



# SINGER®

## **Instruction Manual and Parts List**

**Zigzag Sewing Machine**

20U- 109 / 109C

112 / 112C

309



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## 1. Safety Instructions

### 1.1. Important Safety Instructions

When using this machine, basic safety procedures must be followed. Read with attention all instruction before using the machine. When using the machine, understand all basic safety instructions which are not limited to the items following. Read all instructions, take care of this manual, and use it as reference when necessary.

- Before running the machine, make sure all relevant safety specifications are adequate to specifications and technical rules in your country.
- The machine should not be run without its safety devices.
- The machine should only be operated by properly trained personnel.
- For your safety, goggles must be used running the machine.
- Turn off or unplug the machine when the following situations arise:
  - Passing the thread by the needle or replacing the bobbin or looper.
  - Replacing the needle, presser foot, throat plate, feed dog and sliding plate.
  - When the machine is in maintenance.
  - When the operator is not running the machine.
- In case of lubricant oil contact with the eyes or skin, washed the surface with plenty of icy water with a generous amount of cold water. In case of ingestion, seek medical help immediately.
- Repair, fitting or maintenance should only be performed by properly trained personnel.
- Maintenance and repair on electric equipment should only be made by qualified personnel. If any electric device is damaged, the machine should be immediately stopped.
- Before starting the machine in full running, a test must be conducted to assure that machine and operator are able to perform the task.
- The machine should not be placed next to a sound source as an ultrasonic welding machine and other equipment.
- The machine should only be run with the proper electric cable and connectors, and also the adequate grounding.
- The machine should only be used to sew materials as indicated in its instruction manual, and indications of use should be followed.
- Singer will not be held responsible for any damage caused by unauthorized changes in the products.

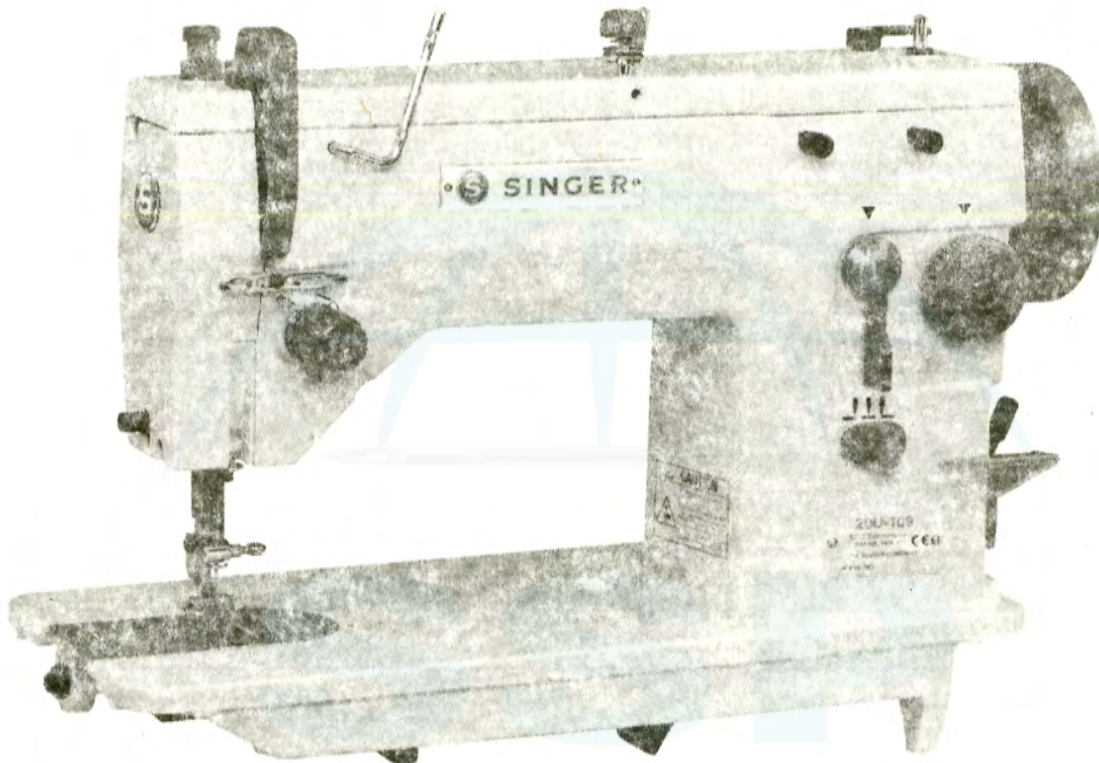
## 1.2. Safe Operation

- To avoid the risk of electric shock, do not open the motor wiring box and do not touch the components assembled inside the wiring box.
- To avoid injuries do not run the machine without the belt cover or in case any other safety device is removed.
- To avoid possible injuries keep fingers, head and clothes far from wheel, belt and motor when the machine is running. Nothing should be placed near those parts.
- To avoid injuries never put your fingers next to the rotating hook and the thread take-up lever cover when the machine is running.
- The rotating hook whirls at high speed while the machine is running. To avoid hand injuries, keep them away from the rotating hook while the machine is running, turn off the machine to replace the bobbin.
- To avoid possible injuries be careful when putting down or lifting the machine head.
- To avoid accident in case of a sudden start of the machine always turn it off when laying it down, or remove the belt cover and the belt.
- If you machine is equipped with a servomotor, it does not make noises while being driven. To avoid a possible accident caused by an unexpected start, be sure the machine is turned off.
- To avoid electrical shock, do not run the machine without proper grounding.
- To minimize the risk of accidents or damage in electric components caused by electric discharge turn the machine off before unplugging it.
- Clean the machine periodically.

## 2. Product Description and Machine Specification

### 2.1. Product Description

Zigzag Sewing Machine



## 2.2. Machine Specification

Table 1 – Machine Specification

|                                 | Singer model                        |                |               |
|---------------------------------|-------------------------------------|----------------|---------------|
|                                 | 20U-109 / 109C                      | 20U-112 / 112C | 20U-309       |
| For sewing                      | Light to medium                     |                |               |
| Stitch type                     | Plain zigzag (Straight stitch)      |                | 3-step zigzag |
| Max. speed <sup>1</sup>         | 2,500 rpm                           | 2,000 rpm      | 2,500 rpm     |
| Max. stitch bight               | 9.0 mm                              | 12.0 mm        | 9.0 mm        |
| Max. stitch length              | 5.0 mm                              |                |               |
| Needle bar stroke               | 34.8 mm                             |                |               |
| Presser bar lift (manual)       | 6.35 mm                             |                |               |
| Presser bar lift (knee lifter)  | 9.0 mm                              |                |               |
| Needle catalog (needle system)  | Cat. 1910-05 (135x9)                |                |               |
| Needle size                     | See Section 3.5 "Needle and Thread" |                |               |
| Machine pulley                  | 74.0 mm effective dia. for v-belt   |                |               |
| Oil                             | Singer Oil                          |                |               |
| Workspace (w x h)               | 211 x 130 mm                        |                |               |
| Bedplate dimensions             | 399.0 mm x 178.0 mm                 |                |               |
| Net weight (head only)          | 21.0 kg                             |                |               |
| Gross weight (with accessories) | 25.0 kg                             |                |               |
| Noise <sup>2</sup>              | Lower than 76 dBA at 1,600 spm      |                |               |

<sup>1</sup> Maximum speed will vary depending on fabric, threads and sewing condition

<sup>2</sup> Noise measurement according to DIN 4563-45-A-1

### 2.3. Motor, Motor Pulley and V-Belt Specifications

- ½ HP (400W) 4-pole (medium speed) clutch motor
- M type v-belt

Table 2 – Machine Speed vs. Motor Pulley Diameter

| Machine Speed [spm] |                |         | Motor Pulley Diameter [mm] |       |
|---------------------|----------------|---------|----------------------------|-------|
| 20U-109 / 109C      | 20U-112 / 112C | 20U-309 | 50 Hz                      | 60 Hz |
| 2,500               | -              | 2,500   | 130                        | 105   |
| 2,000               | 2,000          | 2,000   | 105                        | 85    |
| 1,800               | 1,800          | 1,800   | 90                         | 75    |
| 1,500               | 1,500          | 1,500   | 80                         | 65    |

### 2.4. Relationship between Zigzag Bight and Maximum Speed

Table 3 – Relationship between zigzag bight and maximum speed

| Machine Class | 20U-109 / 109C / 309 |              | 20U-112 / 112C |               |
|---------------|----------------------|--------------|----------------|---------------|
| Zigzag bight  | 0 ~ 5.0 mm           | 5.0 ~ 9.0 mm | 0 ~ 5.0 mm     | 5.0 ~ 12.0 mm |
| Max. speed    | 2,500 rpm            | 2,000 rpm    | 2,000 rpm      | 1,800 rpm     |

### 3. Setup and Adjustment Instructions

### 3.1. Table Cut-Out Drawing

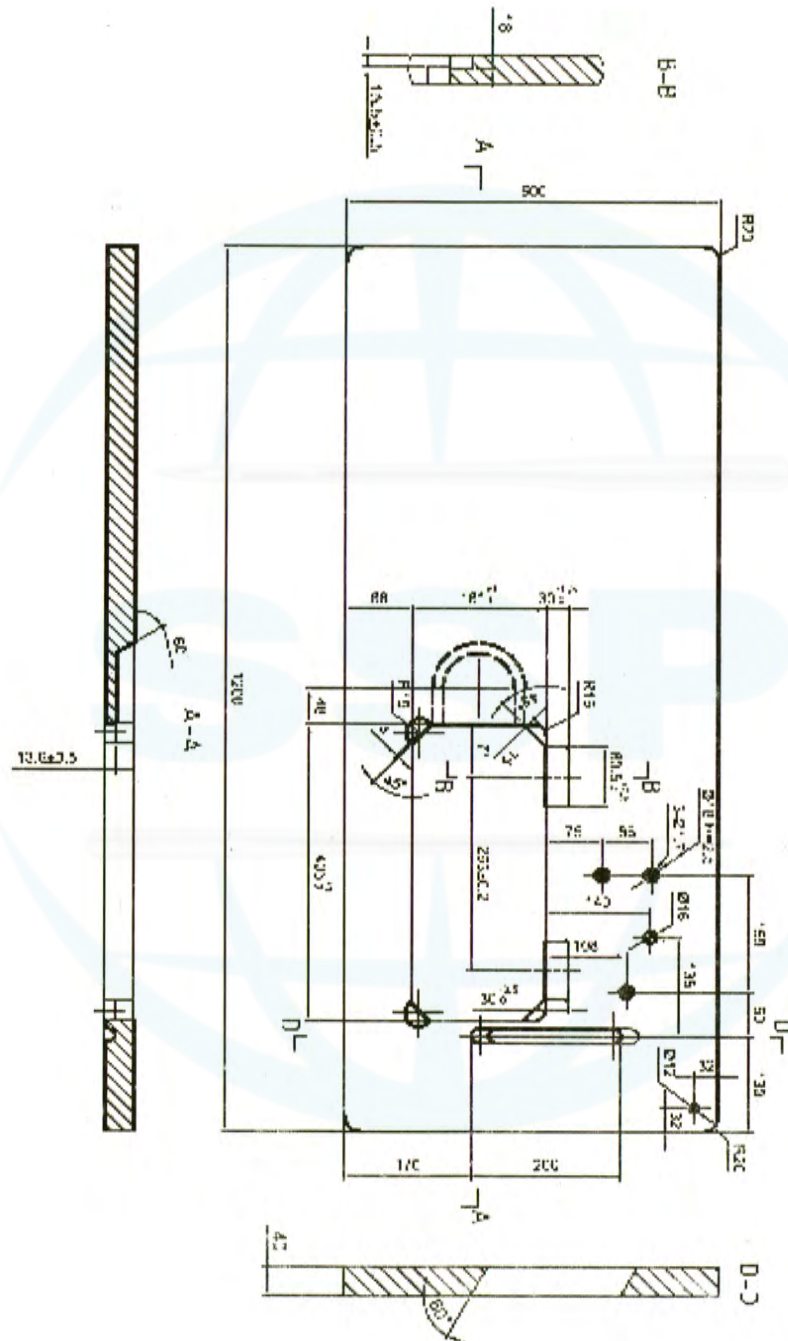


Figure 1

### 3.2. Oil Reservoir Installation

The oil pan should be fixed on the side of the machine table groove by using four nails (Figure 2).

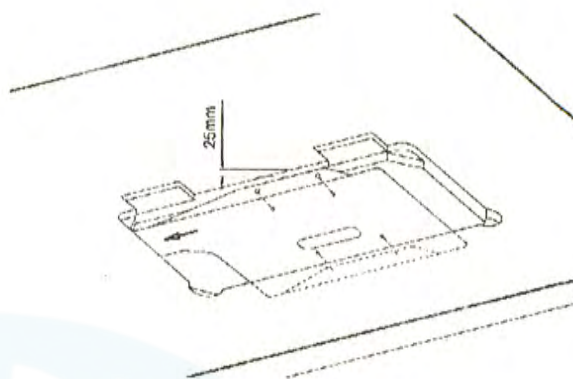


Figure 2

Two rubber seats and two rubber corners for supporting the head portion should be fixed on the extended portion of the table by using nails, and the other two rubber cushion on the hinge side should be fixed on grooves by using nails too (Figure 3).

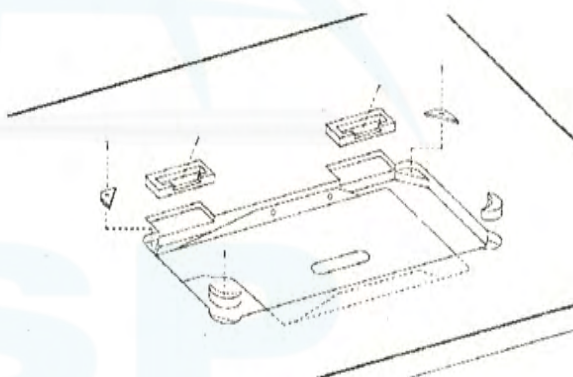


Figure 3

Two hinges fit into the hole in the machine bed, and the machine head fitted the table hinge's rubber, before the machine head is placed to the cushions on the four corners of the table (Figures 3 and 4).

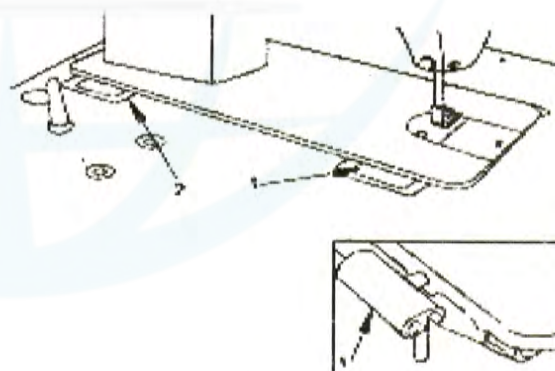


Figure 4

### 3.3. Belt Cover Installation

#### Above table surface

Align the belt guard so that hand wheel and v-belt move freely, then screw it down in this position (see Figure 5).

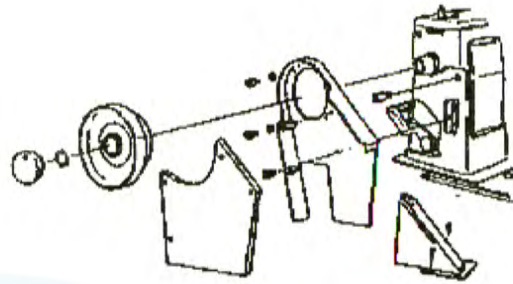


Figure 5

#### Below table surface

Install belt guard so that motor pulley and v-belt will rotate freely without interference.

#### **Caution:**

- Switch off the machine.
- Set sewing head upright again using both hands.
- Danger of crushing between sewing head and table top.
- For your safety, do not run the machine without the belt cover.

### 3.4. Lubrication

Rotating hook and area under throat plate.

Turn hand wheel over toward you until oil hole in rotating hook appear in sight.

Apply one or two drops of oil to the oil hole (see Figure 6).

