

1. HOW TO OPERATE THE MACHINE

1. GENERAL DESCRIPTION

JUKI MODEL LG-57 is a two-needle, compound feed, long-arm, lockstitch industrial sewing machine. This machine is equipped with two sewing hooks of vertical axis rotary type which are driven by a timing belt.

The amount of presser lift is 16 m/m($5/8$ "), the maximum feed amount is 10 m/m($3/8$ ") and the compound feed mechanism is so constructed to make the needle feed and the feed driving mechanism to harmonize each other irrespective of number of rotations. By this mechanism, the slipping of the upper and lower cloth is prevented. Also, a safety clutch is provided to maintain the durability of the machine.

This machine is especially designed and constructed to be used for sewing long, heavy weight materials such as tents, awnings, furniture upholstery, etc.

2. SEWING SPEED

The maximum sewing speed recommended for this machine is 1,500 revolutions per minute, when permitted by the nature of the material being sewn. A clutch motor of 400 W ($1/2$ HP) is used when connected directly to the power source.

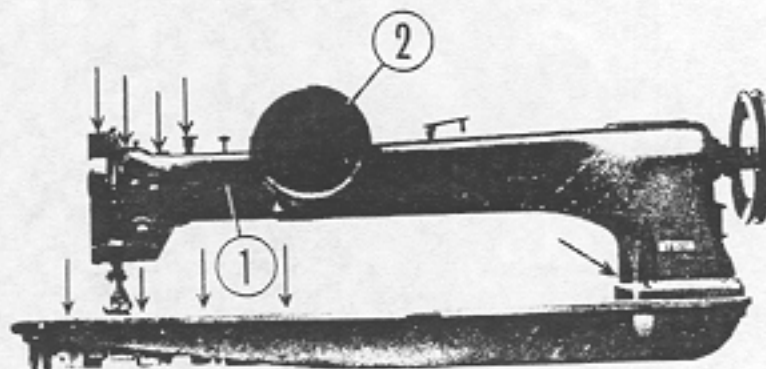


Fig. 1

The running speed depends on the feed amount but the machine should be run slower than the maximum speed until the parts which are in movable contact have been glazed by their action on each other. When the machine is in operation, the hand wheel should turn over toward the operator.

3. LUBRICATION

To maintain a smooth running of the machine and also to prevent the depreciation of all frictional parts, always apply sufficient amount of JUKI Defrix Oil. When the machine is to be used continuously, oil all parts over 2 times every day. Oil should be applied at each of the places designated by arrows in Figs. 1, 2, 3 and 4.

