

**MITSUBISHI  
INDUSTRIAL  
SEWING  
MACHINE**

**Model**

**LU2-4710.4730**

**Classes**

**Single-Needle, Double-Needle**

**Lockstitch**

**Compound-Feed**

**Automatic undertrimmer**

**Variable speed control**

Thank you for your purchase of Mitsubishi Industrial Sewing Machine.

Before the use of your sewing machine, please read this booklet carefully.

**INSTRUCTION MANUAL**

## **PRECAUTIONS BEFORE STARTING OPERATION**

### **1. Safety Precautions**

1. When turning the power on, keep your hands and fingers away from the area around/under the needle and the area around the pulley.
2. Power must be turned off when the machine is not used, or when the operator leaves his/her seat.
3. The power must be turned off before tilting the machine head, installing or removing the "V" belt, adjusting the machine, or when replacing.
4. Avoid placing fingers, hairs, bars etc., near the pulley, "V" belt, bobbin winder pulley, or motor when the machine is operation. Injury could result.
5. Do not insert fingers into the thread take-up cover, under/round the needle, or pulley when the machine is in operation.
6. If a belt cover, finger guard, and/or eye guard are installed, do not operate the machine without these safety devices.

### **2. Precaution before Starting Operation**

1. If the machine's oil pan has an oil sump, never operate the machine before filling it.
2. If the machine is lubricated by a drop oiler, never operate the machine before lubricating.
3. When a new sewing machine is first turned on, verify the rotational direction of the pulley with the power on.  
(The pulley should rotate counterclockwise when viewed from the pulley.)
4. Verify the voltage and (single or three) phase with those given on the motor nameplate.

### **3. Precaution for Operating Conditions**

1. Avoid using the machine at abnormally high temperature(35°C or higher) or low temperature(5°C or lower). Otherwise, machine failure may result.
2. Avoid using the machine in dusty conditions.
3. Avoid using the machine in areas where too much electrical noise, resulted from the high-frequency welder and others, is generated.

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# SPECIFICATIONS

## Specifications

Model		LU2-4710-BIT			LU2-4730-BIT		
Number of needles		Single-needle			Double-needle		
Application		Heavy material					
Max. sewing speed	(spm)	reciprocal st.	st. length	(spm)	reciprocal st.	st. length	
	3000	2	0~6	2500	2	0~6	
	2700	3	0~6	2300	3	0~6	
	2000	5~6	6~9	2000	5~6	6~9	
Stitch length (mm)		0~9					
Presser-foot stroke (mm)	Hand	9					
	Knee lifter	16					
Needle No.		DP×17 # 23					
Needle-bar stroke (mm)		36					
Thread take-up lever stroke (mm)		72					
Alternating	movement (mm)	2~6					
	stroke adj.	Dial					
	instant adj.	Air cylinder					
Automatic thread trimmer		○					
Touch back		○					
Hook (horizontal full-rotating)		Large					
Bobbin		Aluminum trimmer type					
Lubrication system		Automatic lubrication					
Oil		MC70M					
Bed dimensions (mm)		517×178					
Needle gauge (mm)		—					

※ The maximum sewing speed is fixed automatically according to the alternating up and down stroke. However, it is not fixed automatically to the stitch length. So please adjust manually the maximum sewing speed whenever it is required to the stitch length.

- Notes:
- Some materials, gauge sizes, and/or sewing conditions may require specifications other than those listed above.
  - Feed dog, throat plate, rotating hook, bobbin case and bobbin should be those designed for tread timer.
  - Bobbin should be of high quality free from deformation.
  - This specification is subject to change for machine improvement.

