

**SERVICE
MANUAL**

SINGER

312 U 141

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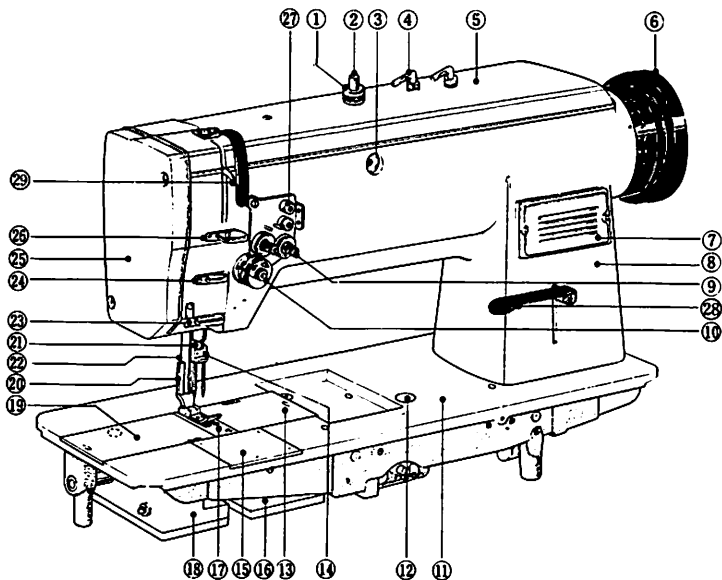
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Specifications and Parts of machine head

† SPECIFICATIONS:

Application	: General cloth and clothing fabrics.
Sewing speed	: at 3500 r.p.m.
Needles	: CAT. No.1901. #14
Needle bar stroke	: 33.4 mm (1 - 5/16").
Thread take up	: Slide type thread take up.
Feeding system	: Under feed and needle feed.
Stitching length	: 0 ~ 5 m. m. (0 ~ 3/16")
Presser bar stroke	: 7 m.m. (9/32")
Hook	: Gear driven vertical axis rotating hook, with opener.
Feeding mechanism	: Double eccentric mechanism.
Stitching adjustment	: Push button type stitch regulator on arm-top.
Lubrication	: Rotating hook Lubrication by pump. Arm shaft, hook shaft and feed driving mechanism Automatically lubricated by means of an oiling device from the oil reservoir in machine arm and bed. Others Hand oiling.
Motor recommended	: 1/2HP (400W) clutch motor.

† Parts of machine head



- | | | |
|------------------------------------|-----------------------------------|-----------------------------|
| 1) Press stud for oil plunger. | 11) Bed. | 21) Needle bar. |
| 2) Press bar for oil plunger. | 12) Stitch regulator push button. | 22) Presser bar. |
| 3) Oil level indicator. | 13) Slide plate (right) . | 23) Thread guide (lower) . |
| 4) Thread guide (top of arm). | 14) Needle clamp. | 24) Thread guide (middle) . |
| 5) Arm top cover. | 15) Slide plate (front) . | 25) Face plate. |
| 6) Machine pulley. | 16) Hook saddle. (right) | 26) Thread guide (upper) . |
| 7) Front cover. | 17) Throat plate. | 27) Pre-tension. |
| 8) Arm. | 18) Hook saddle. (left) | 28) Feed reverse lever. |
| 9) Upper thread tension regulator. | 19) Slide plate. (left) | 29) Thread take-up lever. |
| 10) Thread controller. | 20) Presser foot. | |

Preparation for installation of machine

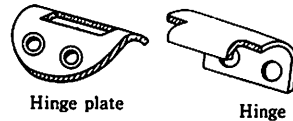
PREPARATION FOR INSTALLATION OF MACHINE.

1. PLACE OF INSTALLATION OF MACHINE.

In order to ensure smooth operation of your machine at high speed without vibration, the machine should be set on a level floor.

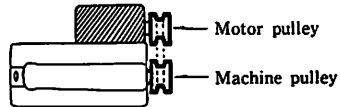
2. HOW TO MOUNT MACHINE HEAD

Attach the machine hinges at the rear of the machine bed and the hinge plates into the table cutouts with screws provided in accessories. Place machine so that hooks of hinges fit into the slots of the hinge plates.



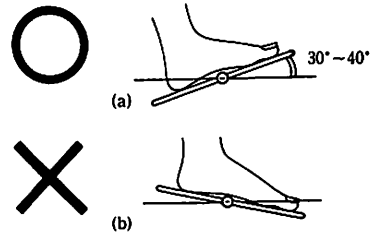
3. HOW TO MOUNT THE MOTOR

Mount motor to the table in a position that will locate the drive belt in straight alignment between the machine pulley and motor pulley - as illustrated. Connect motor to power supply source with electrical cord extending from the switch.



4. HOW TO CONNECT THE MOTOR TO THE TREADLE.

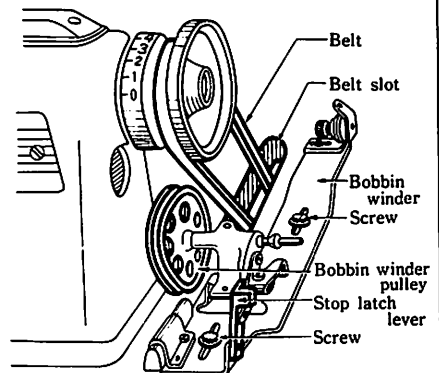
Pressure on the treadle will be reduced if the inclination of treadle is not at proper angle. The best inclination is 30° - 40° as shown in Fig. (a).



In case of Fig. (b), the treadling gets difficult, therefore, adjust the length of the treadle connecting rod.

5. HOW TO MOUNT THE BOBBIN WINDER ASSEMBLY.

Bobbin winder should be mounted in parallel with belt slot of the table and fixed with 2 screws so that the bobbin winder pulley touches the belt when the stop latch lever is pushed forward.



