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FEATURES AND PARTS
(Front View)

1. Spool Pin
2. Hand Wheel
3. Wheel Clutch
4. Bobbin Winder
5. Stitch Length Indicator
6. Reverse Lever
7. Stitch Length Lock
8. Bobbin Winding Tension
9. Spool Pin
10. Drop Feed Knob
11. Needle Plate—Seam Guide
12. Cover Plate
13. Presser Foot
14. Presser Foot Screw
15. Needle Clamp
16. Sew Light
17. Face Plate Thread Guide
18. Tension Regulator
19. Take-up Lever
20. Pressure Release—Darner
FEATURES AND PARTS

(Back View)

21. Arm Thread Guide
22. Presser Bar Lifter
23. Thread Cutter
24. Feed
25. Motor
26. Motor Pulley
27. Belt
SETTING THE NEEDLE

See Fig. 3. Raise the needle bar (A) to its highest point, turning wheel toward you by hand. Then loosen the needle clamp screw (B) and the needle clamp will open itself. Place the needle (C), flat side to right, in the needle clamp and push it upward as far as it will go into the needle clamp hole. Fasten the needle clamp screw securely with a screw driver.
The following table will show the size of needles generally used with various sizes of thread.

**NEEDLE-THREAD-FABRIC-STITCHING GUIDE**

<table>
<thead>
<tr>
<th>Fabric</th>
<th>Needle No.</th>
<th>Machine Stitches Per Inch</th>
<th>Cotton Thread</th>
<th>Mercerized Thread</th>
<th>Silk or Nylon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely heavy tarpaulin,</td>
<td>4</td>
<td>to 6</td>
<td>10</td>
<td>Heavy Duty</td>
<td></td>
</tr>
<tr>
<td>canvas, duck, etc.</td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy upholstery fabric,</td>
<td>3</td>
<td>to 8</td>
<td>30</td>
<td>Heavy Duty</td>
<td></td>
</tr>
<tr>
<td>ticking, denim, leatherette</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium heavy drapery fabric,</td>
<td>2</td>
<td>to 10</td>
<td>40</td>
<td>Heavy Duty</td>
<td></td>
</tr>
<tr>
<td>velveteen, suiting, felt,</td>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>terry, etc.</td>
<td></td>
<td></td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium broadcloth, percale,</td>
<td>1</td>
<td>to 12</td>
<td>60</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>gingham, linen, chintz,</td>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>taffeta, sheer wool,</td>
<td></td>
<td></td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shantung, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheer voile, lawn, dimity,</td>
<td>0</td>
<td>to 14</td>
<td>80</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>crepe, handkerchief linen,</td>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>plastic film, etc.</td>
<td></td>
<td></td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Plastic film 8 to 10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very sheer chiffon, batiste,</td>
<td>00</td>
<td>to 16</td>
<td>100</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>lace, organdy, ninon, net,</td>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>marquisette, etc.</td>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HOW TO WIND THE BOBBIN

Turn the clutch in the center of the hand wheel (Fig. 4) toward you to disengage the sewing mechanism. Place a spool of thread on the spool pin on the bed of the machine (Fig. 5). Pass thread through tension disc A. Insert thread through a hole on edge of bobbin and place bobbin on spindle (B) of winder. Be sure that the notch in the bobbin fits over the small pin on the spindle. Place pulley (C) against hand wheel by pressing lever (D) and set machine in motion. When the bobbin is fully wound, the action of the winder stops automatically. Remove from spindle and cut off loose thread end used to start winding.

If the bobbin winds unevenly, adjust the bobbin winding tension disc (A) to the right or left by loosening the screw. When the disc is in the proper position, tighten screw. Before starting to sew again, tighten clutch by turning it away from you.
HOW TO THREAD THE BOBBIN CASE

Refer to Figs. 6, 7 and 8 to familiarize yourself with the procedure. Hold the bobbin case in your left hand with the tongue pointing up. Let about two inches of thread hang free from the bobbin, and insert bobbin into case so that thread will be rotating counter-clockwise.

Guide the thread end through the slot on the side of the case and under the tension spring until it enters the small notch on the edge of the spring.
PLACING BOBBIN CASE IN SHUTTLE

Raise needle bar to highest position, and lift hinged cover plate. Hold the bobbin case latch, (D), Fig. 9, 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 latch catches on the center post of the shuttle. THEN release the bobbin case latch, (D). Press bobbin case again after latch has been released to make sure the bobbin case is locked securely in place. Close the cover plate.
1) Place spool of thread on spool pin.
2) Lead thread through upper thread guide A on back of face plate.
3) Down and around tension discs B from back to front.
4) Into check spring C.
5) Then tug on thread to pull it into hook D (see insert, Fig. 10).
6) Up into take-up lever E from back to front.
7) Down into thread guide F on face plate.
8) Through the needle bar thread guide G.
9) Into needle from left to right.
10) Pull three or four inches of thread through needle.

UPPER THREADING (Fig. 10)
The length of the stitch and reverse sewing are both regulated by the lever A, Fig. 12. Button B locks the stitch length for both forward and reverse.

To adjust stitch length, turn button B to the left, then move lever A past the zero mark until bar C is opposite the number stitch length required. (4 is the longest stitch, near 0 the shortest.) Turn button B to the right to lock the stitch length. Then push lever A down against bar D. To sew in reverse push lever A upward against bar C.