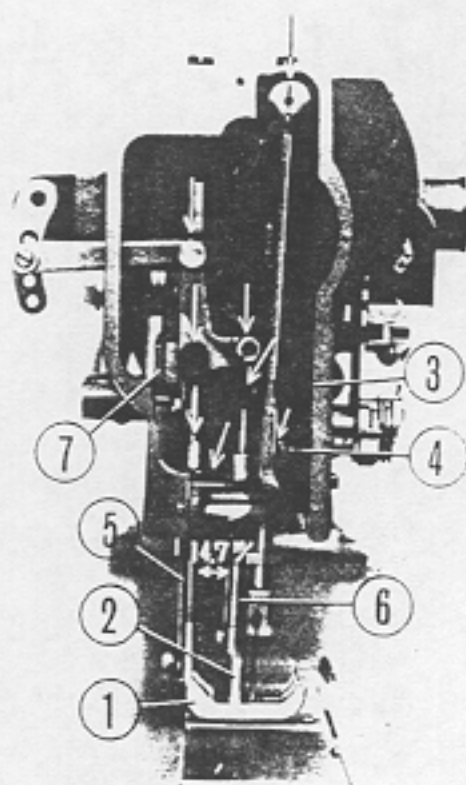


Fig. 2

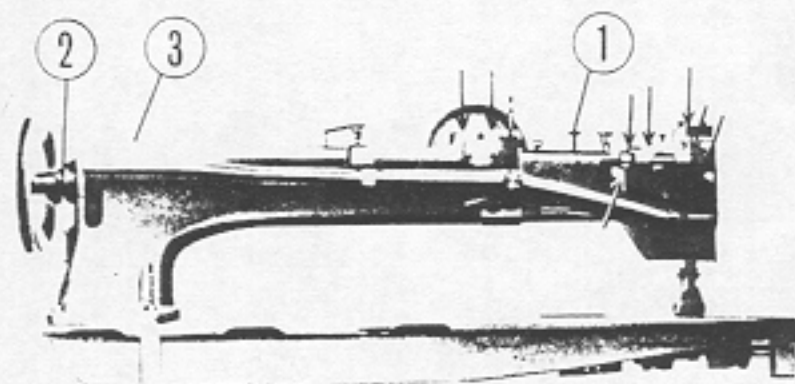


Fig. 3

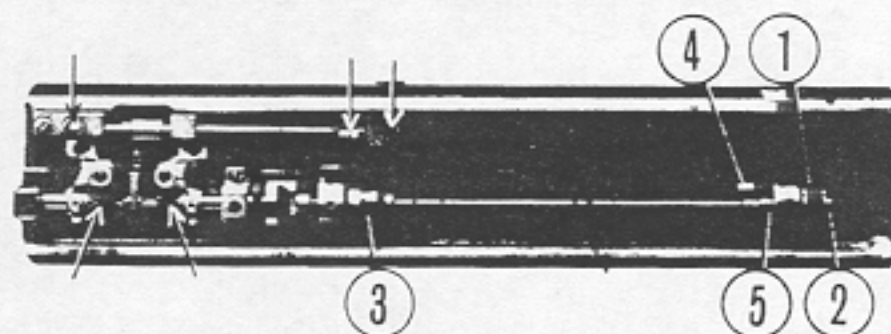


Fig. 4

(Note)

Do not run the machine even for trial running, before oiling all the parts mentioned above.

4. THREADS

Use only left twist thread for the needles. Either left or right twist thread may be used for the bobbins. Normally, synthetic thread of either #20 single thread of 9 strands or #30 single thread of 9 strands is used for sewing heavy cloth such as tents, sails, etc. To test the twist of the thread, hold the thread as shown in Fig. 5. Turn the thread over towards you between the thumb and forefinger of the right hand; if left twist, the strands will wind tighter; if right twist, the strands will unwind.

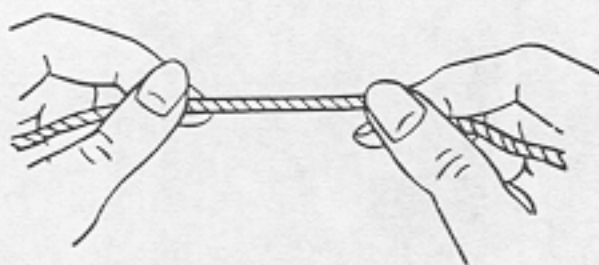


Fig. 5

5. NEEDLES

The standard needle for this machine is DD X 1 (214 x1) #25. If rough or uneven thread is used, or if it passes with difficulty through the eye of the needle, the successful use of the machine will be interfered with.

6. INSERTING THE NEEDLES

To insert the needles, push the auxiliary hand wheel in the center of the arm and rotate it. Put the needle bar at its highest position, loosen the 2 screws of the needle holder, insert the needles deep into the needle hole of the needle holder so that the long groove of the inner needle (right side) will come to your left and the long groove of the outer needle

(left side) will come to your right. In other words, the long grooves of the two needles should be facing each other. Then tighten the set screws.

7. TO REMOVE THE BOBBIN

Draw back the slide plates in the bed of the machine and turn the hand wheel until the bobbin case openers move clear of the bobbins. With the forefinger, raise the latches to a vertical position and lift out the bobbin as shown in Fig. 6.