Preparation for installation of machine

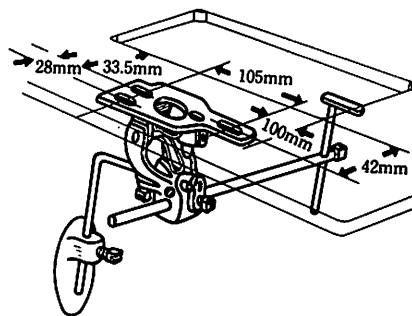
6. HOW TO MOUNT AND ADJUST THE KNEE LIFTER AND ACCESSORIES.

a. KNEE LIFTER MECHANISM.

The knee lifter mechanism lifts and lowers the presser bar. Mount it properly on the table to promote operating efficiency.

1) Place of Mounting

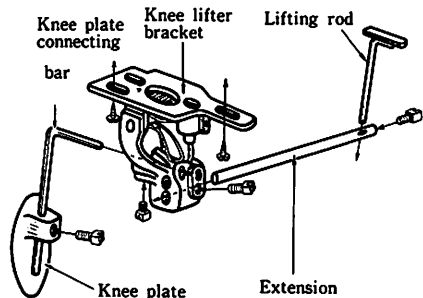
Mount unit properly on reverse side of table using screws in accordance with the location and measurements indicated.



2) How to Mount

Mount knee lifter mechanism in the following sequence as per illustration.

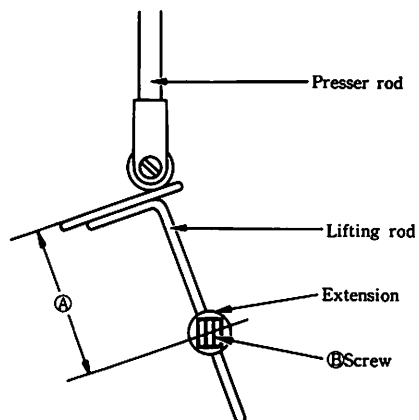
- Mount knee lifter bracket on reverse side of table.
- Assemble the extension on lifting rod.
- Assemble knee plate connecting bar on knee plate.
- Mount the knee lifting bar and rod assemblies on knee lifter bracket.



3) Adjustment

The positioning of lifting rod and extension is directly related to presser rod up and down movement and the corresponding action of presser foot. Position the following parts:

- Lower presser foot to the down position.
- Loosen and secure screw (B) after adjusting to position (A) for lifting rod and presser rod as illustrated.



Preparation for installation of machine

- c) Loosen screw (C) of knee lifter bracket and adjust the lifting rod for proper inclination; tighten screw after adjustment.

4) Placing the Stopper Pin

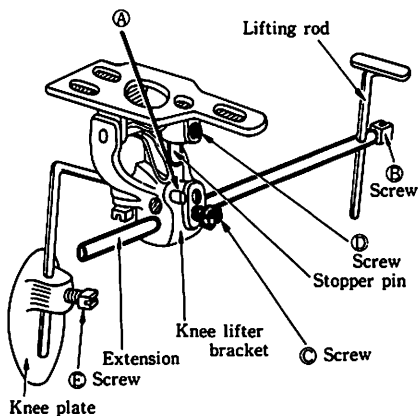
- a) Loosen set screw (D) of stopper pin.
- b) Move knee plate to the right so that presser foot lifts to its highest position (12.7 mm).
- c) Tighten set screw (D).

NOTE

After this adjustment, stopper pin should contact part (A) of knee lifter bracket.

5) Position of Knee Plate

Adjust knee plate in accordance with the physical posture of operator to provide for the most comfortable position then tighten screw (E).



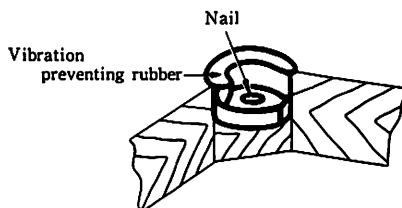
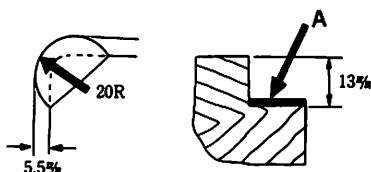
b. OIL PAN

Position oil pan on reverse side of table cut-out as not to interfere with knee lifter operation, secure oil pan to table using nails.

c. VIBRATION-PREVENTING RUBBER

The vibration-preventing rubber is used to stabilize the machine and thereby to provide smooth operation. Fit these rubbers at the four corners of the table as shown in the illustration as follows.

- 1) Make spot facing of 20 mm radius and 13 mm depth at the four corners of the table. Be sure to give smooth facing to face A.
- 2) Nail the vibration-preventing rubbers down at the four corners of the table as shown in Fig.



Lubrication before starting to sew

II. LUBRICATION BEFORE STARTING TO SEW.

1. OIL TYPE AND OIL RESERVOIRS

a. Type of Oil Used.

Use Singer Type A or C oils or equivalent grades acceptable for industrial sewing machines.

b. Oil Reservoir located in Arm.

- 1) To fill the reservoir remove the press stud for oil plunger.
- 2) Fill the reservoir to the red mark "H" of oil level indicator.

c. Oil Reservoir located in Bed.

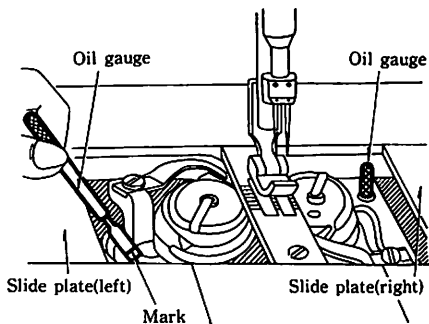
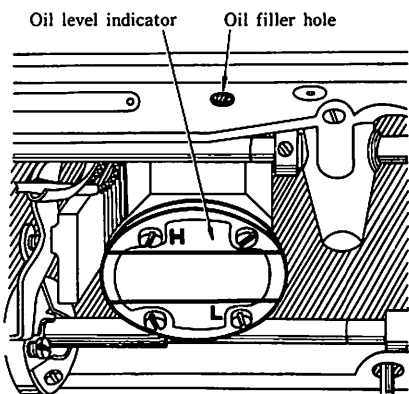
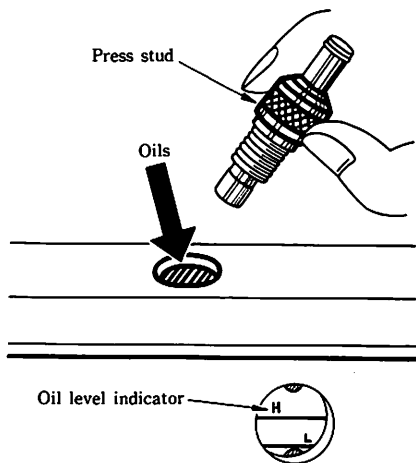
- 1) Tilt the machine head backward and locate the oil filler hole for filling the reservoir.
- 2) Fill the reservoir to the red mark "H" of oil level indicator.

d. Oil Reservoir located in Hook saddles.

