

# JUKI

CYLINDER-BED, 1-NEEDLE, NEEDLE-FEED  
LOCKSTITCH MACHINE WITH AUTOMATIC  
THREAD TRIMMER

## LS-246-4 INSTRUCTION MANUAL

No.01

BE010800B0A

Congratulations on your purchase of a JUKI sewing machine.  
Please read this Instruction Manual carefully before using the unit in order to get the most out of it and to enjoy using it for a long time.

### BEFORE OPERATION

1. Never operate your machine unless its oil pan has been filled with oil.
2. After setting up your machine, check the rotational direction of the motor. To do this, turn the handwheel by hand to bring the needle down, and turn the power switch ON while observing the handwheel. (The handwheel should turn counterclockwise as observed from the handwheel side.)
3. For the first month, run the machine at a speed of 2,000 s.p.m. or less.
4. When carrying the machine, do not hold it by the synchronizer located at the rear of the handwheel.
5. Confirm that the voltage and phase (single- or 3-phase) are correct by checking them against the ratings shown on the motor nameplate.

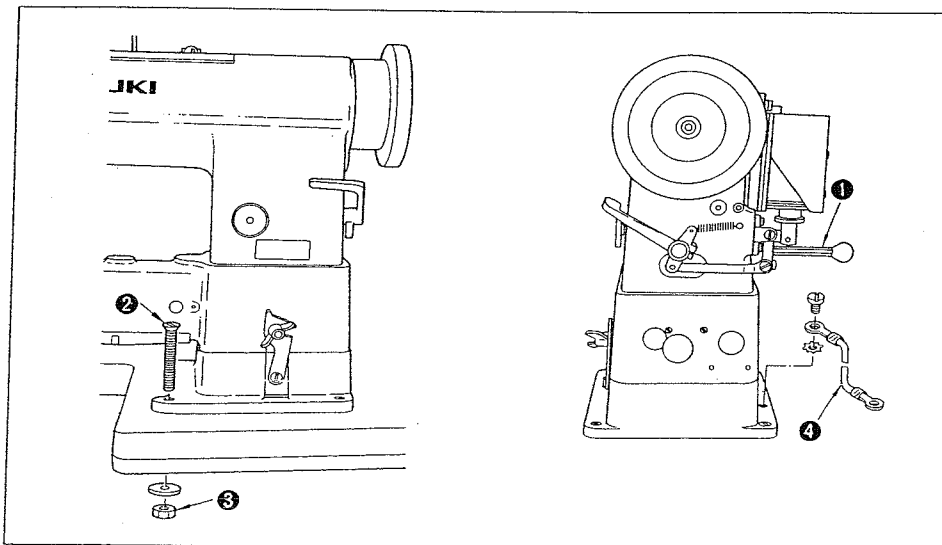
### OPERATION PRECAUTIONS

1. Keep your hands away from the underside around the needle when you turn the power switch ON.
2. Do not put your fingers into the thread take-up cover while the machine is operating.
3. Be sure to turn the power switch OFF before tilting the machine head or removing the V belt.

### SPECIFICATION

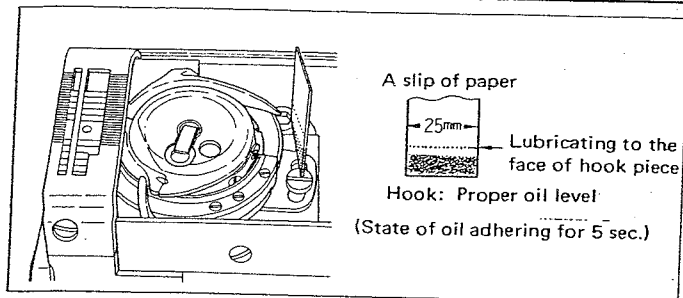
Sewing specification	Medium-heavy materials
Application	Hem stitching of swimming wear
Sewing speed	Normal speed 2,400 s.p.m. (Max. 2,600 s.p.m.)
Max. stitch length	4 mm
Needle	DP x 17 #16B (small ball-point)
Lift of presser foot	8.5 mm by hand lifter, 10 mm by knee lifter
Lubricating oil	New Defrix Oil No. 1

### 1. SETTING UP THE SEWING MACHINE



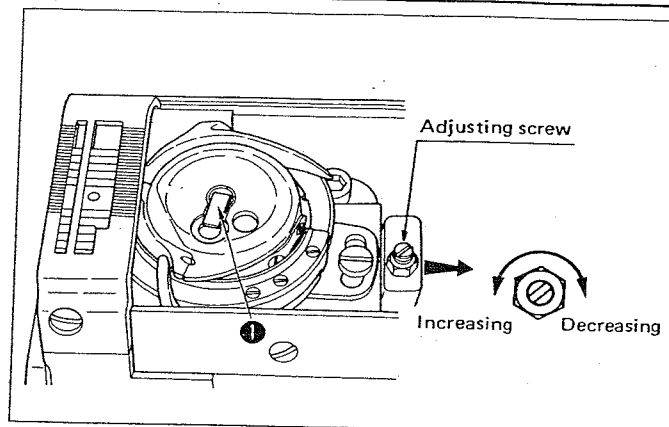
- 1) Install supporting bar ① of the machine head in the arm. Next, mount the machine on the machine table, insert screws ② in holes in four corners and tighten them by nuts ③.
- 2) Connect an earth cable to the machine head and connect either side of earth cable ④ to the motor.

## 2. LUBRICATION



### ● Before starting the sewing machine

- 1) Supply Juki New Defrix Oil No. 1 up to H mark of the oil pan.
  - 2) When oil level drops to L mark or less, supply oil again.
  - 3) While the sewing machine operates after lubrication, it can be seen that oil splashes over the window of the oil reservoir. (1,000 s.p.m. or more)
  - 4) When using the machine at a low temperature (5°C or less), the oil level of the face plate section becomes rather short and that of the hook section becomes rather excessive. Therefore, readjust oil level.
  - 5) In addition, when using oil other than Juki specification, readjust the oil level in the face plate section and the hook section after approx. 30 minutes after starting operation.
- (Precaution)** When using the machine which has not been used for a long time, please do running-in operation at 2,000 s.p.m. for approx. 10 minutes.

