

# INSTRUCTION

# *FBX* SERIES

Industrial Sewing Machines

*FBX1104P*

*FBX1104*

*FBX1106P*

*FBX1106*

*Second edition : September 2004*

No. 040037

**KANSAI**  
SPECIAL®

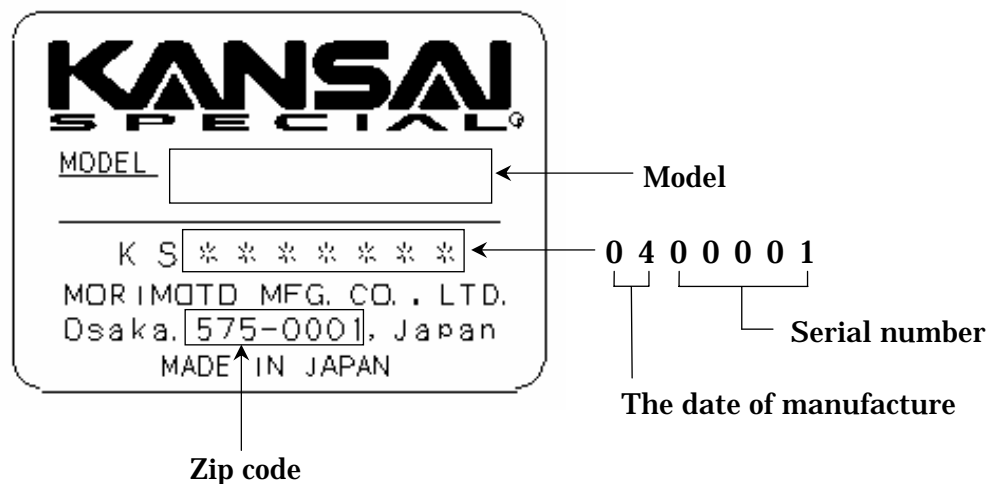
## **INTRODUCTION**

*Thank you for your purchasing Kansai Special's FBX Series.*

*Read and study this instruction manual carefully before beginning any of the procedures and save it for later use.*

1. This instruction manual describes adjustments and maintenance procedures on this machine.
2. Before starting the machine, check to make sure the pulley cover, safety cover, etc. are secured.
3. Before adjusting, cleaning, threading the machine or replacing the needle, be sure to turn off the power.
4. Never start the machine with no oil in the reservoir.
5. Refer to the parts list as well as this instruction manual before performing preventive maintenance.
6. The contents described in this instruction manual are subject to change without notice.

### **Indication of serial number**



**FBXseries**

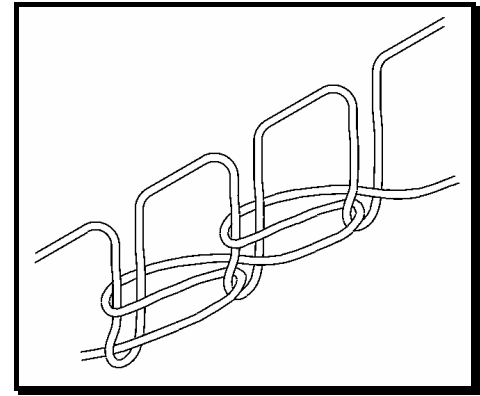
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## 【1】 SPECIFICATIONS

### 1-1 Stitch type

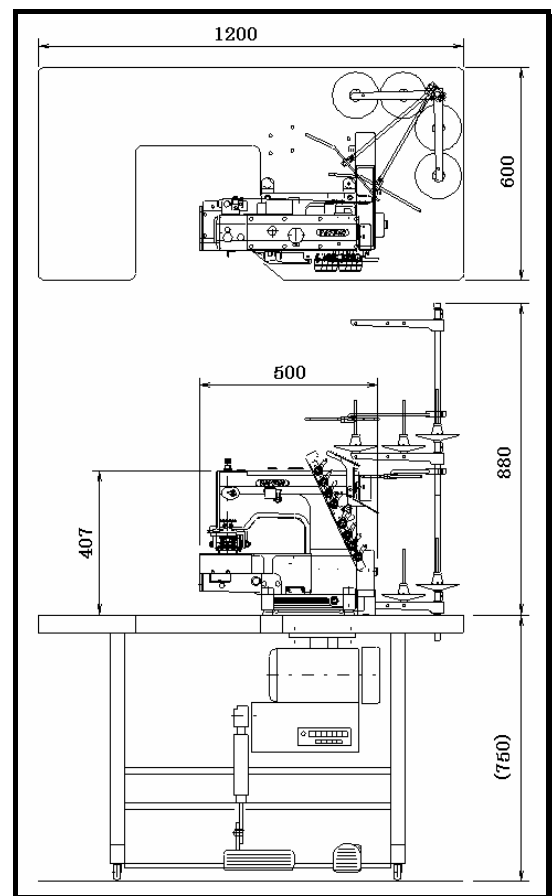
JIS401 double chain stitch machines



### 1-2 Model

Model	FBX1104P	FBX1106P
No. of needles	2~4	2~12
No. of threads	4 needle threads	6 needle threads
	4 looper threads	6 looper threads
Type of tension set	Mounted type	
Puller width	55mm	78mm
Minimum gauge width	6.4mm	6.4mm
Maximum gauge width	38.1mm	70mm

### 1-3 Diagrammatic sketch of the Series



## 【2】 NEEDLES & THREADING THE MACHINE

### 2-1 Needles

DV × 57 of Schmetz or Organ

Select the proper needle for the fabric and thread.  
(Standard #21)

< Needles and needle size >

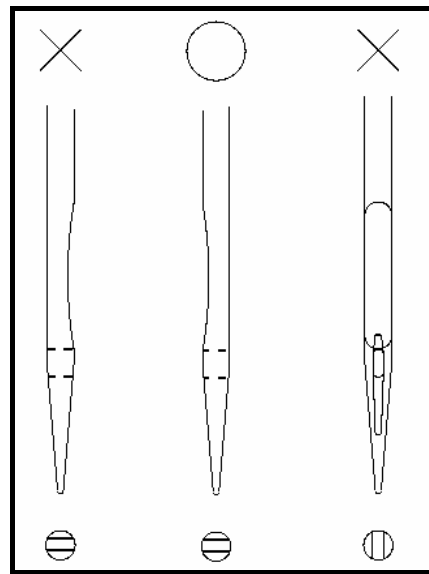
Schmetz DV × 57	Nm90~Nm200
Organ DV × 57	#14~#25

### 2-2 Replacing the needle

When replacing the needle, check the needle carefully to see that the scarf is turned to the left of the machine (see the illustration).

< Note >

*When replacing the needle, be sure to turn off the machine. A clutch motor continues running for a while after the machine is turned off. Therefore keep on pressing the pedal until the machine stops.*



### 2-3 To thread the machine

Thread the machine correctly by referring to pages 3 to 4.

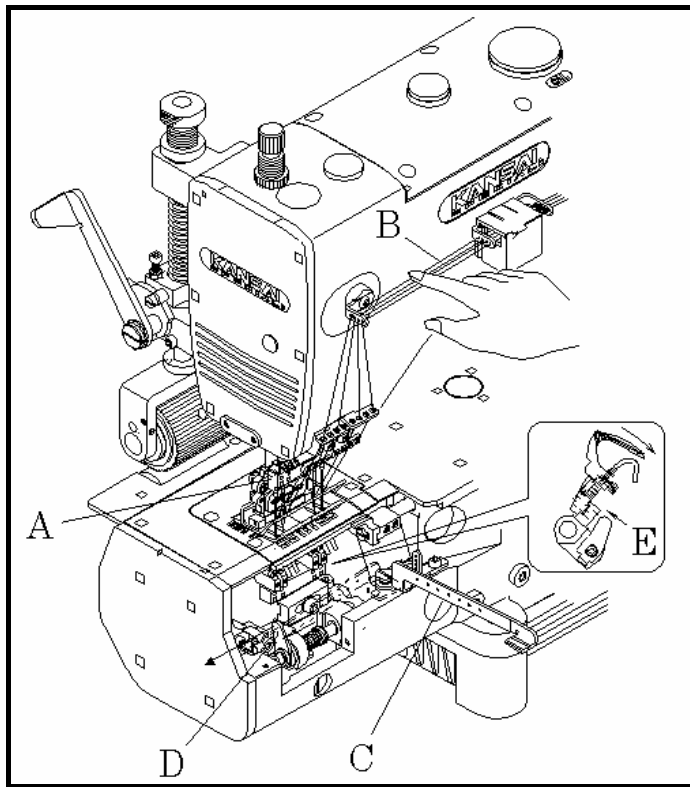
Incorrect threading may cause skip stitching, thread breakage and/or uneven stitch formation. When threading the looper, tilt the looper holder toward the front of the machine using the looper drawing bar.