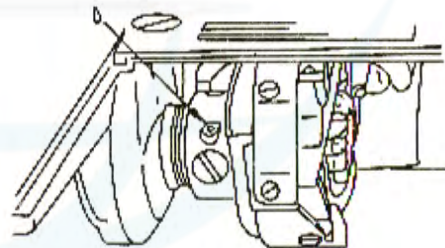
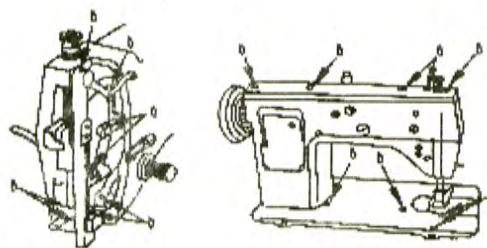


Figure 6



Loosen and remove screws and remove face plate by sliding it downward.

Remove screws and lift off arm top cover.

Clean and oil the places indicated with 'O'.

Apply sufficient oil to all oil felt shown in Figure 7

Apply a small amount of grease to gear teeth indicated with letter 'B'.

Also apply a drop of oil to all other oiling points shown

Keep oil pad 'A' under arm top cover saturated with oil.

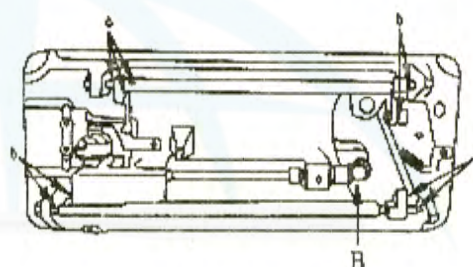
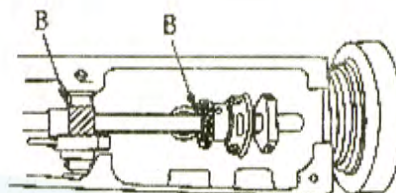


Figure 7

**Caution:**

- Switch off the machine.
- Set sewing head upright again using both hands.
- Danger of crushing between sewing head and table top.
- For your safety, do not run the machine without the belt cover.

**Important:**

When you first operate your machine after set up or after an extended period of disuse, oil the machine and run your machine at 1,000 to 1,500 spm for about 10 minutes for the purpose of break-in.

### 3.5. Needle and Thread

Selection of the proper needle depends not only on the machine model, but also on the material and thread used. For selection of proper needle and thread sizes to be used on the various machine models please refer to the table below

| Model                            | 20U-109 / 109C / 112 / 112C / 309 |                         |                            |
|----------------------------------|-----------------------------------|-------------------------|----------------------------|
| Application                      | Light weight materials            | Medium weight materials | Mid-heavy weight materials |
| Max. thread size (Nm)-Synthetic* | 120                               | 60                      | 30                         |
| Needle size (1/100mm)            | 10 (60)                           | 12 ~ 16 (80 ~ 100)      | 18 ~ 19 (110 ~ 120)        |
| Needle catalog (Needle system)   | 1910-05 (135x9)                   |                         |                            |

\* or an equivalent size of other types of thread

#### Caution:

- The power supply should be cut off before attaching the needle.

### 3.6. Inserting the Needle

Use needle Cat. No. 1910-05 needle system (135x9) only.

Raise needle bar to its highest position by turning hand wheel toward you.

Loosen needle set screw '1' (see Figure 8) Insert the needle in the needle bar and push it up as far as it will go.

Make sure its long groove faces toward the front. Tighten needle set screw '1' securely.

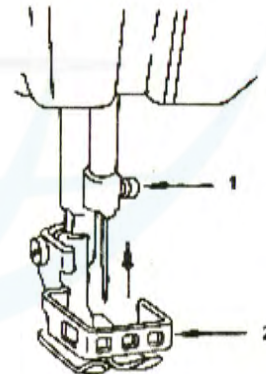


Figure 8

#### Caution:

- Switch off the machine.
- Do not operate the machine without the finger guard '2' (see Figure 8).

### 3.7. Bobbin Case Removal

Open bed slide.

Raise latch '1' (see Figure 9).

Lift out bobbin case '2' (see Figure 9).

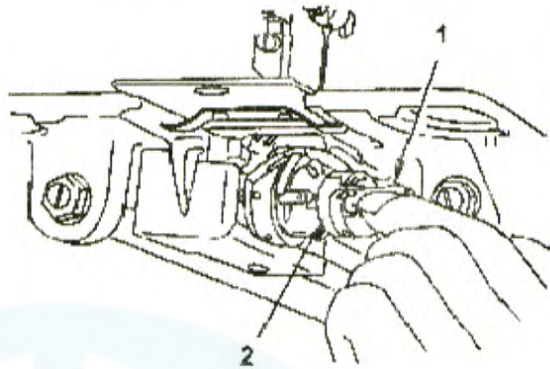


Figure 9

**Caution:**

- Switch off the machine.
- Do not operate the machine with throat plate left open.

### 3.8. Bobbin Winding

Stop motion of needle by loosening stop-motion screw '1', Figure 10. Hold hand wheel with left hand and turn stop-motion screw toward you with right hand.



Figure 10

Place bobbin on bobbin winder spindle '3'. Figure 11, pushing it on as far as it will go.

Pre tension '1' (see Figure 11)

'+' More tension

'-' Less tension

Push latch '2' in the direction indicated by arrow 'A', then start the machine (see Figure 11).

Bobbin winder spindle '3', rotate in the direction indicated by arrow 'B' (see Figure 11).

To adjust the amount of thread on bobbin, loosen screw '4' on latch '2' and swing the latch '2' away from you or toward you, as required.

For more thread on bobbin, swing latch '2' away from you.

For less thread on bobbin, swing latch '2' toward you. If thread winds unevenly on bobbin, loosen screw '5' and move pre-tension '1' up or down, as required, and tighten screw '5'.

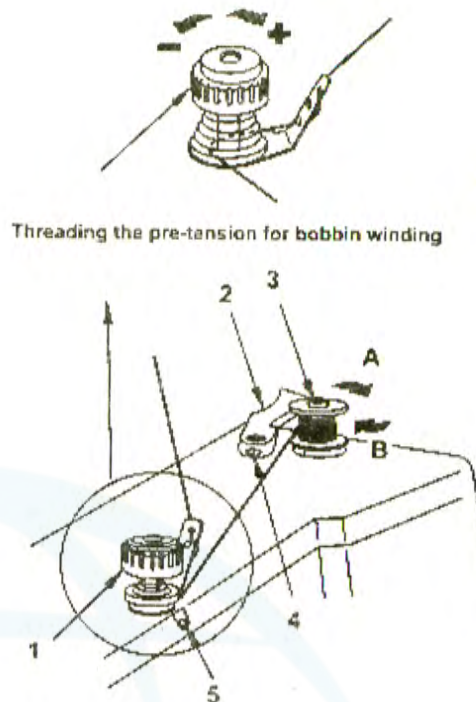


Figure 11

**Caution:**

- Do not guide or hold thread when winding the bobbin.

### 3.9. Bobbin Case Threading

Hold bobbin case so that thread unwinds in the direction shown in Figure 12, and put bobbin in bobbin case.

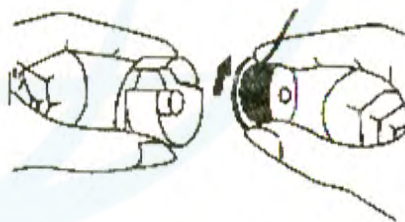


Figure 12

Put thread into notch '1', and draw it under tension spring '2' (see Figure 13)

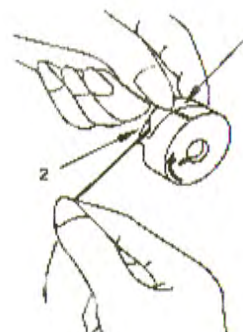


Figure 13

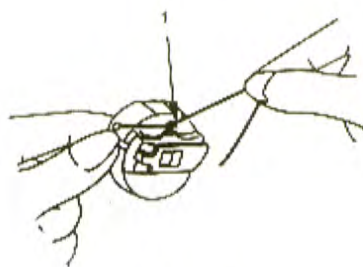


Figure 14

Draw thread out from slot '2' on end of spring '1', (Figure 14) and pass it through bobbin case thread guide '1', Figure 15.

Allow about 4 inches of thread to hang freely from bobbin.

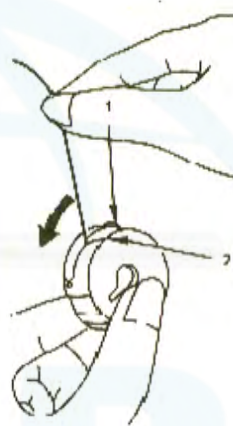


Figure 15

**Note:**

- When straight stitching, a better result can be obtained if bobbin thread is not threaded through bobbin case thread guide '1' of Figure 15.

### 3.10. Bobbin Case Replacement

Hold bobbin case by latch '1' and place it on spindle of bobbin case holder '2' so that position finger '3' enters notch '4' at right of bobbin case holder (see Figure 17)

Release latch and press bobbin case firmly in place to assure proper position. Close bed slide

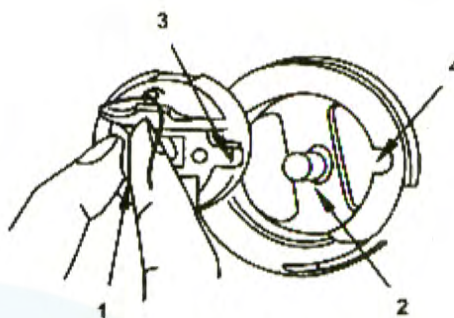


Figure 17

**Caution:**

- Switch off the machine.
- Do not run machine without closing bed side. Danger of injury!

### 3.11. Machine Threading

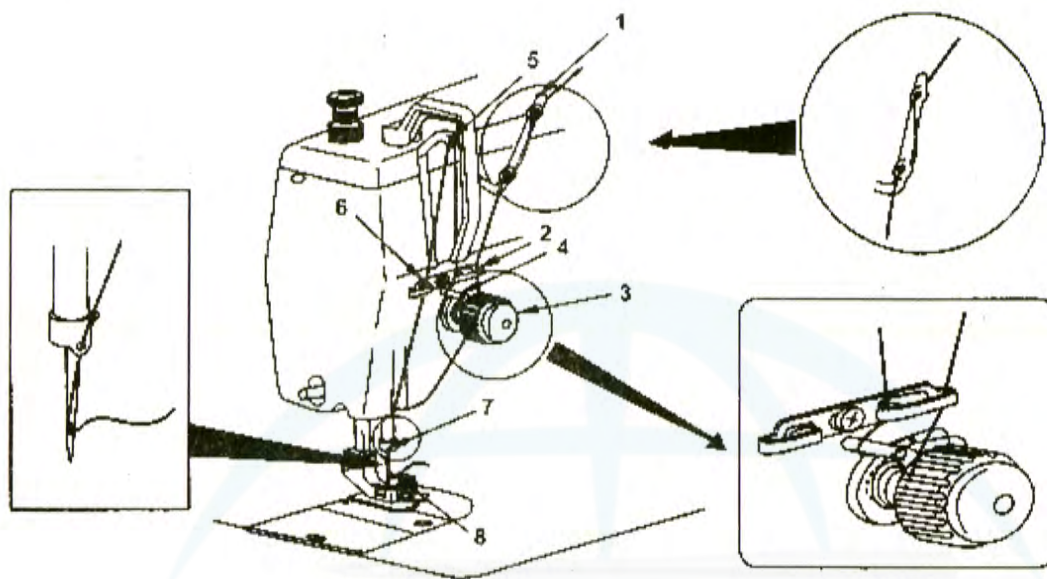


Figure 17

Lead thread from the thread unwinder through all the threading points in the order shown in Figure 17

Thread the needle from front to back, as show in Figure 17

Draw about 3 inches of thread through eye of needle.

**Caution:**

- Switch off the machine.
- Do not operate the machine without thread take-up guard.
- Do not operate the machine without finger guard.

### 3.12. Stitch Length Adjustment

#### Regulating the stitch length:

To regulate the stitch length, turn feed regulating dial '1' Figure 18, toward left or right as required.

'+' to lengthen

'-' to shorten

#### Changing to reverse feed:

Push lever '2' Figure 18 down for reverse feed and release for forward feed.

To regulate the reverse stitch length, turn thumb screw '3' Figure 18, toward left or right as required.

'+' to lengthen

'-' to shorten

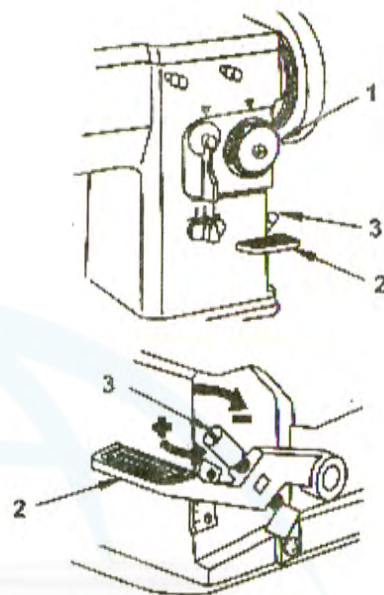


Figure 18

### 3.13. Presser Foot Pressure Adjustment

To regulate the presser foot pressure, turn knurled thumb screw '1', Figure 19, toward left or right as required.

'+' more pressure

'-' less pressure

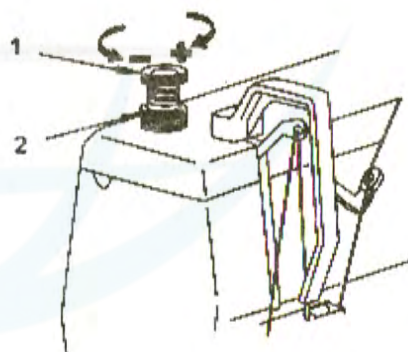


Figure 19

### 3.14. Needle Thread Tension Adjustment

Regulate needle thread tension with tension regulating knob '1', Figure 20.

'+' more tension

'-' less tension

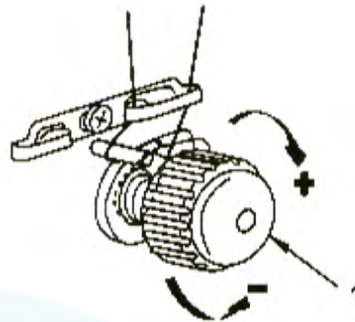


Figure 20

### 3.15. Take-up Spring Regulation

Using a screwdriver in slot of stud '1', Figure 21, regulate take-up spring tension by turning stud '1', as required.

'+' More tension

'-' Less tension

To adjust the amount of take-up spring movement, loosen screw '2'. Figure 21, and set take-up spring height by turning the entire tension assembly '3' toward left or right, as required. Securely tighten screw '2'.

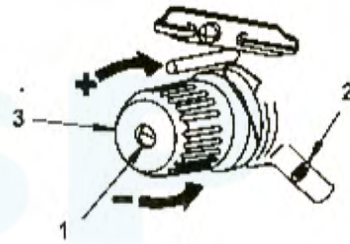


Figure 21

### 3.16. Bobbin Thread Tension Adjustment

Regulate bobbin thread tension with tension regulating screw '1', Figure 22.

'+' More tension

'-' Less tension



Figure 22

### 3.17. Needle Position Selector

Left, Center and Right needle position settings are available for placement of both straight and zigzag stitching (see Figure 23).

To position, push lever in and move to desired setting.

Do not make any needle position adjustment while the needle is in the fabric.

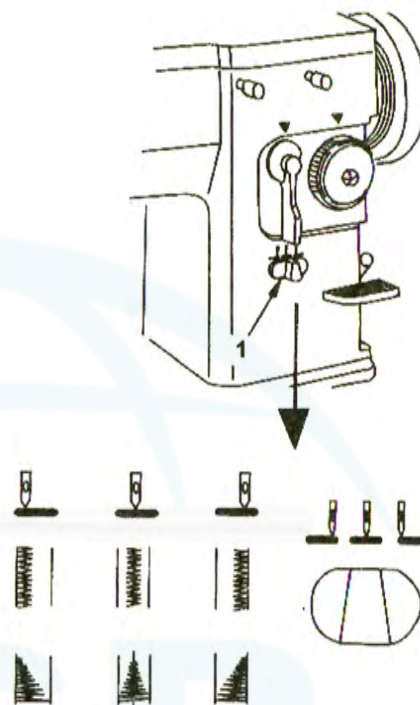


Figure 23

**Caution:**

- Switch off the machine.

### 3.18. Stitch Width Regulator

The width of zigzag stitch is controlled with the spring biased stitch width regulating lever '1', Figure 24.