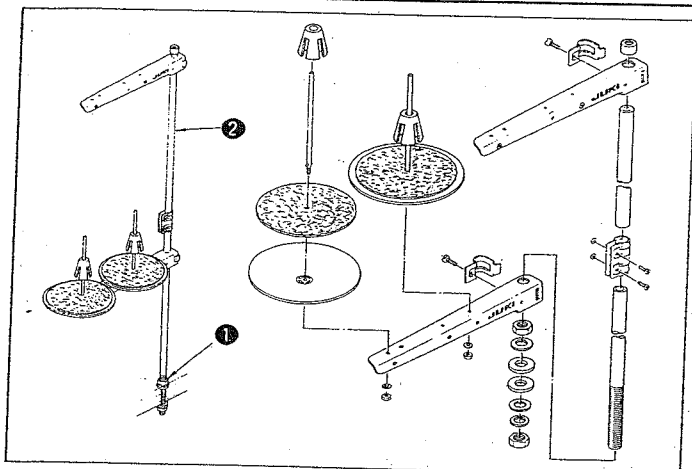


### ● Adjusting the amount of oil supplied to the hook

- 1) The adjusting screw can be seen in the right side of the hook.
- 2) Loosen the nut and turn it clockwise, and the amount of oil will be increased.

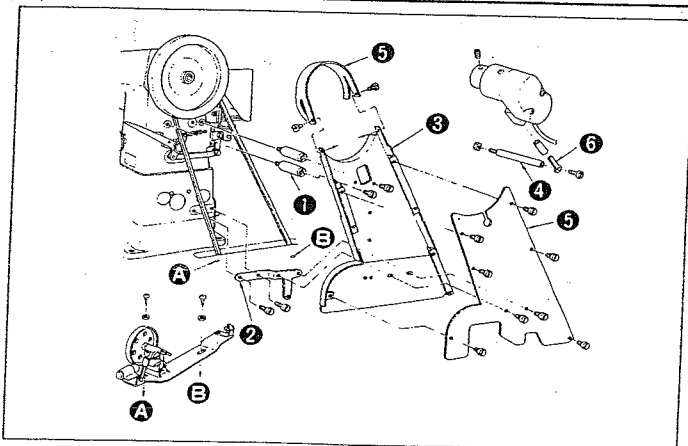
**(Caution)** When handling the adjusting screw, be sure to turn OFF the power switch. It is dangerous to turn the adjusting screw with the power switch ON, because the hook might rotate in error.

## 3. INSTALLING THE THREAD STAND



- 1) Assemble the thread stand, and insert it in the hole in the machine table, and fit it by tightening nut ①.
- 2) For ceiling wiring, pass the power cord through spool rest rod ②.

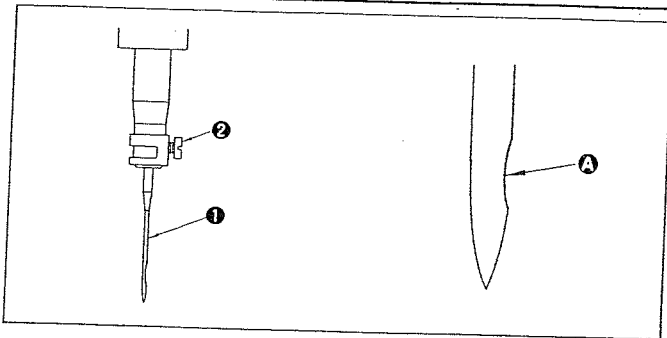
## 4. INSTALLING THE BELT COVER AND THE BOBBIN WINDER



### (Installing Procedure)

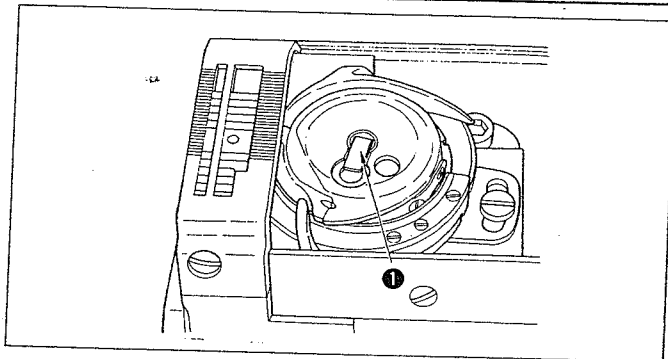
- 1) Drill guide holes A and E for wooden screws on the machine table.
- 2) Insert belt cover support ① in the tapped hole in the machine arm.
- 3) Install belt cover support plate ② in the machine bed.
- 4) Place the bobbin winder in the belt cover and adjust the position.
- 5) Install belt cover ③ in support ① and support plate ②.
- 6) Fix the bobbin winder in the machine table.
- 7) Install the support bar ④ of the synchronizer.
- 8) Install belt cover ⑤.
- 9) Install the support plate ⑥ of the synchronizer.

## 5. ATTACHING THE NEEDLE



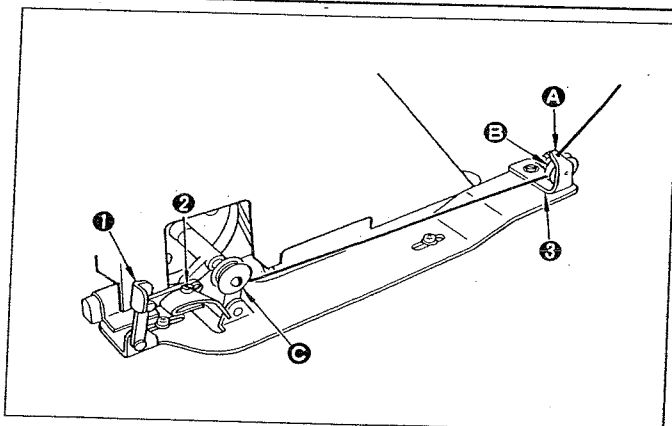
- Turn the motor power OFF.
- 1) Turn the handwheel to move the needle bar up to its highest position.
  - 2) Loosen setscrew ② and holding needle ① so that the indented part A of the needle directs outside.
  - 3) Insert the needle into the needle bar until it will go no further.
  - 4) Securely tighten the needle setscrew.

## 6. ATTACHING/DETACHING THE BOBBIN CASE



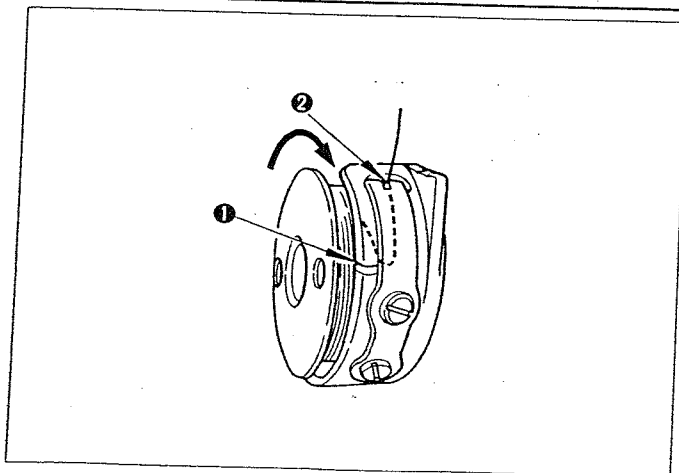
- 1) Raise lever ① of the hook and remove the bobbin case together with the bobbin.
- 2) When attaching it, insert it in the hook shaft properly and tilt the lever.