To tilt the looper toward the front

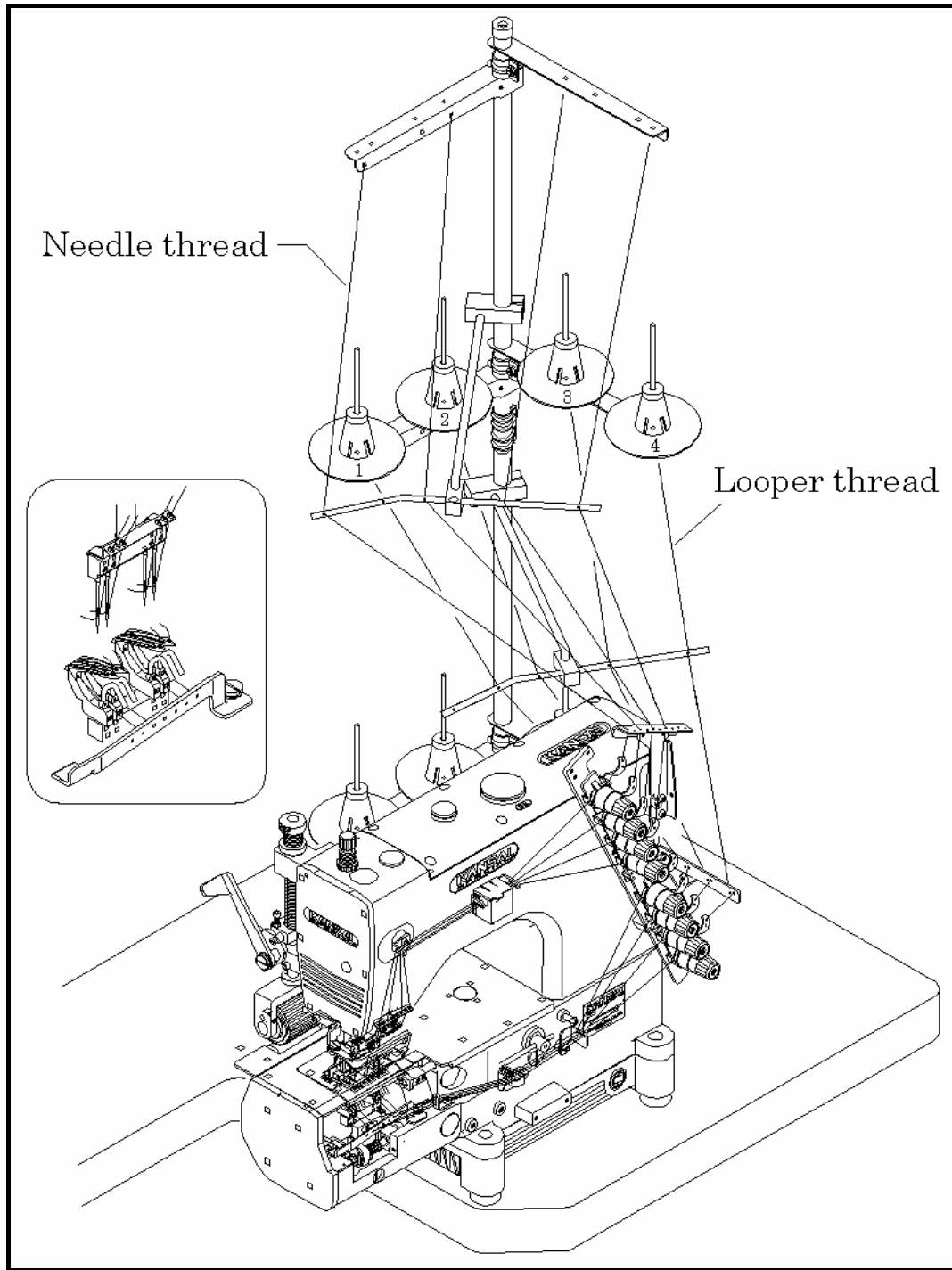
1. Bring needle bar A to the top of its stroke.
2. Pay out the needle thread from the spool by pressing a finger down on needle threads B.
3. Open looper eyelet.
4. Pull drawing lever D out to the arrow mark as shown in the illustration so that the looper holder is tilted toward the front of machine.
5. After the machine is threaded, replace the looper by pressing looper holder E into the machine until it clicks.

< Note >

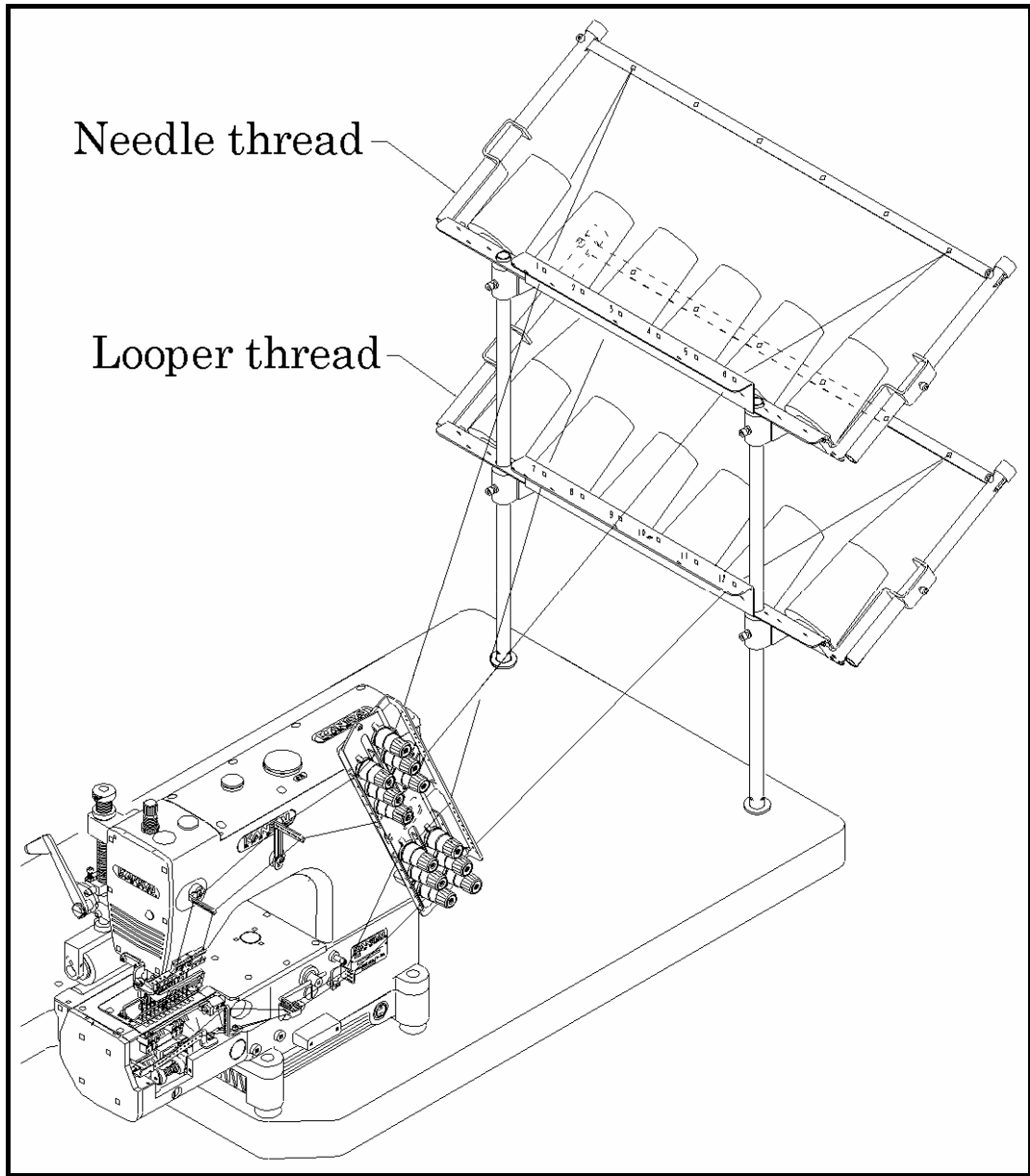
*The looper pops out of the machine as soon as lever D is pulled, so do not bring your fingers close to the looper.*



FBX1104P



FBX1106P



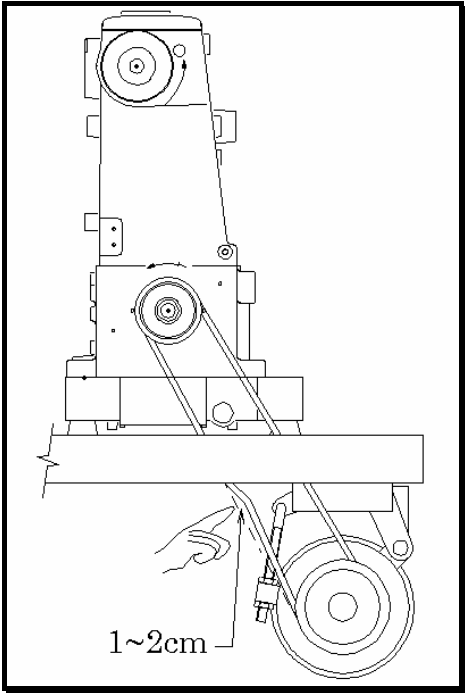
### 【3】 MACHINE SPEED

#### 3-1 Machine speed & direction in which the machine pulley runs

Refer to the table below for maximum and standard speeds of the Series. To extend machine life, run the machine approximately 15~20% below the maximum speed for the first 200 hours of operation (approx. 1 month).

