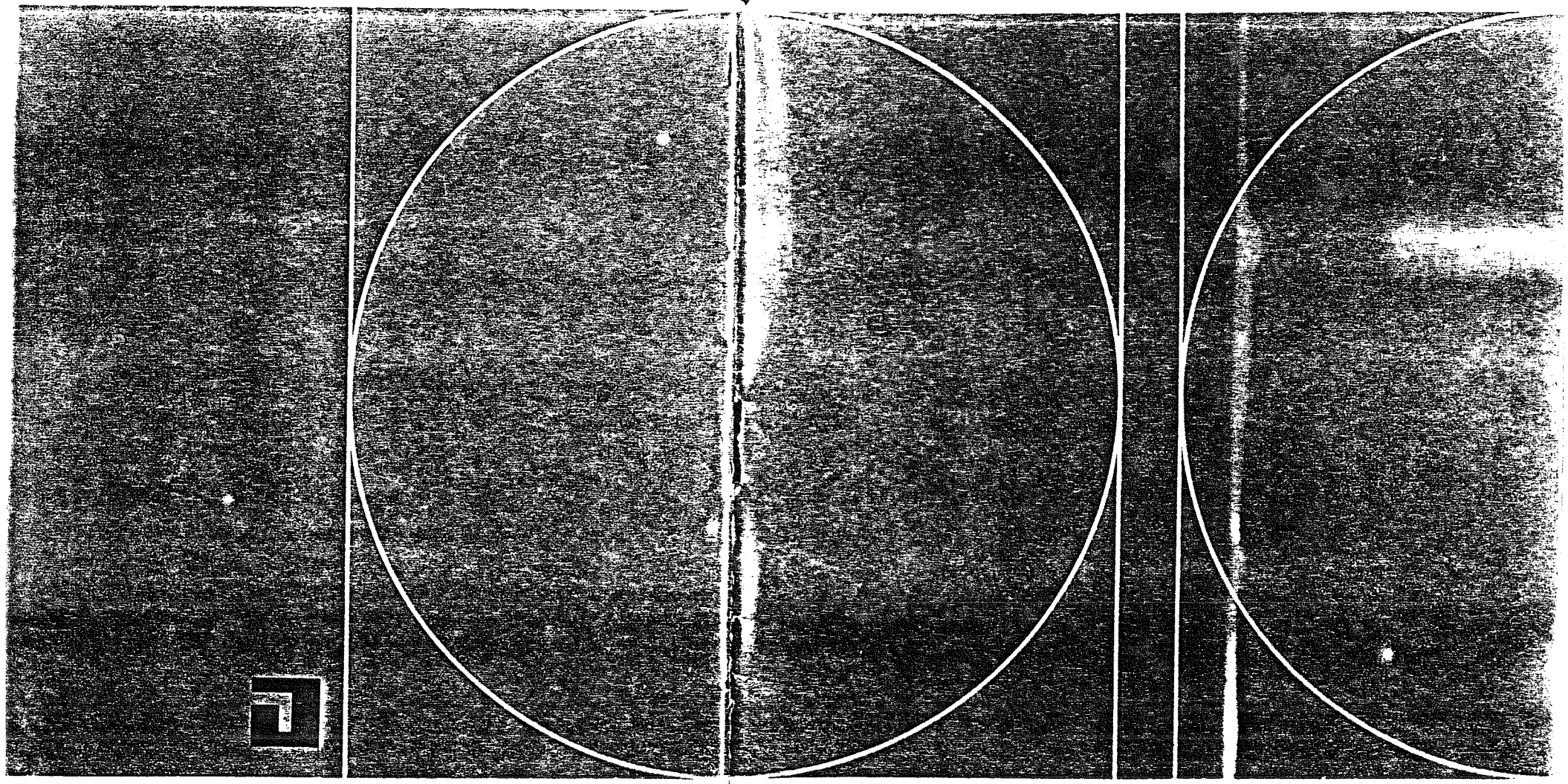
S40P

JUKI MODEL

# LU-55

SINGLE NEEDLE,
LOCK STITCH, UNISON FEED
INDUSTRIAL SEWING MACHINE
INSTRUCTION BOOK



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TOKYO JUKI INDUSTRIAL CO., LTD.