- 1) Remove slide plates to left and right of throat plate.
- 2) Remove oil gauges from the left and right hook saddles.
- 3) Fill reservoir with oil so that reservoirs are filled to high mark indicated on oil gauges.

CAUTION

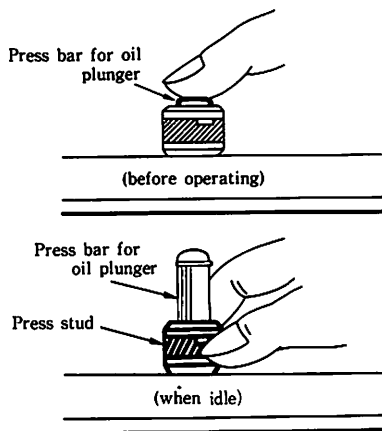
Check daily to ascertain that oil reservoirs are filled properly. If oil levels fall below "L" red mark indications, parts will not be lubricated and seizing of machine parts will result.



2. ADJUSTMENTS FOR LUBRICATION

a. Oil Control Plunger

- 1) Before starting to operate machine, push press bar down so that oil penetrates thoroughly into necessary parts of the arm.
- 2) When machine is left idle, release the press bar by pushing press stud downward, to stop automatic lubrication.



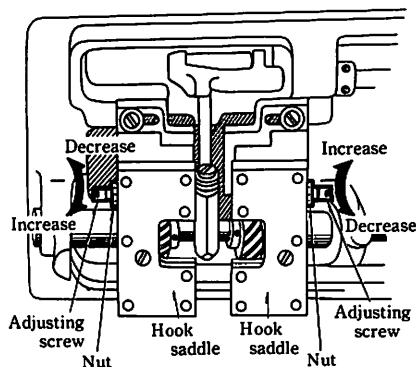
b. Adjustment of Hook Lubrication

- 1) Tilt machine head backward and loosen the nut on the side of hook saddle to be adjusted.
- 2) Turn adjusting screw clockwise to increase and counterclockwise to decrease oil supply.
- 3) After proper adjustment, tighten the nut.

3. PRECAUTIONS BEFORE STARTING TO SEW

When machine is operated for the first time or after a long period of idleness, proceed as follows:

- a. Refer to pertinent cleaning and lubrication procedures.
- b. After reservoirs have been filled to required levels, depress the press bar for oil plunger.
- c. Run machine slowly for approximately 10 minutes so that oil will penetrate thoroughly into necessary parts.

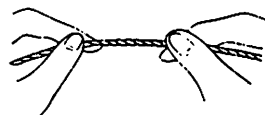


Preparation for operation

III. PREPARATION FOR OPERATION.

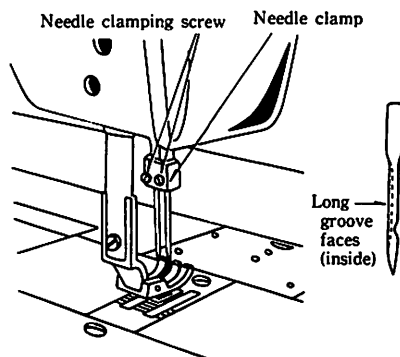
1. SELECTION OF THREAD

Always use left-twist thread for upper thread. In order to check if a thread is right-twist or left-twist, hold the thread as shown in illustration and twist it toward you with your right hand thumb and forefinger; if the twist loosens, the thread is right-twist and if it tightens, the thread is a left-twist.



2. HOW TO INSERT THE NEEDLES (Use. Cat. No. 1901)

- Rotate the machine pulley toward you so as to raise the needle bar to its highest position.
- Then loosen the needle clamping screw.
- Hold the needles so that the long grooves are facing inside as illustrated, then insert the needles as deeply as possible into the needle clamping holes.
- Clamp needles securely by tightening the needle clamping screws.



3. METHOD OF THREADING THE UPPER THREAD.

The upper thread is passed according to the following:

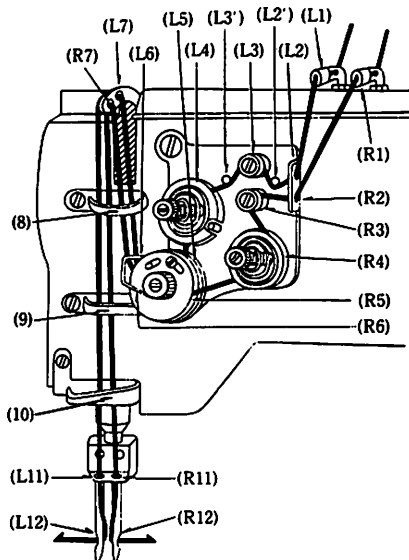
- Raise the thread take up lever to its highest position and pass the thread in the order of the numbers shown in Fig.

- Threading the thread from the left side spool.

