WHITE SEWING MACHINE

Record in space provided below the Serial No. and Model No. of this appliance.
The Serial No. is located Rear of arm.
The Model No. is located Rear of arm.
Serial No.

Model No. 310

Retain these numbers for future reference.
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<table>
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<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Always at its highest position when beginning or ending sewing. For regulating the pressure on the fabric. For leading the thread to the tension dial for sewing. For selecting the stitch pattern and setting the zigzag width, as well as for easy four-step buttonholes. For winding thread on a bobbin.</td>
<td></td>
</tr>
<tr>
<td>For selecting the stitch length between 0 and 1/6” per stitch. Push the button for easy backtacking to lock the thread ends. With guide lines for accurate sewing. For holding the fabric when sewing. Diamond point to feed fabric accurately. For regulating the feed dog height for various types of sewing.</td>
<td></td>
</tr>
<tr>
<td>Access to the bobbin, the bobbin case and the feed dog height button. For clamping the presser foot in place on the presser bar. For holding the needle in place in the slot of the needle bar. For regulating the amount of tension on the upper thread. For automatic precise flow of the upper thread. Hinge type. Opened for replacement of the light bulb and for oiling.</td>
<td></td>
</tr>
<tr>
<td>For providing the proper tension on the thread when bobbin winding. For raising or lowering the presser bar and the presser foot. For changing to the flat sewing surface. For turning on or off the light. For stopping the movement of the needle bar in order to wind a bobbin.</td>
<td></td>
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</tbody>
</table>
ACCESSORIES

Your new White sewing machine comes equipped with the following set of accessories to make your sewing easier.

Three Metal Bobbins

These spools are made of metal and hold about 80 yards of thread.

Needles

All purpose needles sizes 11, 14 and 16 are included. Twin needle is also provided.

Two Felt Washers

Place the felt washers under the spools for best stitching results.

Quilting Guide

Helps make parallel rows of stitching.

Cloth Guide and Screw

Aids in sewing straight seams.

Buttonhole Foot

Use for buttonhoiling.

Button Sewing Foot

Hold button in place for stitching.

Cording and Zipper Foot

For stitching very close to the edge of a cord or zipper.

Screw Drivers

Small one for use on bobbin tension. Large one for use on thumb screw, needle clamp screw, etc.

Tubed Oiler

For use in oiling the machine. See page 33.

Straight Stitch Foot and Plate

For straight sewing on sheer and very light weight materials where extra support is needed.
ELECTRICAL CONNECTIONS

Insert the plug with the indentations on the underside into the socket on the right side of the machine. The plug will only go in one way. Place the foot control in such a position that your foot rests comfortably on it. Insert the plug into a wall outlet, 110–120V.

When not in use, keep the plug disconnected from machine.

ATTACHING EXTENSION PLATE

To change to flat sewing surface, place extension plate as follows.

1. Turn down the extension plate support legs (A) with the left hand.
2. Pull the lock lever (B) and turn it up to the left.
3. Tilt the extension plate down to enter the pin (C) in the corresponding hole (D) at the rear side free arm.
4. Turn the lever (B) down to the right to set the pin into front hole (E).

Note: In case of sewing tubular areas, detach the extension plate for free arm sewing.
CHOOSING THE RIGHT NEEDLE

TYPES OF NEEDLES

The correct selection of needle to suit the thread and fabric being sewn gives the best stitching results. Fine fabric should be sewn with fine needles, heavier fabrics with heavier needles. For best results, sewing machine needles should be replaced when they become even slightly dull or bent or at the completion of every other garment.

A regular needle is suggested for use with woven fabrics. Needles style 15 x 1, (European equivalent System 705) are used on the majority of household sewing machine. They range in sizes from 8 to 20 with the lower number indicating the finer needle. The most commonly used sizes are 11 and 14.

An all purpose needle is designed to handle knits as well as woven fabrics. It eliminates skipped stitches and the slight ball will not damage delicate fabrics. This is the needle provided with your sewing machine and will be used for most of your sewing. A larger ball point may still be necessary for certain knits, such as bathing suit fabric or power net.

A ball point needle is recommended for use with tricots, jerseys, lingerie and power nets. Unlike sharp, pointed needles, which pierce fibers of knit fabrics, destroying elasticity, the ball point slips between fibers, preventing damage to fabric and skipped stitches. These are available in fine, medium, and heavy ball points.

A wedge point needle is recommended for use with leather and leather-look vinyls. A wedge cutting point pierces leather more easily than ordinary sewing machine needles, resulting in more satisfactory stitching.

[Diagram of needle parts and types]
**NEEDLE, THREAD, FABRIC & STITCHING GUIDE**

The correct selection of needle and thread to suit the fabric will result in more satisfactory stitching. Fine fabrics should be stitched with fine needles, fine thread and short stitches. For the best results on heavier fabrics, use coarser needles, heavier threads and longer stitches. Replace the machine needle when it becomes even slightly dull or bent.