Then run the machine at the standard speed.

The machine pulley turns counterclockwise as seen from the end of the machine pulley.



#### 3-2 Motor & belt

Motor : 3-phase, 2-pole, 400W clutch motor

Belt : M type V belt

Select the proper motor pulley according to the machine speed (refer to the motor pulley outer diameter on the table below).

Adjust the position of the motor by pressing the finger onto the middle of the belt so that 1~2cm deflection can be achieved (see the illustration on the right).

#### < Machine speed >

Model	Maximum speed	Standard speed
FBX1104P	4,000rpm	3,500rpm
FBX1104	4,500rpm	4,000rpm
FBX1106P	3000rpm	2500rpm
FBX1106	3500rpm	3000rpm

#### < Motor pulley selection table >

Motor pulley outer diameter (mm)	Machine speed (SPM)	
	50Hz	60Hz
60	3150	2950
70	2300	3450
80	3300	3900
90	3700	4400
100	4100	(4900)
110	(4500)	(5400)



## 【4】 LUBRICATION

### 4-1 Oil

Use Kansai Special's genuine oil.  
(Part No. 28-611)

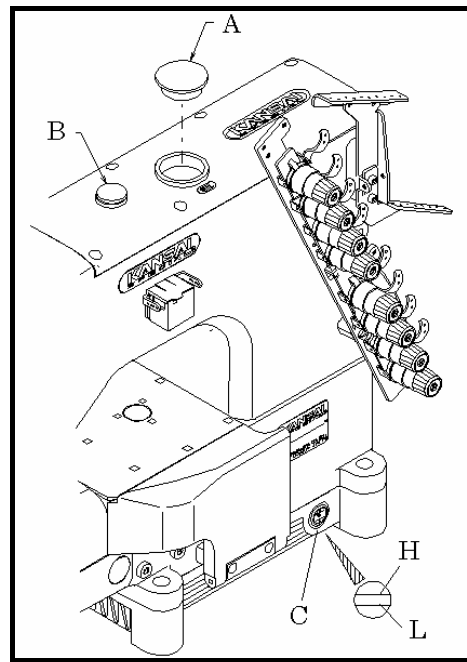
### 4-2 To fill the machine with oil

Remove rubber plug A from the oil hole.

Fill the machine with oil until the oil level is at the top line (see H in the illustration) on oil gauge C.

After the first lubrication, add oil so that the oil level will be between H and L.

After filling the machine with oil, run the machine to check the oil is splashing onto oil pot A.

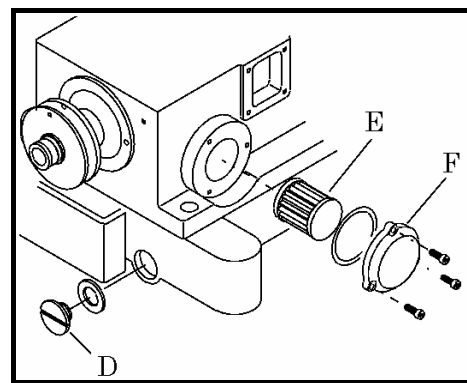


### 4-3 Replacing the oil and the oil element

To extend machine life, be sure to replace the oil after the first 250 hours of operation.

To replace the oil, follow the procedures below.

1. Remove the V belt from the motor pulley and then remove the machine from the table.
2. Remove screw D and then drain the oil.  
Be careful not to stain V belt with the oil.
3. After draining the oil, be sure to tighten screw D.
4. Fill the machine with oil by referring to 4-2 shown above.



If element E is contaminated, proper oiling may not be performed.

Clean the filter element every six months. If just a little or no oil flows out from the nozzle with the proper amount of oil in the machine, check the element.

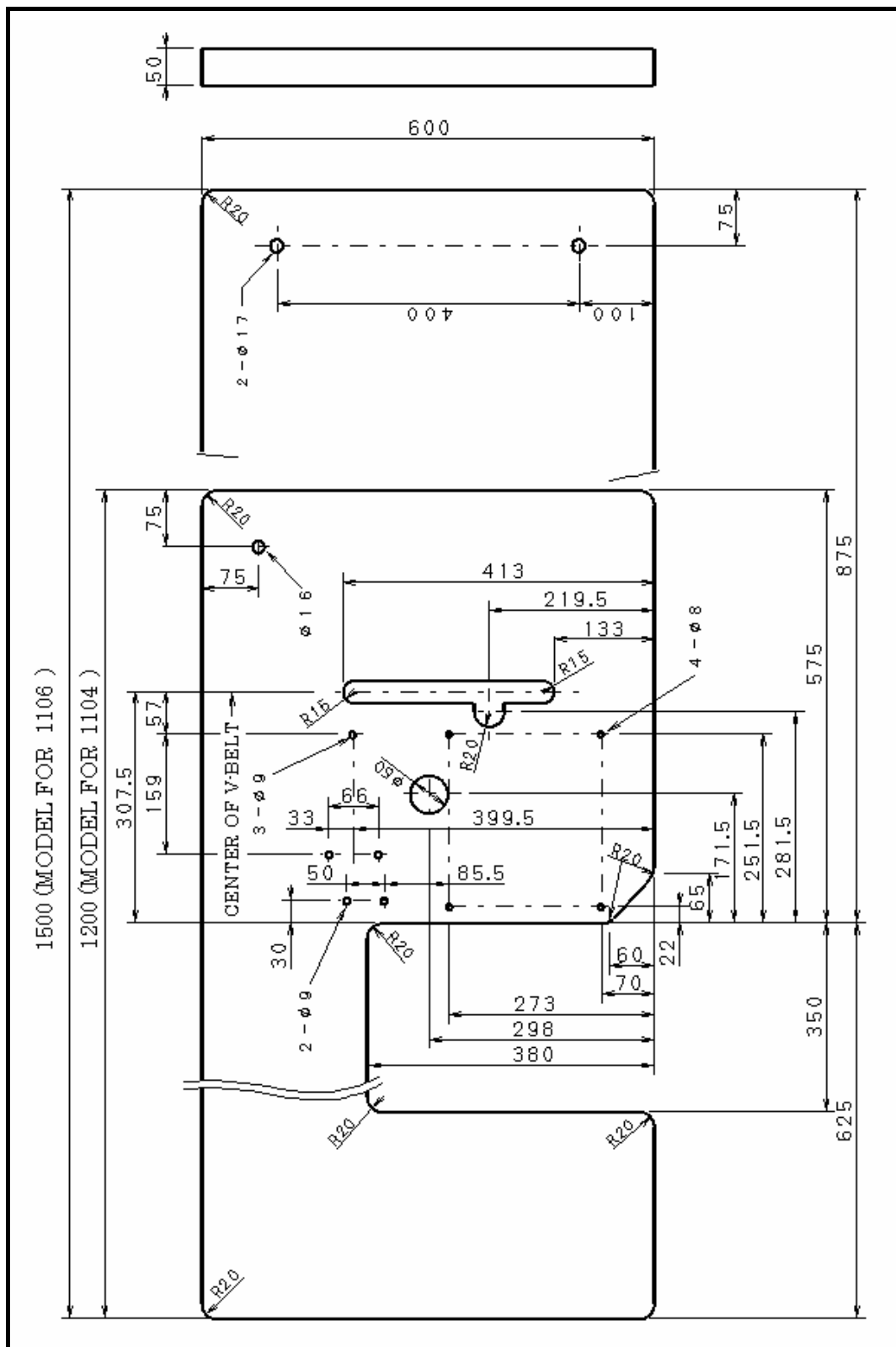
To do so, remove oil filter cap F. Replace the element if necessary.

