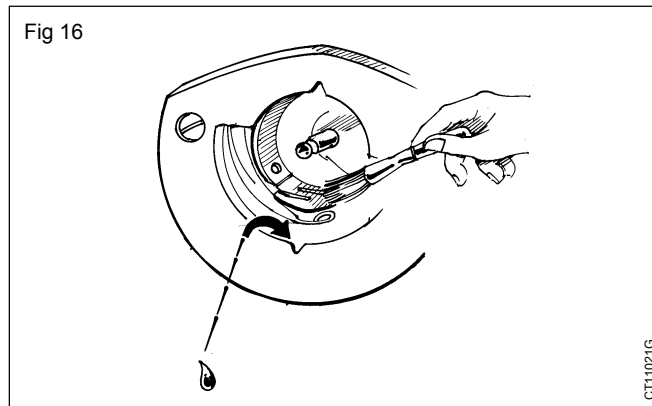
The needle sizes range from 9 to 19. When selecting the needle, remember that finer the weight of the fabric and thread, the finer the needle should be.

Care and maintenance of the machine: Regular cleaning, oiling and care of the machine ensures satisfactory sewing and a long life for the machine. When not in use, keep your machine covered to prevent dust from settling on it.

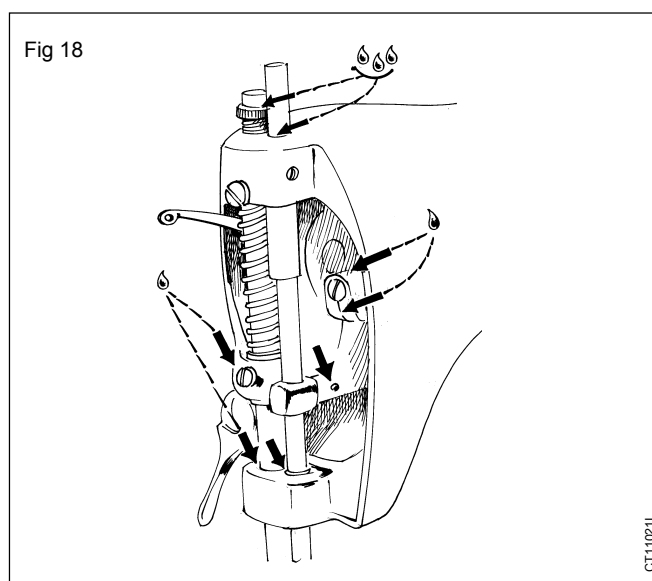
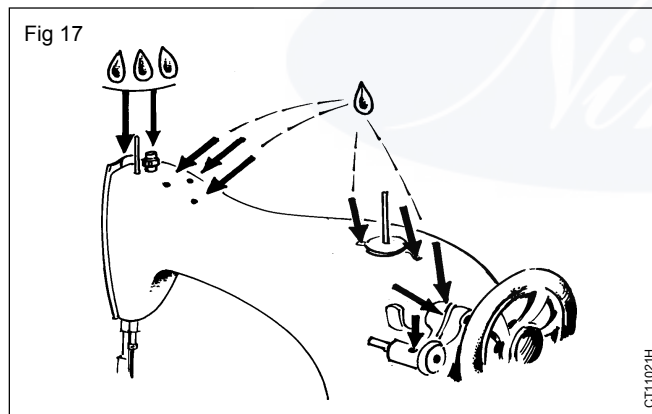
Cleaning: You should always remove lint deposits, dust and thread bits before oiling any part of the machine. Use a small dry brush or a toothbrush and a soft cloth to remove dust and lint. Use a pointed instrument like a needle to pick out bits of thread and lint that cannot be brushed out. To clean the feed dog remove the needle plate of the machine and brush off lint deposits and dirt sticking to the feed mechanism. (Fig 15)