# I. GENERAL DESCRIPTION

JUKI Model LU-55 is a single needle, unison feed, lockstitch industrial sewing machine possessing a maximum sewing speed of 3,000 stitches per minute. A vertical axis rotary hook which is driven by a timing belt is used for this machine. The rising range of the presser foot is 10 m/m (0.393"). The maximum feed range is 7m m (0.273") and a unison feed mechanism is adopted for this machine by which, no matter how fast the machine might rotate, the needle feed mechanism and the feed driving mechanism act in perfect alignment with each other; thus the upper and the lower sewing fabric never slide off. With this specially designed feature, this machine is ideally suited for sewing heavy weight fabric such as tent, awning, leathercoat, work clothes and gloves.

# II. HOW TO OPERATE THE MACHINE

## 1. Cautions on Operation

* Do not, under any circumstances, operate the machine, even for trial run, without lubricating the entire machine.
* The rotational direction of the machine and the hand wheel is toward the operator as you face the machine. (Viewed from the hand wheel side, the rotation is anti-clockwise)
* The maximum rotation of the machine is 3,000 s.p.m. However, for the first month, drop the speed to 2,500 s.p.m. and gradually increase the speed depending upon the nature of the fabric, the feed range and the capability of the operator.



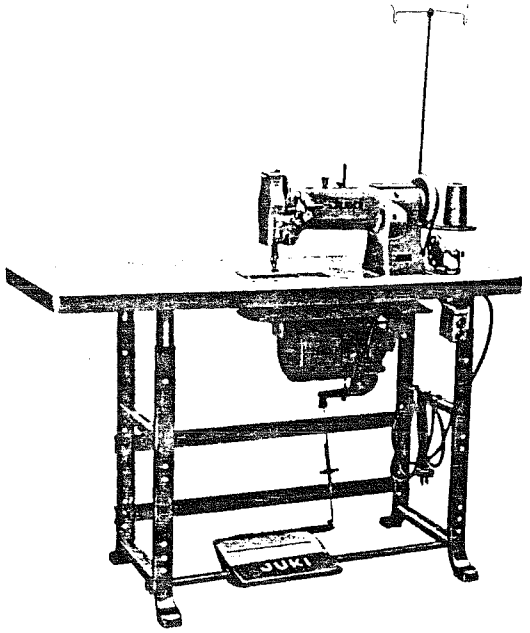



Fig. 1

## 2. Motor Pulley and Belt

When connecting directly to the power source, use a 3-phase, 400 W 1/2 HP electric clutch motor. Use a M type V belt. Refer to the following table for the relation between the number of rotation of the machine with the diameter of the motor pulley. (By the diameter of the motor pulley it is meant the diameter as calculated from the center of the V belt as it is wound around the pulley)

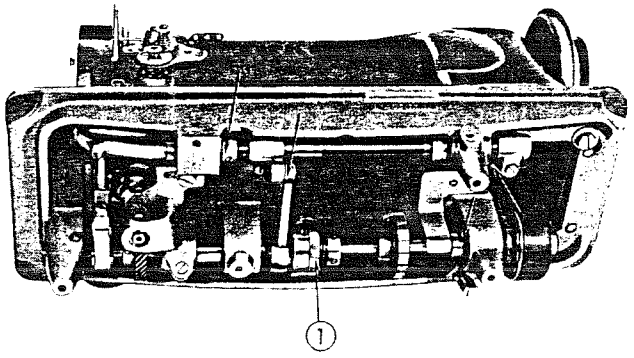



Fig. 5

## 4. Thread

Only left twist thread should be used for the upper thread. But for the bobbin thread, either right twist or left twist can be used.