Maximum zigzag width:

20U-109 / 109C / 309: 9.0 mm

20U-112 / 112C: 12.0 mm

Do not make any needle position adjustment while the needle is in the fabric.

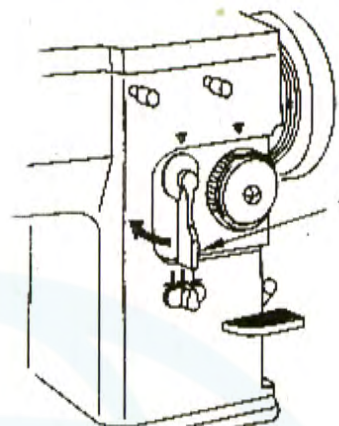


Figure 24

### 3.19. Zigzag Stitch Width Control

To obtain minimum to maximum width (20U-109, 109C, 309: 9mm or 20U-112, 112C: 12mm) zigzag stitches, first loosen thumb screw '2' to permit the stitch width regulator '3' to return to its zero position 'A' and retighten thumb screw '2', according to Figure 25.

Then loosen thumb screw '1', Figure 25, turn stitch width regulator '3' clockwise as far as it will go and while holding the regulator '3' in this position (see 'B', Figure 25), retighten thumb screw '1'.

You can now regulate the stitch width regulator within the range of zero to maximum.

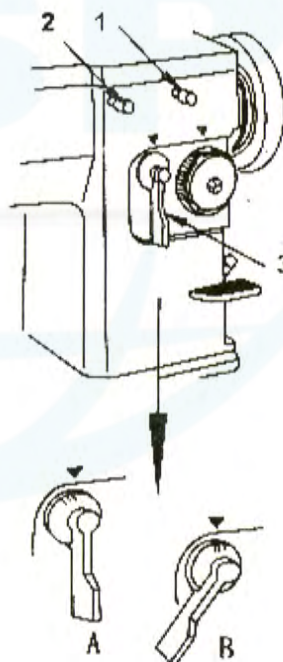


Figure 25

### 3.20. Needle Bar Frame Clamp Device

When straight stitching, a better sewing result can be obtained by locking the needle bar frame immovable with the clamping device (see Figure 26).

'A' Clamp

'B' Release

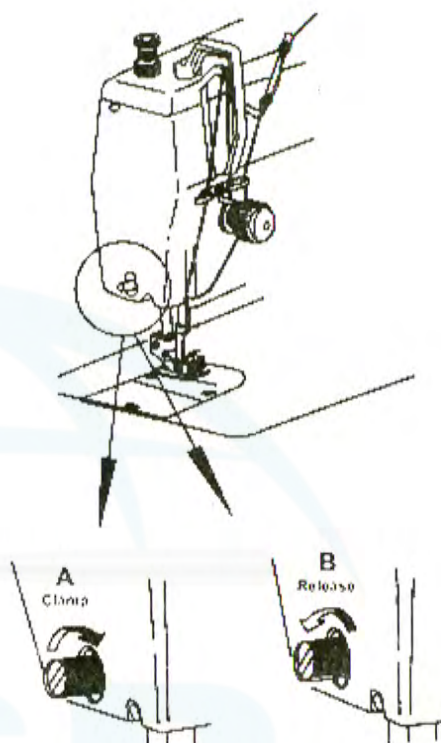


Figure 26

**Caution:**

- Switch off the machine.

### 3.21. Straight and Zigzag Stitch Fitting

General Purpose Presser Foot '1', Throat Plate '2' and Feed Dog '3' as shown in Figure 27, are used for straight and zigzag stitching.

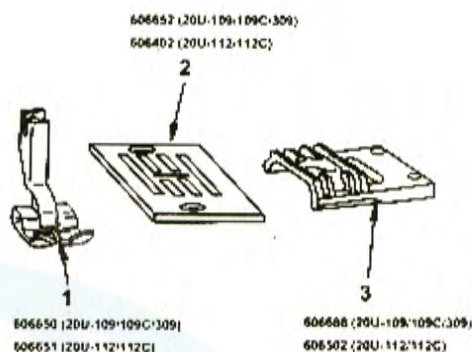


Figure 27

Straight Stitch Presser Foot '1', Throat Plate '2' and Feed Dog '3' as shown in Figure 28, are used for straight stitching only.

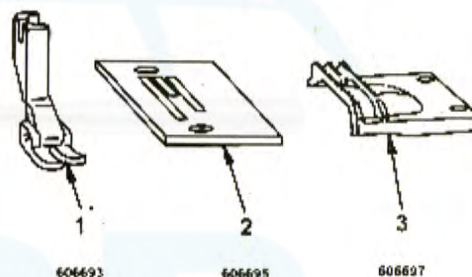


Figure 28

Open bed slide, then remove throat plate, (Use screwdriver '3' Figure 29, furnished with machine for removal and replacement of throat plate and feed dog.)

Using a screwdriver '2' remove bed plate '1' and remove feed dog '4' (see Figure 29).

To replace general purpose or straight stitch feed dog, fasten feed dog to machine temporarily and replace general purpose or straight stitch throat plate. Set feed dog correctly in position so that it will not hit the edges of feed dog slots in the throat plate.

Replace bed plate and press it firmly in place.

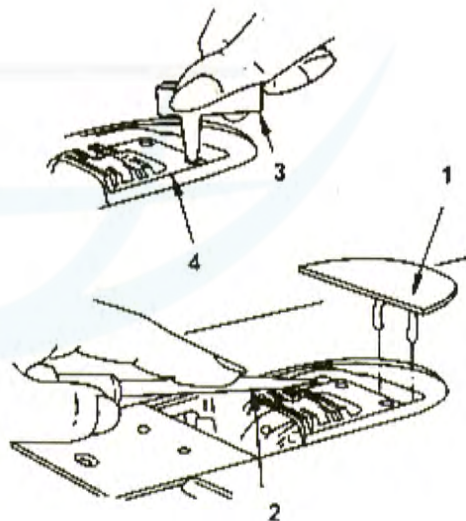


Figure 29

**Caution:**

- Switch off the machine.

### 3.22. Spool Cap Usage

When using a reel type thread spool, fit the spool cap '1' supplied with the machine onto the thread spool '3' (see Figure 31).

Set height of spool rest so there is approximately 2.0 mm clearance between top end of spool pin and the tip of the slotted spigot of the spool cap (see Figure 31)

The spool cap should never be fitted on the spool pin '5'. Forcing it onto the spool pin may result in breaking the slotted spigot of the spool cap (see Figure 31).

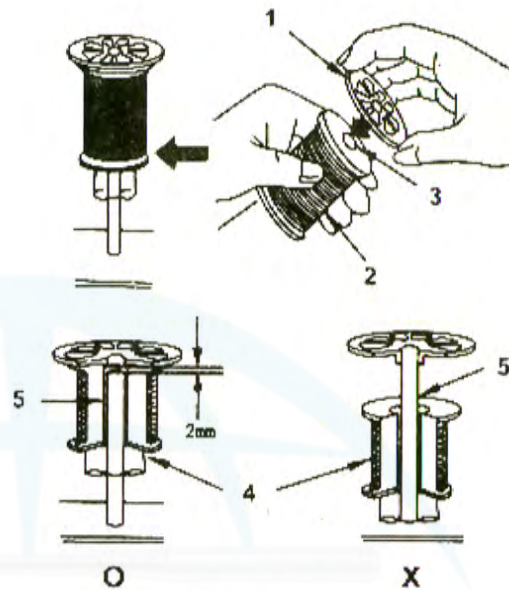


Figure 31

### 3.23. Anti-Spill Sleeve Usage

When using synthetic threads that easily spill off the cone '1', slip the anti-pill sleeve '2' furnished with the machine over the thread from the bottom of cone '1' leaving the thread end to hang free at the top of anti-spill sleeve '2' as shown in Figure 32

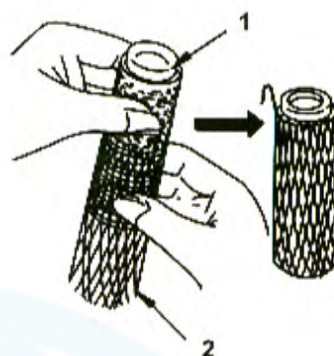


Figure 32

### 3.24. Knee Lifter Installation

#### Knee lifter mounting

Fasten knee lifter bracket '1' to underside of table '2' 145mm from table cut-out as shown in Figure 33

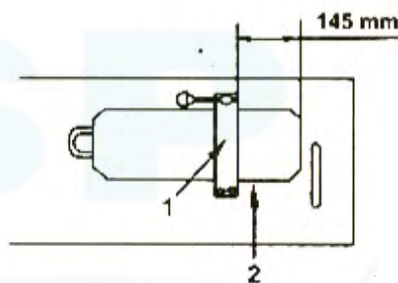


Figure 33

### Knee operating presser foot lift

Bell cranks '1' and '2' shown in Figure 34 are fastened to the underside of the bed bell crank '1' is used for lifting and lowering the presser foot with knee, and bell crank '2' is used for controlling the stitch width.

To raise or lower the presser foot with knee, loosen screw '4' holding the knee lifter shaft arm '3' and move knee lifter shaft arm '3' just under the bell crank '1', and firmly tighten screw '4'.

Loosen the lock nut holding screw '7' and turn screw '7' as required, so that the bent end '6' of knee lifter shaft arm '3' will be almost horizontal when knee lifter knee plate '5' is pushed as far as it will go in the direction indicated with arrow 'A', then firmly tighten the lock nut.

With knee lifter shaft arm '3' set in position as described above, loosen screw '8' and move knee lifter shaft arm '3' up or down as required, so that height '10' from its bent end '6' to bracket '9' is 64 mm.

Raise presser foot '12' with presser foot lifter '11'. Then loosen the lock nut holding screw '14' and turn screw '14' as required, so that knee lifter knee plate '5' when pushed in the direction indicated with arrow 'B', will stop at a point (presser foot '12' raised approx. 9 mm from throat plate '13' surface) where presser bar lifter '11' will drop down from its raised position when presser bar is lifted a little higher than its normal up position. Then firmly tighten the lock nut.

When knee lifter knee plate '5' is pushed in the direction indicated with arrow 'B', the presser foot '12' will rise and when knee plate '5' is released, presser foot '12' will be lowered.

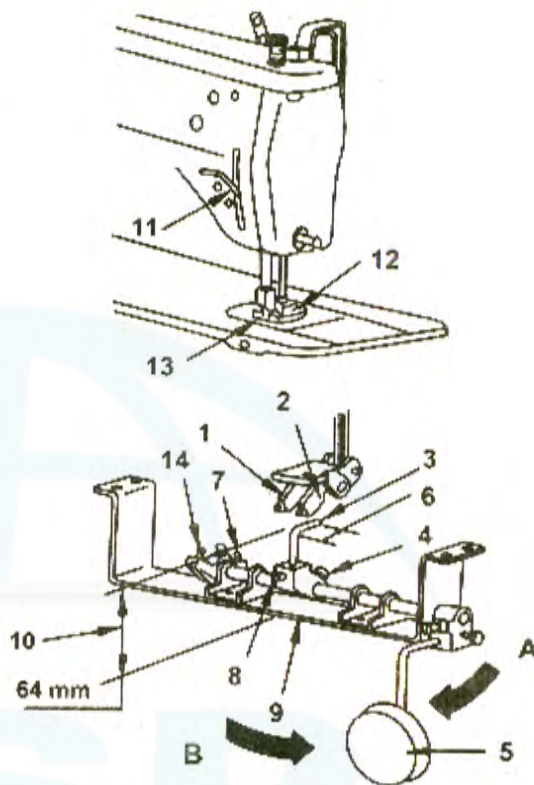


Figure 34

#### Caution:

- Switch off the machine.
- Set sewing head upright again using both hands.
- Danger of crushing between sewing head and table top

**Knee operating stitch width control:**

Bell cranks '1' and '2' shown in Figure 35 are fastened to the underside of the bed. Bell crank '1' is used for lifting and lowering the presser foot with knee and bell crank '2' is used for controlling the stitch width.

To control the stitch width with knee, loosen screw '4' holding the knee lifter shaft arm '3' and move knee lifter shaft arm '3' just under the bell crank '2' and firmly tighten screw '4'.

Loosen the lock nut holding screw '7' and turn screw '7' as required, so that the bent end '6' of knee lifter shaft arm '3' will be almost horizontal when knee lifter knee plate '5' is pushed as far as it will go in the direction indicated with arrow 'A'. Then firmly tighten the lock nut.

With knee lifter shaft arm '3' set in position as described above, loosen screw '8' and move knee lifter shaft arm '3' up or down as required, so that height '10' from its bent end '6' to bracket is 67 mm.

Loosen stitch width regulating plate thumb screws '11' and '12' so that stitch width regulator '13' can be moved from zero to maximum stitch width. (20U-109 / 109C / 308: 9mm or 20U-112 / 112C: 12mm). Loosen the lock nut holding screw '14' and turn screw '14' as required, so that knee lifter knee plate '5' when pushed in the direction indicated with arrow 'B', will stop at the maximum stitch width position of stitch width regulator '13'. Then firmly tighten the lock nut.

Stitch width will become wider when knee lifter knee plate '5' is pushed in the direction indicated with arrow 'B' and will become smaller when knee plate is released.

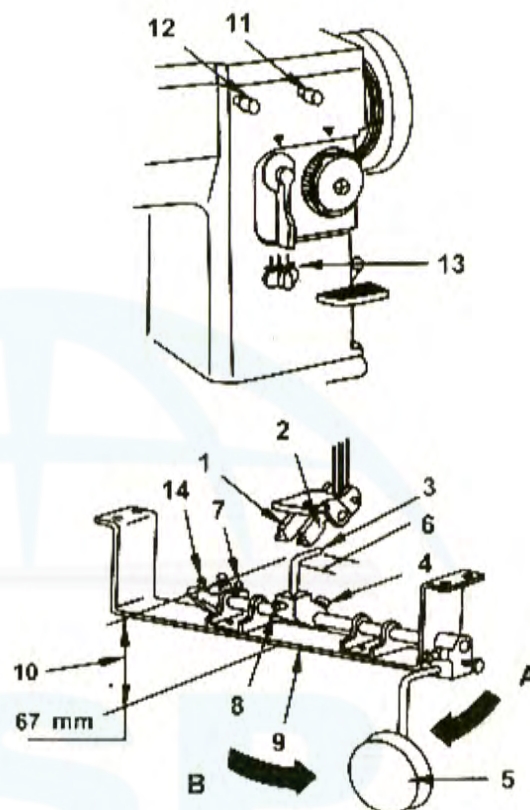


Figure 35

**Caution:**

- Switch off the machine.
- Set sewing head upright again using both hands.
- Danger of crushing between sewing head and table top

### 3.25. Fittings for Buttonhole Stitching

Buttonhole Foot '1', General Purpose Throat Plate '2' and Feed Dog '3' as shown in Figure 36 are used for buttonhole stitching.

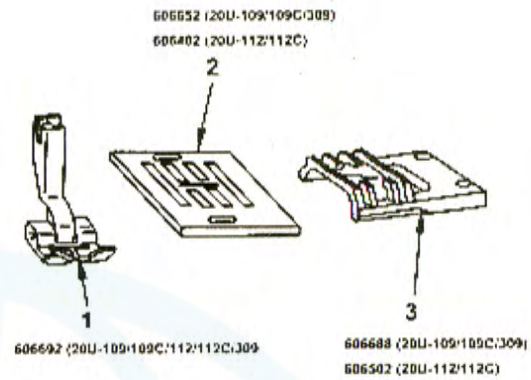


Figure 36

### 3.26. Fittings for Hem Sewing

Hemmer Foot '1', Straight Stitch Throat Plate '2' and Feed Dog '3' as shown in Figure 37 are used for hem sewing.

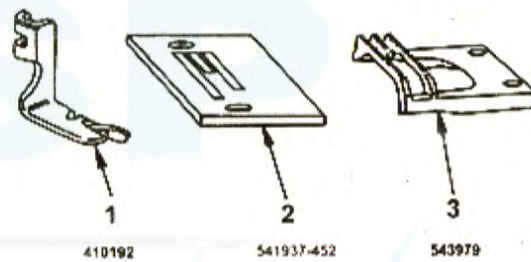


Figure 37

### 3.27. Fittings for Zipper and Cord Sewing

Zipper Foot '1', General Purpose '2' or Straight Stitch '3'

Throat Plate and General Purpose '4' or Straight Stitch '5'

Feed Dog as shown in Figure 38 are used for zipper and cord sewing.