<table>
<thead>
<tr>
<th>Fabric</th>
<th>Needle No.</th>
<th>Machine Stitches Per Inch</th>
<th>Mercerized Thread</th>
<th>Synthetic Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely heavy tarpaulin, sacking, canvas, duck, etc.</td>
<td>18</td>
<td>6 to 8</td>
<td>Heavy Duty</td>
<td></td>
</tr>
<tr>
<td>Heavy upholstery fabric, ticking, denim, leatherette.</td>
<td>18</td>
<td>8 to 10</td>
<td>Heavy Duty</td>
<td></td>
</tr>
<tr>
<td>Medium heavy drapery fabric, velveteen, suiting, felt, terry cloth, etc.</td>
<td>16</td>
<td>10 to 12</td>
<td>Heavy Duty</td>
<td></td>
</tr>
<tr>
<td>Medium broadcloth, percale, gingham, linen, chintz, taffeta, sheer wool, shantung, etc.</td>
<td>14</td>
<td>12 to 14</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Sheer voile, lawn, dimity, crepe, handkerchief linen, plastic film, etc.</td>
<td>11</td>
<td>14 to 16 (plastic film) 8 to 10</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Very sheer chiffon, batiste, lace, organdy, nylon net, marquisette, etc.</td>
<td>9</td>
<td>16 to 20</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>
CHANGING THE NEEDLE

Always change the needle after every other garment, especially when sewing on polyester and nylon fabrics which dull needles much faster. When needles are dull or bent, they damage both your fabric and the machine. A general rule when placing sewing machine needles is that the flat side of the needle is placed to the back of the machine, when the bobbin is put in from the front. If the needle is inserted incorrectly, the stitches will not form.

To change the needle:
1. Raise the needle bar to its highest position by turning the hand wheel toward you.
2. Loosen needle clamp to remove the needle.
3. Place needle (flat side to the back and long groove to the front) in the needle clamp and push it upward as far as it will go, tighten needle clamp.
4. After changing the needle, make one complete turn of the hand wheel by hand to be sure the needle is clearing the needle plate.

CHANGING NEEDLE PLATE

Although an all-purpose utility needle plate is fixed on your machine, for straight sewing on fine fabric or soft or very stretchy fabric, you may want to use the straight stitch needle plate together with the straight stitch foot, both of which are included in your accessory box.

To change the needle plate, remove the two screws holding the plate in place. Lift the needle plate and replace.
The needle plate is removed for cleaning the lint which may pile up between needle plate and feed dogs.
CHANGING THE FOOT

For most ordinary sewing the original all-purpose foot can be used. However, it is recommended to use the following special feet in your accessory box whenever you want a better stitching result.

Straight Stitch Foot
This has only a narrow hole to accommodate only straight stitching. It may be used on sheer or soft fabrics for more control.

Buttonhole Foot
This foot has a groove underneath, to allow the narrow satin stitch or buttonhole to form evenly. However, if skip stitches occur on sheer fabrics with this foot, it may be necessary to use thin paper underneath.

Cording & Zipper Foot, and Button Foot
Use for sewing very close to the edge of a cord or zipper, and sewing on buttons respectively.

Use the large screwdriver to loosen thumb screw. Turn the screw backward until the foot becomes loose. Then, lift up on presser foot lever until it is in its highest position in order to remove the foot. Replace with desired foot and tighten thumb screw securely.
WINDING THE BOBBIN

Disengage the hand wheel (1) from the stitching mechanism by turning the coupling wheel (2) towards you or counterclockwise.

Place a spool of thread on one of the spool pins and lead the thread through the rear Top Thread Guide (3) after winding it around the Bobbin Widner Tension Disc. Slip the end of the thread through a hole in the rim of the bobbin and place the bobbin on the spindle of the bobbin winder (4), fitting the notch on the bobbin over the small spring on the spindle.

Push the bobbin winder to the right, and hold the thread end loosely, then run the machine slowly. The bobbin will stop turning when the bobbin is full. Cut the thread and push the bobbin winder to the left. Remove the bobbin from the bobbin winder.

Turn the coupling wheel away from you until the sewing mechanism is again engaged so that the needle moves when you turn the hand wheel.

ADJUSTING THE BOBBIN WINDER

It may be necessary to adjust the rear top thread guide if the bobbin winds unevenly.

If the bobbin winds unevenly as shown in Fig. (A), loosen the set screw of the rear top thread guide and move the thread guide up slightly. If the bobbin winds as shown in Fig. (B), move the thread guide down slightly.
UPPER THREADING

1. Turn the hand wheel toward you to raise the take-up lever to its highest position.
2. Place a spool of thread on the spool pin.
3. Lead the thread through the top thread guides.
4. Down and between the tension discs, from right to left.
5. Draw the thread up through the check spring and with a slight tug into the hook.
6. Up and through the eye of take-up lever from right to left.
7. Lead thread down through the thread guide at the bottom of the threading slot, then, through the thread guide on needle clamp.
8. Thread the needle FROM FRONT TO BACK, drawing it through about 3 or 4 inches. Hold the end of the upper thread loosely and turn the hand wheel toward you until the needle goes all the way down and comes back up. A thread loop will form over the upper thread which then can be pulled out straight. Place both thread ends under presser foot and draw toward the back of the machine, leaving both threads three or four inches long.