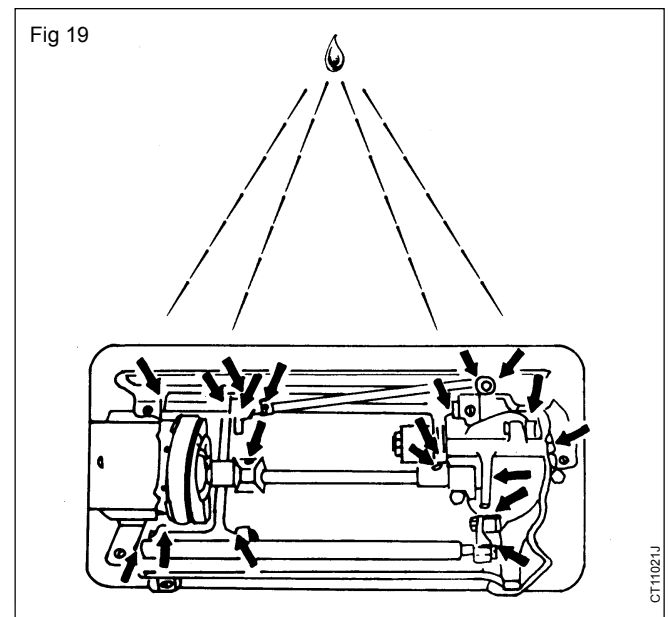
To clean the shuttle race, remove the two screws holding the shuttle race assembly to the machine, take out the shuttle race, wipe its groove free of dirt, fluff and broken bits of thread. Sometimes loose thread wind around the rivets of the treadle and make the machine hard to run. You should remove thread bits caught in the wheel and all lint and dust sticking to the treadle part. (Fig 16)



Oiling: It is necessary to oil and lubricate the machine periodically. If the machine is used everyday, oil it once a week. If you use it infrequently then once a month should be sufficient. To oil thoroughly, remove the upper thread, needle plate, slide plate, faceplate, bobbin case, needle and presser foot. Put special sewing machine oil in all oil holes and joints where one part rules against another. While oiling, turn the flywheel back and forth to help the oil flow to the moving parts. (Fig 17 & 18)

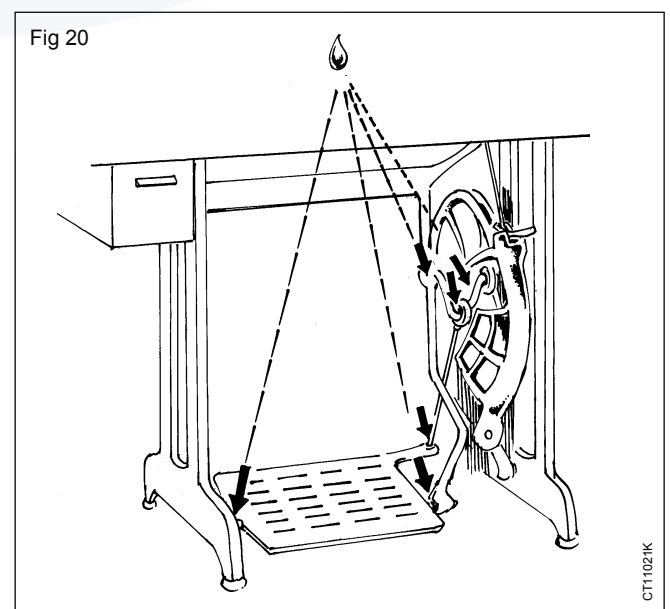


After oiling the points on the head of the machine, tilt the machine head back to oil the points on the bed of the machine. It is essential to oil the shuttle race. On a treadle machine, the belt will have to be released before tilting the machine head back. (Fig 19)



Do not forget to oil the machine stand. (Fig 20)

When the machine has been thoroughly oiled, wipe away excess oil and run it slowly for several minutes on a waste piece of material. Before you close the machine, place a scrap of material under the pressure foot and lower the needle. The fabric will absorb the excess oil that might drain down through the machine and will prevent formation of oil spots on your work, when the machine is used.



If there is excess oil in the machine, put a drop of kerosene or petrol in each oil hole and joints and run it rapidly for several minutes. Then wipe off the oil that oozes out with a soft cloth and re-oil the machine. It will need a second oiling within a few hours after this treatment.

Stitch formation/troubleshooting

Objective: At the end of this lesson you should be able to

- explain the stitch formation, balance and stitch length
- explain machine troubles occurring while stitching with machine and name its rectification
- select needle and thread according to the fabric.

Stitch formation: The needle thread loop, having been formed on the underside of the material by the needle, is interlocked with a second thread (underthread) by means of a hook.