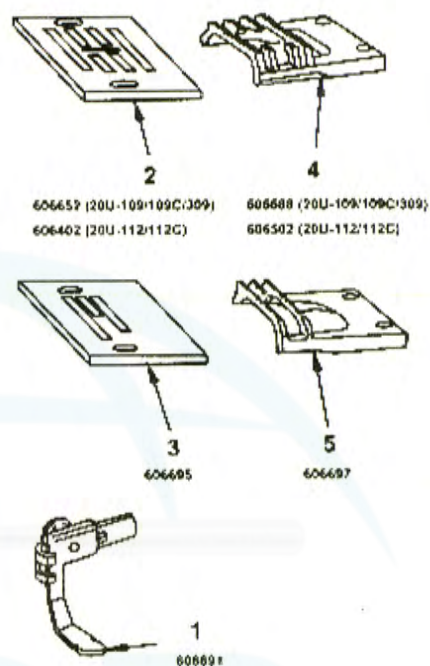


Figure 38

**Caution:**

- Switch off the machine.

#### **4. Maintenance**

##### **4.1. Machine Head Cleaning**

Clean the machine periodically with a soft and dry cloth to remove the excess of dust on the machine head. Do not use any kind of lacquer thinner to wipe the surface.

##### **4.2. Lubrication**

If the machine was idle for a long time, lubricate the machine according to the instructions of topics 3.4.

##### **4.3. Safety Inspection**

Check periodically if all safety devices are properly installed and adjusted.

Check if all fixing and supporting screws of the machine head are adequately tighten.

Check if the v-belt is not excessively worn and if it has the right tension.

Check if there is no overheating in the electrical motor and check if the power cord and plug are not damaged.

SSP

## 5. Troubleshooting

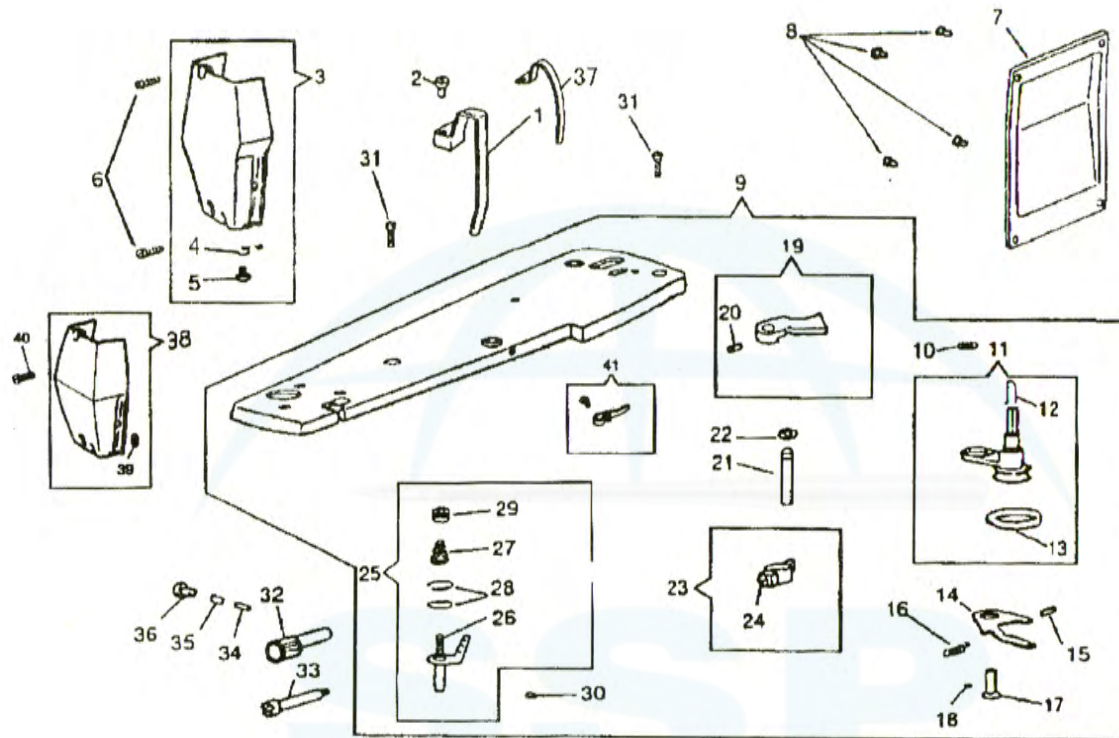
Whenever sewing difficulty is encountered, check and make adjustments as follows.

| Problem                | Possible Causes                                      | Possible Solutions                                 |
|------------------------|------------------------------------------------------|----------------------------------------------------|
| Needle thread breaks   | 1. Is machine properly threaded?                     | 1. Correct needle threading                        |
|                        | 2. Are thread guides or tension disc area lint-free? | 2. Remove lint & fluff in bobbin case & hook       |
|                        | 3. Is needle-thread tension too tight?               | 3. Adjust needle thread tension                    |
|                        | 4. Is needle bent or has a blunt point?              | 4. Insert new needle                               |
|                        | 5. Is needle inserted correctly?                     | 5. Insert needle correctly                         |
|                        | 6. Is needle the correct size for thread & fabric?   | 6. Select proper needle size & thread              |
|                        | 7. Is thread free of slubs & knots?                  | 7. Remove slubs & knots                            |
| Bobbin thread breaks   | 8. Is bobbin threading correct?                      | 8. Correct bobbin threading                        |
|                        | 9. Is thread tangled or caught?                      | 9. Untangle thread from bobbin case & hook         |
|                        | 10. Is thread tension correct?                       | 10. Adjust needle & bobbin case thread tension     |
|                        | 11. Does bobbin rotate smoothly?                     | 11. Check whether bobbin thread is wound correctly |
| Stitches skip          | 12. Is needle inserted correctly?                    | 12. Insert needle correctly                        |
|                        | 13. Is needle bent or has blunt needle point?        | 13. Insert new needle                              |
|                        | 14. Is size of needle & thread suitable for fabric?  | 14. Select proper needle size & thread             |
|                        | 15. Is threading correct?                            | 15. Correct needle threading                       |
| Needle breaks          | 16. Is needle properly inserted?                     | 16. Insert needle correctly                        |
|                        | 17. Is needle bent?                                  | 17. Insert new needle                              |
|                        | 18. Is needle the correct size for the fabric?       | 18. Select proper needle & thread for fabric       |
|                        | 19. Is needle clamping screw loose?                  | 19. Tighten needle set screw                       |
|                        | 20. Is the fabric pulled while sewing?               | 20. Do not pull fabric while sewing                |
| Fabric fails to feed   | 21. Is feed regulating dial properly adjusted?       | 21. Lengthen stitch length by feed regulating dial |
|                        | 22. Is presser foot pressure adjusted properly?      | 22. Adjust correct presser foot pressure           |
| Fabric puckers         | 23. Is needle threading correct?                     | 23. Correct needle threading                       |
|                        | 24. Is needle point blunt?                           | 24. Insert new needle                              |
|                        | 25. Is thread tension too tight?                     | 25. Adjust needle tension properly                 |
| Rotating heavy noise   | 26. Is there any lint or fluff on feed dog?          | 26. Remove lint & fluff from feed dog              |
|                        | 27. Is there any lint in rotating hook?              | 27. Remove lint & fluff from rotating hook         |
| Machine fails to start | 28. Are electrical plugs properly connected?         | 28. Turn on power switch                           |
|                        | 29. Is power & light switch turned on?               | 29. Connect plug to power source                   |

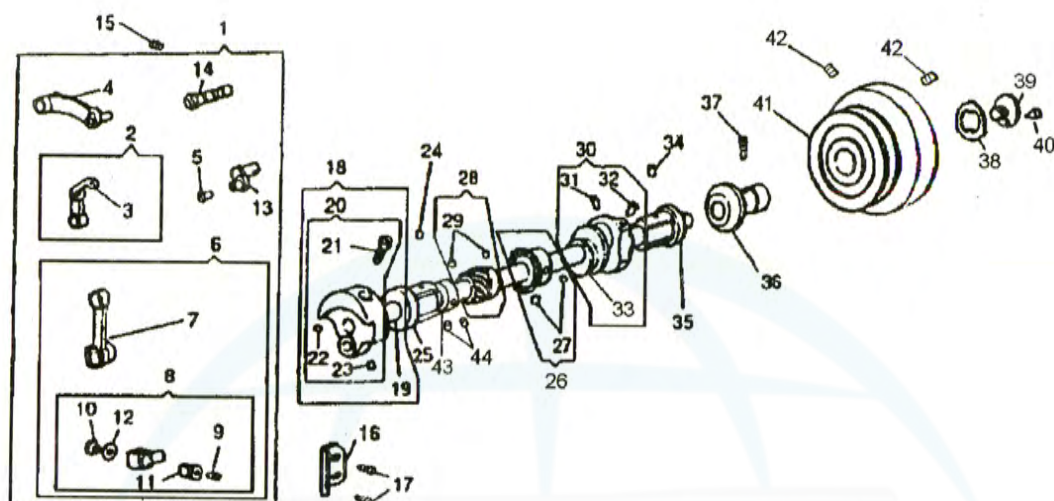
\*\*\* If you still have difficulty in sewing even after making adjustments, contact your nearest Service Center.

## 6. Parts List

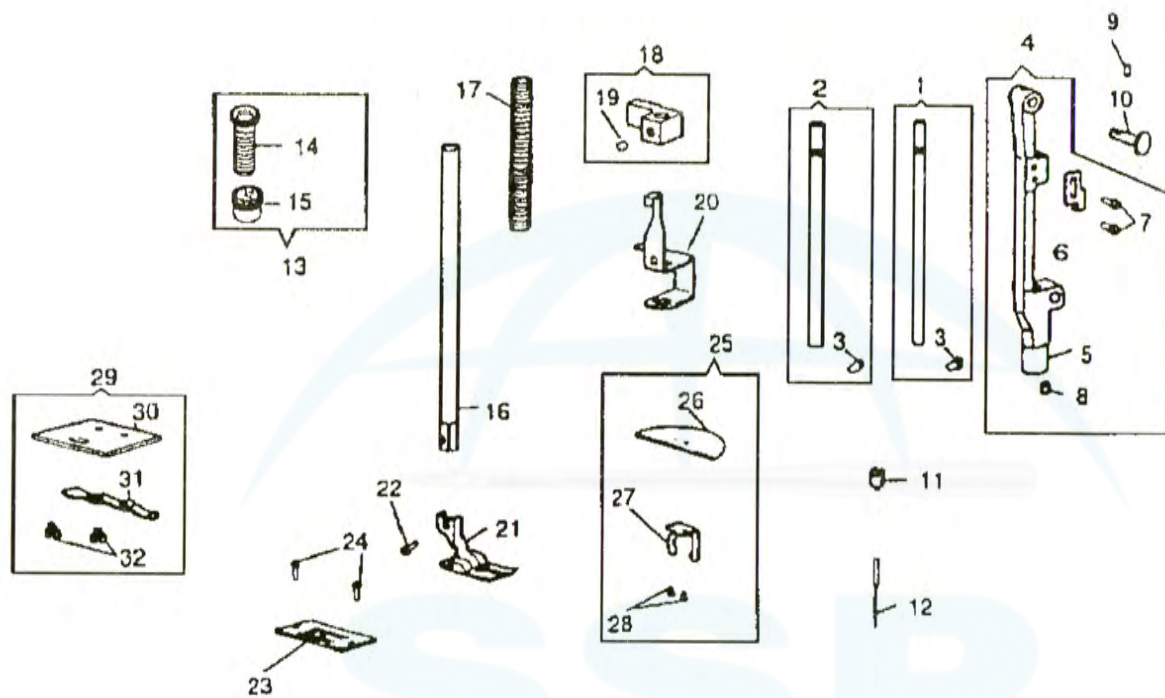
### 6.1. Face Plate, Arm Top Cover and Arm Side Cover Components



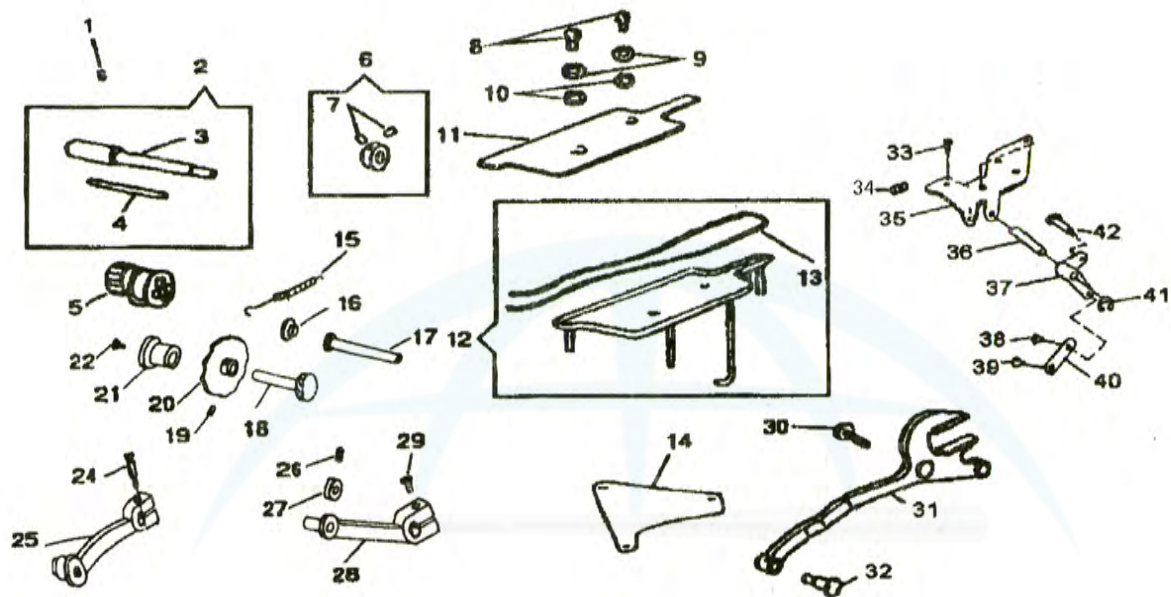
| No. | Part No.   | Description                     | Quantity |      |     |      |     |
|-----|------------|---------------------------------|----------|------|-----|------|-----|
|     |            |                                 | 109      | 109C | 112 | 112C | 309 |
| 1   | 554113-383 | Thread Take-up Guard            | 1        | 1    | 1   | 1    |     |
| 2   | 606407     | Take-up Guard Screw             | 1        | 1    | 1   | 1    | 1   |
| 3   | 606395     | Face Plate Assembly             | 1        | 1    | 1   | 1    |     |
| 4   | 606632     | Thread Guide                    | 1        | 1    | 1   | 1    |     |
| 5   | 606633     | Thread Guide Screw              | 1        | 1    | 1   | 1    |     |
| 6   | 606634     | Screw                           | 2        | 2    | 2   | 2    |     |
| 7   | 554118-385 | Back Cover                      | 1        | 1    | 1   | 1    | 1   |
| 8   | 606635     | Screw                           | 4        | 4    | 4   | 4    | 1   |
| 9   | 606433     | Arm Top Cover Assembly          | 1        | 1    | 1   | 1    |     |
|     | 601433     | Arm Top Cover Assembly          |          |      |     |      | 1   |
| 10  | 606636     | Thrust Washer                   | 1        | 1    | 1   | 1    | 1   |
| 11  | 606454     | B/W Bracket Assembly            | 1        | 1    | 1   | 1    | 1   |
| 12  | 606637     | Spring                          | 1        | 1    | 1   | 1    | 1   |
| 13  | 606638     | Friction O-ring                 | 1        | 1    | 1   | 1    |     |
|     | GO207-8    | Friction O-ring                 |          |      |     |      | 1   |
| 14  | 606452     | B/W Regulating Plate            | 1        |      | 1   |      | 1   |
| 15  | 606453     | Spring                          | 1        |      | 1   |      | 1   |
| 16  | 606449     | Spring                          | 1        |      | 1   |      | 1   |
| 17  | 606451     | Hinge Stud                      | 1        |      | 1   |      |     |
|     | GS272-8    | Hinge Stud                      |          |      |     |      | 1   |
| 18  | 606439     | Set Screw                       | 1        |      | 1   |      | 1   |
| 19  | 550032     | B/W Lever Assembly              | 1        |      | 1   |      | 1   |
| 20  | 544208-005 | B/W Lever Set Screw             | 1        |      | 1   |      | 1   |
| 21  | 606447     | B/W Lever Stud                  | 1        |      | 1   |      | 1   |
| 22  | 606448     | B/W Lever Stud Ring             | 1        |      | 1   |      |     |
|     | GZ202-8    | B/W Lever Stud Ring             |          |      |     |      | 1   |
| 23  | 606446     | B/W Regulator Assembly          | 1        |      | 1   |      |     |
| 24  | 544208-005 | B/W Regulator Screw             | 1        |      | 1   |      |     |
| 25  | 606639     | B/W Tension Assembly            | 1        |      | 1   |      |     |
|     | GR482/6-8  | B/W Tension Assembly            |          |      |     |      | 1   |
| 26  | 606440     | Bobbin Winder Tension Stud      | 1        |      | 1   |      | 1   |
| 27  | 606442     | Bobbin Winder Tension Spring    | 1        |      | 1   |      | 1   |
| 28  | 606441     | Bobbin Winder Tension Disc      | 2        |      | 2   |      | 1   |
| 29  | 606443     | Tension Nut                     | 1        |      | 1   |      |     |
|     | GL162-8    | Tension Nut                     |          |      |     |      | 1   |
| 30  | 606439     | Screw                           | 1        |      | 1   |      | 1   |
| 31  | 606602     | Arm Top Cover Screw             | 2        |      | 2   |      | 2   |
| 32  | 606398     | Eccentric Lock                  | 1        |      | 1   |      |     |
|     | GT150-8    | Eccentric Lock                  |          |      |     |      | 1   |
| 33  | 606397     | Eccentric Screw                 | 1        |      | 1   |      | 1   |
| 34  | 554128     | Stopper pin                     | 1        |      | 1   |      | 1   |
| 35  | 554144     | Stopper Spring                  | 1        |      | 1   |      | 1   |
| 36  | 544212-001 | Stopper Screw                   | 1        |      | 1   |      | 1   |
| 37  | GK146-8    | Stitch-staff shield             |          |      |     |      | 1   |
| 38  | GR406/-8   | Panel assembly                  |          |      |     |      | 1   |
| 39  | GR232-8    | Panel thread hook               |          |      |     |      | 1   |
| 40  | GS132-8    | Panel screw                     |          |      |     |      | 2   |
| 41  | GR480/2-8  | Volume adjusting plate assembly |          |      |     |      | 1   |