In case of twin needle sewing, place two spools of thread, matching or contrasting in color, one on each spool pin. Lead both threads through top thread guides, bring threads down and pass one thread between the back discs and the other between the front discs, then treat both thread as one until threading each thread through each needle eye of twin needle.
THREADING BOBBIN CASE

1. Hold bobbin case between thumb and forefinger of left hand, so that the slot in the edge of the bobbin case is on top. Take the bobbin between thumb and forefinger of right hand so that the thread on top leads from left to right.

2. Insert bobbin into bobbin case, pull the thread into the slot of the bobbin case and draw it under tension spring and into the fork-shaped opening of the spring.

PLACING BOBBIN CASE IN SHUTTLE

Raise needle bar to its highest position, and swing open the access cover down. Hold the bobbin case latch (D) between the thumb and forefinger of the left hand, with at least three inches of thread running from the top of the bobbin case to the right. Insert and center the bobbin case on the stud of the shuttle body (C). Be sure the bobbin case finger (E), is opposite the shuttle race notch (A). Press the bobbin case (B) into the shuttle as far as possible until the latch catches on the center post of the shuttle. Then release the bobbin case latch (D). Press the bobbin case again after the latch has been released to make sure the bobbin case is locked securely in place. Close the access cover.
SECTION III

GETTING TO KNOW YOUR MACHINE

SELECTION OF THE STITCH:
STITCH LENGTH DIAL

This dial controls the forward feeding of the fabric. At 0, the fabric is not fed at all. As the numbers increase, so does the length of the stitch. Turn the dial so that the desired number is below the white guide mark.

Note: Always set at 5 or the * mark when the pattern selector is set at one of the * marks.

REVERSE BUTTON

If you wish to sew backwards to fasten the threads at the beginning or end of a seam, when doing ordinary sewing, press in the Reverse Button as far as it will go so that your machine sews in reverse at approximately the same stitch length as the forward stitch length. The machine will sew in reverse as long as the button is held in.

Table showing the numbers on the stitch length dial and the actual number of stitches per inch or length per stitch.

<table>
<thead>
<tr>
<th>Numeral on the dial</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of stitches per inch (approx.)</td>
<td>No Feeding</td>
<td>30</td>
<td>25</td>
<td>15</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>
STITCH PATTERN/BUTTONHOLE DIAL

This dial is used for selecting the stitch pattern, for adjusting the zigzag width and for sewing the easy, built-in, four-step buttonhole.

- **Stitch Pattern Selector:**
  Including straight and zigzag stitches, 6 kinds of the stitch patterns, as shown on the dial, can be selected. Turn this dial in any direction and the pattern of the stitch chosen is indicated by the white guide mark above the dial.

<table>
<thead>
<tr>
<th>Stitch Pattern Selector</th>
<th>Stitch Pattern Selector</th>
</tr>
</thead>
<tbody>
<tr>
<td>--- Straight Stitch</td>
<td>--- Zigzag</td>
</tr>
<tr>
<td>--- Blind Stitch</td>
<td>--- Multiple Stitch Zigzag</td>
</tr>
<tr>
<td>--- Stitch-and-Overcast</td>
<td>--- Straight Stretch Stitch</td>
</tr>
</tbody>
</table>

*Note: When sewing with the dial at the * mark, the stitch length dial should be at the * mark.*

- **Zigzag Width Control:**
  At the straight stitch symbol ( ), the needle does not swing and, therefore, a straight stitch seam is sewn. With the dial at the narrow zigzag symbol ( ), the needle takes a narrow swing resulting in a narrow column of stitching. At the widest zigzag symbol ( ), the needle takes a large swing resulting in a wide column of stitches. The dial may be set at any position desired between the straight stitch and the widest zigzag positions for a variety of widths.

*Note: When sewing with twin needle, the dial should be set in the white zone.*

- **Buttonhole Control:**
  When set at the first buttonhole symbol (step 1), your machine sews, forward, the left side of the buttonhole. With the dial at the next buttonhole symbol (2–4), your machine feeds the fabric for bartacking the buttonhole ends and, set at the third buttonhole symbol (3), it feeds the fabric in reverse to sew the right side of the buttonhole.

RELATING STITCH LENGTH TO STITCH WIDTH

When the stitch width dial is set at one particular width (such as the widest zigzag) the stitch length dial will then determine how closely the stitches are sewn together. At length 0, the fabric does not move so that the stitches are formed one on top of the other, as is used when sewing on buttons. At the symbol 0 or near 0, the fabric is fed through slowly resulting in a dense column of stitches known as a satin stitch. At length 5, a very long, open zigzag is sewn.
CONTROLS:
ADJUSTING THE THREAD TENSIONS

Always adjust the upper thread tension with the presser foot lowered, as the tension is released when it is raised. To increase the tension on the upper thread, turn the tension dial to the right. To decrease the tension, turn it to the left. Before adjusting the tension, make sure that the machine is threaded correctly. Normal upper tension is usually between 4—6.