## 7. WINDING THE BOBBIN THREAD



- 1) Thread in the order of A, B and C, and wind thread a few times around the bobbin.
- 2) Tilt bobbin winder stop latch ① and contact the bobbin winder pulley to the belt.
- 3) Adjust the bobbin winding capacity by adjusting screw ② so that thread can be wound by approx. 80%. Turning the screw clockwise increases the amounts of thread wound on the bobbin, and vice versa.
- 4) When thread is wound unevenly, adjust bobbin winder tension stud base ③ to the correct position moving it on both sides.
- 5) After winding completes, the bobbin winder stop latch comes off and the bobbin winder pulley stops automatically.

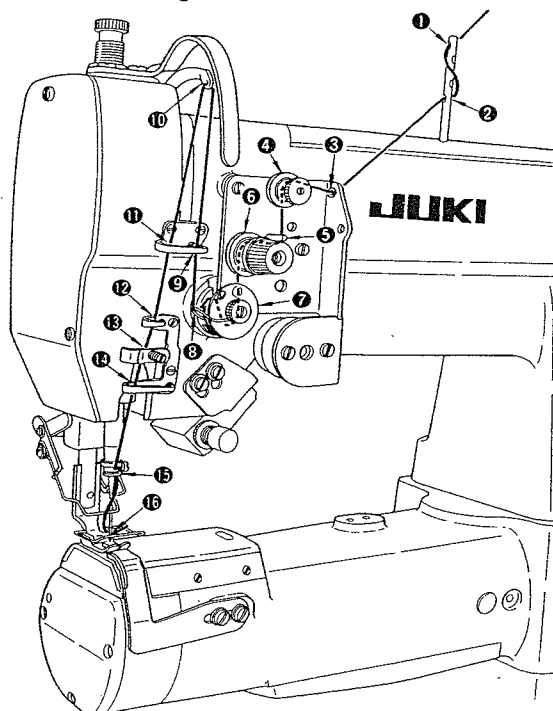
## 8. HOW TO INSERT THE BOBBIN



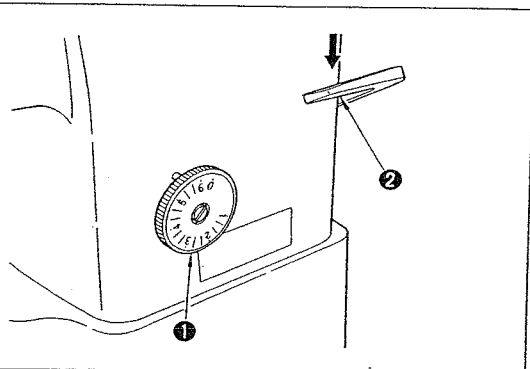
- 1) Holding the bobbin so that thread winds clockwise, insert the bobbin into the bobbin case.
- 2) Thread groove ① of the bobbin case and pull the thread as it is. Then the thread can be pulled from the yarn feeder ② after passing under the thread tension spring.
- 3) Set the bobbin so as to turn in the arrow direction when pulling the bobbin thread.

## 9. HOW TO THREAD THE NEEDLE THREAD

Thread the needle thread in the order shown in the Fig.



## 10. ADJUSTING THE STITCH LENGTH

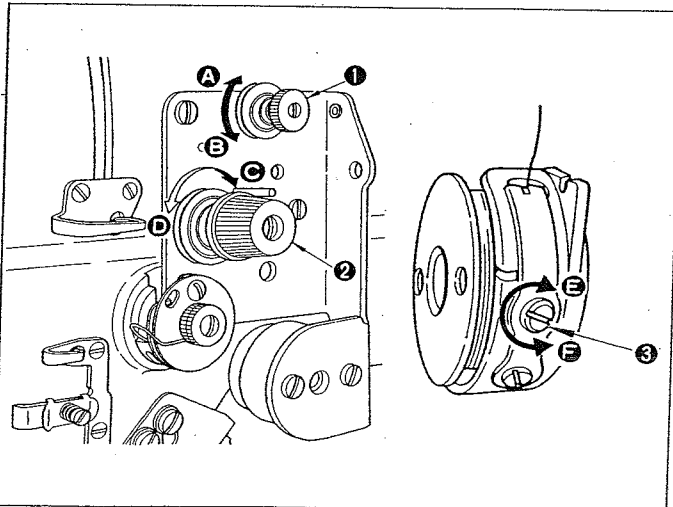


Turn the regulator dial ① to the left (right) to align the pin so that the desired value comes to the upper side.

### • How to engage the reverse feed stitching

- 1) Push feed lever ② down.
- 2) The machine performs reverse feed stitching as long as the lever is held depressed.
- 3) The moment you release the lever, the machine resumes the normal stitching mode.

## 11. THREAD TENSION



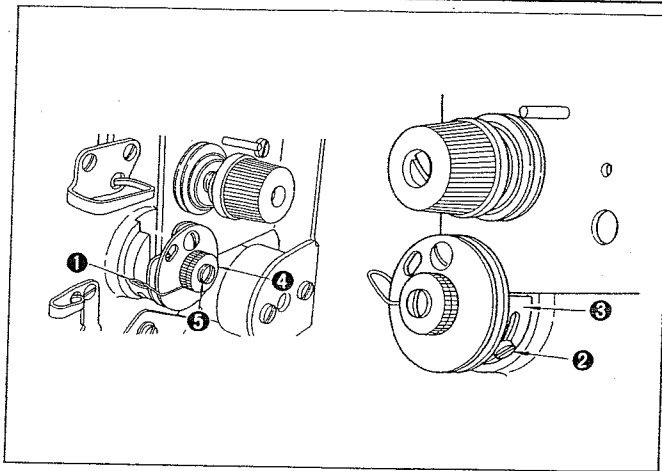
### • Adjusting the needle thread tension

- 1) Turning nut ① to the right, the thread length remaining in the needle point after trimming decreases A . Turning it to the left, the length increases B .
- 2) Turning nut ② to the right, the needle thread tension increases C . Turning it to the left, the tension decreases D .

### • Adjusting the bobbin thread tension

- 1) Turning tension screw ③ to the right, the bobbin thread tension increases E . Turning it to the left, the tension decreases F .