The needle is inserted into the material. (Fig 1)

As the needle moves upwards from its lowest position, the needle thread forms a loop which is caught by the point of the hook. (Fig 2)

The hook enlarges the needle thread loop. (Fig 3)

The needle thread loop is guided around the bottom thread spool. (Fig 4)

Interlacing begins. (Fig 5)

The take-up lever tightens the stitch into the material. The material is fed forward. (Fig 6)

Stitch balance: Before regulating the tension, make sure that the threading of the machine - top and under threading - is correct. When there is perfect balance of tension between the upper and lower threads, the stitches lock or meet together in the middle of the thickness of the

cloth. The stitches will look alike on either side of the work, both as to shape and tightness.

When the upper tension is too tight, the spool thread lies straight on top of the fabric and the under thread appears like loops on the upper side of the cloth.

When the upper tension is too loose, the under thread lies straight on the underside of the fabric and the top thread appears like loops on the underside.

An easy method of recognising tension is to stitch diagonally across a square of the fabric folded on true bias and then to stretch the cloth firmly between your fingers until one or both threads break.

The broken thread always is the one with tighter tension. If the tensions are balanced, both threads break together and require more force to break. If it is found that the tension needs adjustment, it is better to try to adjust the upper tension. To increase or decrease upper tension, turn the screw on the tension regulator with the pressure foot down. In turning the screw remember that right is tight and left is loose. Usually there will be numbers