The bobbin thread tension seldom requires adjustment. However, when the bobbin thread tension has to be changed, turn the small screw on the side of the bobbin case clockwise to tighten and counterclockwise to loosen.

When both tensions are properly balanced, a perfect stitch will be formed with both threads interlocking in the fabric (A).

When the upper tension is too tight, the bobbin thread is pulled up over the upper thread which lays flat on the fabric (B).

When the upper tension is too loose, the upper thread forms loops over the bobbin thread lying flat on the fabric (C).

When the upper and bobbin thread tensions are balanced but the fabric is puckered in sheer fabrics, both tensions are too tight. Slightly loosen both tensions evenly.

It is recommended to adjust the tension balance with a medium stitch length. In the case of satin stitching for buttonholes and embroidery slightly loosen the upper thread tension.
ADJUSTING THE PRESSURE ON THE FABRIC AND THE FEED DOG HEIGHT

- General Sewing
For normal sewing, except when sewing on very heavy and bulky fabrics, the center pin (A) of the pressure control should be at its lowest position, with the feed dog height at the UP position, obtained by pressing the \( \frac{1}{2} \) part of the feed dog height button to the right of the rotary hook. For special fabrics, as mentioned above, reduce the pressure by half. To do so, press the outer ring (B) of the pressure control, then press the centre pin (A) down again, to the half-way position.

<table>
<thead>
<tr>
<th>Fabric</th>
<th>Pressure on fabric</th>
<th>Feed dog height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary fabric with little elasticity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and bulky fabrics</td>
<td>Half</td>
<td></td>
</tr>
<tr>
<td>Medium and light weight fabrics</td>
<td>Full</td>
<td>(Up)</td>
</tr>
<tr>
<td>Very stretchy fabrics and knits:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and bulky fabrics</td>
<td>Half</td>
<td></td>
</tr>
<tr>
<td>Medium, light weight and sheer fabrics.</td>
<td>Full</td>
<td>(Up)</td>
</tr>
</tbody>
</table>

- Mending and Darning
So as to be able to move the fabric freely in any direction for darning and mending, release the center pin (A) completely by pressing down on the outer ring (B). Press the \( \frac{1}{2} \) mark on the feed dog height button so that the feed dog drops well below the needle plate. To raise the feed dog to its normal height, press the \( \frac{1}{2} \) (up) mark on the button.
SEWING LIGHT

The sewing light is located in face cover directly over the needle so as to better illuminate the stitching area.

Turn the light on and off by pressing the button located at the back side of face cover.

To replace bulb, disconnect the plug and open the face cover to the left. Unscrew the bulb as you do a conventional light bulb. Place new bulb in socket and screw in place.
PREPARING TO SEW

Have take-up lever at highest position before starting to sew. Pinning may be used as a time saver instead of hand basting. It is possible to sew over pins when placed at right angles to the edge of fabric with the pin head at the raw edge, but for best results it is recommended that the pins be removed as you approach the presser foot. Sewing over pins can result in damaged needles.

Place material and threads under presser foot and lower the presser foot. Lower the needle by turning hand wheel by hand to check if the needle will pierce the stitching line you want to sew. You are now ready to begin sewing. Press the speed control. The speed of the machine is regulated by increasing or decreasing the amount of pressure exerted on the control. Never run machine without material under presser foot.

GUIDING FABRIC

The scale is etched with every 1/8 inch distance measured from the center of needle plate. Let the edge of fabric follow the line selected for the seam, and let your eyes follow the etched line you selected for the seam, not the needle, during sewing. To help you guide the fabric, place cloth guide attachment securing it by the extra thumb screw onto machine bedplate. Cloth guide and extra thumb screw are included in your accessory box.

Do not try to help the feeding by pulling the material as this may deflect the needle and cause it to break.

TURNING CORNERS

To pivot at a corner, leave the needle in the fabric in its upward stroke. Lift the presser foot, turn the fabric, then lower the presser foot and continue sewing.

CURVED SEAMS

Use slightly shorter stitch length than that of the rest of the seams. On the part where elasticity is required on the seam, sew by stretch stitch. The cloth guide may be used on angle as shown.
SEWING ACROSS HEAVY SEAMS

When approaching heavy seam, hold the fabric upward on an angle so that the heavy seam falls under the front curve of presser foot.

FREE-ARM SEWING

For sewing tubular and hard-to-reach areas, use your machine as a free arm. Stitching buttonholes or sewing buttons on a cuff or neckband; topstitching a sleeve; edge finishes on sleeves, pantlegs and waistlines; darning and patching knees, elbows; and other areas of wear on children's clothing become as easy as sewing a common seam when you have the free-arm at your fingertips.

REMOVING THE WORK

Be sure to stop the machine when the thread take-up lever or needle bar is at the highest position. Now raise the presser foot and draw the fabric back and to the left and pass the threads over the thread cutter. Pull down slightly, holding thread in both hands, so as not to bend the needle. Leave the ends of threads under the presser foot.
SECTION V

APPLICATIONS OF THE STITCHES

STRAIGHT STITCH:

SEAMS
The normal stitch length for most fabrics is between 2–3 but the length chosen should depend on the fabric and area of usage. Usually, heavier fabrics require longer stitches, and lighter weight fabrics require shorter stitches. For curved seams and bias cut areas use a shorter stitch length.