To inspect the twist of the thread, hold the thread with your fore-finger and thumb of your right hand, as shown in Fig. 6, and if the thread is twisted towards you and if it gets firm, it's a left twist but if it gets loose, it's a right twist.

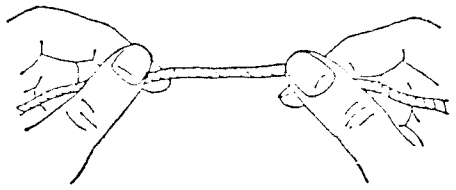


Fig. 6

## 5. Needle

Use a needle number DP×7 (135×7) or DI×3 (29×3), size #18-23 for this machine. The size of the needle depends on the thickness of the sewing cloth and sewing thread. Try to select a needle through which the thread passes easily. Beautiful stitching job cannot be performed if a rough and defective thread, which is difficult to pass through, is used.



## 6. Inserting the Needle

To insert the needle correctly, first, rotate the hand wheel toward you, raise the needle bar to the highest position, loosen the needle set screw, then by inserting the needle into the needle hole of the needle bar as far it will go with the long groove of the needle facing left (toward the head cover), tighten the needle set screw.

## 7. To Remove the Bobbin (See Fig. 7)

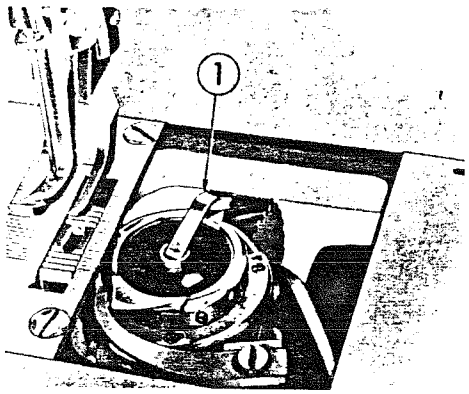



Fig. 7

Pull out the right bed slide, raise the bobbin case latch (Fig. 7 ①) with your fingers and take out the bobbin.

## 8. Winding the Bobbin (Fig. 8)

As shown in Fig. 8, fasten the bobbin winder to the table. Be sure to fasten the pulley ⑤ so that it will be contacting the belt correctly at the winding position. To wind the bobbin, first, insert the bobbin into the pulley shaft ① as far as it will go. Next,

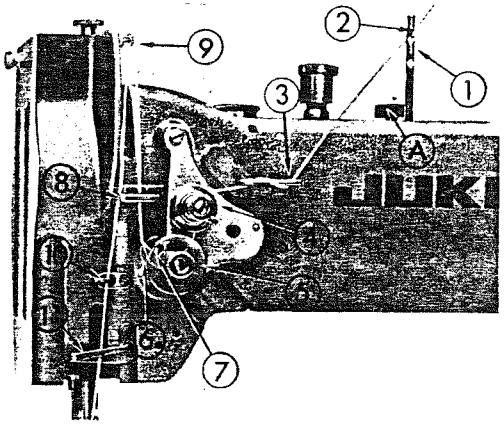



Fig. 10

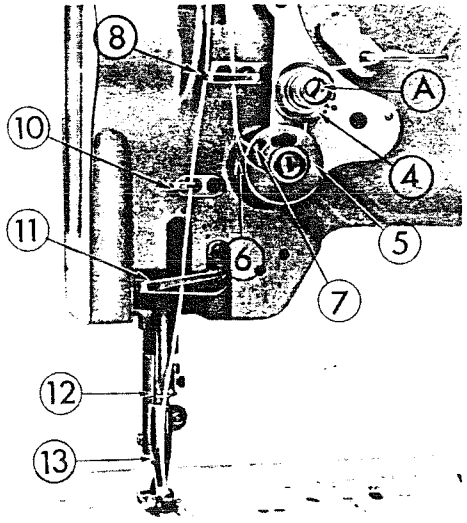



Fig. 11

## 11. Adjusting the Thread Tension

The tension of the upper thread is adjusted by turning the thread



tension nut (Fig. 11 Ⓓ).