< Note >

*When the oil filter cap is removed, the oil collected on the element drips. Be careful.*

**【5】 SEWING MACHINE INSTALLATION**

**5-1 Cutting the machine table**

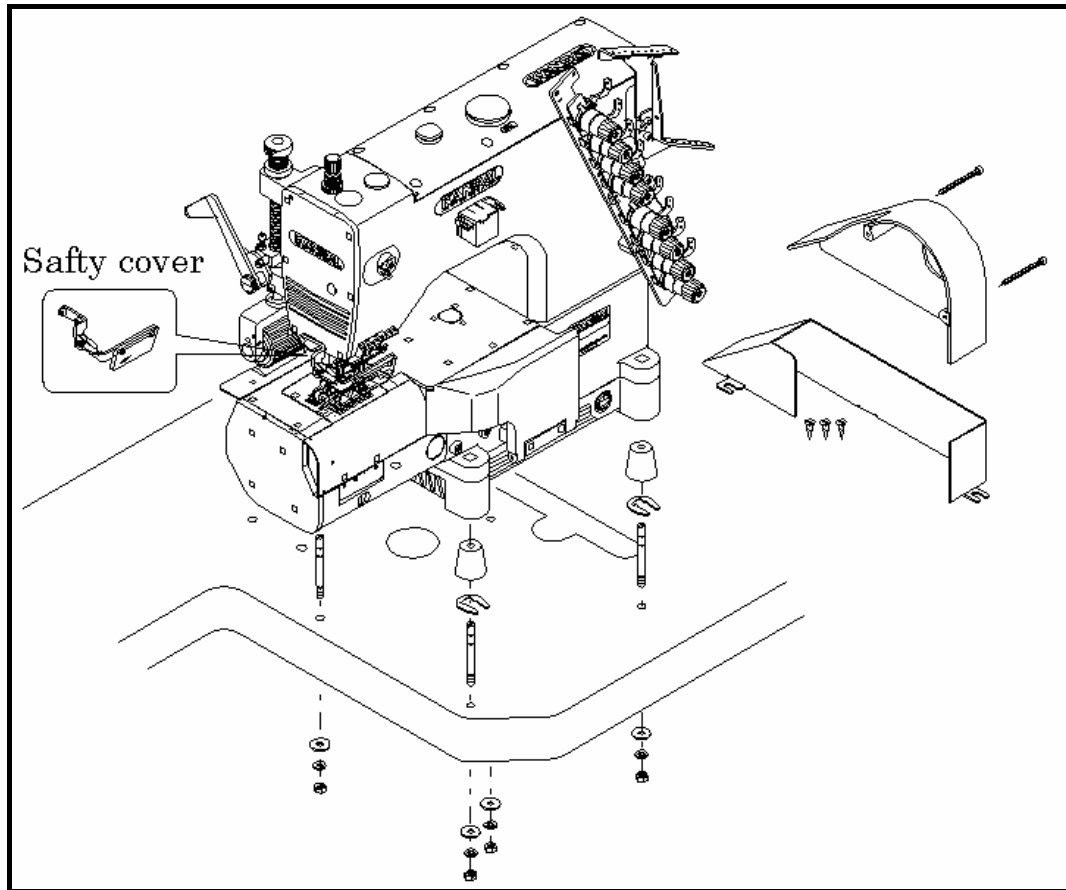


## 5-2 How to install the machine

1. Install properly as shown in the illustration.
2. Hung a V-belt on the hand pulley. ( Refer to [ 3 ] machine speed in page no.4 )
3. Install the eye guard and the pulley cover.

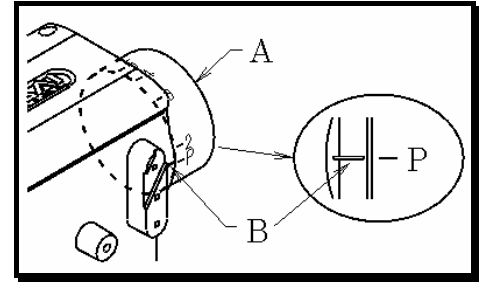
< Note >

*Until all procedures will be done, do not switch on the motor.*

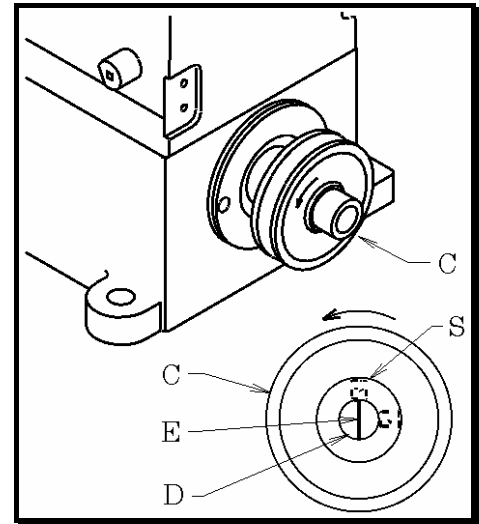


**【6】 TO ADJUST THE TIMING BETWEEN THE UPPER AND THE LOWER SHAFT**

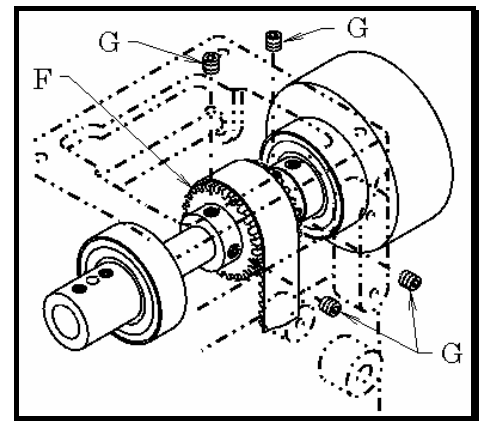
Turn the hand pulley and align mark B on the hand wheel mark P. The needle bar position would be at the top of its stroke.



In this case, the line E marked on the lower shaft D should be vertical. And make sure if the first screw S of the turning direction is above the V-belt pulley C or not.



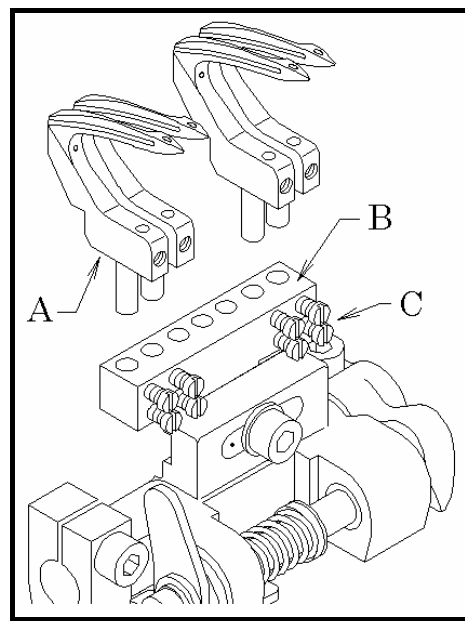
If not, loosen screw G (4pcs) on the timing pulley F of the upper shaft to be adjusted to the above-mentioned position. Make sure of tightening screw G (4pcs) again after adjustment.



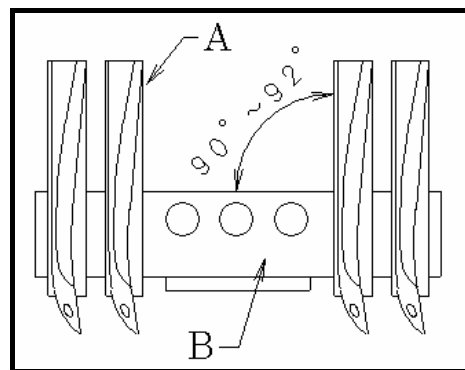
## 【7】 TIMING OF THE LOOPER TO THE NEEDLE

### 7-1 Angle for installing the looper and position of the looper holder bracket

Insert the looper into the looper holder until the bottom A of the looper touches to the looper rocker B. Then tighten screw C.



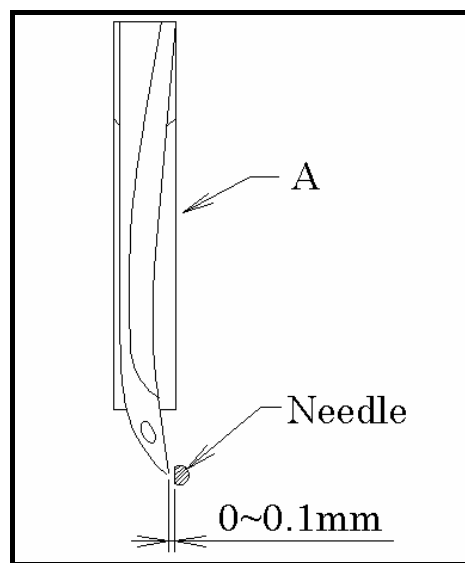
As shown in the illustration, the angle between the looper rocker B and the looper A is 90~92 degrees.