BASTING/TOPSTITCHING
Sewing a seam with a longer stitch is useful for temporary seams prior to fitting. Basting stitches also may be used when gathering in fullness. Topstitching can be done very effectively with the long straight stitch. For a bolder stitch, two threads of the same type can be threaded through one needle (size 14 or 16). A heavier thread such as buttonhole twist may be used for topstitching, but be sure to use a larger needle (size 16 or 18).

DARNING
Worn spots or small holes can be darned very easily. Use of an embroidery hoop is optional depending on the fabric. A fine thread is recommended so that the fabric and thread will blend together invisibly. Trim the ragged edges from the area to be darned. Hold the threads to start, then move the fabric slowly backwards and forwards while running the machine very fast to fill the area. Professional results will be attained by moving the fabric in a figure eight pattern while sewing. After filling in the area lengthwise, reweave with crosswise stitches in the same manner.

Pattern: 
Length: 0
Feed Dog: Down
Pressure: 0
Foot: Straight Stitch or All-Purpose

Pattern: 
Length: 2–3
Feed Dog: Up
Pressure: Full
Foot: Straight Stitch or All-Purpose

Pattern: 
Length: 4–5
Feed Dog: Up
Pressure: Full
Foot: Straight Stitch or All-Purpose

Pattern: 
Length: 45
Feed Dog: Up
Pressure: Full
Foot: Straight Stitch or All-Purpose
CORDING AND ZIPPER FOOT

- **Insert Cording**

  (A) Fold bias strip of fabric over cord. Loosen the adjusting screw on the back of cording/zipper foot and set the foot to the left of needle.

  (B) Sandwich the welting between two layers of fabric with right sides together. Stitch a second time with cording/zipper foot to the right of needle so that the needle stitches close to the cord through all thicknesses.

- **Zippers**

  Swing the foot to left or right of the needle as needed so that the foot sews very close to zipper teeth.

QUILTING GUIDE

Parallel straight lines are easy to sew with the quilting guide. To attach the guide, loosen thumb screw and slip the U-shaped holder of the guide between presser foot and thumb screw. Tighten the thumb screw securely. Adjust the curved bar to the desired distance from the needle. Sew the first line of stitching as desired, then, for the succeeding rows let the guide follow along the previous stitch line. A straight stitch, zigzag, or any other stitch may be used.
ZIGZAG STITCH:

OVERCASTING
Place the edge of the material underneath the opening of the sewing foot and guide the raw edge along the centre slot of the foot allowing the stitch to form half on and half off the fabric. The multiple stitch zigzag is a wiser choice for most fabrics. See Page 26.

SEWING KNITS
The narrow zigzag can be used for seams in firm knits for added strength. After sewing, open the seam and press it flat. Tiny zigzag stitches can hardly be seen and the seam will give when stretched. Generally on knits, however, try the straight stretch stitch or the stitch-and-overcast. See page 32.

SEWING ON BUTTONS
Place the button so that the hole is at the center of the foot.

Turn the hand wheel by hand until needle point is close to the face of the button. Turn the stitch pattern dial to the right until the needle comes just above the hole of button. Turn the hand wheel slowly to check if the needle clearly enters the second hole of button. If necessary readjust the button position below the foot.

Note: Be sure the needle clears the holes of button by moving the wheel by hand before running the machine fast.

Usually 6 to 8 stitches are adequate for securing a button in place. To lock the threads, set the stitch pattern dial at the straight stitch position, readjust the button position so that a hole of the button is just below the needle, and make a few stitches in the hole.
- With a Thread Shank

Buttons sewn on coats or jackets should have a thread shank to make them stand away from the fabric. To form a thread shank, sew over a pin or rounded toothpick.
After stitching the button to the fabric, remove work from under the presser foot leaving threads about six inches from fabric. Remove pin or toothpick. Pull the threads to back of button and form a shank between button and fabric by winding threads tightly around the attaching stitches. Pull threads to back of the fabric and tie thread ends securely.

SATIN STITCHING

This is useful for decoration such as tapering, manual designed embroidery, monogramming and applique.
The satin stitch, which is really just a very close zigzag stitch, is obtained by setting the stitch length as near to “0” as possible without stopping the feeding action or at the symbol . The setting will vary for different fabrics. It may be desirable to loosen the upper tension slightly to cause the threads to lock underneath in order to make the top surface look especially smooth. For lightweight fabrics, place a paper underneath the fabric for best results.