The tension of the bobbin thread is adjusted by turning the screw (Fig. 9 4) at about the middle of the tension adjusting spring attached on the outside of the bobbin case.

If it's turned to the right, the tension gets stronger and if turned to the left, it gets weaker.

## 12. Adjusting the Presser Foot

The pressure of the foot presser is adjusted by the presser spring regulator (Fig. 10 Ⓨ) atop the arm. When the pressure is to be increased, turn the spring regulator to the right and to make it weaker, turn it to the left.

## 13. Adjusting the Stitch Length

The graduation of stitch length is marked on the feed graduation plate attached to the upper main shaft. Fig. 12 1). To adjust the stitch length, rotate the hand wheel slowly as you keep on pressing the push-button (Fig. 12 2) atop the bed until the tip of the push-button enters the groove (Fig. 5 1) of the eccentric cam mechanism. When it is entered, rotate the hand wheel either towards you or away from you as you keep pressing the push button until the desired stitch length mark on the graduation plate appears on the hole of the arm (Fig. 12 1). When the desired stitch length mark appears on the hole, release the push button.

## 14. Regulating the Vertical Stroke of the Upper Feed and Presser Foot

The vertical stroke of the presser foot (Fig. 13 1) and the upper feed (Fig. 13 2) moving alternately is equal, normally, and the range of this stroke is adjusted by the thickness of the sewing fabric.

But, sometimes, the alternating vertical stroke range has to be changed depending upon the nature of the sewing cloth.

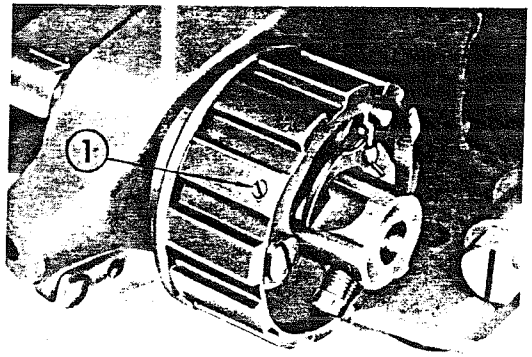



Fig. 16

# III. HOW TO ADJUST THE MACHINE

### 1. Adjusting the Tension Device (Fig. 17)

The function of the thread take-up spring is to absorb the slack of the upper thread until the point of the needle pierces the cloth in its downward stroke. If this spring does not function properly, the needle might be tangled up with the slack thread or the needle might pierce the upper thread.

To regulate the movement of the thread take-up spring, loosen the screw ② Fig. 17 and move the thread take-up spring adjusting plate ① Fig. 17). To lengthen the movement, turn it to right and to shorten it, turn it to left. After adjusting, be sure to tighten the screw.

To strengthen the tension of the thread take-up spring, loosen the thread controller stud set screw ③ Fig. 17, inserted in the arm under the thread controller disc, insert a screw driver to the tip of the groove of the thread tension post (Fig. 17 ④) and turn slowly to the left. To



weaken the tension, turn the screw driver to right. After the adjustmer re-tighten the screw.