## 12. THREAD TAKE-UP SPRING



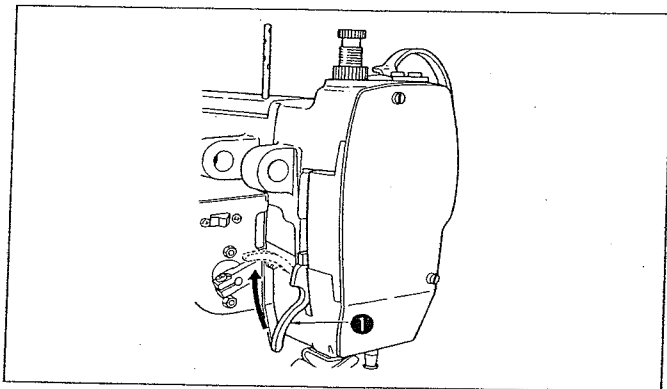
- When changing the stroke of the thread take-up spring

- 1) To adjust thread take-up spring ①, loosen setscrew ② and move stopper ③ on both sides.
- 2) The stroke increases by turning the stopper to the right and it decreases by turning it to the left.

- When changing the tension of the thread take-up spring

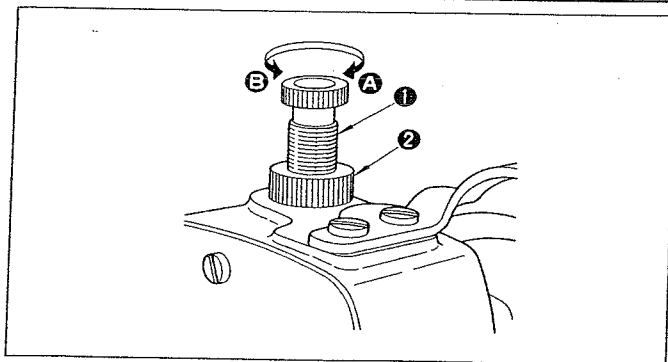
- 1) To adjust the tension of the thread take-up spring, loosen nut ④. Turning spring shaft ⑤ to the left, the tension increases. Turning it to the right, the tension decreases.

## 13. PRESSER BAR LIFTER



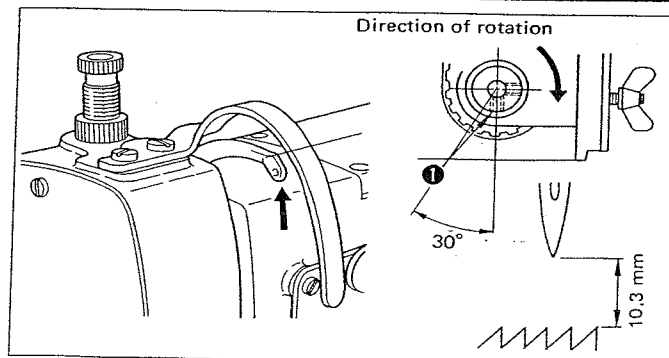
- 1) To stop the presser foot at the lifted position, turn presser foot ① in the arrow direction.
- 2) The presser foot stops at the position lifted 8.5 mm.
- 3) To lower the presser foot, lower the presser bar lifter.
- 4) When using the knee lifter, the presser foot lifts approx. 10 mm.

## 14. ADJUSTING THE PRESSURE OF THE PRESSER FOOT



- 1) To adjust pressure, loosen nut ②. Turning adjusting screw ① in the right ④, the pressure increases. Turning it in the left ⑤, the pressure decreases.
- 2) After adjustment, tighten the nut.

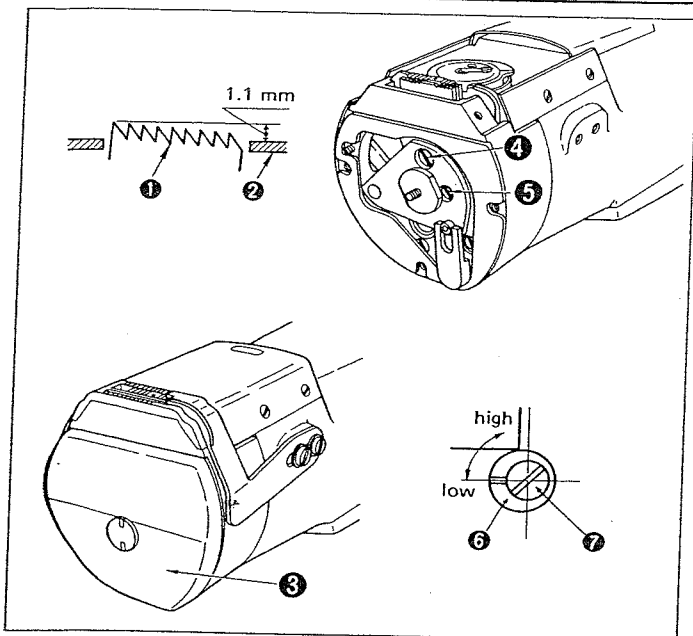
## 15. TIMING OF MAIN SHAFT AND HOOK DRIVING SHAFT



After removing or replacing the timing belt, adjust the timing of main shaft and hook driving shaft.

- 1) Set the feed regulator dial at 0.
  - 2) Turn the handwheel to the normal direction and set the thread take-up lever to the highest position.
  - 3) Turn the hook driving shaft to the normal direction (clockwise) and set first screw ① of the oil feed pump shaft so as to come just under the machine bed or to be within 30 from the right underside.
  - 4) Attach the timing belt in the lower sprocket in the state.
- When the thread take-up lever is at the top dead center just under the first screw of the feed pump shaft, the distance between the needle and the top face of the throat plate is 10.3 mm.

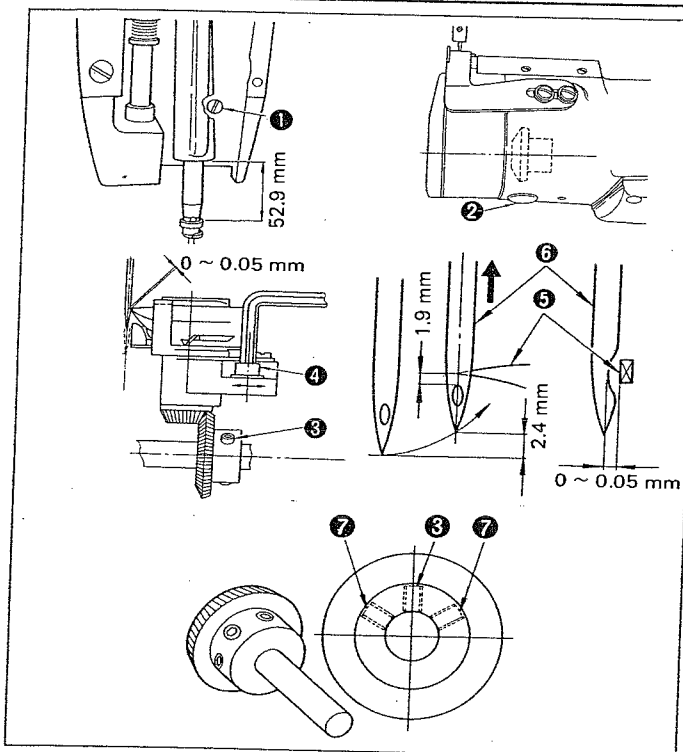
## 16. HEIGHT OF THE FEED DOG



Adjust the feed dog ① to jut out 1.1 mm from the throat plate ②. To adjust the height of the feed dog.