- (L1) Thread guide-left-(top cover)
- (L2) Thread retainer (upper hole)
- (L2') Guide pin (right)
- (L3) Pre-Tension (upper)
- (L3') Guide pin (left)
- (L4) Tension regulator (upper)
- (L5) Thread controller disc (back)
- (L6) Thread tension spring
- (8) Thread guide (upper)
- (L7) Take up lever hole (upper)
- (8) Thread guide (upper)
- (9) Thread guide (middle)
- (10) Thread guide (lower)
- (L11) Thread guide hole-left-(needle clamp)
- (L12) Needle (left)

- Threading the thread from the right side spool

- (R1) Thread guide-right-(top cover)
- (R2) Thread retainer (lower hole)
- (R3) Pre-tension (lower)
- (R4) Tension regulator (lower)
- (R5) Thread controller disc (front)
- (R6) Thread tension spring
- (8) Thread guide (upper)
- (R7) Take up lever hole (lower)
- (8) Thread guide (upper)
- (9) Thread guide (middle)
- (10) Thread guide (lower)
- (L11) Thread guide hole-right-(needle clamp)
- (R12) Needle (right)

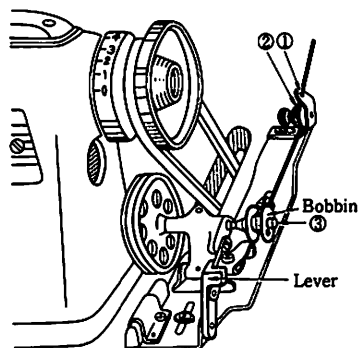


† Pass the thread on (3) pre-tension & (4) tension regulator between its two discs, and (12) two needle from in side to out side.

4. HOW TO WIND THE LOWER THREAD ON THE BOBBIN.

- a. Pass the thread from the spool through the hole of the thread guide (1) as shown in Fig. next through the tension discs (2).
- b. Then wind the thread about 5 - 6 times on the bobbin.
- c. Fit the bobbin into the bobbin spindle (3) in such a manner that the thread would be wound on the bobbin from the underside.
- d. Push the lever forward so that the pulley and the belt will engage.
- e. Then the bobbin can be wound with thread when the machine is rotated.
- f. When the bobbin is fully wound with thread, the pulley will automatically be free from the belt and stopped.

† This operation can be done while sewing.



5. HOW TO ADJUST THE BOBBIN WINDER ASSEMBLY.

It is desirable that the bobbin is wound evenly with thread as shown in Fig. (A). If the thread is wound unevenly as in (B) & (C), the thread will not be drawn out smoothly and the thread tension will become irregular.



a. In case of uneven winding:

- 1) If it is inclined to left as (B), loosen the screw (A) shown in Fig. and move the thread guide rest slightly to the right so as to obtain uniform winding of thread as in (A).
- 2) If it is inclined to right as (C), move the thread guide rest slightly to the left.

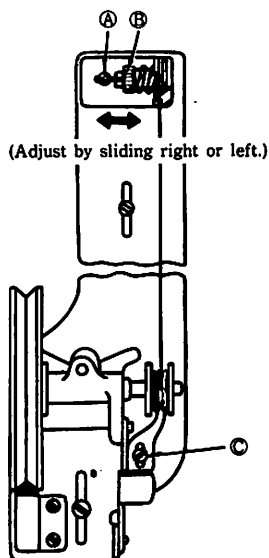
b. Tension of the winding

Particularly in case of nylon thread, there is fear that the bobbin may be damaged if the bobbin is wound too tightly with thread. Adjust with nut (B) shown in Fig.

c. Winding amount of thread.

Best results are obtained when the bobbin is wound up to 4/5 of its full capacity with thread. Excessive winding will result in poor draw-out of the thread;

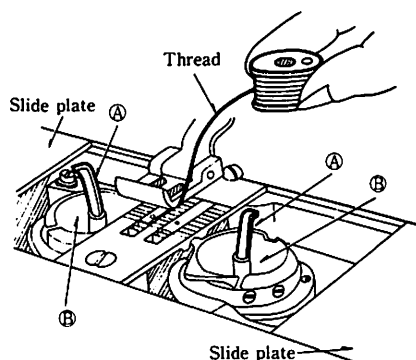
To adjust the amount of thread wound on the bobbin, turn the screw (C) shown in Fig. to the left when the winding is excessive, and to the right when it is insufficient.



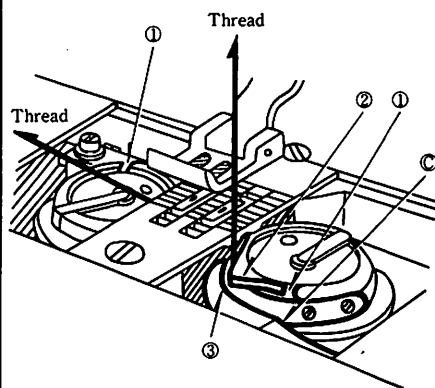
Preparation for operation

6. HOW TO PLACE THE BOBBIN INTO THE HOOK.

- a) Open the slide plate.
- b) Raise the needle bar to its highest position.
- c) Open the latch lever (A) shown in Fig.
- d) Hold the bobbin and unwind about 5 cm thread as shown in Fig.
- e) Place the bobbin on the post (B) shown in Fig.
- f) Then clamp down the latch lever (A)



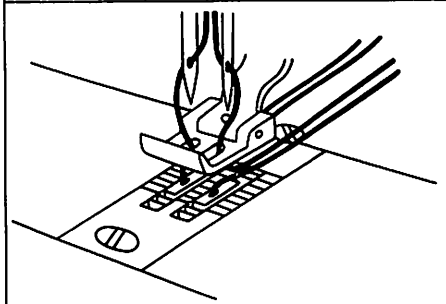
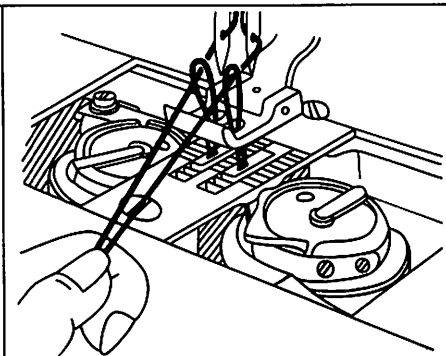
- g) As illustrated lead the end of thread through the groove of the hook (1), through the horn (2) and opener (3), then pull the thread out so that it is led under the tension spring (C).