Pattern: Length:

Length: or near 0
Feed Dog: Up
Pressure: Full
Foot: All-Purpose
FREEHAND MONOGRAMMING

For giving garments and linens a personalized touch, first transfer the design to the right side of the fabric. An embroidery hoop is recommended especially for soft fabrics and toweling. In order to monogram, you must move the fabric slowly and run the machine rapidly. Monogramming is like writing by moving the paper under a stationary pen. Guide the fabric slowly so that the zigzag falls close together like a satin stitch, but be careful that the stitches do not pile up. When guiding from side to side, move fabric slightly faster to avoid a heavy area. Practice by forming loops. Once this is accomplished any letter is easy. Sometimes the use of paper or non-woven interfacing under the fabric may make guiding the fabric easier. The paper or interfacing may be torn or cut away at the completion of the monogram. When monogramming towels, plastic film placed on the top will help cover loops and make the monogram smooth. Pull or cut away remaining plastic film when finished.

APPLIQUE

Applying decorative shapes of fabric scraps to household articles and clothing is a very interesting way of trimming an otherwise plain article. First, trace the design on fabric to be appliqued, then pin or baste it securely in place on garment. With a small straight stitch or narrow zigzag, sew around the traced design. At the excess fabric is trimmed away, sew around the applique with a satin stitch. For a smooth curve, stop frequently at the inside edge of the curve to pivot the fabric slightly. Corners look much better when the point is stitched by pivoting rather than just turned. As with all decorative stitches, paper may be used to give more body to the fabric when stitching and can be torn away when the applique is completed.
GATHERING OVER A CORD
Ordinary gathering with a basting stitch often breaks thread while pulling in fullness. A small zigzag across a cord such as crochet thread or carpet thread, gives a much stronger cord for gathering fullness into fabrics. Once the gathers have been stitched in place, the cord can be pulled out in order to eliminate bulk.

Pattern: 
Length: 2
Feed Dog: Up
Pressure: Full
Foot: All-Purpose

LACE APPLICATION
Attaching laces or trims adds a special touch to lingerie, dresses, or linens. Pin or baste lace in place easing or mitering corners where necessary.
A straight edged lace or braid has a convenient line to follow when sewing. When using a scalloped edged lace, follow the design of the lace for an almost invisible application.

Pattern: 
Length: 1
Feed Dog: Up
Pressure: Full
Foot: All-Purpose

FLUTTER HEM
An unusual way of hemming or finishing edges of tricot or soft knits is by a flutter edge. Hemming in this manner is just like overcasting an edge, but the fabric is stretched in back and in front of the needle as you sew. For best results, pull the fabric equally, making sure the needle goes over the edge. When you stop to reposition your hands, keep the needle in the fabric.

Pattern: 
Length: 1
Feed Dog: Up
Pressure: Full
Foot: All-Purpose
SEWING TIPS

When a dainty hair line finish is particularly desirable for the inside seams of sheer collars, facings, and yokes, seam allowance that would ordinarily show through is eliminated by following the seam outline with a narrow zigzag stitch. Trim seam allowance close to line of stitching. Turn and press.

Pattern:  
Length: 1/2 - 1  
Feed Dog: Up  
Pressure: Full  
Foot: All-Purpose

MULTIPLE STITCH ZIGZAG

The multiple stitch zigzag can be used for hundreds of various kinds of sewing applications, such as replacing worn blanket bindings for both a decorative and durable finish, overcasting an edge to prevent fraying, applying elastic waist bands to skirts and dresses, sewing a zigzag stitch on soft or sheer material preventing puckering, etc. Just sew like ordinary zigzag stitching.

Pattern:  
Length: 1/4 - 2  
Feed Dog: Up  
Pressure: Full  
Foot: All-Purpose
TWIN NEEDLE SEWING

Attractive parallel straight stitch effects and decorative zigzag patterns can be made easily by sewing with the twin needle. They are very effective for various kinds of garment finishes, such as topstitching, borders, etc.

When sewing with the twin needle, the stitch pattern dial should be set in the white zone.

The use of colour-matched or contrasting threads will result in a more attractive finish.

Note: Use the zigzag needle plate when sewing with the twin needle.
BUTTONHOLES:
Various fabrics require various methods of sewing buttonholes. Three different methods are given below, with suggested uses. If you are in doubt as to which method is best for your fabric, test the methods in question and choose the best according to the finished appearance.

PREPARATION
For the best results, a good quality mercerized cotton thread should be used. Polyester threads often result in puckered or heavy unattractive buttonholes. The finer your fabric is, the finer your cotton thread should be.
An interfacing should be used under the buttonholes to give body, to strengthen, and to help them withstand wear.
To establish the correct length of the buttonhole, add the length of the button (A), plus the thickness of the button (B), plus 1/32 inch for the bartacks. The length may be marked on the garment with a basting stitch, tailor’s chalk, or an invisible cellophane tape, as shown. Horizontal buttonholes should extend 1/8 inch beyond the centerline of the garment. Vertical buttonholes are placed so that the cutting space of the buttonhole is directly on the center line.
Always make a practice buttonhole on a scrap of the garment fabric before making any buttonholes on your garment. On your test sample, duplicate the thicknesses found in the garment and be sure to include the interfacing. The test sample should help determine the length needed for the button to pass through the hole easily, as well as the stitch length needed for the particular fabric. As with the satin stitch, the stitches should be close together, but not so close that they pile up. Be sure to use the buttonhole foot.
BUILT-IN BUTTONHOLE

This buttonhole makes it unnecessary to pivot the fabric. It is used most often on light and medium weight woven fabric. The stitch length dial should be turned to the 1 mark or near 0 so as not to stop the feeding action. A buttonhole with a width of 3/16" can be made simply by turning the stitch pattern dial from buttonhole position 1 to 2, 3 and 4 consecutively.