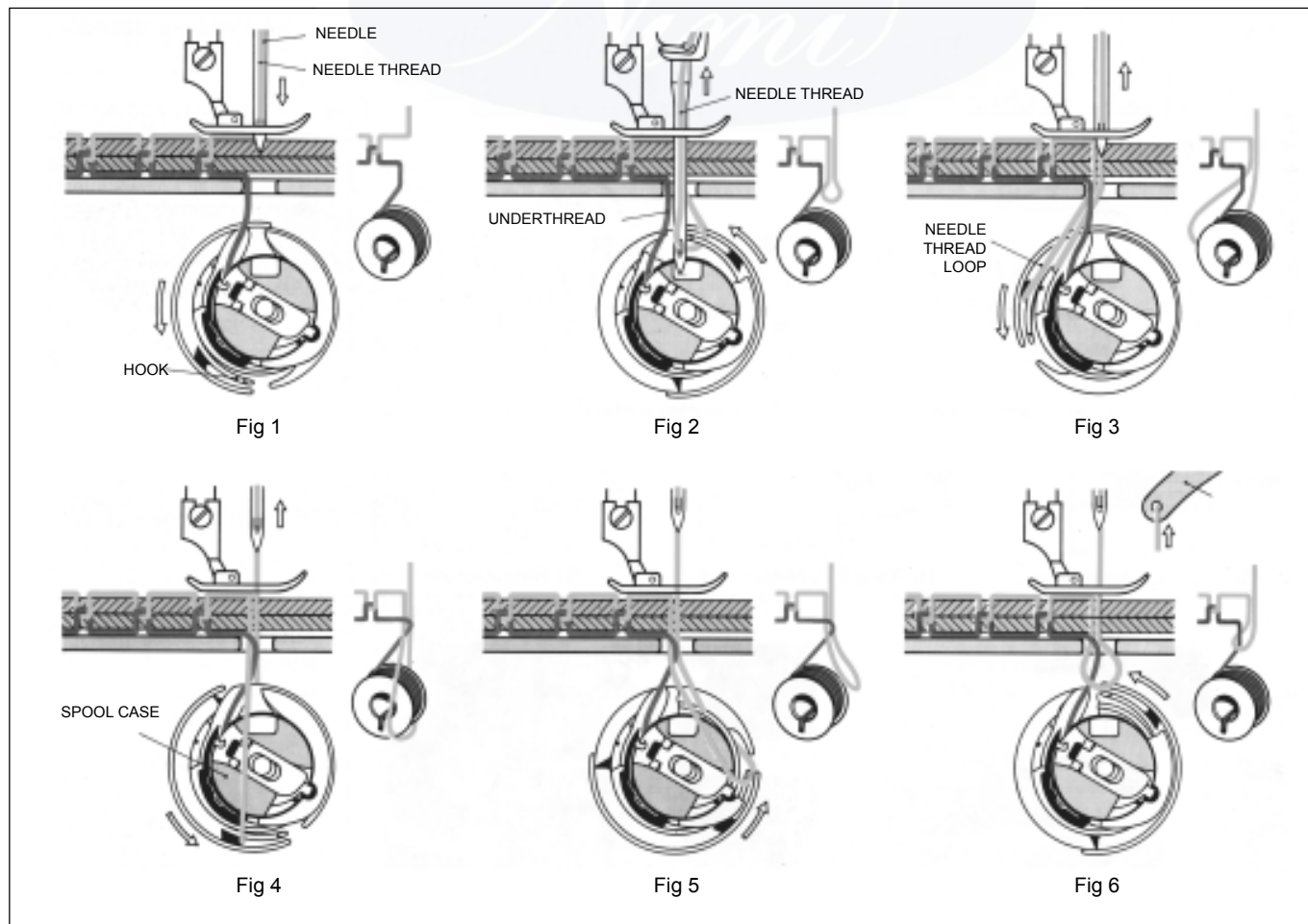
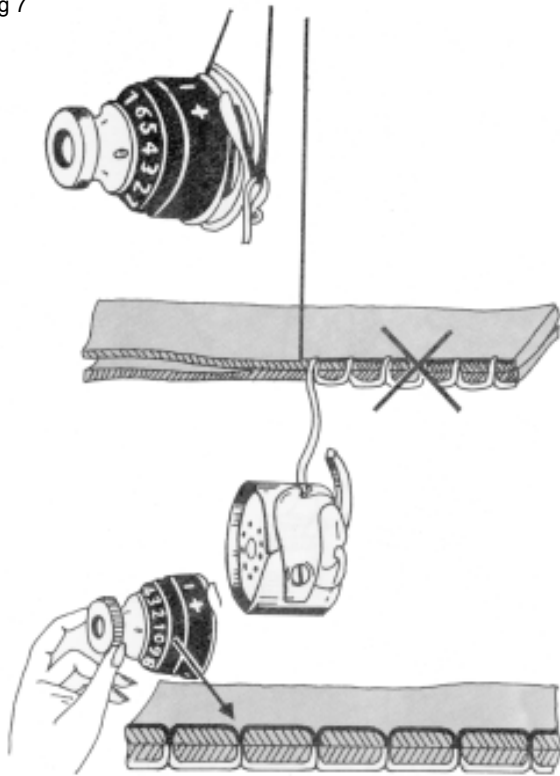
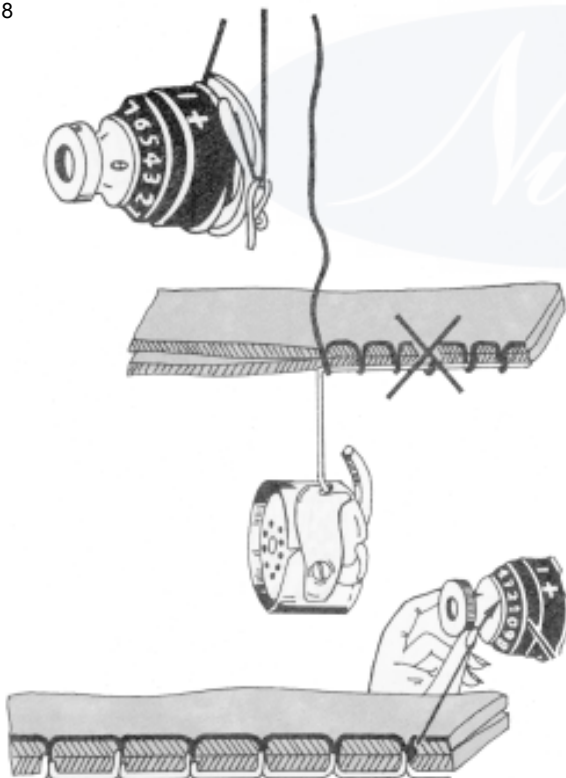