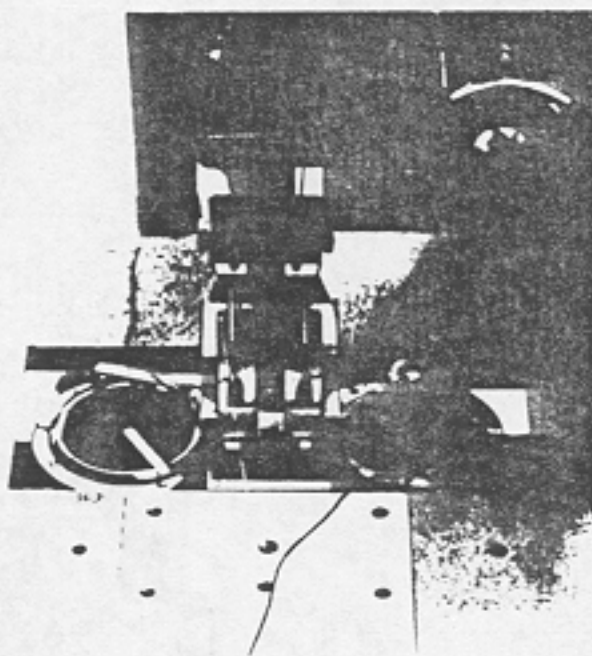


Fig. 6

Removing the bobbin

8. TO WIND THE BOBBIN

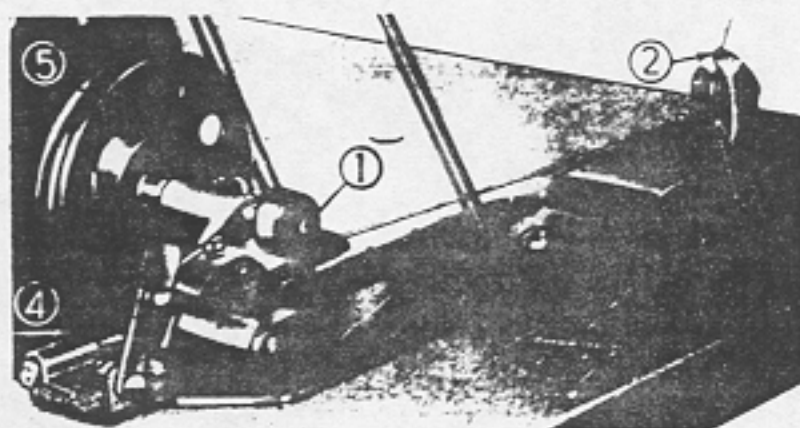


Fig. 7

Winding the bobbin

Fasten the bobbin winder to the table as shown in Fig. 7 with its driving pulley in front of the machine belt, so that the pulley will drop away from the belt when sufficient thread has been wound upon the bobbin.

Place the bobbin on the bobbin winder spindle (1) and push it in as far as it will go.

Pass the thread through the thread eyelet (2) of the tension bracket, around and back and between the tension discs (3). Then wind the end of the thread around the bobbin a few times. Then when the trip latch (4) is pushed against the machine belt, the pulley (5) will contact the belt and the machine will start.

When sufficient thread has been wound upon the bobbin, the bobbin winder will stop automatically.

Bobbin can be wound while the machine is stitching.