The clearance between the looper and the needle when the point of looper passes the scarf of the needle should be 0~0.1mm. (Adjust by the screw C)

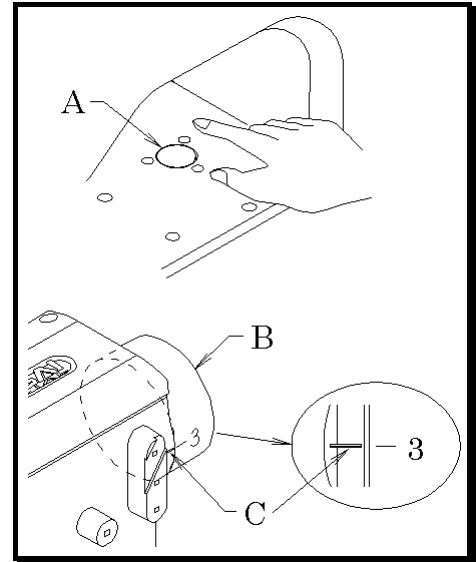
< Note >

*Before adjusting machine, be sure to turn off the motor.*

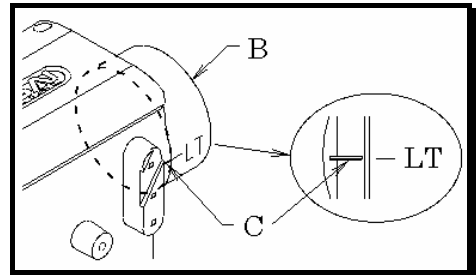


## 7-2 Timing of the looper to the needle

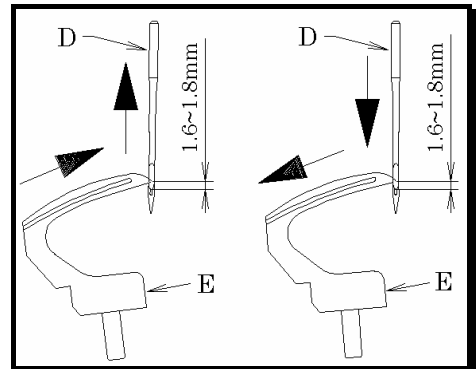
Turn the hand pulley B pressing push button A lightly until the push button touches an inside parts and clicks. And align mark C with the scale no.3 on the hand pulley B. (Refer to 11-4 stitch length adjustment on page no.16.)



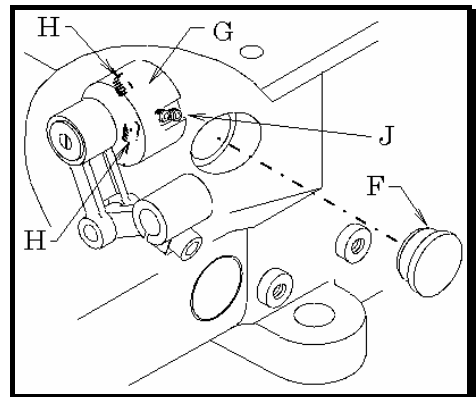
Detach your hand from the push button A. Then turn the hand pulley B and align mark C with the scale LT on the hand pulley B.



In this case, turn the hand pulley and check that the point of looper is 1.6~1.8mm above the needle eye when the point of looper, moving both to the right and to the left, reach to the center of the needle.



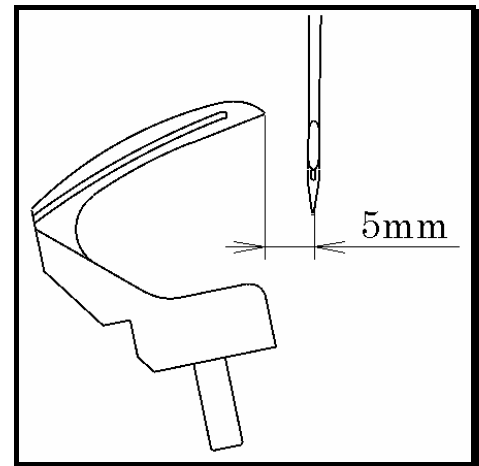
In the beginning, the stitch length would be adjusted to scale no.3. If you need to change it, procedures are as follows. Remove the rubber plug F and loosen screw H (2pcs) in the looper eccentric G to adjust appropriate timing. Make sure tighten screws H again one by one.



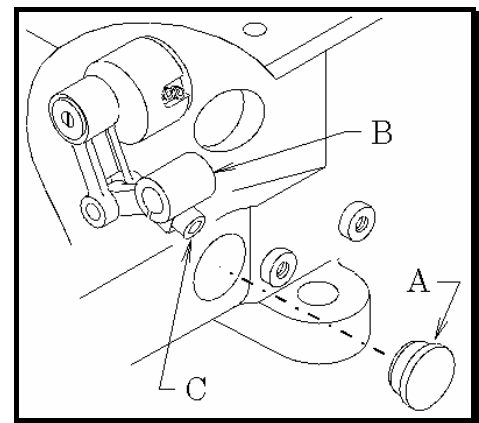
*< Note >  
Before adjusting machine, be sure to turn off the motor.*

### 7-3 Loper setting distance

When the needle bar is at the bottom of its stroke, there should be a distance of approximately 5mm from the point of the looper to the center of the needle.

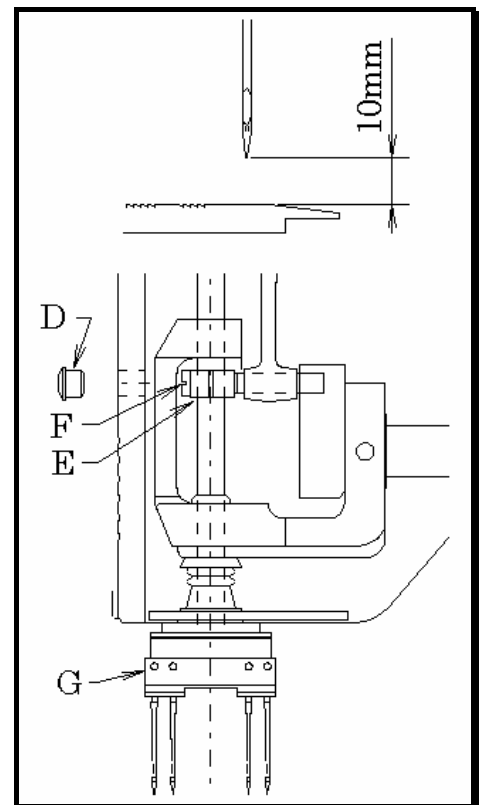


The adjustment for the looper setting distance is made by removing plug A and loosening screw C for the lever B. After adjusting, tighten screw C.



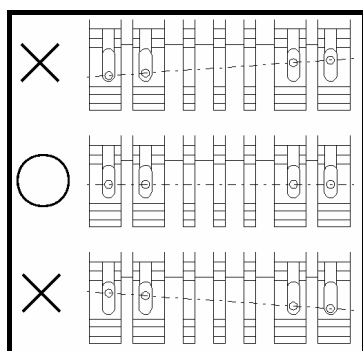
### 7-4 Needle height

When the needle bar is at the top of its stroke, there should be a distance of approximately 10mm from the top surface of the needle plate to point of the needle. Adjustment is made by loosening screw F of the needle bar bracket E after removing plug D. After the adjustment is made, check to make sure each needle drops correctly into the center of each needle drop hole.



< Note >

Before adjusting machine, be sure to turn off the motor.



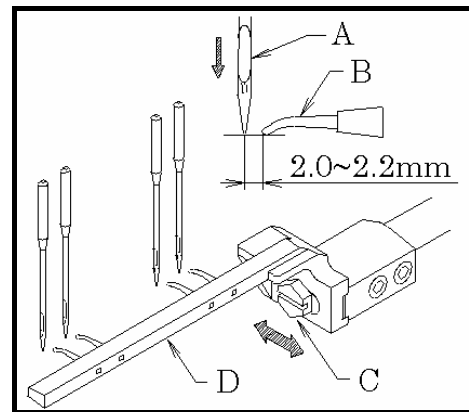
## 【8】TIMING OF THE RETAINER LOOPER

### 8-1 Front to back position of the retainer looper

When the needle bar descend from the top to the bottom of its stroke and the point of the needle A is same height as the point of the looper retainer B, there should be a clearance of 2.0~2.2mm between the point of needle and the point of looper retainer.

(In the beginning, the stitch length is aligned with scale no.3 on the hand pulley.) when adjusting, loosen the screw C of the looper retainer bar D and adjust the front to back position.

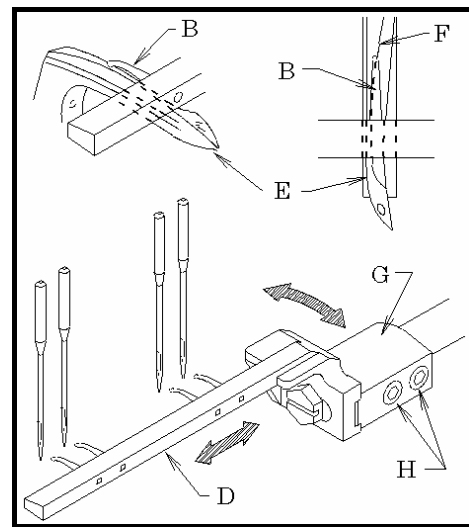
- \* When the stitch length is changed much, necessary to the adjust again because the clearance would be changed.