1. Set the dial at the red square marked (1) buttonhole position. Lower the needle into the mark indicating the top left end of the buttonhole. Lower the presser foot and sew the left side of the buttonhole until the bottom is reached.

2. With the needle out of the fabric and the dial set at the (2—4) position, sew a few stitches to bartack the bottom end of the buttonhole.

3. With the needle out of the fabric, turn the dial to the (3) position. Sew the right side of the buttonhole. At this position the machine is feeding in reverse.

4. With the needle out of the cloth, turn the dial again to the (2—4) position and complete the buttonhole by bartacking the top edge.

5. To lock the stitches, make sure that the needle is out of the fabric, set the dial at the straight stitch position and the feed dog at the down position. Then sew a few stitches.

6. To prevent cutting through the bartack accidentally, insert a pin through the bartack. Cut open the buttonhole.

Pattern: Buttonhole
Length: Buttonhole
Feed Dog: Up
Pressure: Full
Foot: Buttonhole Foot
TURN-AROUND BUTTONHOLE

It is possible to make small and dainty buttonholes if you desire, or to repair damaged buttonholes. This entails slightly moving the cloth but, with some practise, good buttonholes can be achieved.

1. Set the stitch length dial at the mark, or density you desire.
2. Choose the desired width of your buttonhole.
   Example: If you want a buttonhole with a width of 1/8", set the stitch width dial on half this width, i.e. 1/16".
3. Start at your marked position, sew down on the left side of buttonhole to the other end of the marking. Leave the needle in the cloth at the right side of stitches and rotate your cloth. Sew down on the right side of buttonhole to other end.
4. Reset the stitch pattern dial to bartack, in this case, at the position of the width of 1/8", set your feed dog at △△, align your stitch width with the end of buttonhole, sew several stitches, repeat for the other end.

   Pattern: \[ \text{ } \]
   Length: \[ 1 \]
   Feed Dog: Up △△ → Down △△
   Pressure: \[ \text{Full} \]
   Foot: Buttonhole Foot

CORDED BUTTONHOLE

Cording gives a reinforced, raised buttonhole. It is excellent for use on bulky, woven fabrics, or knits in which the stitching often gets buried and makes cutting difficult. On knits, a cored buttonhole will help keep the fabric from stretching out of shape.

Choose a heavy cotton crochet thread or buttonhole twist for the cording. Proceed as for either the built-in buttonhole or the turn-around buttonhole, placing the cord under the foot in such a way that the zigzag stitch covers the cord.

After completing the buttonhole, snip the excess cord close to the bartack on woven fabrics. For knitted garments, always pull the cords through to the wrong side, using a darning needle or needle threader, and knot cord ends before clipping.
BLIND HEM STITCH

The blind hem provides a durable hem finish that is almost invisible on garments, drapes, and curtains. It is sewn easily on straight or slightly curved hems. With a little practice, hems will be sewn quickly and easily and will never need repairing.

Procedure:
1. Prepare the raw edge of the hem in the desired manner, such as overcasting, 1/4 inch stitched under, pinked, hem tape, or just plain. (Step 1)
2. Fold the hem up to the desired length. Baste or pin 1/2 inch from the upper edge. Press in place. (Step 2)
3. Fold the hem back towards the right side of the fabric, leaving an overlap of about 1/4 inch. (Step 3)
4. Guide the fold of the fabric slightly left of the center cut of the presser foot so that the wide zigzag bite of the stitch just catches the fold of the fabric. The narrow zigzag stitches of the blind stitch should be formed on the single thickness of fabric, and the wide zigzag width bite should just catch the fold of the fabric at the left.
5. When stitching is completed, remove the fabric from the machine and turn to the right side. Press the completed hem.

When hemming an A-line skirt, place a machine basting stitch along the raw edge of the hem. Fold up the hem on an ironing board, matching the seams. Ease in the excess fabric by pulling on the basting thread. Press with steam, then apply a hem tape. Baste or pin the hem 1/2 inch from the taped edge, then continue into step 3.

Pattern: 1
Length: 2–3
Feed Dog: Up
Pressure: Full
Foot: All-Purpose
STRAIGHT STRETCH STITCH

SEAMS
This stitch may be used on knits and woven fabrics, in areas of stress, as a reinforcement stitch. It is excellent for curved seams such as armholes and crotch seams. For active wear such as ski pants and girdle fabrics which endure a lot of stress in bending and stretching, this stitch may be used for seaming throughout the garment.

CAUTION: It is difficult to remove this stitch from the fabric. Pre-fit a garment before using this stitch.

TOPSTITCHING
Because this stitch is heavier than an ordinary straight stitch, it is ideal for topstitching particularly on knits.