**6.2. Thread Take-up, Arm Shaft and Handwheel Components**

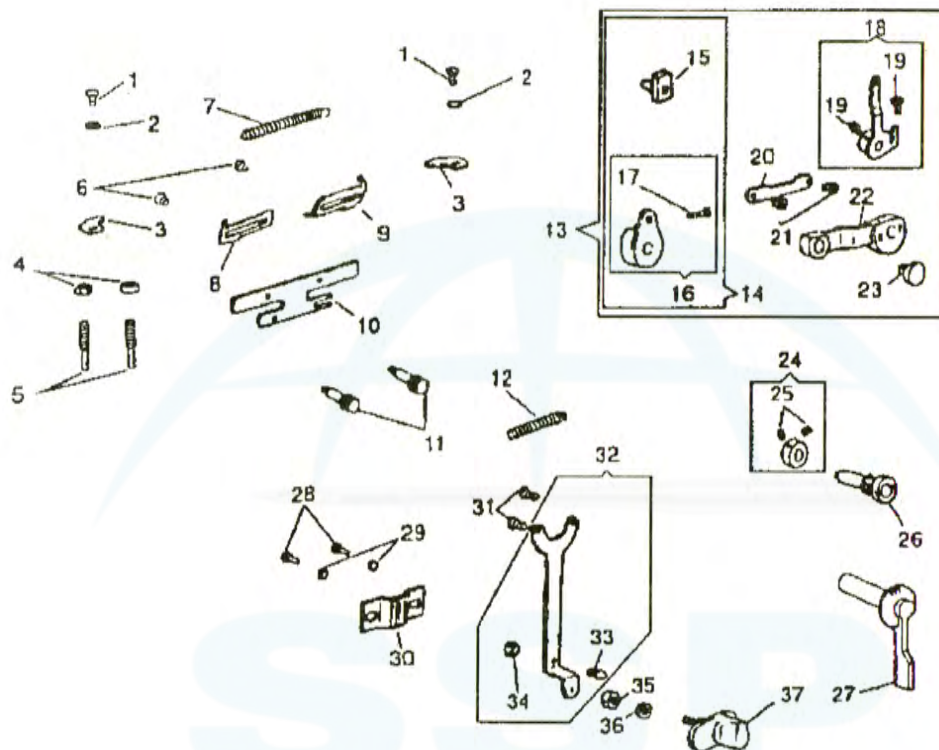
| No. | Part No.   | Description                      | Quantity |      |     |      |     |
|-----|------------|----------------------------------|----------|------|-----|------|-----|
|     |            |                                  | 109      | 109C | 112 | 112C | 309 |
| 1   | 606640     | Take-up Assembly                 | 1        | 1    | 1   | 1    | 1   |
| 2   | 606475     | Take-up                          | 1        | 1    | 1   | 1    | 1   |
| 3   | 606474     | Take-up Eyelet                   | 1        | 1    | 1   | 1    | 1   |
| 4   | 606641     | Take-up Lever Link               | 1        | 1    | 1   | 1    | 1   |
| 5   | 606471     | Conn. Link Cap Screw             | 1        | 1    | 1   | 1    | 1   |
| 6   | 606642     | N/B. Connecting Link Assembly    | 1        | 1    | 1   | 1    | 1   |
| 7   | 606472     | N/B. Connecting Link             | 1        | 1    | 1   | 1    | 1   |
| 8   | 606466     | Connecting Stud Assembly         | 1        | 1    | 1   | 1    | 1   |
| 9   | 606468     | Set Screw                        | 1        | 1    | 1   | 1    | 1   |
| 10  | 606464     | Hinge Pin Screw                  | 1        | 1    | 1   | 1    | 1   |
| 11  | 606467     | Hinge Pin                        | 1        | 1    | 1   | 1    | 1   |
| 12  | 606465     | Pin Washer                       | 1        | 1    | 1   | 1    | 1   |
| 13  | 606473     | Take-up Crank                    | 1        | 1    | 1   | 1    | 1   |
| 14  | 606643     | Hinge Stud                       | 1        | 1    | 1   | 1    | 1   |
| 15  | 606420     | Set Screw                        | 1        | 1    | 1   | 1    | 1   |
| 16  | 606469     | Guide                            | 1        | 1    | 1   | 1    | 1   |
| 17  | 606444     | Screw                            | 2        | 2    | 2   | 2    | 2   |
| 18  | 606644     | Arm Shaft and N/B Crank Assembly | 1        | 1    | 1   | 1    | 1   |
| 19  | 606484     | Arm Shaft                        | 1        | 1    | 1   | 1    |     |
|     | 601478     | Arm Shaft                        |          |      |     |      | 1   |
| 20  | 606478     | N/B. Crank Assembly              | 1        | 1    | 1   | 1    | 1   |
| 21  | 606477     | N/B Crank Posh. Screw            | 1        | 1    | 1   | 1    | 1   |
| 22  | 504066     | Position Screw                   | 1        | 1    | 1   | 1    | 1   |
| 23  | 504101     | Crank Posh. Screw                | 1        | 1    | 1   | 1    | 1   |
| 24  | 606480     | Bushing Set Screw                | 1        | 1    | 1   | 1    | 1   |
| 25  | 606481     | Front Bush                       | 1        | 1    | 1   | 1    | 1   |
| 26  | 541606     | Bevel Gear Assembly              | 1        | 1    | 1   | 1    | 1   |
| 27  | 504066     | Bevel Gear Set Screw             | 2        | 2    | 2   | 2    | 2   |
| 28  | 541607     | Worm Gear Assembly               | 1        | 1    | 1   | 1    |     |
|     | 541607-308 | Worm Gear Assembly               |          |      |     |      | 1   |
| 29  | 504028     | Worm Gear Screw                  | 2        | 2    | 2   | 2    | 2   |
| 30  | 606483     | Feed Eccentric Assembly          | 1        | 1    | 1   | 1    | 1   |
| 31  | 606482     | Feed Eccentric Screw             | 1        | 1    | 1   | 1    | 1   |
| 32  | 606482     | Feed Eccentric Screw             | 1        | 1    | 1   | 1    | 1   |
| 33  | 606645     | Retaining Ring                   | 1        | 1    | 1   | 1    | 1   |
| 34  | 606480     | Arm Shaft Bushing Screw          | 1        | 1    | 1   | 1    | 1   |
| 35  | 606485     | Arm Shaft Bushing, back          | 1        | 1    | 1   | 1    | 1   |
| 36  | 606487     | CSM Flanged Bushing              | 1        | 1    | 1   | 1    | 1   |
| 37  | 606488     | CSM Bushing Set Screw            | 1        | 1    | 1   | 1    | 1   |
| 38  | 505009     | CSM Clamp Washer                 | 1        | 1    | 1   | 1    | 1   |
| 39  | 415763-383 | CSM Clamp Screw                  | 1        | 1    | 1   | 1    | 1   |
| 40  | 154756     | CSM Clamp Stop Screw             | 1        | 1    | 1   | 1    |     |
| 41  | 606489     | Handwheel                        | 1        | 1    | 1   | 1    |     |
|     | 601489     | Handwheel                        |          |      |     |      | 1   |
| 42  | 606420     | Screw                            |          |      |     |      | 2   |
| 43  | 606712     | Retaining Collar Assembly        | 1        | 1    | 1   | 1    | 1   |
| 44  | 606713     | Retaining Collar screw           | 2        | 2    | 2   | 2    | 2   |

**6.3. Needle Bar, Presser Bar and Throat Plate Components**

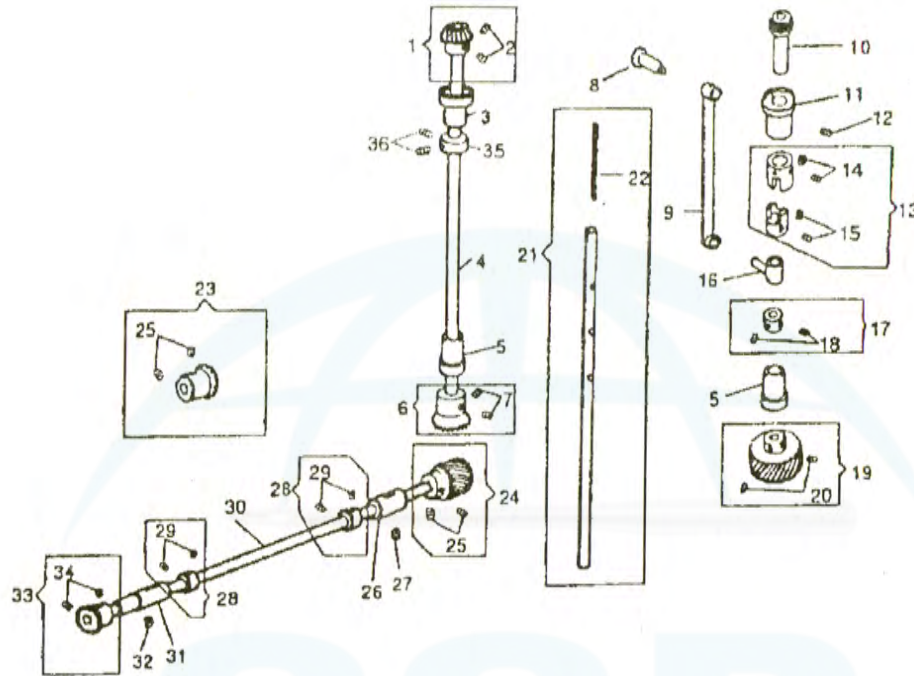
| No. | Part No. | Description                    | Quantity |      |     |      |     |
|-----|----------|--------------------------------|----------|------|-----|------|-----|
|     |          |                                | 109      | 109C | 112 | 112C | 309 |
| 1   | 606646   | Needle Bar                     | 1        | 1    |     |      | 1   |
| 2   | 606461   | Needle Bar                     |          |      | 1   | 1    |     |
| 3   | 606463   | Needle Clamp Screw             | 1        | 1    | 1   | 1    | 1   |
| 4   | 606647   | Needle Bar Frame Assembly      | 1        | 1    | 1   | 1    | 1   |
| 5   | 606456   | Needle Bar Frame               | 1        | 1    | 1   | 1    | 1   |
| 6   | 606458   | Indicator Plate                | 1        | 1    | 1   | 1    | 1   |
| 7   | 606459   | Indicator Plate Screw          | 2        | 2    | 2   | 2    | 2   |
| 8   | 606457   | Exec. Pin Set Screw            | 1        | 1    | 1   | 1    | 1   |
| 9   | 606516   | Set Screw                      | 1        | 1    | 1   | 1    | 1   |
| 10  | 606460   | N/B Frame Pin                  | 1        | 1    | 1   | 1    | 1   |
| 11  | GR466-8  | Needle Bar Tread Guard         | 1        | 1    |     |      | 1   |
|     | GR252-8  | Needle Bar Tread Guard         |          |      | 1   | 1    |     |
| 12  | 1910-05  | Needle (1910-05 #14)           | 1        | 1    | 1   | 1    | 1   |
| 13  | 606648   | P/B Thumb Screw & Nut Assembly | 1        | 1    | 1   | 1    | 1   |
| 14  | 606592   | Presser Bar Thumb Screw        | 1        | 1    | 1   | 1    | 1   |
| 15  | 606649   | Presser Bar Thumb Screw Nut    | 1        | 1    | 1   | 1    | 1   |
| 16  | 606594   | Presser Bar                    | 1        | 1    | 1   | 1    | 1   |
| 17  | 606593   | Presser Bar Spring             | 1        | 1    | 1   | 1    | 1   |
| 18  | 606600   | Presser Bar Bracket Assembly   | 1        | 1    | 1   | 1    | 1   |
| 19  | 606599   | Screw                          | 1        | 1    | 1   | 1    | 1   |
| 20  | 606601   | Presser Bar Lifting Bracket    | 1        | 1    | 1   | 1    | 1   |
| 21  | 606650   | Presser Foot Assembly          | 1        | 1    |     |      | 1   |
|     | 606651   | Presser Foot Assembly          |          |      | 1   | 1    |     |
| 22  | 606444   | Presser Foot Screw             | 1        |      |     |      |     |
| 23  | 606652   | Needle Plate                   | 1        | 1    |     |      | 1   |
|     | 606402   | Needle Plate                   |          |      | 1   | 1    |     |
| 24  | 606403   | Needle Plate Screw             | 1        | 1    | 1   | 1    | 1   |
| 25  | 606653   | Bed Plate Assembly             | 1        | 1    | 1   | 1    | 1   |
| 26  | 606404   | Bed Plate                      | 1        | 1    | 1   | 1    | 1   |
| 27  | 606405   | Bed Plate Spring               | 1        | 1    | 1   | 1    | 1   |
| 28  | 606401   | Bed Plate Screw                | 2        | 2    | 2   | 2    | 2   |
| 29  | 606654   | Slide Plate Assembly           | 1        | 1    | 1   | 1    | 1   |
| 30  | 606399   | Slide Plate                    | 1        | 1    | 1   | 1    | 1   |
| 31  | 606400   | Slide Plate Spring             | 1        | 1    | 1   | 1    | 1   |
| 32  | 606401   | Slide Plate Spring Screw       | 2        | 2    | 2   | 2    | 2   |