Fig 7



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Fig 8

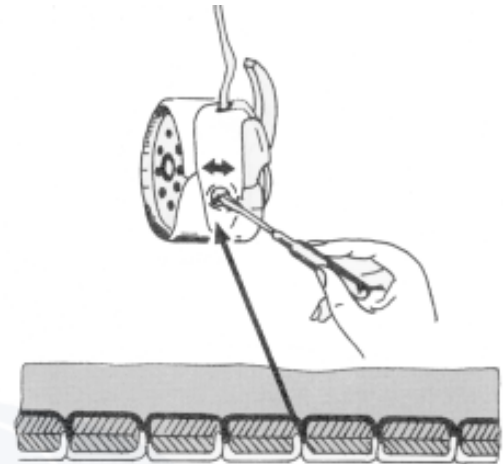


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written on the tension dial. To increase tension you should turn towards the higher numbers (Fig 7) and to decrease, towards the lower numbers (Fig 8). Do not move more than two numbers or a slight turn at a time. Then recheck the tension by stitching on a sample of fabric.

Avoid changing the lower tension unless you are sure that the tension cannot be corrected completely by adjusting the top one alone. The lower tension is adjusted by turning the small screw on the bobbin case using a screwdriver. Usually the screw is turned to the right to tighten and onto the left to loosen. Make a very slight turn only each time. (Fig 9)

Fig 9



Adjusting the stitch length: The chart on this page gives the correct stitch length for various fabrics. In general, fine fabrics require a short stitch (16 to 20 stitches for 2.5 cm), medium weight fabrics, a medium stitch (12 for 2.5 cm) and heavy fabrics a long stitch (8 to 10 for 2.5 cm). For machine basting and machine gathering a still longer stitch (6 to 8 for 2.5 cm) is required.

Selection of thread and needle: A perfect stitch can be obtained only when the thread is selected to suit the material to be stitched and the needle is of correct size. For stitching on thin fabrics use fine thread and fine needle. For heavy fabrics, needle and thread size should be larger. The table will guide for the selection of appropriate needle and thread size. The last column in the table gives the approximate number of machine stitches per 2.5 cm.

Sl. No.	Weight of the Fabric	Type of Cloth	Thread size	Needle size	Stitches per 2.5 cm
1	Light	Muslin, Cambric and other thin fabrics	50	9 - 11	14 - 20
2	Medium poplins, etc.	Shirting, Sheeting,	40 - 50	14	12
3	Medium heavy brocade, corduroy	Light woollens,	40	16	10 - 12
4	Heavy upholstery fabrics	Woollen goods,	20	18	8 - 10

Troubleshooting while stitching with machine:
Common troubles and their possible causes are listed below. You can take care of most of these yourself and

in case of major troubles, the help of a qualified mechanic should be obtained.

Fault	Causes	Remedies
Tangled thread at the beginning	Bobbin too full. Bobbin set in wrongly. Under thread not drawn up. Both threads not pulled back under the presser foot, machine not properly oiled and cleaned.	Fill the bobbin just below the outer rim. Set the bobbin in correct position. Under thread should be drawn out. Take out both threads through the hole in the presser foot and leave it under the presser foot. Oil and clean periodically.
Skipped stitches	Needle bent. Needle set to wrong side. Needle set with long groove turned inserted too high or too low in the needle bar. Needle too small. Needle threaded from the wrong side. Excess oil on shuttle.	Check and fix the needle in a correct position. Check whether it is threaded properly. Stitch with a scrap of material to remove excess oil.
Upper thread breaking	Poor thread. Machine incorrectly threaded. Needle set on wrong side. Needle too fine. for thread. Needle threaded from the wrong side. Upper tension too tight. Sharp edge on needle plate hole or shuttle thread. Take-up spring broken.	Select an appropriate (correct) thread and needle. Thread the needle properly. Check the upper tension and the hole in the needle plate (which should be smooth) and also for take up spring.
Lower thread breaking	Poor thread. Lower tension too tight. Bobbin case threaded wrongly. Sharp edge on the needle plate. Bobbin would too full or uneven. Dirt in the bobbin case.	Clean the bobbin case and select the correct thread and wind it uniformly. Check the lower tension and check for a smooth hole in the needle plate.
Fabric puckering	One or both tensions too tight. Stitches too long for material being sewn. Blunt needle.	Select the correct needle. Check for both tensions. Fix the stitch length accurate to the fabric.
Needle breaking	Incorrect size of needle for thread and fabric. Needle bent. Pulling of material while stitching. Presser foot incorrectly set. Crossing a thick seam using a too small needle.	Set the presser foot properly. Select appropriate needle and thread to match the fabric. Fabric should not be pulled out while stitching.
Staggered stitches	Too little pressure on presser foot. Take-up spring weak, broken or missing.	Check the pressure on the presser foot and also for the take up spring.
Uneven stitch length	Incorrect presser foot pressure. Feed dog dirty or worn out.	Check the pressure of the presser foot. Clean and check the feed dog.