- 1) Set the feed regulator dial at 0.
- 2) Remove the front cover ③.
- 3) Loosen setscrew ④ and also loosen setscrew ⑤.
- 4) Turning eccentric roller ⑥, set the feed dog to the specified height and tighten screw ⑦.

## 17. NEEDLE-TO-HOOK RELATIONSHIP



● Adjust the needle and the hook as follows:

- 1) Set the feed regulator dial at 3.
- 2) Turning the handwheel, set the needle bar to the lowest position and loosen needle bar bracket screw ①.

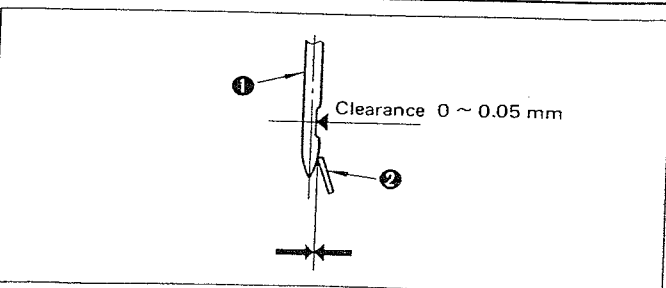
(Set the needle bar at the proper height.)

- 3) Adjust the bottom face of the needle bar frame and the upper end of the needle bar thread guide to 52.9 mm and tighten screw ①.

(Set the hook at the proper position.)

- 4) Remove rubber plug ② mounted under the cylinder bed. Turn the handwheel clockwise and loosen slotted screws ⑦ and ③.
- 5) When raising the needle bar 2.4 mm (The arm marker dot aligns with the black marker dot of the pulley.) by turning the handwheel, the hook blade point comes to the position of 1.9 mm from the upper end of needle eyelet. In this state, loosen two setscrews ④ so that the clearance between hook blade point ⑤ and needle ⑥ is in the range of 0.02 ~ 0.05 mm, move and adjust the hook driving shaft saddle on both sides and tighten the setscrews.
- 6) Next, align the hook blade point with the center of the needle and tighten setscrew ③ of driving gear.
- 7) Turn the handwheel clockwise and tighten screw ⑦. Then tighten further screw ③ so that it is securely fixed.

## 18. ADJUSTING THE HOOK NEEDLE GUARD

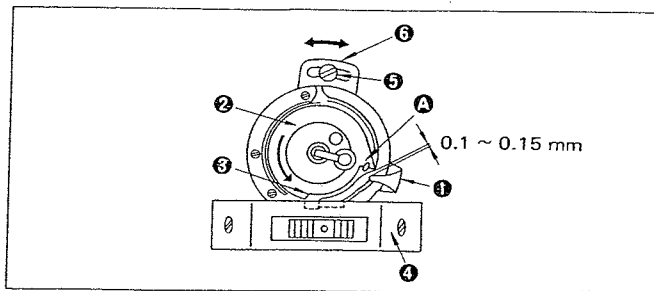


After replacing the hook, check the position of the needle guard.

When needle guard ② is out of the standard position of the side face of needle ①, bend and adjust the hook needle guard.

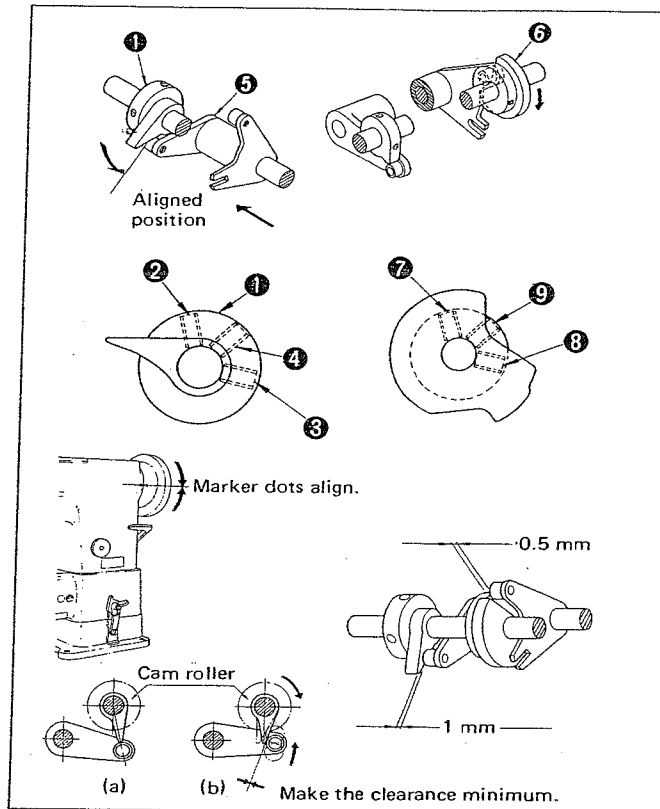
- 1) When bending the hook needle guard inside, insert a screwdriver from its outside to bend it.
- 2) When bending the hook needle guard outside, insert a screwdriver from its inside to bend it.

## 19. ADJUSTING THE BOBBIN CASE OPENING LEVER



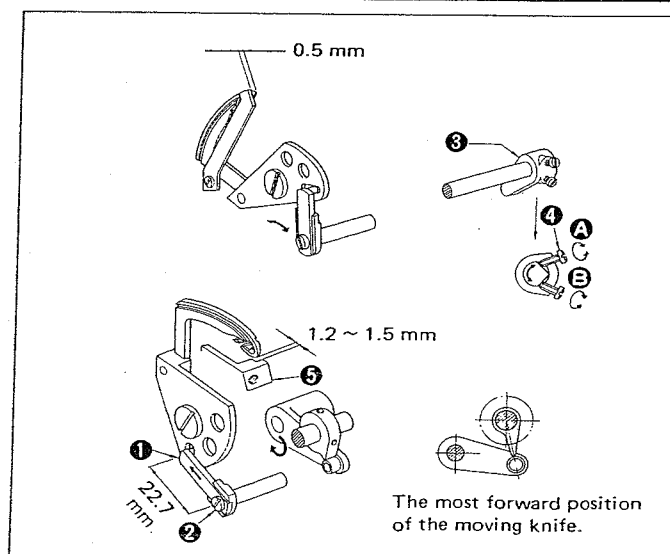
- 1) Turning the handwheel in the normal direction, set bobbin case opening lever ① at the most retreating position.
- 2) Turn bobbin case ② in the arrow direction and contact bobbin case positioning finger ③ to the groove of throat plate ④.
- 3) Loosen setscrew ⑤ and move adjusting plate ⑥ in the arrow direction to adjust the clearance between the bobbin case opening lever and projection ① of the bobbin case to 0.1 ~ 0.15 mm.