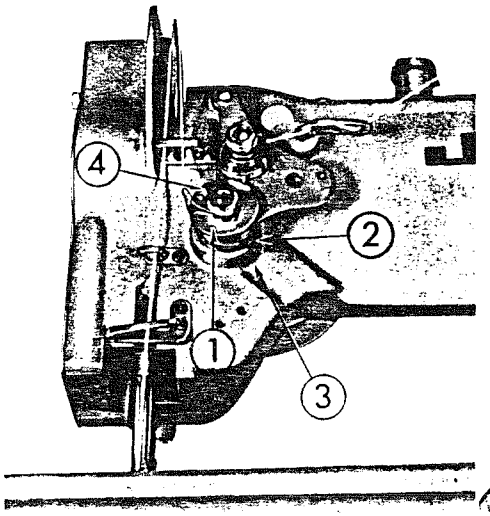



Fig. 17

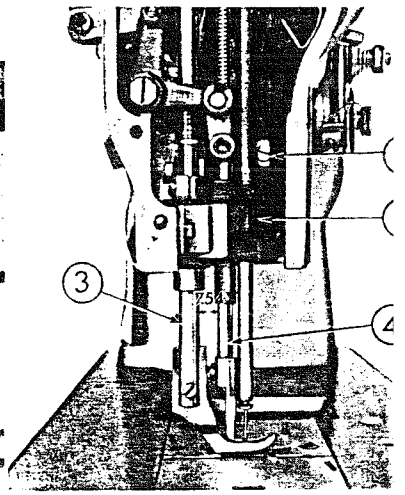



Fig. 18

### 2. Adjusting the Height of the Needle Bar

At first, set the stitch length at approximately 3.2 m m (0.125", th when the needle bar has risen to approximately 2.4 m m (0.094" from lowest point, the center of the needle and the blade point of the sewi hook coincide each other. The correct height of the needle bar is wh at this instance, the upper end of the needle eye is at a position appro mately 1.6 m m (0.063") below the blade tip of the sewing hook.

To adjust the proper height of the needle bar, loosen the needle l clamp screw (Fig. 18 ①), move the needle bar up and down and adju After adjustment, re-tighten the screw.

the presser foot and the presser lifting foot come in one line above the throat plate surface, turn the hand wheel towards the operator and retighten the screw. Then the presser foot amount becomes larger than the presser feed foot amount. At this instant, if the hand wheel is rotated in the reverse direction, the reverse condition ensures, i. e. the rising amount of the presser feed foot gets larger than the presser foot. Consequently, the greater the rotation of the hand wheel, the greater the difference in the rising amount.

### 5. Adjusting the Relative Position of the Blade Tip of the Sewing Hook with the Needle

To prevent the breaking of the upper thread, the blade tip of the sewing hook should be set as closely as possible to the needle. To adjust the clearance between the blade tip of the sewing hook and the needle, first, rotate the hand wheel with your hand until the center of the needle and the blade tip coincide each other. Next, when the 2 screws (Fig. 21 ①, ①') under the bed are loosened, the base of the sewing hook will move to right or left. At this position, try to put them as close as possible without hitting each other and then re-tighten the screws.

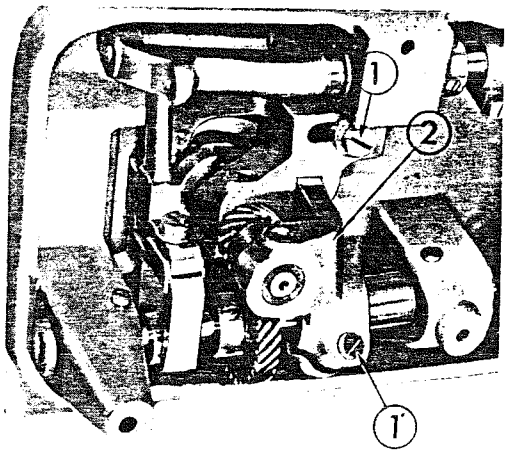



Fig. 21



The needle guide (Fig. 22 ①) at the bottom of the sewing hoo prevents the blade tip from any damages which might occur when th needle, upon piercing the cloth, might bend itself and hit the blade poin of the sewing hook.

The needle guide is so constructed that it can be bent toward outsid with a pair of pliers to prevent the needle from hitting the blade poin of the sewing hook. However, be extremely careful because if you ben it too much, it might cause skip-stitching or thread breakage.