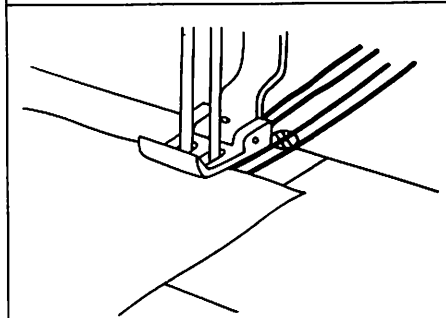
IV. HOW TO OPERATE

1. START SEWING

- a. Lift the presser foot.
- b. Hold the ends of upper threads with the left hand and rotate machine pulley slowly so that needles move down and up.
- c. Observe that the bobbin threads will be picked up by the hooks. Rotate machine pulley until needles move to their highest point and observe that the needle threads are pulling the bobbin threads through the holes of the throat plate as illustrated.
- d. Pull out the bobbin threads and extend them underneath and to the rear of presser foot as illustrated. Then close the left and right slide plates.



- e. Place material beneath presser foot to commence to sew.
- f. Rotate machine pulley so that needles penetrate the cloth.
- g. Then lower presser foot and commence to sew.

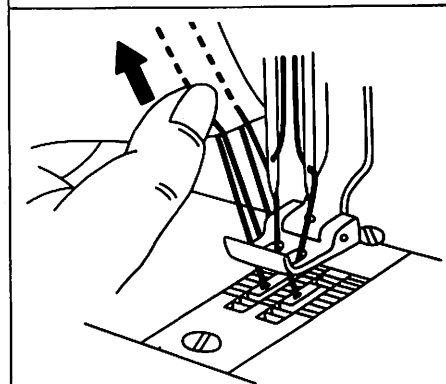


NOTE

Before sewing, leave needle threads pulled out approximately 10 cm in length so thread ends are not drawn into machine.

2. AFTER SEWING

- a. When sewing is completed, the take up lever should be at its highest position.
- b. Lift the presser foot.
- c. Pull out the sewn fabric diagonally to the left side.
- d. Trim both the upper and lower threads.



3. FEED REVERSE STITCH

Reverse sewing can be done during stitching when the reverse lever is depressed.

Stitch adjustment

V. STITCH ADJUSTMENT.

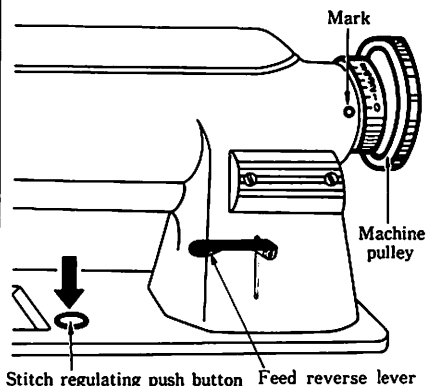
1. ADJUSTMENT OF STITCH LENGTH

Stitch length is adjusted by the stitch regulator push button on the bed and the machine pulley as follows:

- Depress the push button and rotate machine pulley slowly toward you until the push button goes down further and machine pulley stops rotation.
- Press push button further down to permit further rotation of the machine pulley and set the desired graduation (0-5) on the machine pulley to coincide with the mark on the arm; then release the push button.

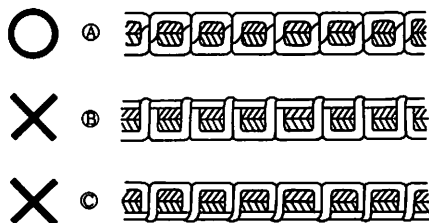
WARNING

Do not depress the push button while the machine is running as this may cause damage to the machine.



2. ADJUSTMENT OF THREAD TENSION

- Adjust the thread tensions according to the materials being sewn, the thread used, the length of stitches and other stitching conditions.
 - If the tensions of the needles and bobbin threads are well balanced, the two threads will link together in the middle of the fabric to form perfect lockstitches (A) as shown in Fig.
 - If either the needle or bobbin thread tensions are too tight or too loose, imperfect stitches will result as shown in (B) or (C). In (B) the needle thread tension is too tight and in (C) the tension is too loose.

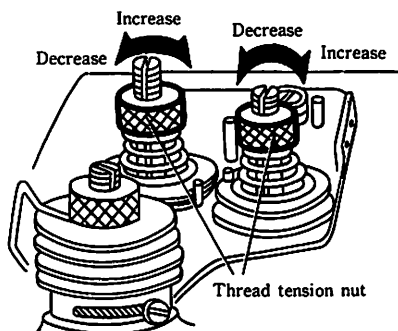


b. Tension of Needle Threads

Adjustment of the needle thread tensions is made by changing the pressure on the thread tension discs of the upper thread tension regulator and the tension and operating range of the thread controller spring as follows.

1. Pressure of thread tension discs.

The desired thread tension can be obtained by adjusting the pressure on the tension discs by turning the thread tension nut to the right to increase tension and turning the nut to the left to decrease tension as shown in Fig.



2. Tension of the thread controller spring.

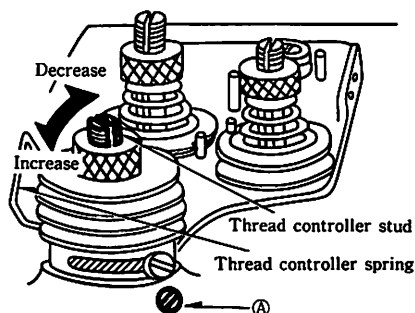
Adjust the tension of the spring according to the materials to be sewn as follows.

- In case of medium weight fabric adjust spring tension to approximately 25 grams.
 - In case of light fabric and short stitches adjust spring to 20 grams tension.
 - In case of heavy fabric and longer stitches, increase the spring tension to about 30 grams.
- d. Adjust spring tension as follows:

(1) Loosen set screw (A) as shown in Fig.

(2) Using a screw driver placed in the slot of the thread controller stud, turn stud to the left to increase tension and to the right to decrease it.

(3) Tighten screw (A) after adjustment.