9. TO REPLACE THE BOBBINS AND THREAD THE BOBBIN CASES

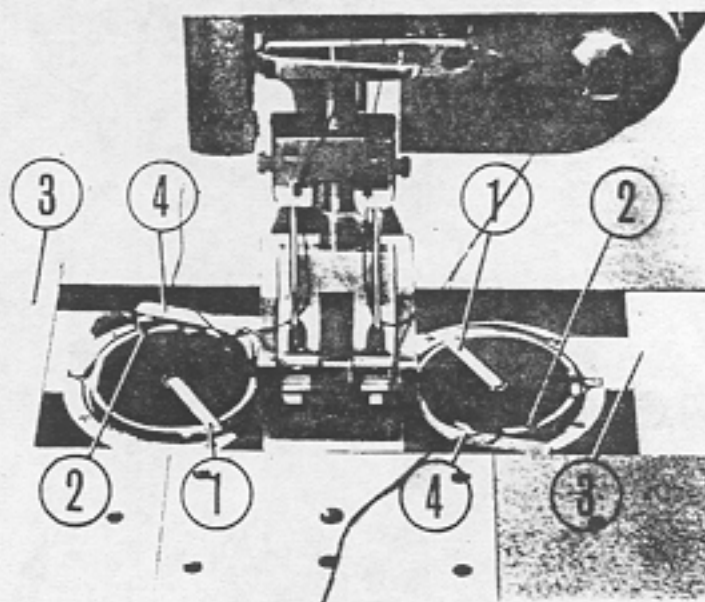


Fig. 8

Bobbin cases threaded

This procedure applies to two bobbins, both right and left. Hold the bobbin between the thumb and forefinger with the thread drawing on the bottom from left to right and place it on the center stud of the bobbin case, then push down the latch (1), Fig. 8.

Draw the thread into the slot ② under the tension spring, leaving a loose end of the thread about 5 c/m (about 2 inches) long above the slide plate ③. When closing the slide plates, leave just enough space for the thread to pass through.

10. THREADING THE NEEDLES (Fig. 9)

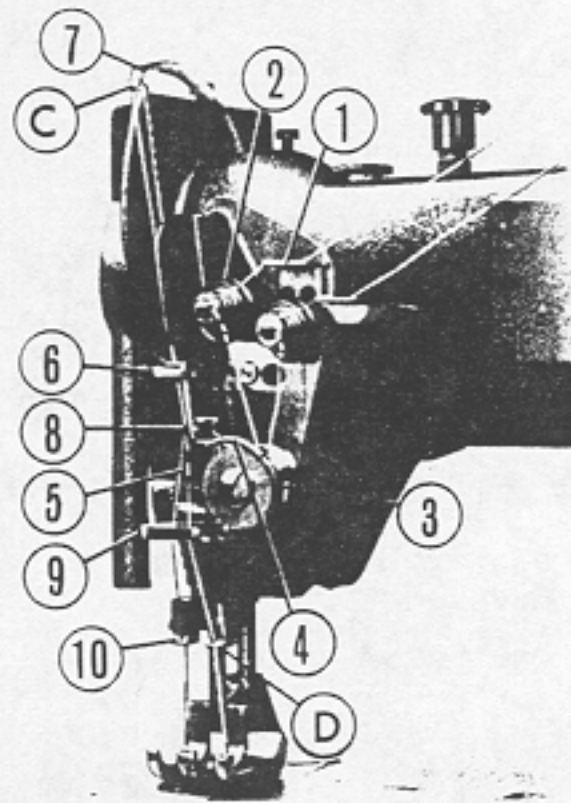


Fig. 9

TO THREAD THE LEFT-HAND NEEDLE, pass the thread from the left thread spool of the spool stand through the thread guide at the top left of the spool stand, through the eyelet of the needle thread guide pin at the top of the arm from the opposite side towards you and pass it through the eyelet just below from right to left. Then pass it **through** the 3 holes of the 3-hole thread eyelet ①, Fig. 9, catch it on the left tension disc ② from above, then wind it once around the groove of the thread guide on the opposite side from left and catch it on top of the thread controller disc ③ and draw it downwards.

Then, catch it on the take-up spring (4) pull it upwards, pass it through the hole of the take-up lever (5) from right to left, pull it downwards, catch it on thread guides (6) (7), pass it through the needle holder eyelet (8) and through the left side needle from the right to left.

TO THREAD THE RIGHT-HAND NEEDLE, pass the thread from the right thread spool of the spool stand, through the thread guide at the right of the spool stand, through the needle thread guide pin at the top of the arm from the operator's side to the other side. Pass it through the hole below from right to left, through the 3 holes of the 3-hole thread eyelet (A) pass it through the tension disc (B) and thread guide (C) from under, then wind it once around the groove of the thread pin and through the wire thread guide (D) from above and draw it downwards. Then pass it through the take-up spring, thread take-up hole (E) thread guides (6) (7), and through the right side eyelet (F) of the needle bar and finally through the right needle eye from left to right.