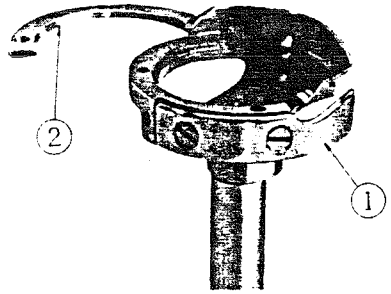



Fig. 22

### 6. Adjusting the Matching Timing of the Sewing Hook Blade Tip with the Needle

First, set the stitch length at 3.2 m/m (0.125").

Remove the throat plate, rotate the hand wheel towards you wi your hand, and when the needle bar has risen 2.4 m/m (0.084" from th lowest position, the center of the needle coincides with the blade tip the sewing hook, and when the needle hole comes to 1.6 m/m (0.063 under the blade tip of the sewing hook, the relative position of the need bar height with the sewing hook becomes correct.

When the timing of the needle bar and the blade point matchin is wrong, first, turn the hand wheel towards you by your hand, s the correct height of the needle bar with the above-mentioned metho

## 10. Adjusting the Height of the Feed Dog

Normally, the entire teeth of the feed dog appears on the surface of the throat plate when it is at its highest position. To adjust the proper height, first, remove the throat plate, clean up any thread hards around the feed dog and install the throat plate to the bed. Next, tilt the machine, rotate the hand wheel towards you and bring the height of the feed dog to its highest position. Then, loosen the screw of the feed bar fork (Fig. 23 ③), adjust the height by sliding the feed bar (Fig. 23 ④) up or down and firmly tighten the screw.

When adjusting the height of the feed dog, be very careful and don't let the bottom part of the feed dog hit the sewing hook.

## 11. To Remove the Needle Bar Frame Rock Shaft

Remove the face plate and the needle bar frame, insert a screw driver into the hole (Fig. 26 ①), loosen the screw of the needle bar frame rock shaft crank and take out the needle bar frame rock shaft.

## 12. Adjusting the Feed Graduation Disc

To set the feed graduation disc correctly, (Fig. 12 ①), first, loosen the set screws of the graduation disc. Next set the stitch length at 3 m/m (0.117"). (Place a piece of paper under the presser foot, rotate the hand wheel with your hand and after 11 stitchings, the overall length should become 30 m/m (1.17"). Next, rotate the hand wheel, as you keep on pressing the push button (Fig. 12 ②) until the tip of the push button engages with the notch of the ratchet pawl on the feed rocker driving eccentric (Fig. 27 ①).

In this position, set the feed graduation disc so that the indicator appears in the hole of the arm (Fig. 12 ③), then tighten the graduation disc to the upper main shaft.



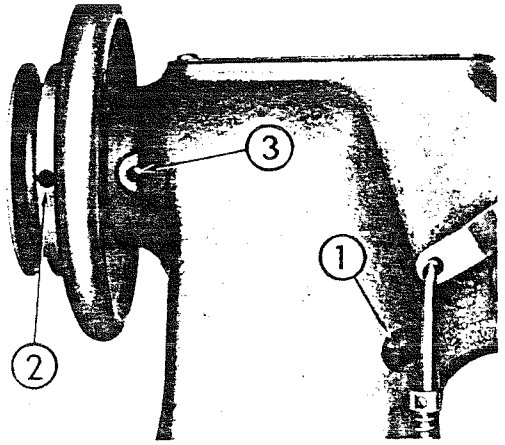



Fig. 26

## 13. How to Replace the Timing Belt

First, loosen the set screws placed in the belt groove of the ha wheel (Fig. 26 ②) and take out the hand wheel. Next, loosen main shaft rear bushing set screws (Fig. 26 ③), then remove the thre take-up, loosen the 2 screws of the upper main shaft rear bushings at right side of the upper sprocket and remove the main shaft rear bush from the frame.

Remove the timing belt from the lower sprocket, pull it out fr the thread take-up hole as much as possible and finally pull it out entir from the hole where formery the upper main shaft was installed.