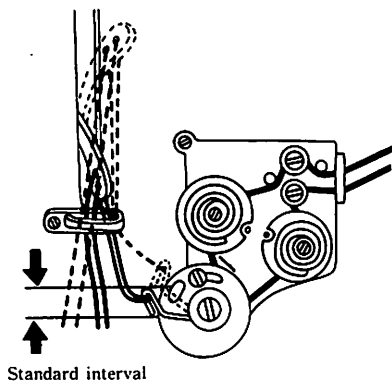
Stitch adjustment

3. Operating range of thread controller spring

Change the operating range of thread controller spring for the fabrics used and for adjustment of the take up spring as follows:

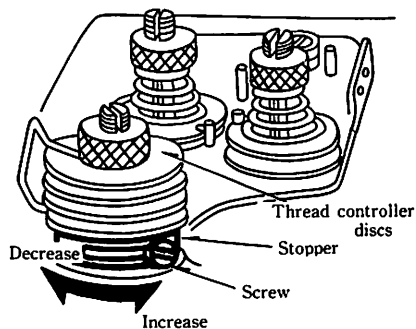
(a) Fabric Used

- (1) In the case of light fabrics (small stitches), increase the operating range.
- (2) In the case of heavy fabrics (large stitches), decrease the operating range.
- (3) In the case of standard fabrics (standard operating range) adjust the interval by 8mm - 10mm of movement of thread controller spring when the take up lever moves from its lowest position to the highest position and applies tension to the needle thread, as illustrated.



(b) Thread Controller Adjustment

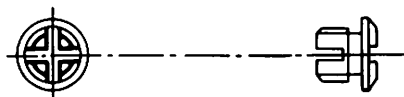
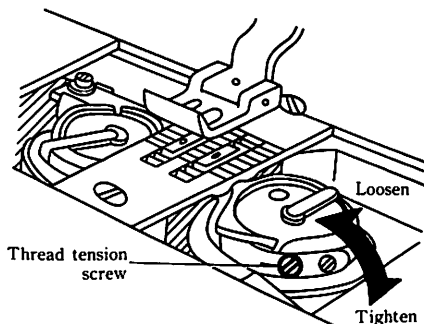
- (1) Loosen the set screw of the thread controller.
- (2) Turn the stopper to the right to increase the operating range, and to the left to decrease it.
- (3) Securely tighten screw after making adjustments.



(c) Tension of Bobbin Thread.

There is virtually no need to adjust the bobbin thread tension except for special fabrics and thread or loosening of thread tension screw. As required, adjust the tension as follows.

- (1) Turn the thread tension screw of the bobbin case to the right to tighten the tension, and to the left to loosen the tension.
- (2) Check this thread tension screw periodically to ensure that it has not loosened during machine operation. The tension screw is provided with slots as illustrated which can be opened to insure screw will fit more securely.



3. ADJUSTMENT OF FEED DOG HEIGHT AND PRESSER FOOT PRESSURE

- a. The height of the feed dog as well as presser foot pressure is adjusted in accordance with the following materials used.

- (1) For Thin Fabrics. If the feed dog is raised excessively or the pressure on the materials to be sewn is too heavy, puckered sewing of material will result.
- (2) For Heavy Fabrics. If the feed dog is not raised sufficiently or the pressure on the materials to be sewn is too light, feeding of material will be poor and stitches will become uneven or skipping may result.

(3) Feed Dog Height

The height of feed dog is measured when the feed dog is raised to its highest position (by rotation of machine pulley) above the throat plate.

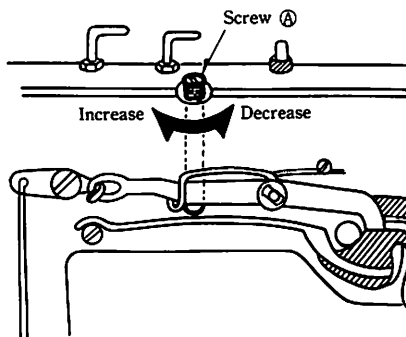
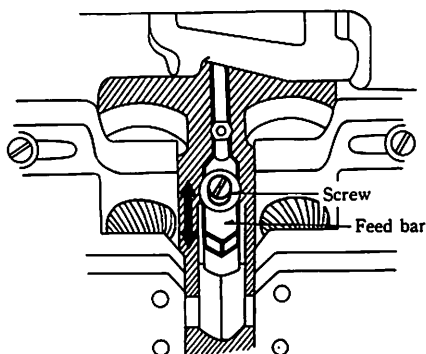
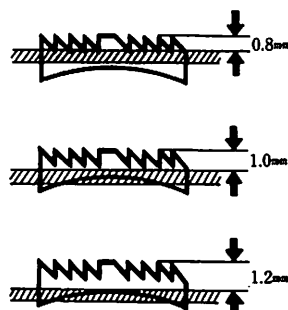
Thin Fabrics Approx. 0.8mm
above throat plate
Standard Fabrics Approx. 1.0mm
above throat plate
Heavy Fabrics Approx. 1.2mm
above throat plate

b. Adjustment of Feed Dog Height

- 1) Tilt machine head backward.
- 2) Rotate machine pulley until feed dog is raised to its highest position above throat plate.
- 3) Loosen feed bar screw.
- 4) Adjust feed dog to desired height by moving feed bar up or down, then tighten feed bar screw.

c. Adjustment of Presser Foot Pressure

- 1) Turn presser regulating screw (A) (located in center of arm illustrated) clockwise to increase pressure.
- 2) Turn screw (A) counterclockwise to decrease pressure.



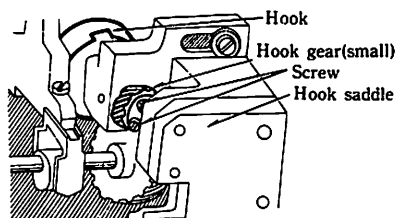
Stitch adjustment

4. PROPER TIMING BETWEEN HOOK AND NEEDLE

When thread gets entangled on the hooks or position of hooks is changed due to strain or other causes, it may be necessary to remove, replace or reposition the hook with respect to the needle position.