SETTING THE STITCH LENGTH

The length of the stitch and reverse sewing are both regulated by the lever A, Fig. 12. Button B locks the stitch length for both forward and reverse.

To adjust stitch length, turn button B to the left, then move lever A past the zero mark until bar C is opposite the number stitch length required. (4 is the longest stitch, near 0 the shortest.) Turn button B to the right to lock the stitch length. Then push lever A down against bar D. To sew in reverse push lever A upward against bar C.
Adjusting the Tensions

Before adjusting lower tension be sure that the machine is threaded properly.

When necessary to change the bobbin tension, turn small screw (Fig. 14) clockwise to tighten, counterclockwise to loosen.

When the upper and under tensions are properly balanced, a perfect stitch will be formed with both threads interlocking in fabric (Fig. 15).

When the upper tension is too tight, the lower thread is pulled up over the upper thread which is lying flat on the fabric.

When the under tension is too tight, the upper thread forms loops over the lower thread lying flat on the fabric.

Fig. 13

Fig. 14

Fig. 15
HOW TO USE THE DARNER, ADJUST PRESSURE

To release the pressure from the presser foot so the material can be moved freely for darning and mending, press down snap lock (A, Fig. 16) and cap B will pop up.
To return pressure to normal, push darning cap B all the way down again.
For a slighter pressure when sewing thin materials, push darning only part way down. Test for correct position on a scrap of fabric.

DROP FEED ADJUSTMENT

The height of the feed can be adjusted to suit the fabric or type of work being done. Turn knob A, Fig. 17, to SILK position to sew on thin materials, or all the way to DARN position for darning. Turn dial to the right to return feed to NORM, or normal. Consult the following chart to determine the level of the feed and darning for various types of sewing.

<table>
<thead>
<tr>
<th>Type of Sewing</th>
<th>Drop Feed</th>
<th>Darned Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewing thin material</td>
<td>SILK</td>
<td>Partially down</td>
</tr>
<tr>
<td>Darning</td>
<td>DARN</td>
<td>All the way up</td>
</tr>
<tr>
<td>Sewing thick material</td>
<td>NORM</td>
<td>Completely down</td>
</tr>
</tbody>
</table>

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Fig. 16

Fig. 17
PREPARING TO SEW

Have take-up lever at highest point before starting to sew. After threading, NEVER run machine without material between presser foot and feed.

Place material and threads in position under presser foot and lower the presser foot. Turn the hand wheel toward you until the needle is at its highest point. You are now ready to begin sewing.

The speed of the machine is regulated by increasing or decreasing the amount of pressure exerted on the control.

REMOVING THE WORK

Be sure to stop the machine when the thread take-up lever and needle bar are located 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 thread under the presser foot.

CARE AND MAINTENANCE OF YOUR MACHINE

HOW TO OIL YOUR MACHINE

Your machine should be oiled occasionally to keep it operating smoothly—how often depends on the amount of sewing you do.

Oil the upper part of the sewing unit at points indicated by arrows in Fig. 18. Avoid overoiling—only a drop is needed at each point.
To oil parts under the bed of the machine, tip the unit back on its hinges and apply a drop of oil at each point indicated in Fig. 19.

To oil moving parts inside the face plate, which only rarely require oiling, remove plate by taking out the screws located at the top and bottom of the face plate. Oil at spots indicated in Fig. 20.
CLEANING AND OILING THE SHUTTLE

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 shuttle:

1. Turn the balance wheel until the needle reaches its highest position. Tilt head back on its hinges.
2. Remove bobbin case (A), Fig. 21.
3. Turn shuttle race cover clamps B downward and pull hinged shuttle race cover, C, down and remove shuttle D.
4. Clean the shuttle race, the shuttle, and shuttle race cover by removing all threads, lint, etc.
5. Apply a drop of oil with finger tip to outer edge of shuttle.

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

1. Turn the balance wheel until the needle reaches its highest position.
2. Place shuttle D, Fig. 21, against shuttle driver and adjust into position.
3. Replace shuttle race cover, C and lock into position by turning clamps B upward. If race cover falls off hinge bracket, replace with polished side out.
4. Put bobbin into bobbin case A.
5. Put the bobbin case into shuttle race, fitting tongue into notch E of race cover.
HOW TO REPLACE LIGHT BULB

Grasp screw light assembly by the knob. Pull out assembly and unscrew bulb. Replace with bulb of same size, obtainable from your sewing machine dealer.

Insert light assembly into arm opening, fitting pins B into holes A in opening, shown in Fig. 22.

TO REPLACE BELT

Simply slip old belt off end of motor pulley and groove in hand wheel. Slip new one over hand wheel and then onto motor pulley.
CHECK UP FOR SMOOTH SEWING

Although your sewing machine is designed for maximum efficiency, should any of the following difficulties occur they can be remedied with minor adjustments.

**Upper Thread Breaks**
- Be sure needle is inserted properly.
- Check on correct way to thread machine.
- Use correct needle size for thread.
- Do not have upper tension too tight.

**Lower Thread Breaks**
- Check correct method of threading bobbin case.
- Be sure lower tension is not too tight.

**Needle Breaks**
- Do not tug or pull on the fabric while sewing as this will bend and eventually break the needle.
- Be sure presser foot is firmly attached to bar.