11. TO REGULATE THE TENSIONS

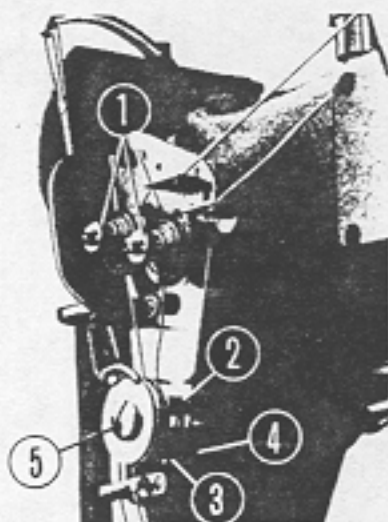


Fig. 10

The tension on the needle threads is regulated by the two thumb tension nuts (1), Fig. 10. To increase the tension, turn these tension nuts over to the right; to decrease, turn to the left.

The tension on the bobbin threads is regulated by means of the screw

nearest the center of the tension spring on the outside of each bobbin case. To increase the tension, turn this screw over to the right; to decrease, turn to the left.

12. TO REGULATE THE PRESSURE OF THE PRESSER FEET

The pressure of the presser feet can be regulated by the pressure adjusting screw 1, Fig. 11. To increase the pressure, turn this screw over to the right; to decrease, turn to the left.

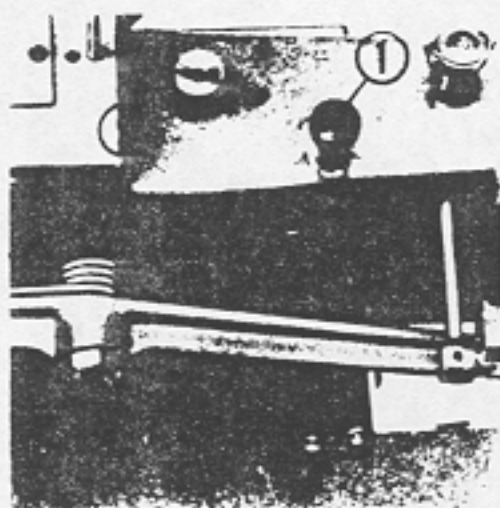


Fig. 11

13. TO REGULATE THE LENGTH OF STITCH

The length of stitch is regulated by the feed regulating button (2), Fig. 11. Rotate the hand wheel slowly by pressing this button until the tip of the button enters completely into the groove of the feed eccentric. When it is completely in, rotate the hand wheel with the push button in the pushed-in condition until the vibrating presser foot amount becomes equal to that of the lifting presser foot amount.

The lifting presser foot amount is adjusted by the button (3), Fig. 11.

14. REGULATING THE AMOUNT OF LIFT OF LIFTING PRESSER FOOT AND VIBRATING PRESSER FOOT

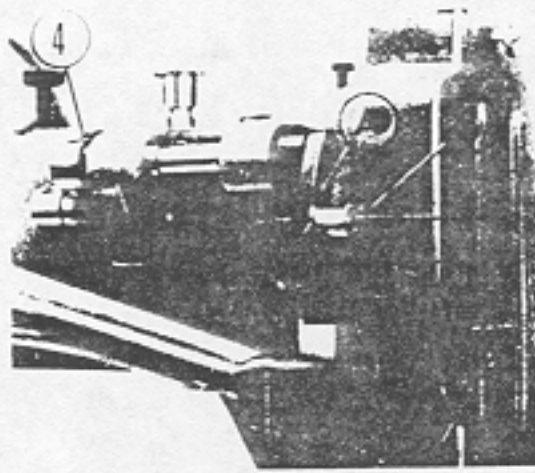


Fig. 12

The alternate lifting amount of the lifting presser foot (Fig. 2 (1)) and the vibrating presser foot (Fig. 2 (2)) is equal, normally, and this lifting height is adjusted according to the thickness of the sewing cloth. However, sometimes this alternate lifting amount may be changed by various kinds of materials.