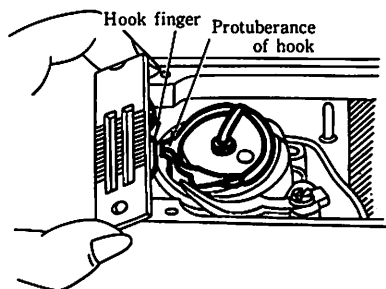
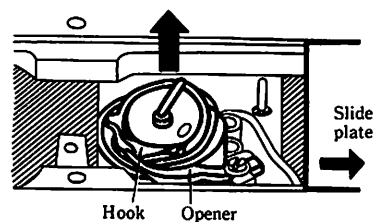
a. Remove hook as follows:

- 1) Rotate machine pulley until needle is raised to its highest position.
- 2) Tilt machine head backward.
- 3) Loosen three screws on hook gear (small) shown in illustration.
- 4) Set machine head upright and move slide plate to remove underbed components.
- 5) In sequence, remove throat plate, feed dog, opener and hooks.



b. Replace hook as follows:

- 1) Replacement of hook and associated components is the reverse of removal procedure described (in step a.5).
- 2) Replace throat plate by aligning the hook finger of throat plate with the protuberance of hook, as illustrated.



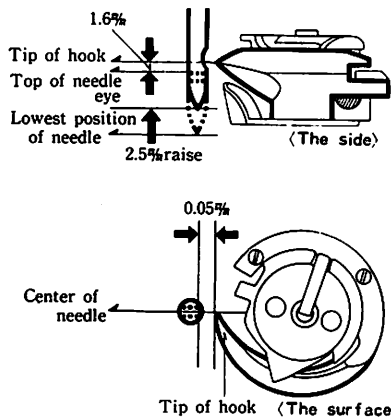
c. Relative position of hooks and needles for proper timing.

- 1) Set amount of stitch length with graduation (3) of dial on machine pulley.
- 2) Raise needle 2.5mm from its lowest position and adjust position of hook and needle in accordance with illustration as follows:

Tip (Point) of hook Center of the needle.

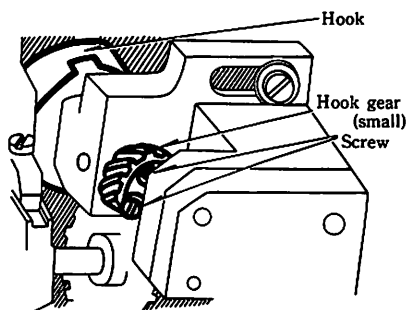
Top of needle eye 1.6mm below the tip (point) of hook.

The gap between the lateral face of needle and point of hook 0.05mm



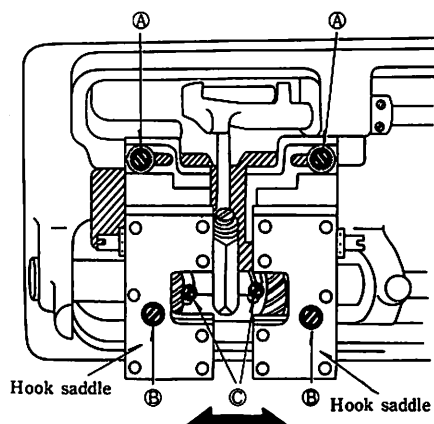
d. Adjust point of hook to centerline of needle as follows:

- 1) Tilt machine head to rear and loosen the 3 set screws on hook gear (small) as illustrated.
- 2) Set machine head upright and rotate machine pulley until needle has been raised 2.5mm from its lowest position.
- 3) Turn the hook by hand and align the point of hook to needle center.
- 4) Tighten the set screws loosened in step 1.



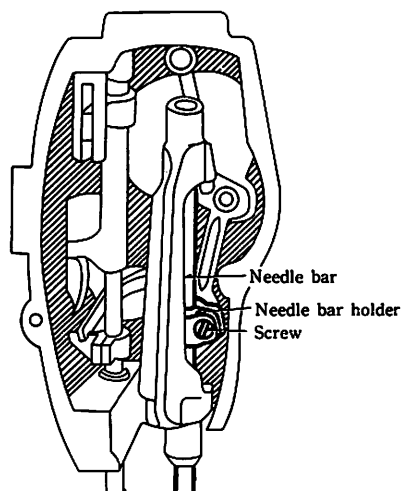
e. Adjust gap between lateral face of needle and point of hook to measure 0.05mm as follows:

- 1) Tilt machine head to rear and loosen hook saddle screws A & B, as illustrated.
- 2) Loosen set screws C, illustrated.
- 3) Move hook saddles to right or left to adjust gap of needle to point of hook to 0.05mm, tighten all screws loosened in steps 1 and 2.



f. Adjust needle position as follows:

- 1) Remove face plate.
- 2) Loosen screw of needle bar holder, adjust needle height then tighten screw.

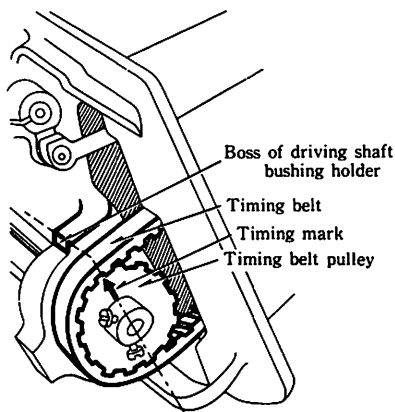


Stitch adjustment

5. PROPER TIMING OF HOOK AND TAKE-UP LEVER

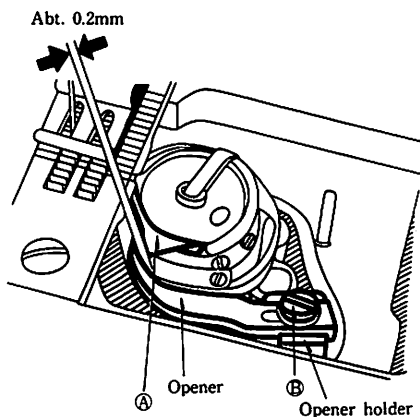
When removing or replacing the timing belt, the timing of the hooks and take up lever must be adjusted as follows.