**6.4. Zigzag Triangular Cam and Hook Advancing Crank Components**

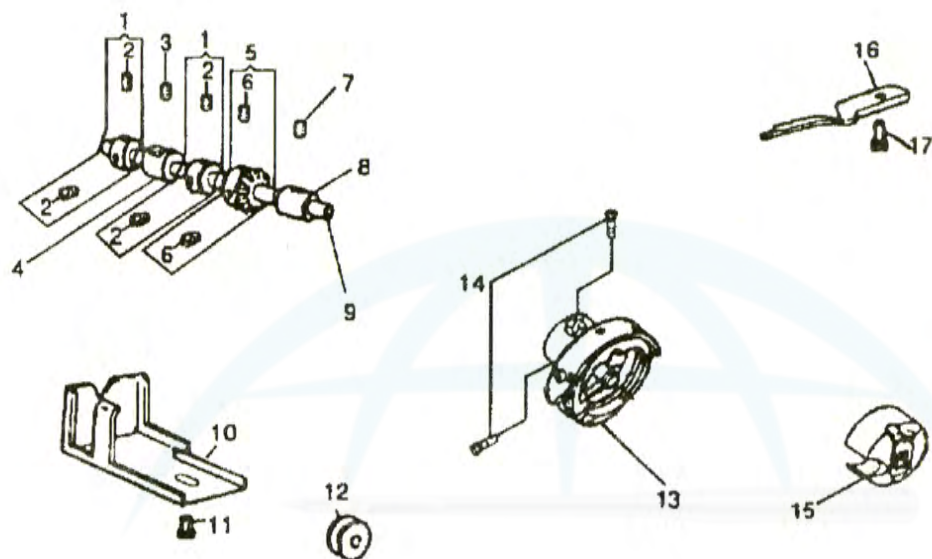
| No. | Part No.   | Description                               | Quantity |      |     |      |     |
|-----|------------|-------------------------------------------|----------|------|-----|------|-----|
|     |            |                                           | 109      | 109C | 112 | 112C | 309 |
| 1   | 606420     | Set Screw                                 | 1        | 1    | 1   | 1    |     |
| 2   | 606539     | Cam Shaft Assembly                        | 1        | 1    | 1   | 1    |     |
| 3   | 606655     | Cam Shaft                                 | 1        | 1    | 1   | 1    |     |
|     | 606655-308 | Cam Shaft                                 |          |      |     |      | 1   |
| 4   | 606656     | Cam Shaft Oil Wick                        | 1        | 1    | 1   | 1    |     |
| 5   | 410031     | Zig Zag Cam and Gear Assembly             | 1        | 1    |     |      |     |
|     | 410056     | Zig Zag Cam and Gear Assembly             |          |      | 1   | 1    |     |
| 6   | 606542     | Cam Shaft Collar Assembly                 | 1        | 1    | 1   | 1    |     |
| 7   | 606541     | Collar Set Screw                          | 2        | 2    | 2   | 2    |     |
| 8   | 606444     | Screw                                     | 2        | 2    | 2   | 2    |     |
| 9   | 606590     | Spring Washer                             | 2        | 2    | 2   | 2    |     |
| 10  | 606589     | Washer                                    | 2        | 2    | 2   | 2    |     |
| 11  | 606588     | Oil Felt                                  | 1        | 1    | 1   | 1    |     |
| 12  | 606657     | Oil Reservoir Assembly                    | 1        | 1    |     |      |     |
|     | 606586     | Oil Reservoir Assembly                    |          |      | 1   | 1    |     |
| 13  | 606658     | Oil Wick                                  | 1        | 1    | 1   | 1    |     |
| 14  | 606659     | Oil Reservoir Bracket                     | 1        | 1    |     |      |     |
| 15  | GW178-8    | Spring                                    |          |      |     |      | 1   |
| 16  | GR243      | Rubber Cap                                |          |      |     |      | 1   |
| 17  | GZ222-9    | Following Shaft                           |          |      |     |      | 1   |
| 18  | GC149-8    | Leaning Gear                              |          |      |     |      | 1   |
| 19  | GS202-8    | Sleeve Screw of Cam Assembly              |          |      |     |      | 1   |
| 20  | GR461/2-8  | Cam Assembly                              |          |      |     |      | 1   |
| 21  | GO226-8    | Leaning gear Sleeve                       |          |      |     |      | 1   |
| 22  | GS166-8    | Left-hand Screw                           |          |      |     |      | 1   |
| 24  | GS258-8    | Screw of Drive Lever                      |          |      |     |      | 1   |
| 25  | GR458/3-8  | Regulator Fork drive Lever Assembly       |          |      |     |      | 1   |
| 26  | GS202-8    | Washer Screw                              |          |      |     |      | 1   |
| 27  | GO164-8    | Washer of Following Lever                 |          |      |     |      | 1   |
| 28  | GR460/-8   | Following Lever Assembly                  |          |      |     |      | 1   |
| 29  | GS020      | Screw of Following Lever                  |          |      |     |      | 1   |
| 30  | 606664     | Slide Block Cap Screw                     | 1        | 1    | 1   | 1    | 1   |
| 31  | 606663     | Zig Zag Stitch Reg. Fork                  | 1        | 1    |     |      |     |
|     | 606538     | Zig Zag Stitch Reg. Fork                  |          |      | 1   | 1    |     |
|     | 606663-308 | Zig Zag Stitch Reg. Fork                  |          |      |     |      | 1   |
| 32  | 606545     | Fork Eccentric Connection Pin             | 1        | 1    | 1   | 1    | 1   |
| 33  | GS256-8    | Screw of Locating Rack                    |          |      | 1   | 1    |     |
| 34  | GS213-8    | Set Screw of Locating Rack Sleeve         |          |      | 1   | 1    |     |
| 35  | GR390/2-8  | Locating Rack Assembly                    |          |      | 1   | 1    |     |
| 36  | GZ175-8    | Differential Connecting Shaft             |          |      | 1   | 1    |     |
| 37  | GH210/3-8  | Differential Crank Assembly               |          |      | 1   | 1    |     |
| 38  | GS216-8    | Screw of Differential Connecting Bar      |          |      | 1   | 1    |     |
| 39  | GS217-8    | Connecting Screw for Sliding Block        |          |      | 1   | 1    |     |
| 40  | GH179-8    | Differential Connecting Shaft             |          |      | 1   | 1    |     |
| 41  | GO177-8    | Retainer of Differential connecting Shaft |          |      | 1   | 1    |     |
| 42  | GS219-8    | Screw of Differential Connecting Bar      |          |      | 1   | 1    |     |

**6.5. Bight Amplitude, Bight and L-C-R Position Components**

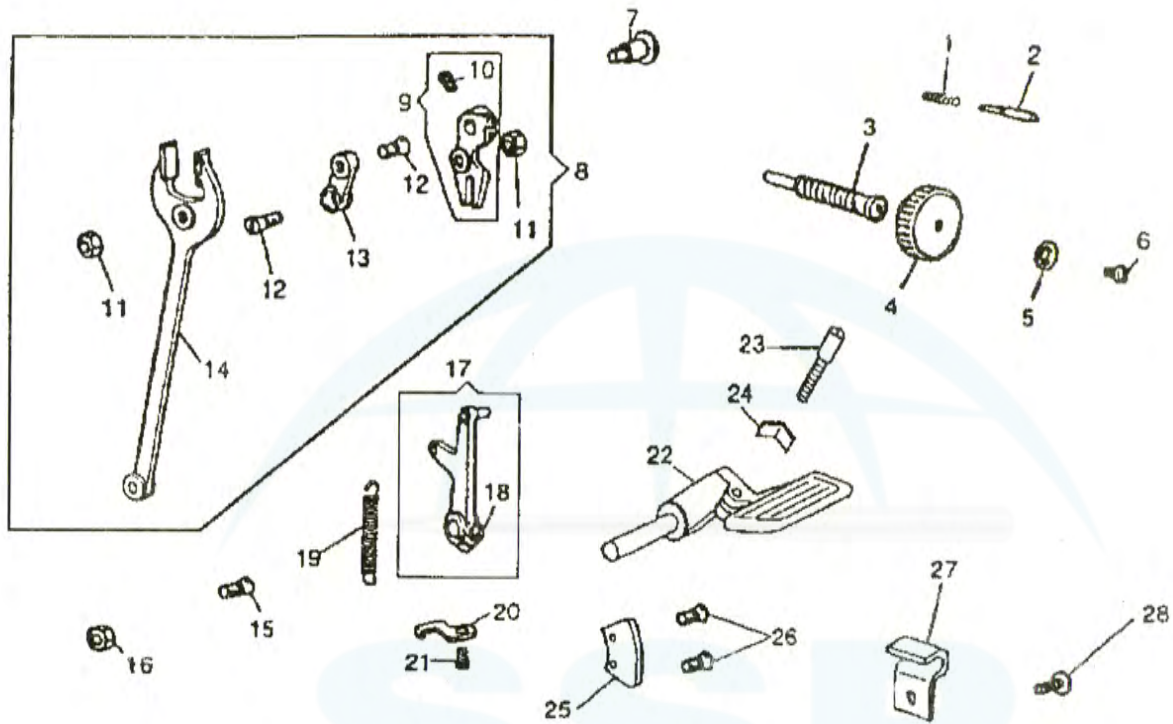
| No. | Part No.   | Description                            | Quantity |      |     |      |     |
|-----|------------|----------------------------------------|----------|------|-----|------|-----|
|     |            |                                        | 109      | 109C | 112 | 112C | 309 |
| 1   | 606511     | Screw                                  | 2        | 2    | 2   | 2    | 2   |
| 2   | 606571     | Washer                                 | 2        | 2    | 2   | 2    | 2   |
| 3   | 606569     | Stop Plate                             | 2        | 2    | 2   | 2    | 2   |
| 4   | 606554     | Lever Arm Reg. Screw Nut               | 2        | 2    | 2   | 2    | 2   |
| 5   | 606553     | Lever Arm Reg. Screw                   | 2        | 2    | 2   | 2    | 2   |
| 6   | 606572     | Screw                                  | 2        | 2    | 2   | 2    | 2   |
| 7   | 606577     | Spring                                 | 1        | 1    | 1   | 1    | 1   |
| 8   | 606575     | Regulating Plate (left)                | 1        | 1    | 1   | 1    | 1   |
| 9   | 606576     | Regulating Plate (right)               | 1        | 1    | 1   | 1    | 1   |
| 10  | 606574     | Reg. Plate Holder                      | 1        | 1    | 1   | 1    | 1   |
| 11  | 606573     | Thumb Screw                            | 2        | 2    | 2   | 2    | 2   |
| 12  | 606556     | Spring                                 | 1        | 1    | 1   | 1    | 1   |
| 13  | 606665     | Bight Amplitude Control Mech. Assembly | 1        | 1    |     |      |     |
|     | 606666     | Bight Amplitude Control Mech. Assembly |          |      | 1   | 1    |     |
| 14  | 606667     | Slide Block & Guide Assembly           | 1        | 1    |     |      |     |
|     | 606668     | Slide Block & Guide Assembly           |          |      | 1   | 1    |     |
| 15  | 606546     | Slide Block                            | 1        | 1    | 1   | 1    |     |
| 16  | 606669     | Slide Block Guide Assembly             | 1        | 1    |     |      |     |
|     | 606547     | Slide Block Guide Assembly             |          |      | 1   | 1    |     |
| 17  | 606670     | Guide Stud Set Screw                   | 1        | 1    | 1   | 1    |     |
| 18  | 606557     | Slide Block Crank Assembly             | 1        | 1    | 1   | 1    |     |
|     | 606557-308 | Slide Block Crank Assembly             |          |      |     |      | 1   |
| 19  | 606555     | Slide Block Crank Set Screw            | 2        | 2    | 2   | 2    | 2   |
| 20  | 606549     | Slide Block Crank Link                 | 1        | 1    | 1   | 1    |     |
|     | 606549-308 | Slide Block Crank Link                 |          |      |     |      | 1   |
| 21  | 606671     | Hinge Screw                            | 2        | 2    | 2   | 2    | 2   |
| 22  | 606551     | Position Lever Arm                     | 1        | 1    | 1   | 1    | 1   |
| 23  | 606552     | Guide Stud                             | 1        | 1    | 1   | 1    | 1   |
| 24  | 606560     | Collar Assembly                        | 1        | 1    | 1   | 1    | 1   |
| 25  | 606518     | Collar Set Screw                       | 2        | 2    | 2   | 2    | 2   |
| 26  | 606562     | Crank Shaft Bushing                    | 1        | 1    | 1   | 1    | 1   |
| 27  | 554139-383 | Crank Shaft Knob Assembly              | 1        | 1    | 1   | 1    | 1   |
| 28  | 606564     | Position Block Screw                   | 2        | 2    | 2   | 2    |     |
| 29  | 606568     | Position Block Screw Washer            | 2        | 2    | 2   | 2    |     |
| 30  | 606673     | Position Block                         | 1        | 1    |     |      |     |
|     | 606563     | Position Block                         |          |      | 1   | 1    |     |
| 31  | 606674     | Position Lever Screw                   | 2        | 2    | 2   | 2    |     |
| 32  | 606566     | Position Lever Assembly                | 1        | 1    | 1   | 1    |     |
| 33  | 606565     | Position Lever Screw Pin               | 1        | 1    | 1   | 1    |     |
| 34  | 606675     | Position Lever Screw Pin Nut           | 1        | 1    | 1   | 1    |     |
| 35  | 606675     | Thumb Stud Nut                         | 1        | 1    | 1   | 1    |     |
| 36  | 606676     | Thumb Stud Spring Washer               | 1        | 1    | 1   | 1    |     |
| 37  | 554140-383 | Thumb Stud                             | 1        | 1    | 1   | 1    |     |