## 20. ADJUSTING THE THREAD TRIMMING CAM



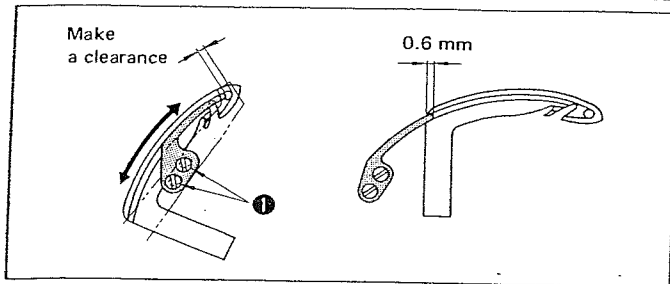
- 1) Loosen setscrews (hexagonal socket head) ④, ② and ③ of outward cam ①.
  - 2) Align the red marker dot on the handwheel with the red marker dot on the machine arm.
  - 3) Press cam follower ⑤ until roller of cam follower ⑤ is aligned with the outward cam. Tighten cam screw ④ and then tighten screws ② and ③. Tighten further cam screw ④ so that it is securely fixed.
  - 4) While pressing cam follower ⑤, turn the handwheel until roller of cam follower ⑤ goes beyond the highest position of the outward cam. At this time, put inward cam ⑥ on either roller of cam follower ⑤ and tighten cam screw ⑨. Then tighten screws ⑦ and ⑧. And tighten further screw ⑥ so that it is securely fixed.
  - 5) The clearance in the axial direction of the cam should be 1 mm between the outward cam and the cam roller, and 0.5 mm between the inward cam and the cam roller.
- (Caution)** Adjust the inward cam so that the cam follower roller and the outward cam are allowed to move with the minimum clearance. If the clearance is too large, the moving knife may come in contact with the blade point of the hook, resulting in the breakage of the related parts.

## 21. HOME POSITION OF THE MOVING KNIFE



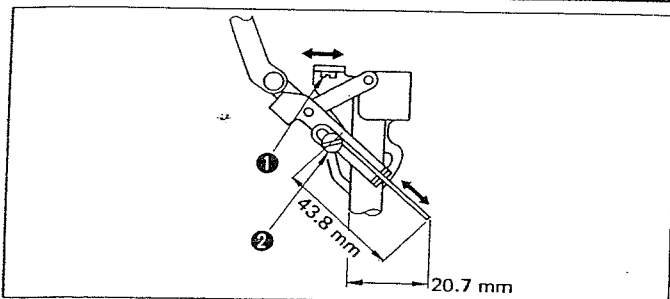
- 1) Push the cam follower in the axial direction and turn the handwheel to set the moving knife at the most forward position. At this time, adjust the clearance between the throat plate base and the tip of the moving knife to 1.2 ~ 1.5 mm.
- 2) Turn the handwheel and restore the moving knife. At this time, check that the projecting length of the tips of fixed knife and moving knife is 0.5 mm.
- 3) If the projecting length is more than 0.5 mm when the moving knife has restored, it means that the stroke of moving knife is small. Therefore, in this case loosen screw ② of adjusting plate ①, move it in the arrow direction and check it again. At this time, the clearance between the tip of moving knife and the throat plate base should be small.
- 4) Next, slightly move ④ and ⑤ of screws ④ of driving arm ③ in order to secure the clearance between the tip of moving knife and the throat plate base ⑤, adjust the dimension and fix them.
- 5) Turning the handwheel, restore the moving knife and check the projecting length of the moving knife and the fixed knife.
- 6) When the proper dimension cannot be obtained, repeat adjustment from 1 to 5.

## 22. POSITION OF THE CLAMP SPRING



- 1) Loosen two screws ❶.
- 2) Pushing the cam follower in the axial direction and turning the handwheel, set the moving knife at the most forward position and adjust the engaging length of moving knife and clamp spring to 0.6 mm.
- 3) Tighten screw ❶ temporarily.
- 4) Turning the handwheel, restore the moving knife, and fix screw ❶ after checking the clearance with the blade of moving knife.

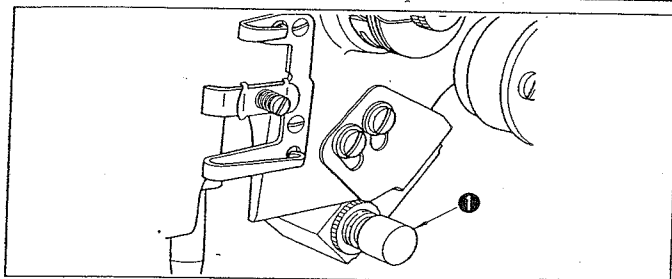
## 23. WIPER



### • Position of the wiper.

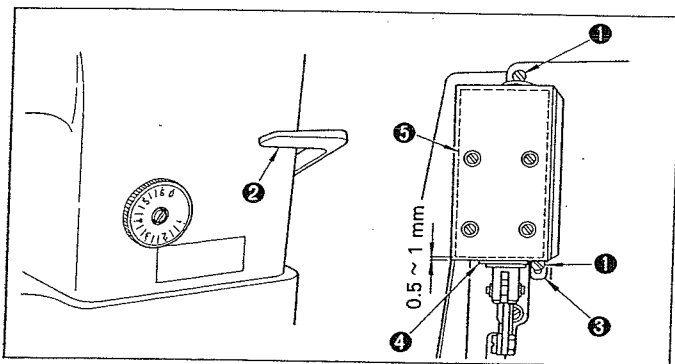
- 1) Align the wiper with the center of the needle bar.
  - 2) Loosen screw ❷ and determine the length of the wiper.
  - 3) Next, loosen screw ❶ and position the wiper.
- When the wiper is unnecessary to be used, turn the wiper seesaw switch OFF.

## 24. ONE-TOUCH TYPE MANUAL REVERSE FEED STITCHING MECHANISM



### • How to operate

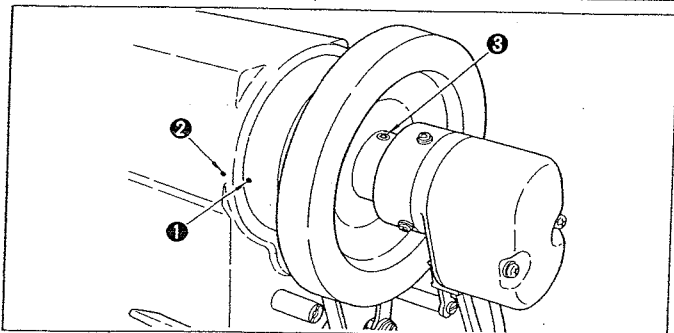
- 1) The moment you press switch lever ❶, the sewing machine performs reverse feed stitching.
- 2) The machine continues reverse feed stitching as long as the switch is held pressed.
- 3) When you release the switch, the machine resumes normal feed stitching.