- 1) Remove needles to avoid damaging them.
- 2) Rotate machine pulley until take-up lever is at its highest point.
- 3) Tilt machine head to the rear and check whether arrow (timing marks) of timing belt pulley and the boss of driving shaft bushing holder are in line.
- 4) If not in line, slide belt off (lower) pulley and rotate pulley so that its timing mark is in line with boss of driving shaft bushing holder.
- 5) Replace belt on pulley.



6. RELATIVE POSITIONS OF HOOK AND OPENER

- a. Rotate machine pulley until opener holder is at its further most position from throat plate.
- b. Check the gap between hook and opener. It should measure approximately 0.2mm as illustrated.
- c. If not, adjust the position of opener, after loosening screw B, to obtain an approximate gap of 0.2mm. Tighten screw after adjustment.

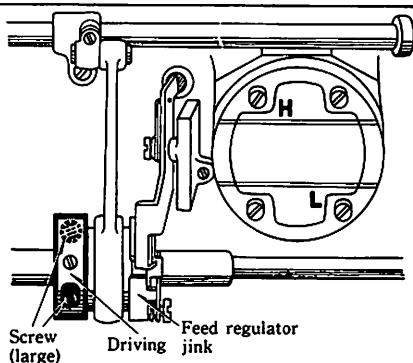


7. POSITION OF FEED REGULATOR

(Stitch length regulator on the bed)

- a. Refer to page 12, adjustment of stitch length; press stitch regulator push button and rotate machine pulley counterclockwise until it stops. This is the longest stitch length and should show graduation (5) of machine pulley in line with marking on the arm.
- b. Rotate machine pulley clockwise and stitch length should be (0) and in line with marking on arm.
- c. If the (0) or (5) graduations do not correspond with the mark on arm, adjust the feed regulator as follows:

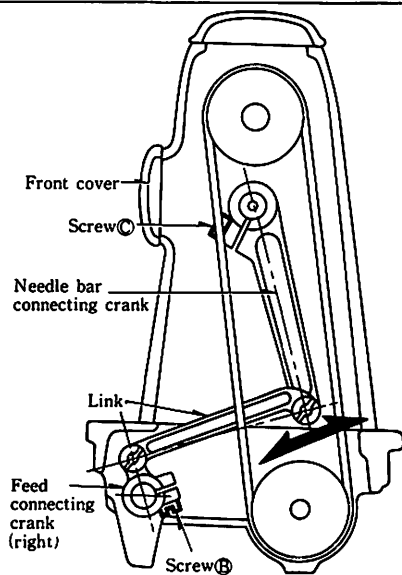
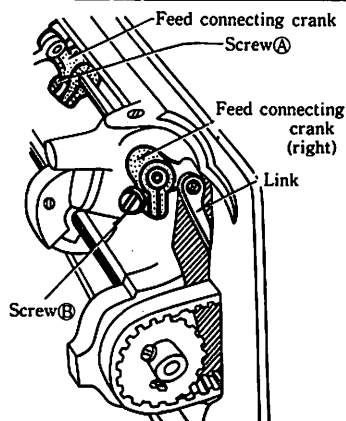
- 1) Tilt machine head to the rear.
- 2) Loosen the two larger screws of feed regulator driving link.
- 3) Set machine head upright. With push button depressed, repeat steps 7a and 7b and align the (0) and (5) graduations with the mark on the arm. Release the push button.
- 4) Repeat step 1 and tighten the screws loosened in step 2.



8. RELATIVE POSITION OF FEED DOG AND NEEDLES

The feed dog should be set so that when the needles are down they will be in the center of the needle holes. If not, proceed as follows:

- a. Push the stitch regulator push button on the bed; rotate machine pulley and align graduation (0) to the mark on the arm. Release the push button.
- b. Tilt machine head to rear.
- c. Loosen screw (A) and (B) of feed connecting cranks as illustrated.
- d. Set machine head upright and adjust feed bar forward or backward so that the needles are positioned in the center of the needle holes.
- e. Repeat step b. and tighten the loosened screws (A) and (B) of step c.
- f. Check whether the center line of the link and the feed connecting crank (right) is at a right angle to the center of the feed connecting shaft.
- g. If not, remove front cover and loosen screw (C); adjust needle bar connecting crank by moving the link toward the arrow so as to assure a right angle configuration of the parts.
- h. After adjustment tighten screws (A), (B), and (C).

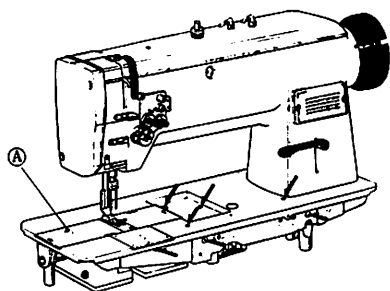


Cleaning and lubrication

VI. CLEANING AND LUBRICATION.

1. CLEANING

Always clean dirt and lint from the hook, teeth of feed dog, thread tension regulator and thread controller disc.

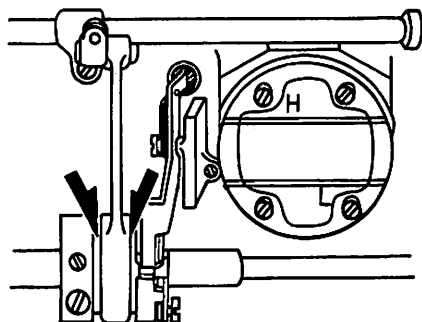


2. LUBRICATION

Lubrication involves the maintenance of oil reservoir and manual oiling of parts to ensure optimum performance and longer life to the sewing machine. Lubricate machine as follows:

a. Maintenance of Oil Reservoirs and Periodic Lubrication.

Refer to pages 6 and 7 for specific maintenance and periodic lubrication procedures. Generally, if machine is in continuous use, check oil daily and keep it at the full mark on the gauges.



b. Places to Lubricate

Apply oil to point A, in the bed after moving the left and front slide plates and to the other places indicated by arrows.