Material not feeding correctly	Stitch regulator set too close to 'O' point. Dirt under needle plate near feed dog. Incorrect presser foot pressure. Bent pressure foot.	Stitch regulator should be set to a correct number to match the fabric. Clean the feed dog and the lower side of the needle plate. Check the presser foot and its pressure.
Machine runs heavily	Lack of oil. Thread wound around the wheel or treadle bearings. Belt too tight. Bobbin winder pressed down. Thread jammed in shuttle race. Gummed oil or dirt on bearings.	Oil the machine periodically, clean the wheel and treadle bearing. Check the belt tension release the bobbin winder. Clean the shuttle race. Use only sewing machine oil.

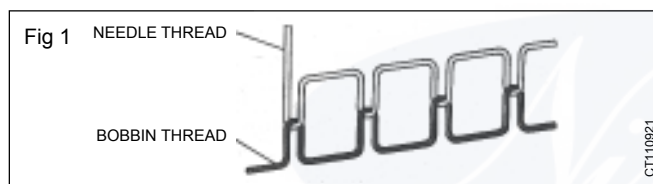
Motorised sewing machines

Objectives: At the end of this lesson you should be able to

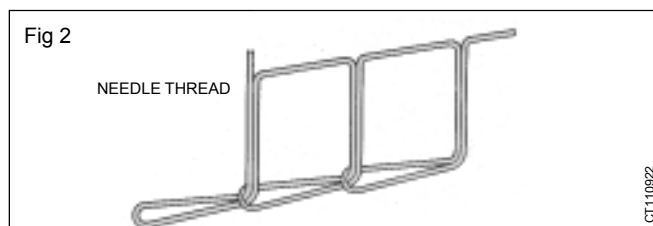
- state two types of machine stitch formation
- identify the parts of motorised sewing machine
- state the maintenance aspects of motorised sewing machines.

Motorised sewing machines can be classified according to the stitch formation they produce.

Lock stitch machine is the common machine used in domestic tailoring and industrial production. The stitch is formed by interlocking two threads. This machine is distinguished by the winding device provided for the bottom thread (Bobbin thread). (Fig 1)



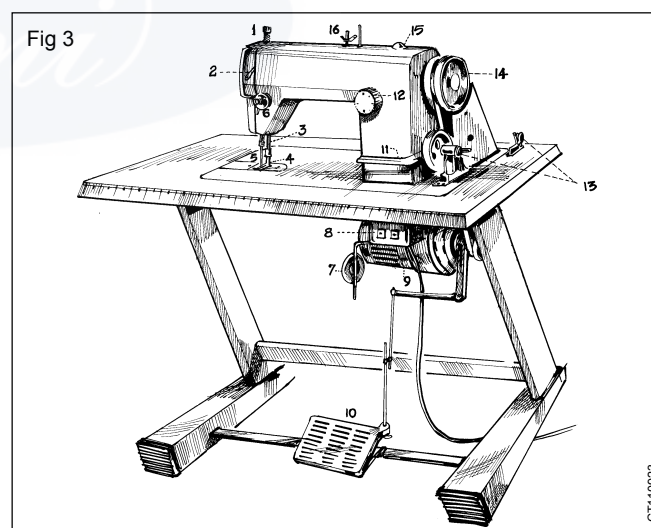
Chain stitch machine uses only needle thread, forming a chain of loops. It is distinguished by the thread tension device placed on the arm and the absence of a spool winder. (Fig 2)



Parts of the motorised lock stitch sewing machine

- Presser foot lever (1)
- Thread take up lever (2)
- Needle bar (3)
- Presser foot (4)
- Needle (5)
- Presser spring regulator set (6)
- Knee lifter (presser foot lifter by knee) (7)
- Power switch (8)

- Motor (0.25HP) (9)
- Accelerator (10)
- Back tack lever (11)
- Stitch regulator (12)
- Thread winder (Bobbin) (13)
- Balancing wheel (14)
- Sight glass (15)
- Thread tension (16) (Fig 3)



Maintenance: After each use, the lint and the dust must be removed. Cover the machine when not in use. Periodic oiling and greasing should be done. Take particular care of the electric power cord and plug and have them repaired at first sign of problem.