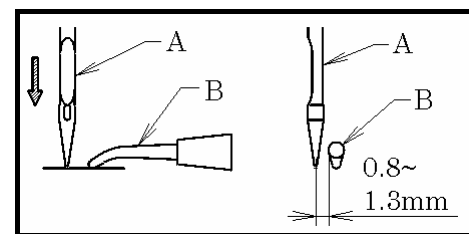
### 8-2 Left to right position of the retainer looper

When the looper E at the extreme front end of its travel, the point of the looper retainer should be on the line F of the looper E.

When adjusting, loosen the screw H of the retainer looper holder G and adjust the left to right position.

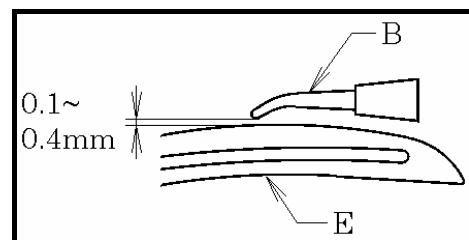


- \* When the needle bar descend from the top to the bottom of its stroke and the point of the needle A is same height as the point of the looper retainer B, there should be a clearance of 0.8~1.3mm between the point of the needle A and the left side of the retainer looper B.



### 8-3 Adjusting the height of the retainer looper

The retainer looper is the nearest position to the top of the looper E, there should be a clearance of 0.1~0.4mm between the point of the retainer looper B and the top of looper E. When adjusting, loosen the screw H of the retainer looper holder G.



< Note >

Before adjusting machine, be sure to turn off the motor.



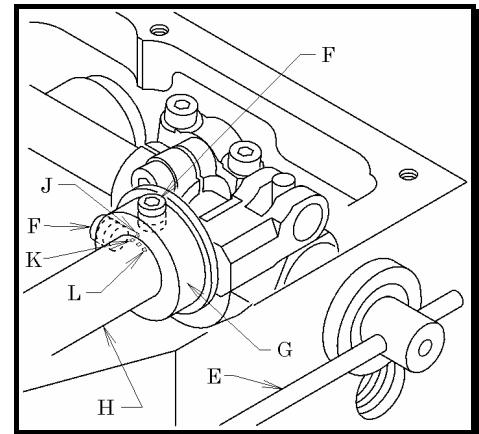
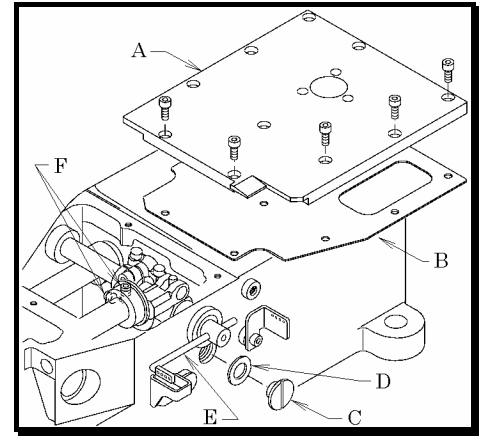
#### 8-4 Timing of the retainer looper to the needle

Remove the upper cover A and gasket B.

Remove the screw C and packing D of the bed.

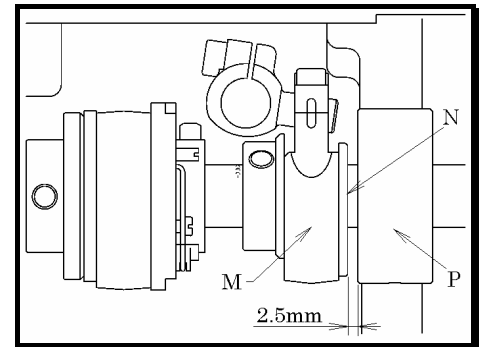
Loosen the screw F (2 pieces) of the retainer looper eccentric G. Adjust by turning of the retainer looper eccentric. It is a standard setting to align the mark J on the retainer looper eccentric G to the mark K on the lower shaft H.

When aligning the mark J to the mark L which is a front of the rotating direction, the moving speed of the retainer looper and the looper thread take-up lever E against the needle and the looper should be faster. When aligning the mark J to the mark K which is a back of the rotating direction, its moving speed should be slower.



After adjusting, fasten the screw F of the retainer looper eccentric G. At the same time, confirm the clearance of approx. 2.5mm between lower shaft bush P and the end plate N of the retainer looper eccentric rod M.

\* After this adjusting, confirm to the position of front/back, the position of left/right and the height of the retainer looper. (Refer to the previous page)

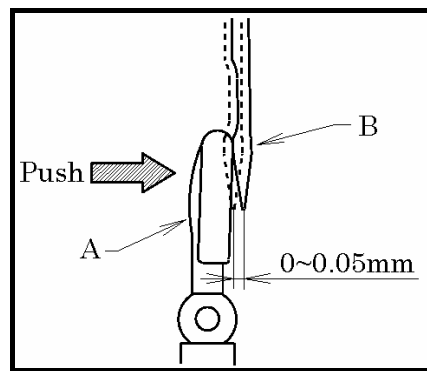


< Note >

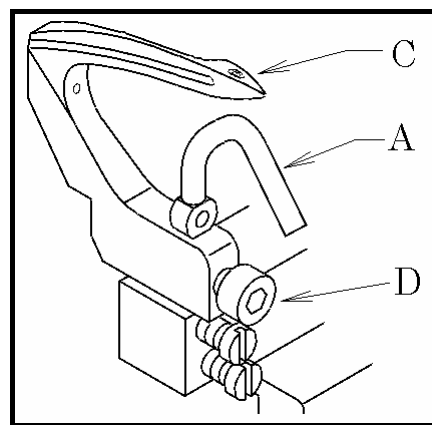
*Before adjusting machine, be sure to turn off the motor.*

### 【9】 ADJUSTING CLEARANCE BETWEEN NEEDLE AND NEEDLE GUARD

Adjustment should be made by pushing of the needle guard A to the needle B at 0~0.05mm.

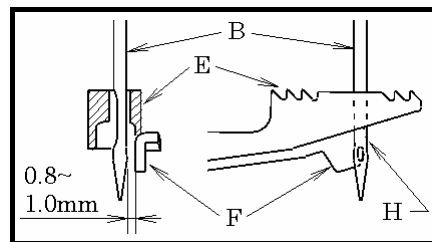


Adjusting by turning of the needle guard A after loosening of the screw D.

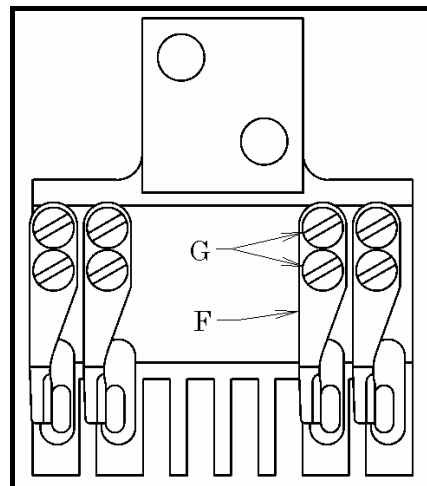


### 【10】 ADJUSTING OF THREAD RECEIVER

The clearance of left-right direction between the needle B and the thread receiver F of the feed dog E is 0.8~1.0mm. At front-back direction, when the needle B is positioned into the feed dog as fig. by turning of hand pulley, the top edge of the thread receiver F should be aligned to the right side line H of the needle.



Adjusting by loosening of the screw G for the thread receiver F.



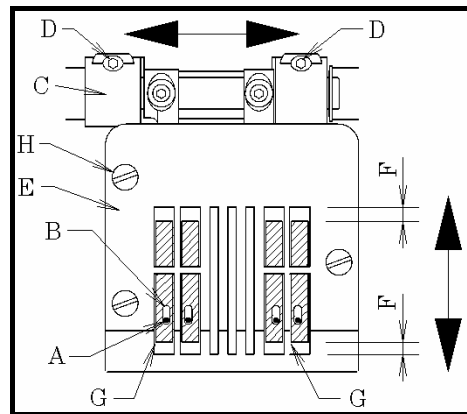
**【11】 ADJUSTING THE FEED DOG & STITCH LENGTH**

**11-1 Adjusting of left-right position for the feed dog**

Make sure each needles A drops into the center of the needle drop hole B of the feed dog J.

Adjusting at left and right by loosening of the screw D (2 pieces) of the feed rocker C.

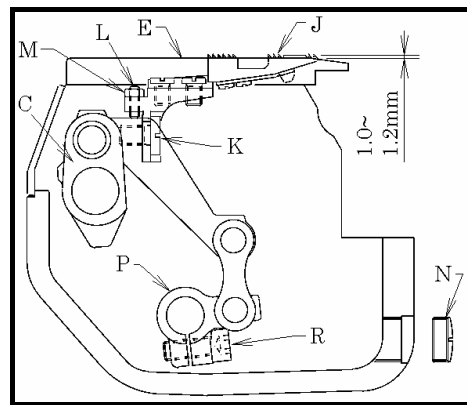
At the same time, adjusting by loosening of the screw H (3 pieces) of the needle plate E, in order to be equal between each clearance G and also to be parallel between the feed dog and the feed grooves of the needle plate E.