STITCH-AND-OVERCAST
SEAMS
On most knits, a 1/6” finished seam, the stitch-and-overcast is more desirable than a 1/2” open seam. These stitches can create a neater, more professional finish, eliminate bulky seams, prevent curling, permit the garment to give under stress, and at the same time they cut down on the amount of work involved in making a garment.

The stitch-and-overcast stitch is excellent for stretch fabrics such as sweater knits, bathing suit knits and cotton knits. It has the greatest strength and elasticity of all.

For patterns with 1/6” seam allowances:
Feed the fabric in such a way that the needle goes over the raw edge of the fabric when it swings to the right.

For patterns with 1/2” seam allowances:
Feed the raw edge of the fabric along the etched guide line 1/2, then trim away the excess fabric close to the stitching.
OILING MACHINE

Use only a good sewing machine oil, do not use any common household oils. Your machine should be oiled occasionally to keep it operating smoothly. How often depends on the amount of sewing you do. Once a month oil your machine thoroughly as indicated by the arrows on illustrations, specifically those point marked in red on your machine. Place a single drop to avoid over oiling.
CLEANING AND OILING THE SHUTTLE AREA

The stitch forming mechanism occasionally becomes clogged with loose threads and lint. This will interfere with the efficient operation of the machine. Cleaning and removal of the lint will safeguard the performance.

To remove the shuttle assembly, proceed as follows:

1. Turn hand wheel until the needle reaches its highest position. Tilt head back on its hinges.
2. Remove bobbin case (A).
3. Turn the two shuttle race cover clamps (f) outward and remove the shuttle race cover (C) and the shuttle body (E) and the lint cleaner (D).
4. Clean the shuttle race, the shuttle, and shuttle race cover by removing all threads, lint, etc.

When the cleaning has been completed, proceed as follows to replace the shuttle assembly:

1. Turn hand wheel until the needle reaches its highest position.
2. Place lint cleaner (D) to shuttle driver and shuttle body (E) in race (F) against shuttle driver and adjust into position.
3. Replace shuttle race cover (C), fitting pin at lower edge into notch, and lock into position with shuttle race cover clamps (f), making certain the clamps have been snapped securely into position.
4. Put bobbin (B) into bobbin case (A).
5. Put the bobbin case into the shuttle, fitting tongue (a) into notch (c) of race cover (C).
6. Place a single drop of oil on shuttle body as indicated by arrow on illustration.
## PROBLEM AND REMEDIES

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Cause</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>The machine sticks</td>
<td>Thread or lint in the shuttle hook.</td>
<td>Clean and oil the machine and the shuttle area (see page 34).</td>
</tr>
<tr>
<td>Skipped stitches</td>
<td>Bent needle. Needle placed incorrectly in the clamp. Too fine a needle for the thread being used. Too stretchy fabric.</td>
<td>Replace with new needle (see page 8). Fit the needle correctly (see page 8). Replace the needle or thread so that they are correctly matched (see page 7). Place a piece of paper beneath the fabric, or use the Ball Point Needle.</td>
</tr>
<tr>
<td>Irregular stitches</td>
<td>Upper thread tension too loose. Incorrect threading. Bobbin not wound evenly.</td>
<td>Tighten the upper tension. See threading instructions, page 11. Adjust the bobbin winder (see page 10).</td>
</tr>
<tr>
<td>Uneven stitches</td>
<td>Material is being held back or pulled. Upper thread tension not tight enough. Poor quality thread. Needle too fine for the thread being used.</td>
<td>Avoid pulling or holding the material just guide it. Increase the tension. Try a different thread. See the needle and thread chart, page 7.</td>
</tr>
<tr>
<td>Upper thread breaks</td>
<td>Incorrect threading. Tension too tight. Sewing is started with the take-up lever in the wrong position. Needle fitted incorrectly. Eye of the needle bent or too sharp. Bent or blunt needle.</td>
<td>Refer to the threading instructions on page 11 and rethread the machine. Loosen the upper thread tension (see page 15). Always start sewing with the take-up lever in its highest position. Refer to the needle fitting instructions on page 8. Try a new needle. Throw away all blunt or bent needles and replace with new needles.</td>
</tr>
<tr>
<td>Machine is noisy and material is not fed when stretch stitches are sewn.</td>
<td>Stitch length control is set at other than the * mark.</td>
<td>Set stitch length control at the * mark.</td>
</tr>
<tr>
<td>Incorrect feeding.</td>
<td>Lint in the feed dog.</td>
<td>Remove the needle plate and clean lint from the feed dog.</td>
</tr>
</tbody>
</table>
If your machine skips stitches only on certain fabrics, try all of the procedures on the previous page before calling a repair-man.

Check the needle plate area, if there are scratches and marks around the needle hole opening, your machine is not being cleaned properly. Always remove the needle plate and clean the feed dogs periodically. Improper and lack of cleaning will cause an accumulation of lint which hampers the feeding mechanism, this in turn will cause the operator to impatiently pull or push the cloth causing the needle to bend and strike the plate, foot or hook, causing a slip in the timing mechanism. Continuous striking will cause defects making it necessary to call a serviceman.