The lifting amount is adjusted by changing the position of the screw hole of the main shaft feed adjusting screws (Fig. 12 (1)).

The screw hole (A) gives the least lifting amount and the hole (D) at the bottom gives the maximum lifting amount. Thus, 4 lifting amounts can be regulated by screw holes (A) (B) (C) and (D).

For adjusting, remove the nut (Fig. 12 (2)) behind the feed adjusting screw (1) by turning it with a screw driver to the left. Then determine the correct position of the screw hole and set it with the vibrating presser bar connecting link (Fig. 12 (3)). When all adjustments are completed, check to see that all screws and nuts are securely tightened.

II ADJUSTING THE MACHINE & EXPLANATION OF MECHANISMS

1. ADJUSTING THE NEEDLE THREAD TENSION MECHANISM

The function of the take-up spring is to remove all the superfluous needle thread until the needle comes down to pierce the cloth. If this

function fails, the needle thread might be entangled or pierced by the coming down needle.

To regulate the movement of the take-up spring, it is necessary to move the take-up spring adjusting plate (Fig. 10 (2)) by loosening the screw (Fig. 10 (3)). To increase the motion of the take-up spring, move this plate to your right. To decrease the motion, move it to your left. When the adjustment is completed, tighten the screw.

To increase the tension of the take-up spring, loosen the screw (Fig. 10 (4)) which is plugged in, in the arm under the take-up spring guide disc, and by inserting a screw driver gently into the groove at the tip of the take-up spring pin (Fig. 10 (5)), turn it to your left. To decrease the tension, turn it to your right. After the adjustment, tighten it securely.

2. ADJUSTING THE HEIGHT OF THE NEEDLE BAR

First, set the length of the stitch at about 10 m/m ($3/8''$) and when the needle bar has risen about 3.5 m/m ($1/8''$) from the lowest point, the center of the needle coincides with the tip of the sewing hook. At this position, if the upper tip of the needle eye is about 3 m/m ($1/8''$) under the tip of the sewing hook, the height of the needle bar is correct.

To adjust to this position, loosen the needle bar clamping screw (Fig. 2 (3)) and by moving the needle bar up and down, determine the correct height. When this adjustment is completed, tighten the screw.

3. ADJUSTING THE RELATIVE POSITION OF THE NEEDLE BAR FRAME

The correct relative position of the needle bar frame (Fig. 2 (4)) and the presser bar (Fig. 2 (5)) should be such that when the stitch length is set at "0", the clearance between the presser bar and the vibrating presser bar (Fig. 2 (6)) becomes 17 m/m ($43/64''$).

Also the correct relative position of the needle bar frame and the dog feed dog is for the needle to be about the center or a little near the operators side of the needle eye of the feed dog, irrespective of the motion of the feed.

When the length of stitching is set at "0" and if the relative position of the vibrating presser bar and the presser bar is bad, remove the side plate (Fig. 1 ①), loosen the set screw in the inside of the needle bar frame rocker shaft crank and by fixing the clearance between the presser bar and the vibrating presser bar at 17 m/m(43/64"), securely tighten the screw.

Also, when the relative position of the needle bar frame and the feed dog is bad, first, set the length of stitching at "0". Next, make the clearance between the needle bar and the presser bar at 17 m/m(43/64"). To adjust to this clearance, remove the side plate and loosen set screw inside the needle bar frame rocker shaft crank.

Next, adjust the position of the feed dog so that the needle comes to the center or a little nearer the needle hole of the feed dog. To adjust to this position, loosen the clamp screw of the feed rocker shaft crank (Fig. 13 ①).

4. TO ADJUST THE HEIGHT OF THE PRESSER FOOT AND THE RELATIVE HEIGHT OF THE PRESSER FOOT AND THE VIBRATING PRESSER FOOT

To adjust the height of the presser foot, loosen the set screw of the knee lifter bell crank bracket (Fig. 2 ⑦) with the knee lifter in raised up position and make the clearance between the lower surface of the presser foot and the upper surface of the throat plate at 16 m/m(5/8") and tighten the screw. To make the presser foot and the vibrating presser foot to rise to the same height, lower the presser foot, loosen the set

screw of the vibrating presser bar rock shaft crank (Fig. 12 ④), rotate the hand wheel slowly toward the operator and when the vibrating presser foot vibrates and the lower surface of the presser foot and the vibrating presser foot comes on the same level with the upper surface of the throat plate, tighten the set screw.