**11-2 Adjusting of front-back position for the feed dog**

When the feed dog is positioned at both the front dead point and the back dead point by turning of hand pulley, each clearance F at the front and the back between the feed dog and the feed grooves of the Needle plate E is to be equal.

Adjusting at front and back by loosening of the screw D (2 pieces) of the feed rocker C.

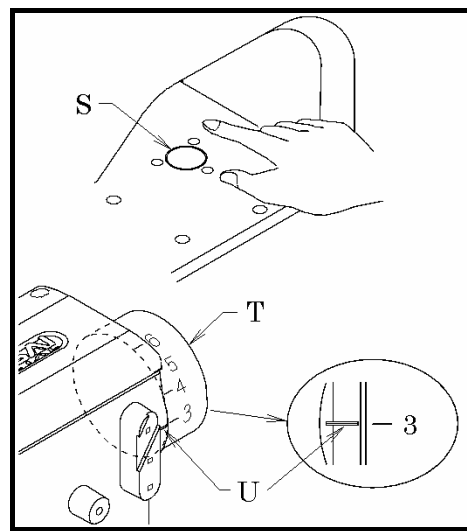


**11-3 Adjusting of height for the feed dog**

When the feed dog is at the upper dead point, the feed dog J is to be parallel with the top surface of the needle plate E. Its height is 1.0~1.2mm.

Adjusting by loosening of nut M and adjusting screw L of the feed dog J and also the screw K.

After adjusting by up and down of the feed dog J, fasten the screw K. Then, fix the adjusting screw L up by the nut M after slight-touching it to the feed rocker. Tilt adjustment is to be done by loosening of the screw R of the feed up-down lever P after removing of the screw N.



#### 11-4 Adjusting of stitch length

The stitch length can be adjusted from 2.1 up to 6.4mm without step.

The following table shows the stitch length with the number of stitches within 1" (25.4mm) and 30mm.

Pulley position	stitch length ( mm )	No. of stitches	
		within 1"	within 30mm
2	2.1	12	14
3	3.0	8.5	10
4	4.0	6.2	7.5
5	5.0	5.0	6.0
6	6.0	4.2	5.0
L	6.4	4.0	4.5

How to change the stitch length ( Fig. : Refer to previous page. )

1. Press push button S lightly with the left hand until the end of push button S touches an inside part.
2. With pressing push button S lightly, turn the hand pulley T by the right hand, until the push button S goes further into the depth.
3. Press the push button S strongly again. With keeping of this press, turn the hand pulley T in order to meet the number of pulley position to the mark U which can be selected as required.
4. After selecting of the desired stitch length, release the left hand.
5. The machine is adjusted the number 3 of pulley position.

In case of happening the defect after big-changing of the stitch length, adjust again for [7] timing of the looper to the needle, [8] timing of the retainer looper and the looper.

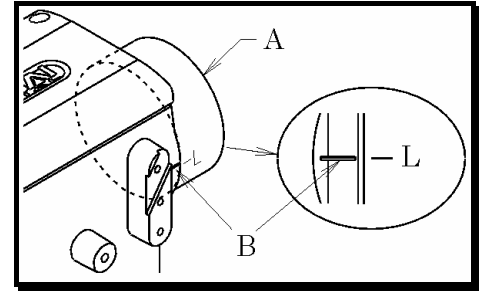
*< Note >*

*Before adjusting machine, be sure to turn off the motor.*

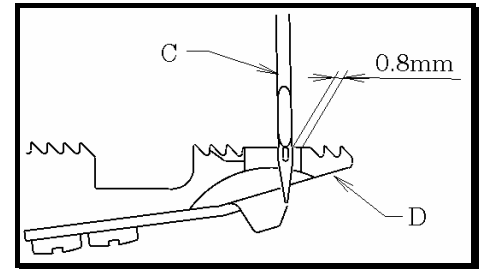
## 【12】 ADJUSTING OF THE NEEDLE FEED

### 12-1 Adjusting of front-back position of the needle

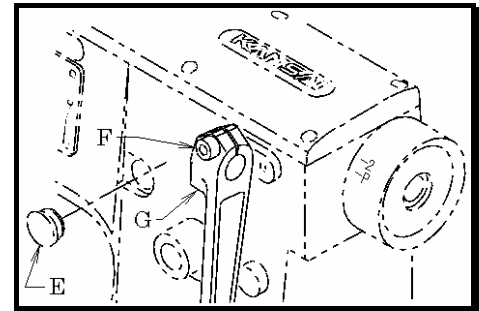
With reference to 11-4. Adjusting of stitch length, align the number L of pulley position to the mark B. Then, the stitch length is maximum.



When the needle C is going down from the top dead point by turning of hand pulley A, align the top end of needle hole of the needle C to the top surface of the feed dog D. The clearance between the needle and the needle drop hole of the feed dog D should be approx. 0.8mm as fig.



Remove the rubber plug E of the machine. Adjust the needle clamp with the moving to front and back after loosening of the screw F of the needle swing lever arm G.



### 12-2 Adjusting of front-back movement amount of the needle

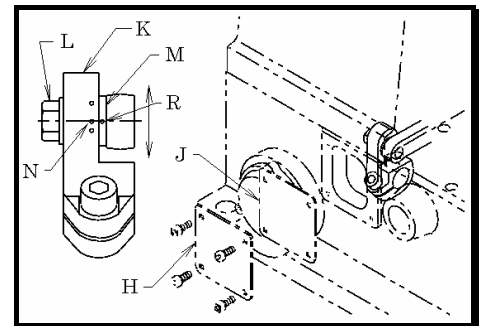
The center mark N of the needle swing lever K should be aligned to the mark R of the needle swing lever pin M as fig. It is a standard setting.

With this setting, the movement amount of the needle is synchronized with the movement amount of the feed. When adjusting of the movement amount of the needle, remove the cover H and the gasket J at the back side of the bed.

Adjust by moving up and down of the needle swing lever pin M after loosening of the nut L.

The needle feeding amount is increased when moving up.

The needle feeding amount is decreased when moving down.



< Note >

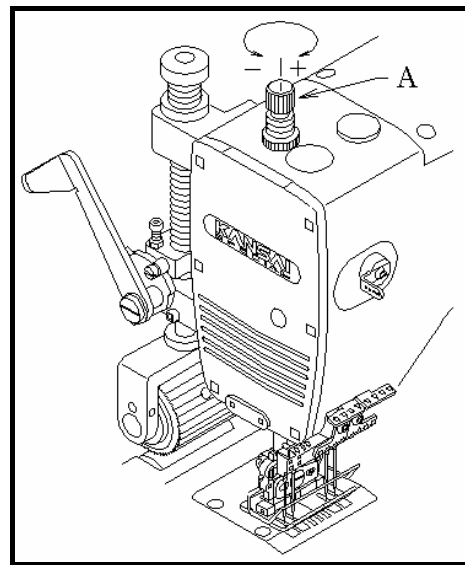
*Before adjusting machine, be sure to turn off the motor.*

## 【13】 ADJUSTING THE PRESSER FOOT

### 13-1 Presser foot pressure

The presser foot pressure should be as light as possible, yet be sufficient to feed the fabric and produce uniform stitches.

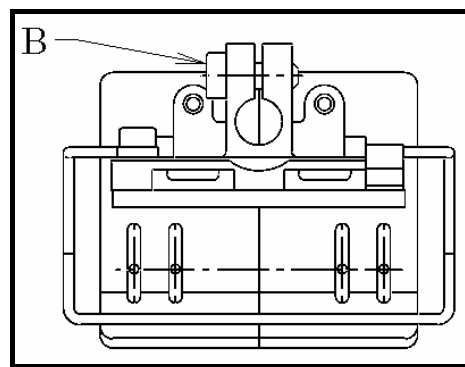
To increase the presser foot pressure, turn the adjusting knob clockwise.



### 13-2 Position of the presser foot

Fit the presser foot onto the presser bar so that the needle can drop correctly to the center of the needle drop hole on the presser foot.

Adjustment is made by loosening screw B.

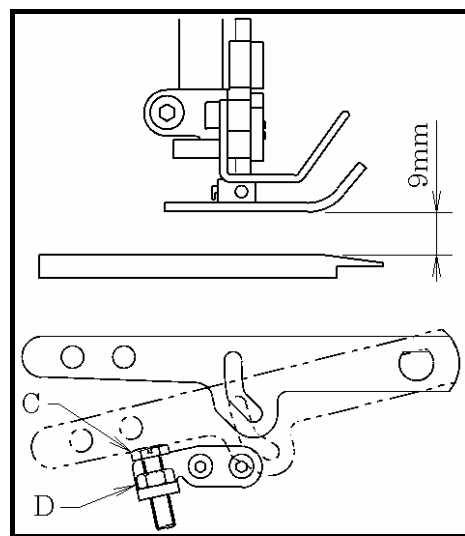


### 13-3 Foot lift

Position stopper C with the presser foot approximately 9mm above the top surface of the needle plate and then tighten nut D.