Stitch lines in different shapes

Objectives: At the end of this lesson you should be able to

- explain the importance of stitching by machine
 - state about the different shapes of stitching lines in sewing machine.
-

Stitching by machine

Sewing by machine is an art. It is an ultimate skill to be known to every dressmaker trainee primarily. Using a sewing machine for stitching involves some important techniques to be followed for perfection and accuracy in stitching. Address maker attains perfection in stitching with continuous practice in machine stitching only.

The practice of machine stitching is done step by step. It ensures for the perfect use of the sewing machine by the dress maker. First it involves the pedalling process for easy running of the machine.

The machine is run by pedalling with out needle and thread to acquire perfection. Later the machine is plugged and switched on to practice handling the machine with power. It requires more care as the functioning of the machine is more speedy with the motorised application.

Secondly, various shapes like vertical and horizontal lines, concentric squares circles etc are drawn on A4 size papers 1 in each.

Machine is set for stitching without threading. Every design drawn A4 paper is fed in machine to sew over it, in the order of various shapes.

The same shapes are drawn on fabric pieces. Finally, threads the sewing machine and practice stitching the fabrics one by one following the drawn shapes. This practice allows the trainee to handle the machine more efficiently and to control the machine speed as and when required. It also helps to stitch perfectly the every component of a garment as it expertises him o stitch different shapes like lines, squares, circles, curves, arcs etc.

Needle guard policy

Needle guard policy is also known as needle control system. Needle control system is a part of product safety compliance. As per the survey reports United States and European countries have strict regulations for children's clothing. These regulations require the retailers, among other things, to ensure that broken parts of needles or any other metal object do not find their way into the garment or its packaging, can cause injury to the customers. Therefore, factories are required to put in place reliable procedures to prevent needles, pins or other sharp metal objects from entering the final products. Similar precautions are also required for under garments.

Factories need to ensure that each and every needle in the factory is accounted for. There should be no needles in the factory anywhere except the ones attached to machine and those in the stock. Broken needles parts should be collected and kept safely for record.

Garment manufacturers should adopt a policy and a set of operating procedures to prevent and detect a metal contamination in the garment. A factory can take the following measures to establish an effective needle control system.

The needle control can be done by the following steps

- 1 The factory should keep the entire stock of new needles under lock and key and away from sewing area.
- 2 They can maintain the broken needles record.
- 3 All the parts of broken needles should be collected immediately and disposed properly.
- 4 The factory should not allow the operators to keep spares needles.

Special Attachments

Objectives: At the end of this lesson you shall be able to

- **explain the features of different special attachments.**

Special Attachments

Special attachments are special accessories attached to the sewing machine to enhance the ability of the machine to perform special operations. These special attachments also reduce the amount of time spent on special operations and helps to maintain consistent standard of quality.

Wide range of special attachments are available to perform specific operations on a wide range of machines. They are all classified into three different types as follows

1 Foot attachments: The foot attachments are designed to perform the basic function of the foot and a special operation. These attachments can either stitch straight stitches or both zigzag and straight stitches, which depends upon the needle hole. If it is small and round, only, used for straight stitching, if the hole is wide, it can be used for both straight and zigzag stitching.

2 Binders and folders: This kind of attachments are used for joining / binding together two or more fabric layers and or folding the fabric edges for finishing .

This attachment is used either with compensating foot and / or special feed dog etc to do the special operation. It is widely used in two or three needle machine.

3 Guides and Gauges: Guides and gauges attachment helps to direct / guide the fabric or tape towards the needle for stitching with the set measurement. This attachments are either fixed on the bed part or pressure foot bar of the machine.