Also, to alter the lifting amount of the presser foot and the vibrating presser foot, loosen the set screw of the vibrating presser bar rock shaft crank when the lower surface of the presser foot and the vibrating presser foot come on the same level with the upper surface of the needle plate. Then rotate the hand wheel and if the set screw is tightened, the presser foot will rise higher than the vibrating presser foot. If the hand wheel is turned in the reverse direction, the vibrating presser foot will rise higher than the presser foot. Accordingly, the more the hand wheel is turned, the greater the difference of the lifting amount of the two pressers.

5. TO SET THE SEWING HOOK TO OR FROM THE NEEDLE

To prevent the point of the hook from breaking or dividing the strands of the thread, it should run as close to the needle as possible.

Turn the hand wheel over towards you until the point of the sewing hook comes to the center of the needle. Loosen the four screws (Fig. 13 ②③④⑤) underneath the bed of the machine and move the hook saddle to the right or left, as may be required, until the point of the hook is as close to the needle as possible without striking it, then securely tighten the four screws.

The needle guard (Fig. 14 ①), which is attached to the side of the sewing hook, should be sprung until it prevents the needle from striking the hook in case the needle is deflected toward the hook.

6. TO TIME THE SEWING HOOK WITH THE NEEDLE

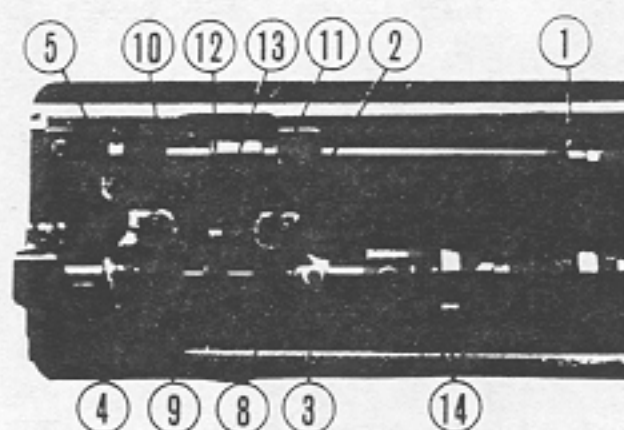


Fig. 13

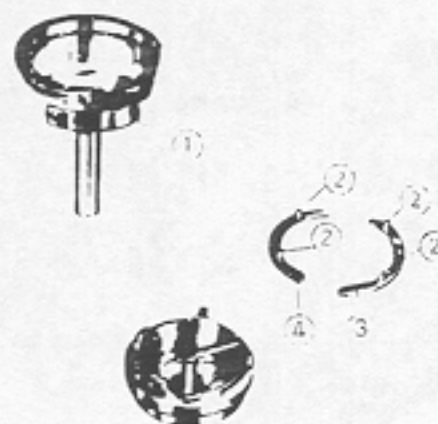


Fig. 14

Set the length of stitch at 10 m/m($3/8''$).

Remove the throat plate, and when the needle bar has risen to 3.5 m/m ($1/8''$) from the lowest point and the center of the needle and the hook point come together, the needle eye will be about 3 m/m($1/8''$) below the hook point. This is the correct position of the sewing hook and the correct height of the needle bar.

When the timing of the needle bar and the point of hook is out of alignment, first, turn the hand wheel towards you, set the height of the needle bar as above, loosen the 2 screws of the gears (Fig. 13 ⑧⑨), move the gears to the right or left, rotate the sewing hook and match it with the center of the needle and firmly tighten the 2 set screws. The sewing hook is firmly fixed in to the small gears (Fig. 13 ⑩⑪).