### • Position of the reverse feed solenoid

- 1) Set the feed regulator dial at the maximum.
- 2) Loosen two setscrews ❶ of the solenoid mounting base.
- 3) Push feed lever ❷ down until it stops, and move solenoid mounting base ❸ up or down to adjust the inner clearance between rubber packing ❹ on the plunger and reverse feed solenoid ❺ to 0.5 ~ 1 mm. Then, tighten setscrew ❶.

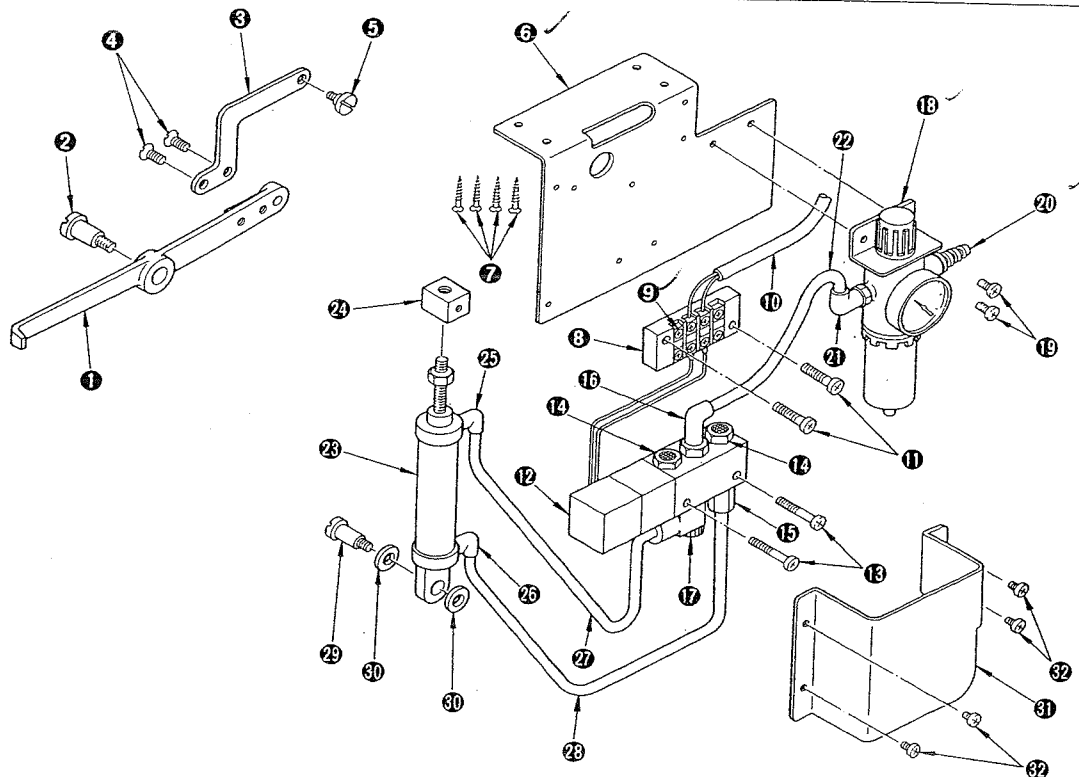
## 25. ADJUSTING THE SYNCHRONIZER



### • How to install the synchronizer

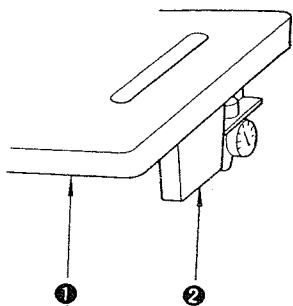
- 1) Install the synchronizer in the handwheel.
  - 2) Perform thread trimming, and adjust the synchronizer by setscrew ❸ of the synchronizer so that white marker dot ❶ on the handwheel aligns with red marker dot ❷ on the arm.
- (Precaution) Adjust the synchronizer sewing a cloth.

# 26. HOW TO INSTALL AND ADJUST AK-29 AUTO LIFTER



## ASSEMBLING THE AUTO LIFTER

①	Knee lifter lever	B3410246000	①⑦	Speed controller	GAK29016000
②	Knee lifter lever hinge screw	SD0991551SP	①⑧	Filter regulator	GAK29007000
③	Auto lifter arm	GAK29004000	①⑨	Filter regulator setscrew	SM4061001SB
④	Auto lifter arm setscrew	SS1151310TP	②⑩	Air joint	GAK29011000
⑤	Auto lifter arm hinge screw	SD0790431SP	②⑪	Quick joint A (elbow)	GAK29009000
⑥	Solenoid valve mounting base	GAK29001000	②⑫	Air hose (0.1M)	GAK29009000
⑦	Air control (asm) setscrew	SK3482500SC	②⑬	Air cylinder	BT0600400EB
⑧	Terminal board	GAS11419000	②⑭	Auto lifter metal fittings	GAK29013000
⑨	Solderless terminal	HP001330000	②⑮	Quick joint C	GAK29003000
⑩	Cord	GAK020210A0	②⑯	Quick joint C	GAK29014000
⑪	Terminal board setscrew	SM4041601SR	②⑰	Quick joint C	GAK29014000
⑫	Solenoid valve	GAK29008000	②⑱	Air hose (1M)	GAK29014000
⑬	Solenoid valve setscrew	GAK29008000	②⑲	Air hose (0.9M)	BT0600400EB
⑭	(Accessories for muffler solenoid valve)	SM40325017B	②⑳	Cylinder hinge screw	BT0600400EB
⑮	Quick joint A	-	③①	Cylinder hinge screw washer	SD0801601SP
⑯	Quick joint B	GAK29015000	③②	Solenoid valve attaching cover	WP0850002SD
		GAK29010000		Solenoid valve attaching plate cover setscrew	GAK29002000
					SM4040601SN



1. The above figure shows how to wire and connect the parts when assembling the auto lifter.
2. The lift of presser foot is 10 mm, rotate and adjust the plunger shaft of the air cylinder accordingly.
3. When installing the auto lifter ② to the table ①, make sure that the auto lifter should not project from the edge of the table, as illustrated in the figure.