**6.6. Arm Shaft (upright) and Rotating Hook Drive Shaft Components**

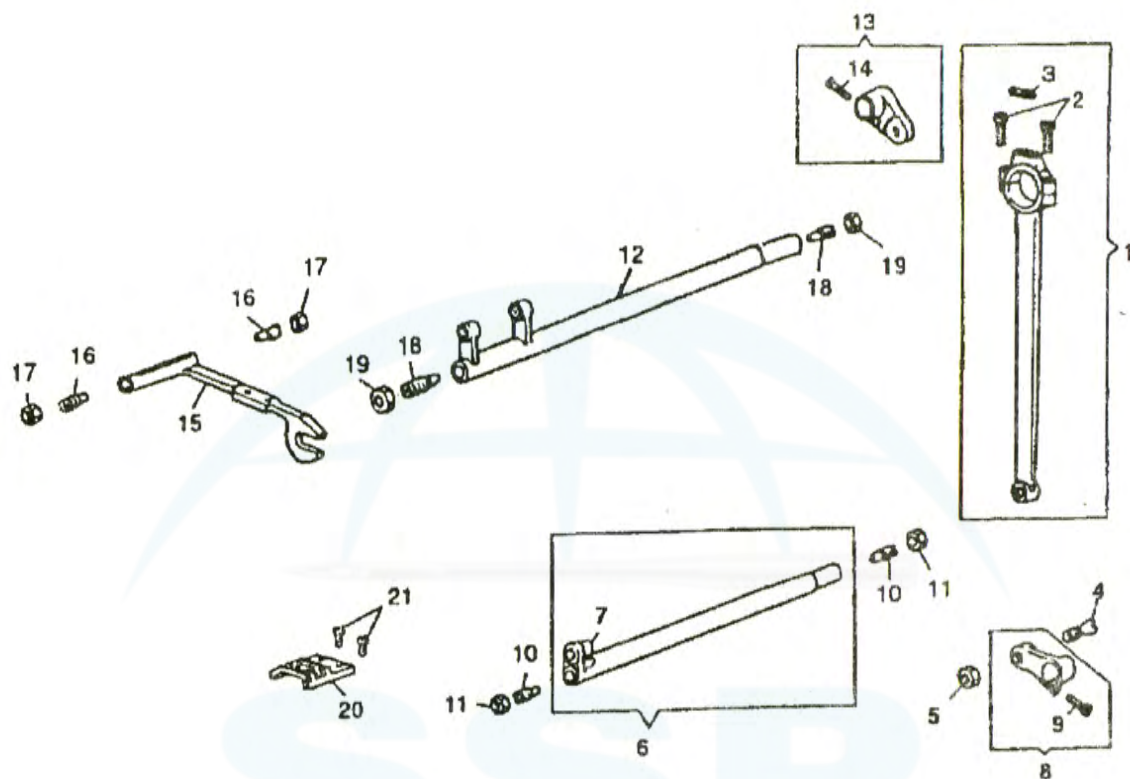
| No. | Part No. | Description                         | Quantity |      |     |      |     |
|-----|----------|-------------------------------------|----------|------|-----|------|-----|
|     |          |                                     | 109      | 109C | 112 | 112C | 309 |
| 1   | 541610   | Bevel Gear Assembly                 | 1        | 1    |     |      | 1   |
| 2   | 504101   | Bevel Gear Set Screw                | 2        | 2    |     |      | 2   |
| 3   | 606677   | Arm Shaft Bushing, upper            | 1        | 1    |     |      | 1   |
| 4   | 606678   | Arm Shaft (Upright)                 | 1        | 1    |     |      | 1   |
| 5   | 606527   | Upright Bushing, lower              | 1        | 1    | 1   | 1    | 1   |
| 6   | 541609   | Bevel Gear Assembly                 | 1        | 1    |     |      | 1   |
| 7   | 504101   | Bevel Gear Set Screw                | 2        | 2    |     |      | 2   |
| 8   | 606585   | Connection Screw                    |          |      | 1   | 1    |     |
| 9   | 606536   | Hook Advance Crank Connecting Rod   |          |      | 1   | 1    |     |
| 10  | 606535   | Bevel Gear                          |          |      | 1   | 1    |     |
| 11  | 606533   | Upright Bushing, upper              |          |      | 1   | 1    |     |
| 12  | 606534   | Bushing Set Screw                   | 1        | 1    | 1   | 1    | 1   |
| 13  | 606679   | Clutch Sleeve Assembly              |          |      | 1   | 1    |     |
| 14  | 504101   | Clutch Sleeve Screw                 |          |      | 2   | 2    |     |
| 15  | 504101   | Clutch Sleeve Screw                 |          |      | 2   | 2    |     |
| 16  | 606528   | Connecting Stud                     |          |      | 1   | 1    |     |
| 17  | 606523   | Retaining Collar Assembly           |          |      | 1   | 1    |     |
| 18  | 504101   | Retaining Collar Screw              |          |      | 2   | 2    |     |
| 19  | 543914   | Screw Gear Assembly                 |          |      | 1   | 1    |     |
| 20  | 504101   | Gear Set Screw                      |          |      | 2   | 2    |     |
| 21  | 606537   | Arm Shaft (Upright) Assembly        |          |      | 1   | 1    |     |
| 22  | 606680   | Arm Shaft Oil Wick                  |          |      | 2   | 2    |     |
| 23  | 541684   | Bevel Gear Assembly                 | 1        | 1    |     |      | 1   |
| 24  | 543944   | Screw Gear Assembly                 |          |      | 1   | 1    |     |
| 25  | 504101   | Screw Gear Set Screw                | 2        | 2    | 2   | 2    | 2   |
| 26  | 606681   | Hook Drive Shaft Bushing            | 1        | 1    |     |      | 1   |
|     | 606525   | Hook Drive Shaft Bushing            |          |      | 1   | 1    |     |
| 27  | 606420   | Set Screw                           | 1        | 1    | 1   | 1    | 1   |
| 28  | 606523   | Retaining Collar Assembly           | 1        | 1    |     |      | 1   |
|     | 606523   | Retaining Collar Assembly           |          |      | 2   | 2    |     |
| 29  | 504101   | Retaining Collar Screw              | 2        | 2    |     |      | 2   |
|     | 504101   | Retaining Collar Screw              |          |      | 4   | 4    |     |
| 30  | 606682   | Hook Drive Shaft                    | 1        | 1    |     |      | 1   |
|     | 606526   | Hook Drive Shaft                    |          |      | 1   | 1    |     |
| 31  | 606522   | Hook Drive Shaft Bush               | 1        | 1    | 1   | 1    | 1   |
| 32  | 606420   | Set Screw                           | 1        | 1    | 1   | 1    | 1   |
| 33  | 541685   | Bevel Gear Assembly                 | 1        | 1    | 1   | 1    | 1   |
| 34  | 504101   | Bevel Gear Screw                    | 2        | 2    | 2   | 2    | 2   |
| 35  | 606523   | Arm Shaft (Upright) Collar Assembly | 1        | 1    |     |      | 1   |
| 36  | 504101   | Arm Shaft (Upright) Collar Screw    | 2        | 2    |     |      | 2   |

**6.7. Hook and Bobbin Case Components**

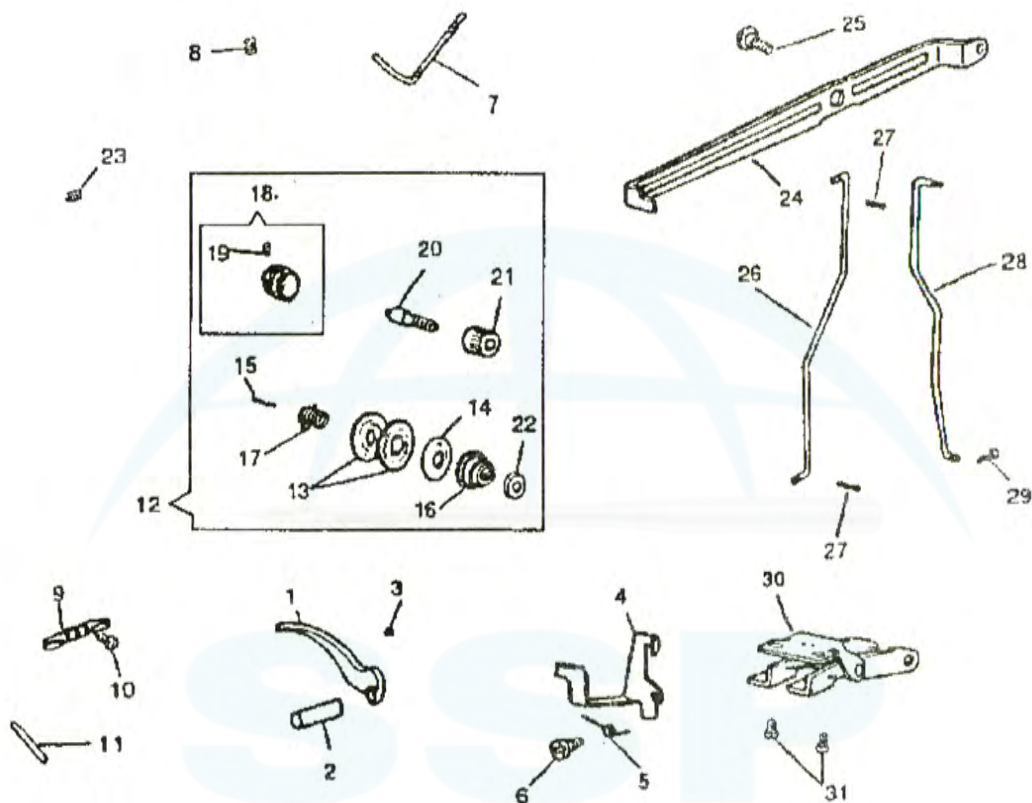
| No. | Part No. | Description                | Quantity |      |     |      |     |
|-----|----------|----------------------------|----------|------|-----|------|-----|
|     |          |                            | 109      | 109C | 112 | 112C | 309 |
| 1   | 606517   | Hook Shaft Collar Assembly | 2        | 2    | 2   | 2    | 2   |
| 2   | 606518   | Hook Shaft Collar Screw    | 4        | 4    | 4   | 4    | 4   |
| 3   | 606516   | Set Screw                  | 1        | 1    | 1   | 1    | 1   |
| 4   | 606519   | Hook Shaft Bush, short     | 1        | 1    | 1   | 1    | 1   |
| 5   | 541689   | Bevel Gear Assembly        | 1        | 1    | 1   | 1    | 1   |
| 6   | 504101   | Bevel Gear Screw           | 2        | 2    | 2   | 2    | 2   |
| 7   | 606516   | Set Screw                  | 1        | 1    | 1   | 1    | 1   |
| 8   | 606515   | Hook Shaft Bush, long      | 1        | 1    | 1   | 1    | 1   |
| 9   | 606520   | Hook Shaft                 | 1        | 1    | 1   | 1    | 1   |
| 10  | 606410   | Gear Shield                | 1        | 1    | 1   | 1    | 1   |
| 11  | 606444   | Screw                      | 1        | 1    | 1   | 1    | 1   |
| 12  | 606513   | Bobbin                     | 1        | 1    | 1   | 1    | 1   |
| 13  | 606683   | Rotating Hook Assembly     | 1        |      |     |      | 1   |
|     | 606683C  | Rotating Hook Assembly     |          | 1    |     |      |     |
|     | 606514   | Rotating Hook Assembly     |          |      | 1   |      |     |
|     | 606514C  | Rotating Hook Assembly     |          |      |     | 1    |     |
| 14  | 606684   | Rotating Hook Set Screw    | 2        | 2    | 2   | 2    | 2   |
| 15  | 606512   | Bobbin Case Assembly       | 1        | 1    | 1   | 1    | 1   |
| 16  | 606510   | Hook Position Finger       | 1        | 1    | 1   | 1    | 1   |
| 17  | 606511   | Position Finger Screw      | 1        | 1    | 1   | 1    | 1   |

**6.8. Feed Regulating Dial and Feed Reverse Lever Components**

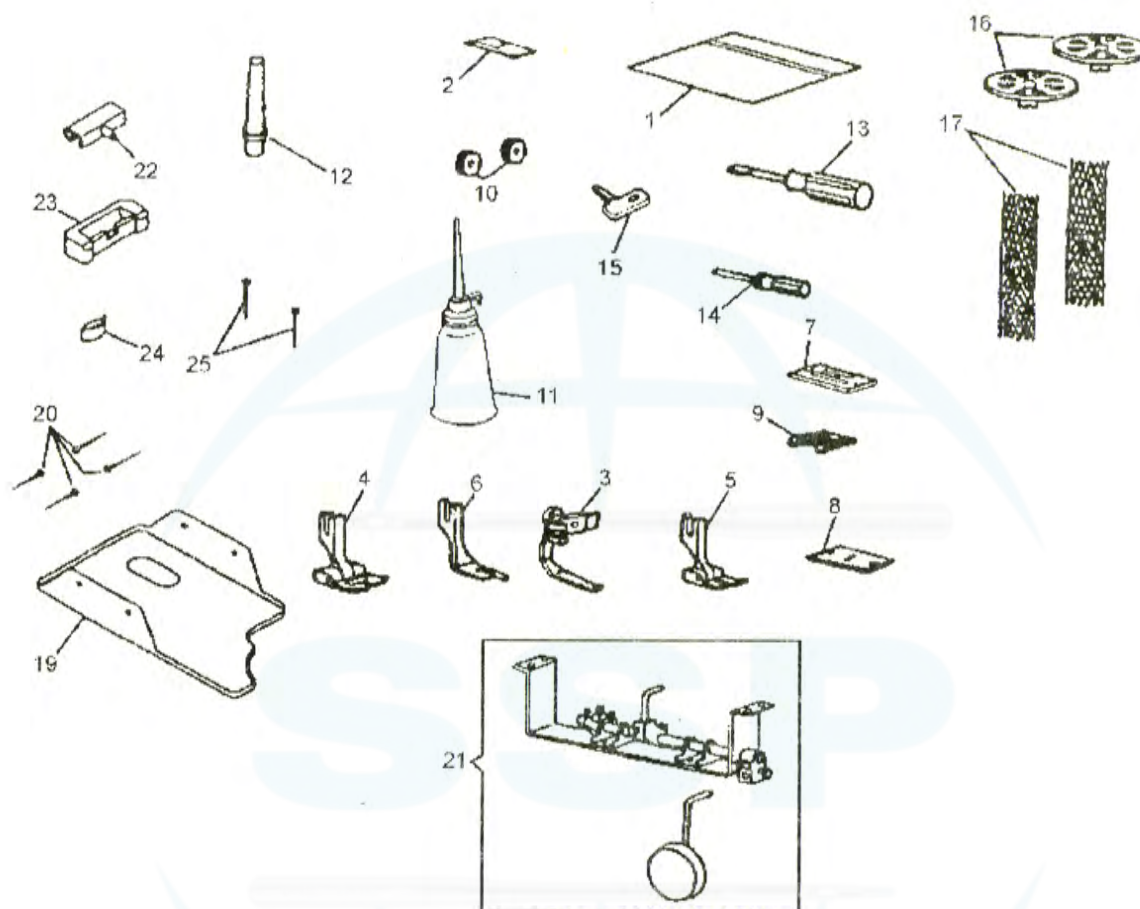
| No. | Part No.   | Description                 | Quantity |      |     |      |     |
|-----|------------|-----------------------------|----------|------|-----|------|-----|
|     |            |                             | 109      | 109C | 112 | 112C | 309 |
| 1   | 606618     | Spring                      | 1        | 1    | 1   | 1    | 1   |
| 2   | 606617     | Stud Lock Pin               | 1        | 1    | 1   | 1    | 1   |
| 3   | 606609     | Feed Regulating Stud        | 1        | 1    | 1   | 1    | 1   |
| 4   | 554138-383 | Feed Regulation Dial        | 1        | 1    | 1   | 1    | 1   |
| 5   | 543803-004 | Dial Screw Washer           | 1        | 1    | 1   | 1    | 1   |
| 6   | 544218-053 | Dial Screw                  | 1        | 1    | 1   | 1    | 1   |
| 7   | 606610     | Hinge Stud                  | 1        | 1    | 1   | 1    | 1   |
| 8   | 606685     | Feed Regulator & Fork Comp  | 1        | 1    | 1   | 1    | 1   |
| 9   | 606611     | Feed Regulator Assembly     | 1        | 1    | 1   | 1    | 1   |
| 10  | 606686     | Screw                       | 1        | 1    | 1   | 1    | 1   |
| 11  | 606494     | Hinge Screw Nut             | 1        | 1    | 1   | 1    | 1   |
| 12  | 606496     | Hinge Screw                 | 2        | 2    | 2   | 2    | 2   |
| 13  | 606495     | Feed Connecting Link        | 2        | 2    | 2   | 2    | 2   |
| 14  | 606509     | Feed Fork Connection.       | 1        | 1    | 1   | 1    | 1   |
| 15  | 606496     | Hinge Screw                 | 1        | 1    | 1   | 1    | 1   |
| 16  | 606494     | Hinge Screw Nut             | 1        | 1    | 1   | 1    | 1   |
| 17  | 606615     | Reverse Lever Link Assembly | 1        | 1    | 1   | 1    | 1   |
| 18  | 606434     | Clamp Screw                 | 1        | 1    | 1   | 1    | 1   |
| 19  | 606612     | Spring                      | 1        | 1    | 1   | 1    | 1   |
| 20  | 606614     | Spring Bracket              | 1        | 1    | 1   | 1    | 1   |
| 21  | 606602     | Screw                       | 1        | 1    | 1   | 1    | 1   |
| 22  | 554131-467 | Reverse Lever Assembly      | 1        | 1    | 1   | 1    | 1   |
|     | 551131-467 | Reverse Lever Assembly      |          |      |     |      |     |
| 23  | 374564     | Adjusting Screw             | 1        | 1    | 1   | 1    |     |
| 24  | 554134     | Adjusting Screw Friction    | 1        | 1    | 1   | 1    |     |
| 25  | 554136     | Indicator Plate             | 1        | 1    | 1   | 1    |     |
| 26  | 504010-453 | Indicator Plate Screw       | 2        | 2    | 2   | 2    |     |
| 27  | 554135     | Adjusting Screw Stopper     | 1        | 1    | 1   | 1    |     |
| 28  | 544213-001 | Stopper Set Screw           | 1        | 1    | 1   | 1    |     |