The sewing hook will rotate 2 times as against one rotation of hook shaft. Also, as the feed cam is attached to the hook shaft, un the feed timing is matched with the needle bar correctly, the timing the sewing hook with the needle bar also becomes discrepant. For reason, when the timing belt is to be replaced again, it is very import to match the mutual relationship of the upper main shaft and the h shaft.

When installing the timing belt, reverse the above procedure

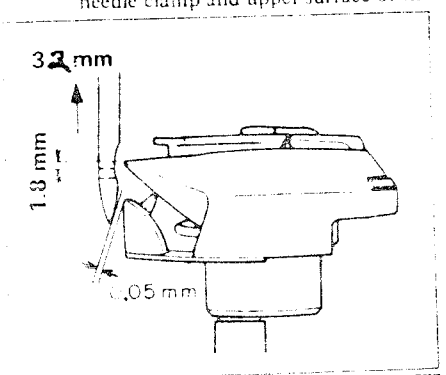
(3)

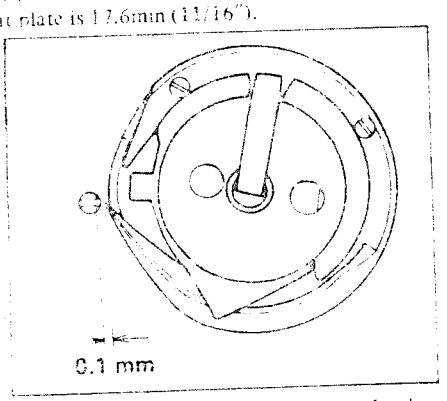
## RELATIONSHIP BETWEEN THE NEEDLE AND THE SEWING HOOK

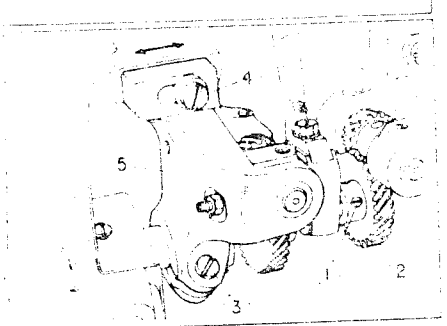
1. **Timing of the needle with the sewing hook**
   First, set the feed amount to "0" and verify that the clearance between the presser bar and the walking bar is 8.5mm (11/32").
   Raise up the presser foot and after matching the feed graduator plate to "4", remove the throat plate.

- When the needle has risen 3.3mm (1/8") from the lowest point,
- Match the blade point of the sewing hook with the center of the needle. At this point,
- The clearance between the needle side surface and the blade point of the sewing hook comes to 0.1mm (1/256"),
- The clearance between the needle side surface and the needle guard "2" of the sewing hook comes to 0.05mm (1/512").
- The distance between the upper tip of the thread hole of the needle and the tip of the sewing hook blade comes to 1.8mm (5/64").

(Note) When the needle bar is at the lowest point, the distance between the lower end of the needle clamp and upper surface of the throat plate is 17.6mm (11/16").




2. **How to match the timing of sewing hook**
   Loosen the set screw (1) of the large gear of the hook shaft, move the large gear (2) to right and left and when the center of the needle and the blade point of the sewing hook are matched together, tighten the set screw (1). At this point, be careful to see that the center gear of the large gear and the center of the hook shaft do not slide each other.

3. **Adjusting the clearance between the needle and blade point of the sewing hook**
   Make adjustment as follows:
   1) Remove the presser foot and the throat plate and tilt the machine.
   2) Loosen the clamp screw (3) and set screw (4) of the hook driving shaft saddle of the adjusting side.
   3) Fix the hook driving shaft saddle rightly and move it to right and left and by making the clearance between the needle and the blade point of the hook to 0.0 mm (1/64"), tighten the clamp screw (3) and set screw (4) firmly.