## 27. TROUBLES AND CORRECTIVE MEASURES

Trouble	Cause	Corrective measures
<p>1. Thread breakage (Thread frays or wears out.)</p> <p>(Needle thread remains 2 to 3 cm on the wrong side of the cloth.)</p>	<ol style="list-style-type: none"> <li>① The thread path, needle point, hook point or bobbin case positioning finger has scratches.</li> <li>② The needle thread tension is too high.</li> <li>③ The clearance of the bobbin case opening lever is too much.</li> <li>④ The needle hits the hook point.</li> <li>⑤ Lubrication to hook is inadequate.</li> <li>⑥ The needle thread tension is too low.</li> <li>⑦ The thread take-up spring has an excessively high tension while it has an excessively small stroke.</li> <li>⑧ The timing between the needle and hook is too early or late.</li> </ol>	<ul style="list-style-type: none"> <li>○ Remove the scratches on the hook point using a fine sand paper. Buff the bobbin case positioning finger.</li> <li>○ Properly adjust the needle thread tension.</li> <li>○ Decrease the clearance. See "19. ADJUSTING THE BOBBIN CASE OPENING LEVER."</li> <li>○ See "17. NEEDLE-TO-HOOK RELATIONSHIP."</li> <li>○ Properly adjust the lubrication. See "2. LUBRICATION."</li> <li>○ Properly adjust the needle thread tension.</li> <li>○ Decrease the tension, and increase the stroke.</li> <li>○ See "17. NEEDLE-TO-HOOK RELATIONSHIP."</li> </ul>
2. Stitch skipping	<ol style="list-style-type: none"> <li>① The clearance between the needle and the hook point is too large.</li> <li>② The timing between the needle and the hook point is too early or late.</li> <li>③ The presser foot pressure is too low.</li> <li>④ The height of the needle bar is wrong.</li> <li>⑤ The hook needle guard is not effective.</li> <li>⑥ The size of the needle is wrong.</li> </ol>	<ul style="list-style-type: none"> <li>○ See "17. NEEDLE-TO-HOOK RELATIONSHIP."</li> <li>○ See "17. NEEDLE-TO-HOOK RELATIONSHIP."</li> <li>○ Increase the presser foot pressure.</li> <li>○ See "17. NEEDLE-TO-HOOK RELATIONSHIP."</li> <li>○ See "18. ADJUSTING THE HOOK NEEDLE GUARD."</li> <li>○ Replace the needle by one which is one grade thicker.</li> </ul>
3. Loose stitches	<ol style="list-style-type: none"> <li>① The thread has not been passed through the notch of the bobbin case tension spring.</li> <li>② The thread path is poorly finished.</li> <li>③ The bobbin does not rotate smoothly.</li> <li>④ The clearance of the bobbin case opening lever is too large.</li> <li>⑤ The bobbin thread tension is too low.</li> <li>⑥ The bobbin thread has been wound too tight.</li> </ol>	<ul style="list-style-type: none"> <li>○ Properly thread the bobbin case.</li> <li>○ Grind it using a fine sand paper or a buff.</li> <li>○ Replace the bobbin or hook.</li> <li>○ See "19. ADJUSTING THE BOBBIN CASE OPENING LEVER."</li> <li>○ Properly adjust the tension.</li> <li>○ Decrease the bobbin thread winding tension.</li> </ul>
4. The thread slips off the needle upon being trimmed.	<ol style="list-style-type: none"> <li>① The tension of tension controller No. 1 is too high.</li> <li>② The thread trimming timing is too early.</li> </ol>	<ul style="list-style-type: none"> <li>○ Decrease the tension.</li> <li>○ See "20. ADJUSTING THE THREAD TRIMMING CAM."</li> </ul>
5. The thread slips off the needle when starting stitching.	<ol style="list-style-type: none"> <li>① The tension of tension controller No. 1 is too high.</li> <li>② The pressure of the clamp spring is weak.</li> <li>③ The position of the clamp spring is not proper.</li> <li>④ The needle hole of the presser foot is extremely large against the stitch length.</li> <li>⑤ The tension of the bobbin thread is weak.</li> </ol>	<ul style="list-style-type: none"> <li>○ Decrease the tension.</li> <li>○ Replace or correct the clamp spring.</li> <li>○ See "22. THE POSITION OF THE CLAMP SPRING."</li> <li>○ Replace the presser foot.</li> <li>○ Increase the tension.</li> </ul>
6. Thread cannot be trimmed sharply.	<ol style="list-style-type: none"> <li>① Blades of the moving knife and the fixed knife are not adjusted properly.</li> <li>② The knife blade is blur.</li> </ol>	<ul style="list-style-type: none"> <li>○ See "21. HOME POSITION OF THE MOVING KNIFE," "20. ADJUSTING THE THREAD TRIMMING CAM," and "22. POSITION OF THE CLAMP SPRING."</li> <li>○ Replace or correct the moving knife and the fixed knife.</li> </ul>
7. Threads cannot be trimmed.	<ol style="list-style-type: none"> <li>① The dimension of the home position of moving knife is inaccurate.</li> <li>② The moving knife does not return to the position of the fixed knife blade.</li> <li>③ The thread trimming timing is wrong.</li> </ol>	<ul style="list-style-type: none"> <li>○ See "21. HOME POSITION OF THE MOVING KNIFE."</li> <li>○ See "20. ADJUSTING THE THREAD TRIMMING CAM."</li> <li>○ See "20. ADJUSTING THE THREAD TRIMMING CAM."</li> </ul>



# JUKI

## JUKI CORPORATION

HEAD OFFICE

2-1, 8-CHOME, KOKURYO-CHO,  
CHOFU-CITY, TOKYO, JAPAN

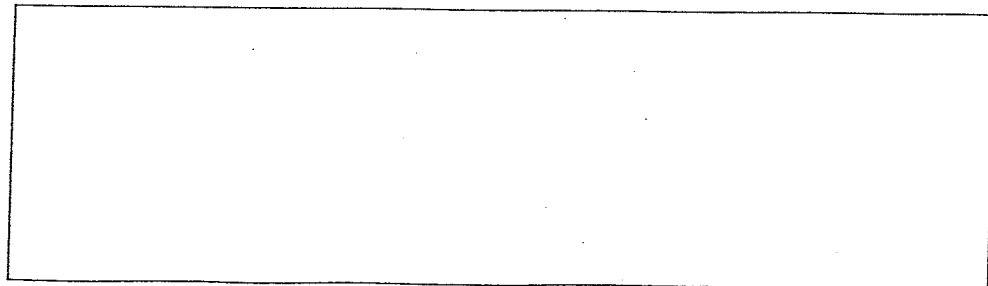
BUSINESS OFFICE

23-3, KABUKI-CHO 1-CHOME,  
SHINJUKU-KU, TOKYO 160, JAPAN

CABLE : JUKI TOKYO

TELEX : J22967, 232-2301

PHONE : 03(205)1188, 1189, 1190



Please do not hesitate to contact our distributors or agents in your area for further informations when necessary.

※Appear and specification listed in this instruction manual are subjected to change without notice.

1988. 7 Printed in Japan