7. THE SAFETY CLUTCH

When an unusual strain such as needle breakage or entangling of thread into the sewing hook occurs during the running of the machine, the safety clutch (Fig. 13 ⑫) springs into action and automatically stops the rotation of the hook.

When this happens, push the auxiliary hand wheel and turn it toward the left as you push the safety clutch button (Fig. 11 (4)) on the bed of the machine, and the safety clutch will be set and the machine will run normally again.

8. TO REMOVE THE BOBBIN CASE FROM THE SEWING HOOK

Remove the 4 hook small screws (Fig. 14 (2)) and remove the 2 hook gibs (Fig. 14 (3) (4)) as shown in Fig. 14 and remove the bobbin case.

9. TO REMOVE THE SEWING HOOK FROM THE MACHINE

Open up the sliding plate and take out the throat plate, feed dog, and the bobbin case opener (Fig. 8 (4)).

Loosen 2 screws of the small gears (Fig. 13 (10) (11)) which are attached to the bottom surface of the bed and by lightly tapping the end of the hook shaft by a screw driver, take out the sewing hook.

10. ADJUSTING THE HEIGHT OF THE FEED DOG

Usually when the feed dog is at its highest position, it should show a full tooth above the throat plate.

Remove the throat plate, clean the lint and dust from between the feed points and replace the throat plate. Tilt the machine, turn the hand wheel towards you until the feed dog is at the highest position. Loosen the screw in the feed driving cam fork (Fig. 13 (12)), raise or lower the feed bar (Fig. 13 (13)), as may be required, and retighten the screw.

When raising or lowering the feed dog, be careful that its underside does not drop low enough to strike the sewing hook.

11. AUXILIARY HAND WHEEL

The auxiliary hand wheel, which is attached to the center of the arm, is to assist the rotation of the main shaft due to the big size of the

machine and is mainly used for adjusting the needle position.

Push the auxiliary hand wheel with your hand forward and if turned to the right, the gear tooth will catch and the main shaft will rotate toward its right direction.

If you release your hand from the auxiliary hand wheel, the machine will automatically resume its normal status.

(Note) It is dangerous to touch the auxiliary hand wheel during the running of the machine. Always stop the machine when handling the auxiliary hand wheel.

12. TO CHANGE THE TIMING BELT

Loosen the set screws of the hand wheel in the belt groove of the hand wheel and take out the hand wheel. Next, loosen the main shaft near bushing set screw (Fig. 3 ②), remove the top cover (Fig. 3 ③); loosen the 2 screws of the main shaft rear bushing which is on the right side of the upper sprocket and pull out the main shaft rear bushing from the arm. Release the timing belt (Fig. 4 ①) from the lower sprocket (Fig. 4 ②); pull it out from the hole of the top cover as much as possible and draw it out from the hole of the main shaft rear bushing.

The sewing hook rotates twice compared to the one revolution of the hook shaft. Also, as the feed eccentric (Fig. 4 ③) is attached to the hook shaft, if the timing with the feed in relation to the needle bar is not set right, the timing of the sewing hook with the needle bar also becomes wrong. Therefore, when the timing belt is to be replaced, it is very important to set the correct timing of the main shaft with the hook shaft.

To replace the timing belt, reverse the above procedure. Pass the belt to the main shaft, insert the main shaft rear bushing into the arm,

and attach the hand wheel to the main shaft and hang the belt to the upper sprocket.

When hanging to the lower sprocket, rotate the hook shaft with your hand with the thread take-up at the highest position and after matching the arrow marks of the hook shaft thrust collar (Fig. 4 ④) with the arrow marks of hook shaft bushing (2) (Fig. 4 ⑤), hang the belt to the lower sprocket. Thus, the feed timing with the needle bar becomes correct.

13. DIFFERENT KINDS OF GAUGES

The standard needle width gauge is $3/4$ inches but depending on the sewing operation, gauges of $1/2$ inch to $2-1/2$ inches may be used.

There are 5 kinds of gauges available: needle bar (with needle holder) presser foot, vibrating presser foot, throat plate, and feed dog.