< Note >

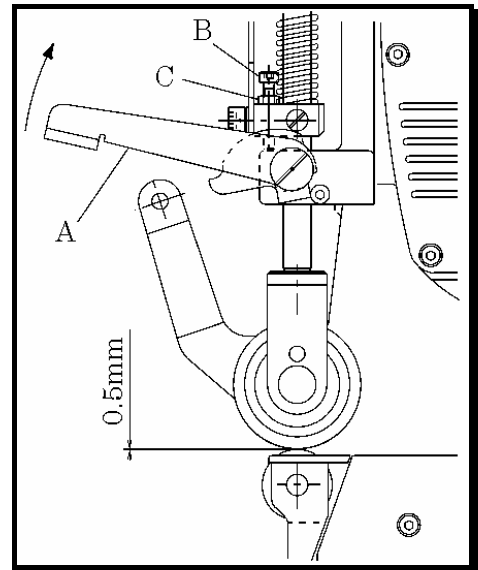
*Before adjusting machine, be sure to turn off the motor.*



## 【14】 ADJUSTING THE REAR PULLER DEVICE

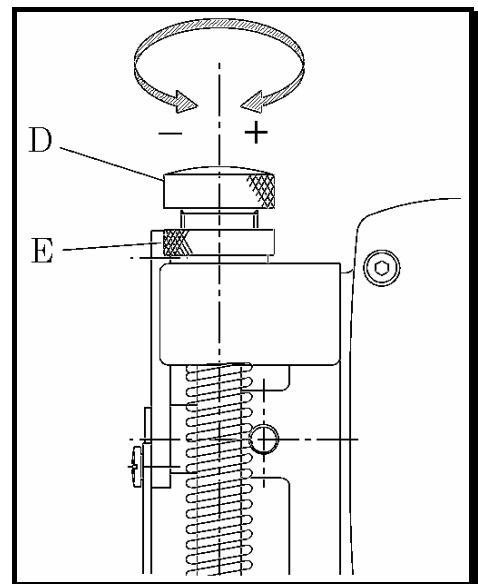
### 14-1 Manual lever and position of the stopper

To position or remove the fabric, raise manual lever A. With the manual lever lowered, hold stopper B so that the clearance between the upper and lower pullers is 0.5mm. Then tighten nut C.



### 14-2 To adjust the puller pressure

The puller pressure should be as light as possible, yet be sufficient to feed the fabric smoothly. To increase the pressure, turn adjusting knob D clockwise. To decrease the pressure, turn adjusting knob D counterclockwise. Fasten the lock nut E after adjusting.



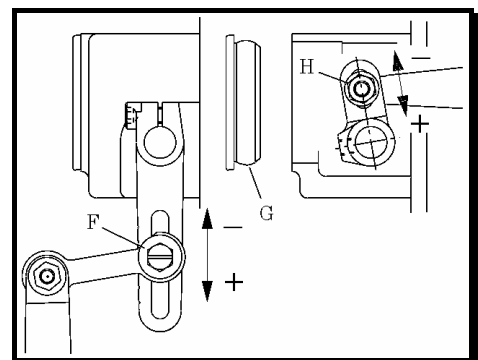
### 14-3 Adjusting the feeding amount of the rear puller

The feeding amount of the puller should be adjusted by changing of the movement amount of the upper roller in order to meet the sewing fabric and the sewing conditions. To decrease the amount, loosen nut F and move it up. To increase the amount, loosen nut F and move it down.

If the feeding amount is too large or small, remove the rubber plug G and loosen the nut H.

To decrease the amount, move it up.

To increase the amount, move it down.



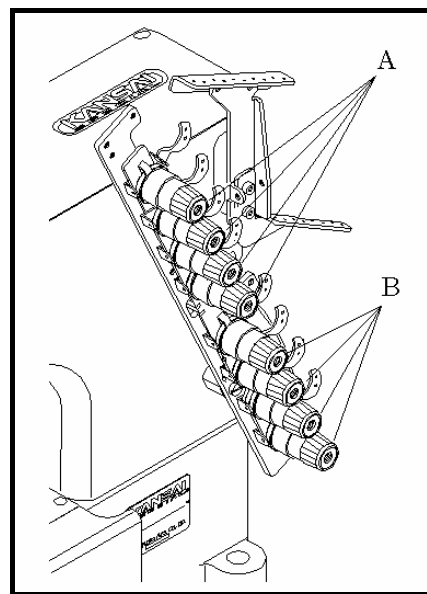
## 【15】 ADJUSTING THE STITCH FORMATION

### 15-1 Thread tension adjustment

Thread tension varies according to sewing conditions such as the fabric, thread and stitch length to be used. Tension on the needle thread can be adjusted with nuts A. Tension on the looper thread can be adjusted with nuts B. To increase the tension, turn the nuts clockwise.

< Note >

*The tension should be as light as possible, yet be sufficient to produce uniform stitches.*

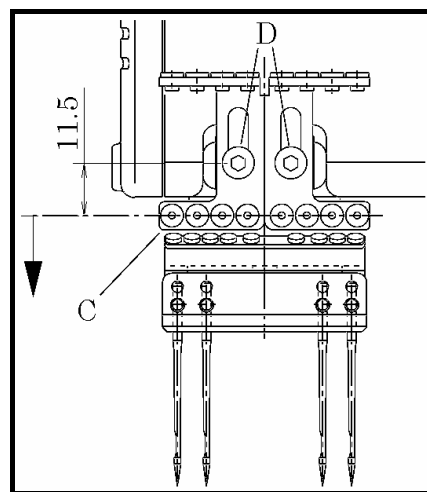


### 15-2 Position of the needle thread eyelet

The position of the needle thread eyelet C should be adjusted about approx. 11.5mm from the center of the screw D.

< Note >

*To loose the needle thread, adjust the needle thread eyelet C to UP. To tight the needle thread, adjust the needle thread eyelet C to DOWN. Depending upon the kind of THREAD or FABRIC.*

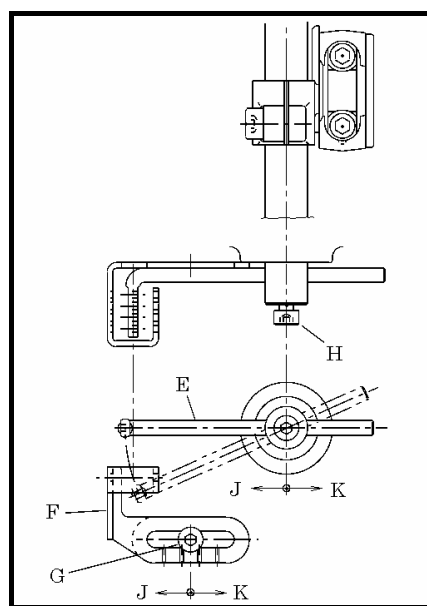


### 15-3 Position of the looper thread take-up eyelet

1. The looper thread eyelet F is to be fastened by the screw G at the center of its long-hole.
2. The looper take-up bar E is to be fastened by the screw H at the center passing position of the looper thread eyelet F.

< Note >

*To loose the looper thread, move to the direction J for both of the looper thread eyelet F and the looper take-up bar E. To tight the looper thread, move to the direction K for both of the looper thread eyelet F and the looper take-up bar E.*



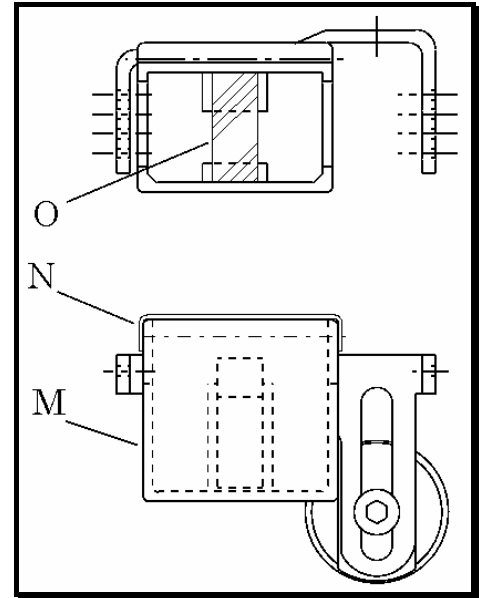


#### 15-4 Silicon Tank

The silicon oil prevents the thread-breakage, the skip stitching and the heating of the needle top when using the synthetic and fiber material for the thread and the fabric. Use the silicon oil.

< Note >

Remove the felt *O* when no-using of the silicon tank *M*. Check the volume of the silicon oil regularly after opening of the cap *N*. If shortage, supply the silicon oil properly.



### 【16】CLEANING THE MACHINE

At the end of each day, remove the presser foot and the needle plate and then clean the slots of the needle plate and the area around the feed dogs.