**6.9. Feed Mechanism Components**

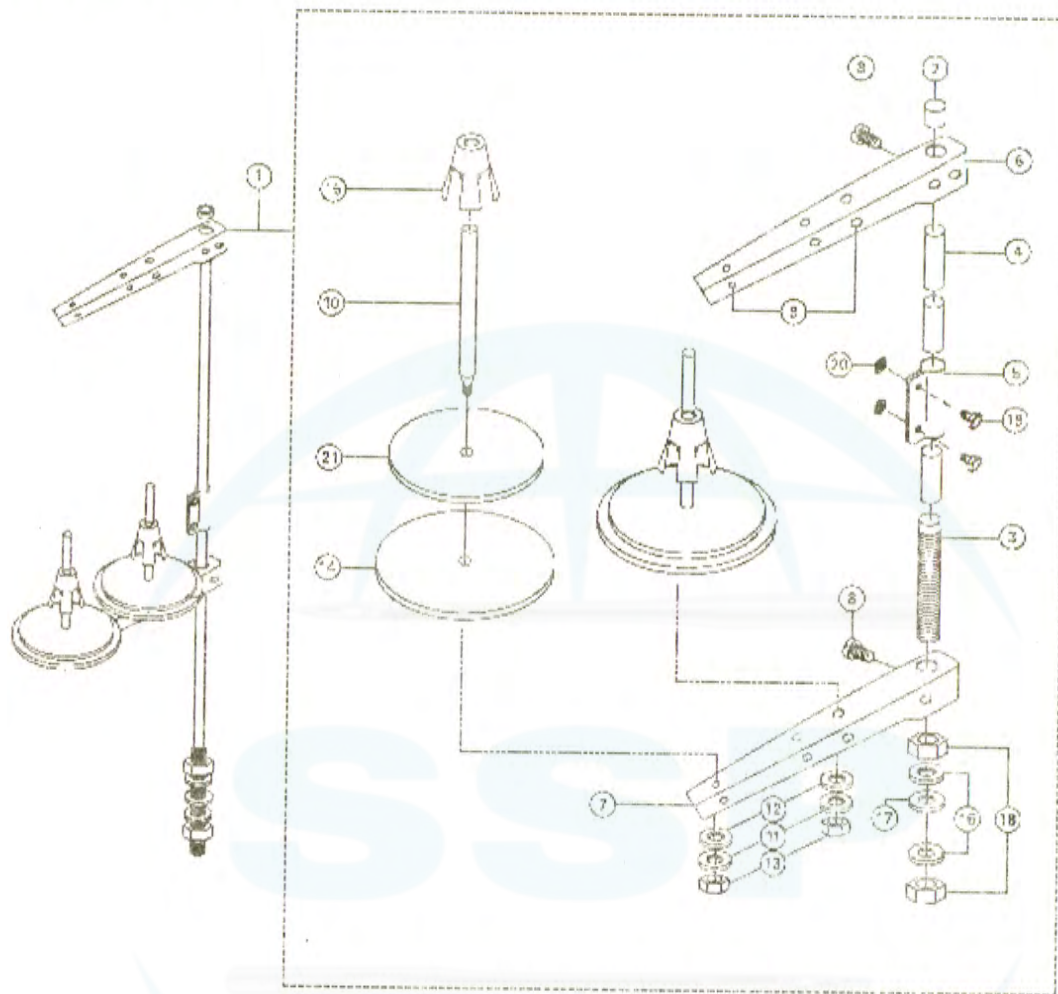
| No. | Part No. | Description                       | Quantity |      |     |      |     |
|-----|----------|-----------------------------------|----------|------|-----|------|-----|
|     |          |                                   | 109      | 109C | 112 | 112C | 309 |
| 1   | 606493   | Connecting Rod Assembly           | 1        | 1    | 1   | 1    | 1   |
| 2   | 606434   | Connecting Rod Cap Screw          | 2        | 2    | 2   | 2    | 2   |
| 3   | 606492   | Oil Felt                          | 1        | 1    | 1   | 1    | 1   |
| 4   | 606496   | Hinge Screw                       | 1        | 1    | 1   | 1    | 1   |
| 5   | 606494   | Hinge Screw Nut                   | 1        | 1    | 1   | 1    | 1   |
| 6   | 606507   | Feed Lifting Rock Shaft Assembly  | 1        | 1    | 1   | 1    | 1   |
| 7   | 606687   | Roller and Stud                   | 1        | 1    | 1   | 1    | 1   |
| 8   | 606508   | Lifting Rock Shaft Crank Assembly | 1        | 1    | 1   | 1    | 1   |
| 9   | 606500   | Crank Clamping Screw              | 1        | 1    | 1   | 1    | 1   |
| 10  | 606497   | Screw Center                      | 2        | 2    | 2   | 2    | 2   |
| 11  | 606498   | Screw Center Nut                  | 2        | 2    | 2   | 2    | 2   |
| 12  | 606505   | Feed Rock Shaft                   | 1        | 1    | 1   | 1    | 1   |
| 13  | 606499   | Feed Rock Shaft Crank Assembly    | 1        | 1    | 1   | 1    | 1   |
| 14  | 606500   | Crank Clamping Screw              | 1        | 1    | 1   | 1    | 1   |
| 15  | 606506   | Feed Bar                          | 1        | 1    | 1   | 1    | 1   |
| 16  | 606503   | Screw Center                      | 2        | 2    | 2   | 2    | 2   |
| 17  | 606504   | Screw Center Nut                  | 2        | 2    | 2   | 2    | 2   |
| 18  | 606497   | Screw Center                      | 2        | 2    | 2   | 2    | 2   |
| 19  | 606498   | Screw Center Nut                  | 2        | 2    | 2   | 2    | 2   |
| 20  | 606688   | Feed Dog                          | 1        | 1    |     |      | 1   |
|     | 606502   | Feed Dog                          |          |      | 1   | 1    |     |
| 21  | 606501   | Feed Dog Screw                    | 2        | 2    | 2   | 2    | 2   |

**6.10. Presser Bar Lifter and Thread Tension Components**

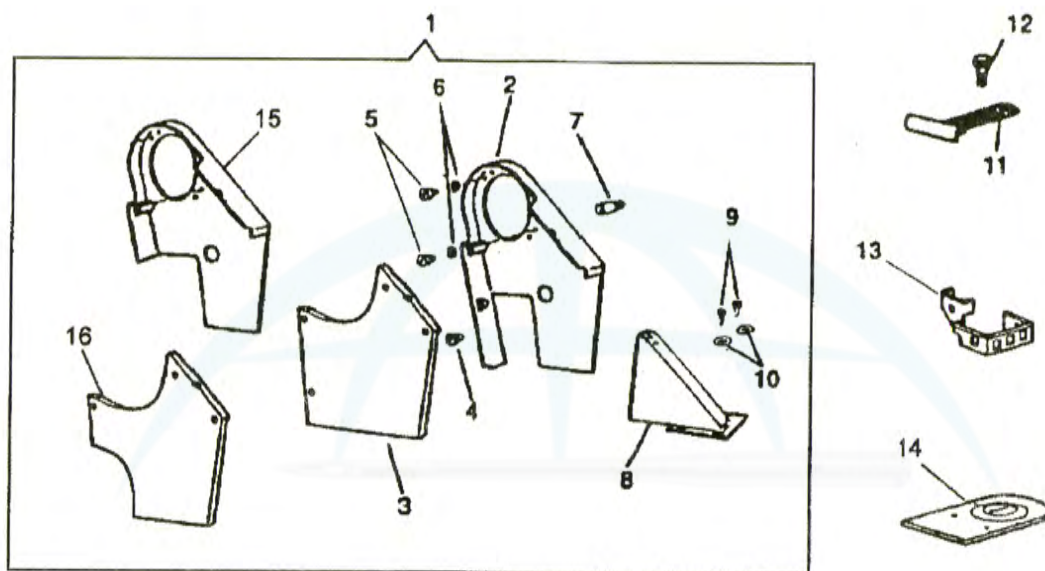
| No. | Part No. | Description                        | Quantity |      |     |      |     |
|-----|----------|------------------------------------|----------|------|-----|------|-----|
|     |          |                                    | 109      | 109C | 112 | 112C | 309 |
| 1   | 606598   | Hand Lifter Lever                  | 1        | 1    | 1   | 1    | 1   |
| 2   | 606597   | Hand Lifter Lever Pin              | 1        | 1    | 1   | 1    | 1   |
| 3   | 606599   | Screw                              | 1        | 1    | 1   | 1    | 1   |
| 4   | 606413   | Tension Release Lever              | 1        | 1    | 1   | 1    | 1   |
| 5   | 606412   | Tension Release Lever Screw Spring | 1        | 1    | 1   | 1    | 1   |
| 6   | 606411   | Tension Release Lever Screw        | 1        | 1    | 1   | 1    | 1   |
| 7   | 410413   | Thread Retainer                    | 1        | 1    | 1   | 1    | 1   |
| 8   | 606518   | Thread Retainer Screw              | 1        | 1    | 1   | 1    | 1   |
| 9   | 606416   | Thread Guide                       | 1        | 1    | 1   | 1    | 1   |
| 10  | 606444   | Thread Guide Screw                 | 1        | 1    | 1   | 1    | 1   |
| 11  | 606414   | Thread Guard Pin                   | 1        | 1    | 1   | 1    | 1   |
| 12  | 606689   | Tension Assembly                   | 1        | 1    | 1   | 1    | 1   |
| 13  | 606425   | Tension Disc                       | 2        | 2    | 2   | 2    | 2   |
| 14  | 606426   | Tension Releasing Disc             | 1        | 1    | 1   | 1    | 1   |
| 15  | 606418   | Tension Release Pin                | 1        | 1    | 1   | 1    | 1   |
| 16  | 606427   | Tension Spring                     | 1        | 1    | 1   | 1    | 1   |
| 17  | 606422   | Thread Take-up Spring              | 1        | 1    | 1   | 1    | 1   |
| 18  | 606419   | Tension Base Assembly              | 1        | 1    | 1   | 1    | 1   |
| 19  | 606421   | Tension Securing Screw             | 1        | 1    | 1   | 1    | 1   |
| 20  | 606424   | Tension Stud                       | 1        | 1    | 1   | 1    | 1   |
| 21  | 606429   | Thumb Nut                          | 1        | 1    | 1   | 1    | 1   |
| 22  | 606428   | Thumb Nut Washer                   | 1        | 1    | 1   | 1    | 1   |
| 23  | 600420   | Set Screw                          | 1        | 1    | 1   | 1    | 1   |
| 24  | 606607   | Lifting Lever                      | 1        | 1    | 1   | 1    | 1   |
| 25  | 606608   | Hinge Screw                        | 1        | 1    | 1   | 1    | 1   |
| 26  | 606605   | Connecting Rod                     | 1        | 1    | 1   | 1    | 1   |
| 27  | 606604   | Connecting Rod Pin                 | 2        | 2    | 2   | 2    | 2   |
| 28  | 606606   | Connecting Rod                     | 1        | 1    | 1   | 1    | 1   |
| 29  | 606604   | Connecting Rod Pin                 | 1        | 1    | 1   | 1    | 1   |
| 30  | 606603   | Bell Crank Assembly                | 1        | 1    | 1   | 1    | 1   |
| 31  | 606602   | Screw                              | 2        | 2    | 2   | 2    | 2   |

**6.11. Accessories and Attachments**

| No. | Part No.   | Description                                    | Quantity |      |     |      |     |
|-----|------------|------------------------------------------------|----------|------|-----|------|-----|
|     |            |                                                | 109      | 109C | 112 | 112C | 309 |
| 1   | 606690     | Accessory Box                                  | 1        | 1    | 1   | 1    | 1   |
| 2   | 1910-05    | Needle (1910-05 #14)                           | 3        | 3    | 3   | 3    | 3   |
| 3   | 606691     | Zipper Foot                                    | 1        | 1    | 1   | 1    |     |
| 4   | 606692     | Presser Foot Assembly (for Button Holing)      | 1        | 1    | 1   | 1    |     |
| 5   | 606693     | Presser Foot Assembly (for Straight Stitching) | 1        | 1    | 1   | 1    |     |
| 6   | 606694     | Hemmer Foot Assembly                           | 1        | 1    | 1   | 1    |     |
| 7   | 606695     | Needle Plate (for Straight Stitching)          | 1        | 1    | 1   | 1    |     |
| 8   | 606696     | Needle Plate (for Embroidery)                  | 1        | 1    | 1   | 1    |     |
| 9   | 606697     | Feed Dog (for Straight Stitching)              | 1        | 1    | 1   | 1    |     |
| 10  | 606513     | Bobbin                                         | 2        | 2    | 2   | 2    | 2   |
| 11  | 606698     | Oiler                                          | 1        | 1    | 1   | 1    | 1   |
| 12  | 606699     | Machine Rest Pin                               | 1        | 1    | 1   | 1    | 1   |
| 13  | 606700     | Screw Driver(large)                            | 1        | 1    | 1   | 1    | 1   |
| 14  | 606701     | Screw Driver(Small)                            | 1        | 1    | 1   | 1    | 1   |
| 15  | 606702     | Screw Driver(for Needle Plate)                 | 1        | 1    | 1   | 1    |     |
| 16  | 606703     | Thread Unwinder Spool Cap                      | 2        | 2    | 2   | 2    |     |
| 17  | 606704     | Thread Unwinder Spool Net                      | 2        | 2    | 2   | 2    |     |
| 19  | 606706     | Drip Pan                                       | 1        | 1    | 1   | 1    | 1   |
| 20  | 606707     | Drip Pan Nail                                  | 4        | 4    | 4   | 4    | 4   |
| 21  | 606708     | Knee Lifter Assembly                           | 1        | 1    | 1   | 1    |     |
|     | GR759/25-8 | Knee Lifter Assembly                           |          |      |     |      | 1   |
| 22  | 606709     | Machine Hinge                                  | 2        | 2    | 2   | 2    | 1   |
| 23  | 606710     | Machine Hinge Cushion                          | 2        | 2    | 2   | 2    | 1   |
| 24  | 606711     | Machine Cushion                                | 4        | 4    | 4   | 4    | 1   |
| 25  | 606707     | Nail                                           | 6        | 6    | 6   | 6    | 1   |

**6.12. Thread Stand Components**

| No. | Part No.   | Description           | Quantity |
|-----|------------|-----------------------|----------|
| 1   | 1013100900 | Thread stand assembly | 1        |
| 2   | 10122028   | Rubber cap            | 1        |
| 3   | 10131008   | Spool post (lower)    | 1        |
| 4   | 10131009   | Spool post (upper)    | 1        |
| 5   | 10112039   | Spool post joint      | 1        |
| 6   | 10112040   | Spool arm (upper)     | 1        |
| 7   | 10112041   | Spool arm (lower)     | 1        |
| 8   | S04013     | Screw                 | 2        |
| 9   | 10113010   | Thread guide          | 2        |
| 10  | 10131010   | Spool pin             | 2        |
| 11  | 10128009   | Spring washer         | 2        |
| 12  | 10128002   | Washer                | 2        |
| 13  | 101S16006  | Nut                   | 2        |
| 14  | 10111013   | Spool rest            | 2        |
| 15  | 10111014   | Spool retainer        | 2        |
| 16  | 10128010   | Washer                | 2        |
| 17  | 10128006   | Spring washer         | 1        |
| 18  | N02003     | Nut                   | 2        |
| 19  | 10104003   | Screw                 | 2        |
| 20  | 101S11020  | Nut                   | 2        |
| 21  | 10102009   | Spool rest cushion    | 2        |

**6.13. Belt Cover Components and Extra Parts**

| No. | Part No.   | Description                            | Quantity |      |     |      |     |
|-----|------------|----------------------------------------|----------|------|-----|------|-----|
|     |            |                                        | 109      | 109C | 112 | 112C | 309 |
| 1   | 281840-383 | Belt Cover Assembly                    | 1        | 1    | 1   | 1    | 1   |
| 2   | 281833-383 | Belt Cover (Upper)                     | 1        | 1    | 1   | 1    |     |
| 3   | 281834-383 | Belt Cover (Upper) Cover               | 1        | 1    | 1   | 1    |     |
| 4   | 549116     | Belt Cover (Upper) Screw               | 1        | 1    | 1   | 1    | 1   |
| 5   | 504063-451 | Belt Cover (Upper) Screw               | 2        | 2    | 2   | 2    | 2   |
| 6   | 543875-104 | Belt Cover (Upper) Screw Washer        | 2        | 2    | 2   | 2    | 2   |
| 7   | 544241     | Belt Cover (Upper) Screw Stud          | 1        | 1    | 1   | 1    | 1   |
| 8   | 281835-383 | Belt Cover (Lower)                     | 1        | 1    | 1   | 1    | 1   |
| 9   | 549398     | Belt Cover (Lower) Wood Screw          | 2        | 2    | 2   | 2    | 2   |
| 10  | 543803-003 | Belt Cover (Lower) Wood Screw Washer   | 2        | 2    | 2   | 2    | 2   |
| 11  | 541515-001 | Cloth Guide                            | 1        | 1    | 1   | 1    |     |
| 12  | 504030     | Cloth Guide Thumb Screw                | 1        | 1    | 1   | 1    |     |
| 13  | 281822     | Finger Guard                           | 1        | 1    | 1   | 1    |     |
| 14  | 410076     | Needle Plate Assembly (for Embroidery) |          |      | 1   | 1    |     |
| 15  | 281833-308 |                                        |          |      |     |      | 1   |
| 16  | 281834-308 |                                        |          |      |     |      | 1   |



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