# PREPARATION FOR OPERATION

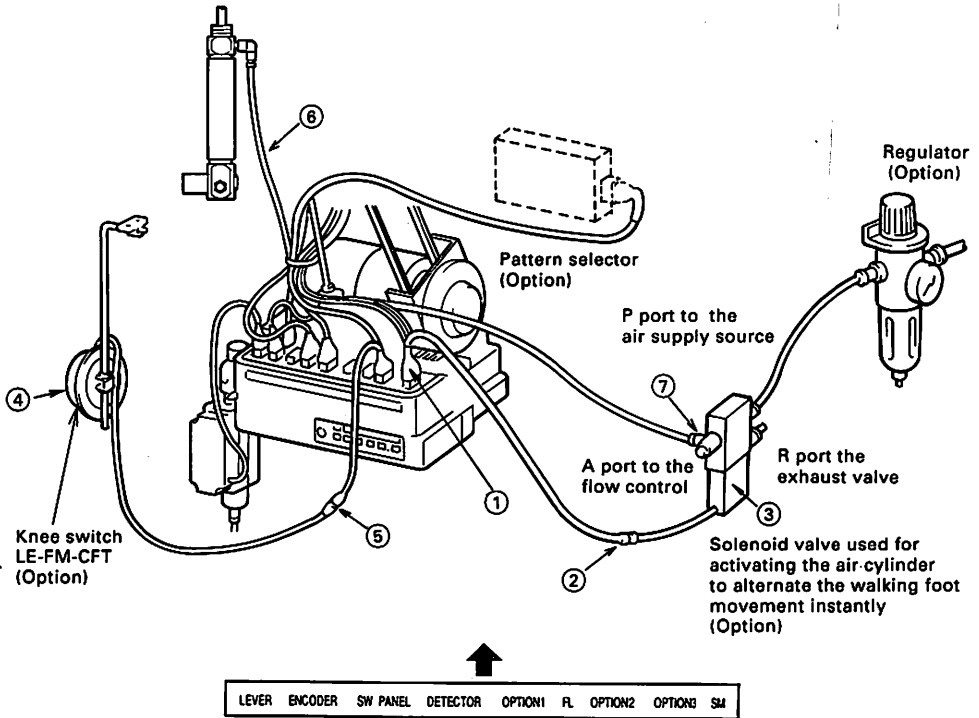
## 1 Connecting the electric cables to the control box

Connect the electric cables to the control box as shown on the figure.

1. Connect the cables (NO. ①) extended from the sewing machine head to the control box and then, connect 3 pin connector (NO. ②) to the solenoid valve (NO. ③) used for activating the air cylinder to alternate the walking foot movement instantly.
2. In the case of using the knee switch (NO. ④) as the alternating switch, connect the optional NO. 3, 2 pin connector (NO. ⑤) to the knee switch (NO. ④).
3. Connect the air tube (NO. ⑥) extended from the sewing machine head to the A port (NO. ⑦) of the solenoid valve (NO. ③).

NOTE : For your safety, always turn off the power switch whenever connect or disconnect connectors.

Air cylinder used for alternating the walking foot movement is built in the sewing machine head.

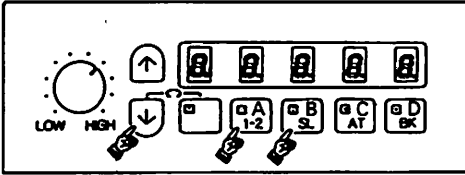


# PREPARATION FOR OPERATION

## 2 Setting up the control panel

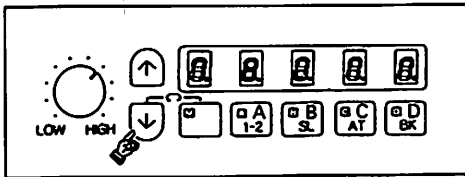
1. Firstly set up the control panel to the machine model LU2-4410-BIT with the following instructions.

(1) Set up programming mode **1**



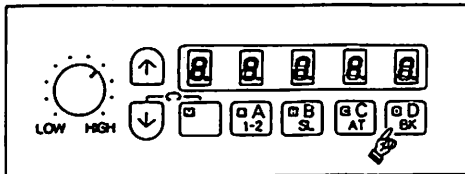
At the normal mode (only the sewing machine rotating indication is appeared), press 3 keys, **↓**, **A** and **B** at the sametime for than 2 sconds.

(2) Set up the sewing machine model number



The display 180M. is appeared in the indicator. Indicate the display 410b showing the sewing machine model number LU2-4410-BIT with **↓** or **↑** key.

(3) Fix the program



Press D key for more than 2 seconds. The display "CLEAR" comes up after the sewing machine model number is blinked. If release the D key, the setting up is finished, then, the control panel is returned to the normal mode.

# PREPARATION FOR OPERATION

## 2. Exclusive setting for LU2-4710/4730

### (1) Setting up program **P**

Press **↓** and **↑** keys at the same time for more than 2 seconds and set the following items.

Item	Setting
⊙ H (Max. high speed)	3000 (2500) ※
M (Medium speed)	500
RU (Needle back up)	ON
R8 (Reversal degree)	44

※ is model 4730

### (2) Setting up program **C**

Press **↓** and **C** keys at the same time for more than 2 seconds and set the following items.

Item	Setting
I1 (IN1)	S7
I2 (IN2)	IO1
I2A (Alternate)	ON
OD (L output)	OT1
O4 (ERR output)	B
O4L (Logic change)	ON
O5 (KS3 output)	OT1
ODC (L output chopping)	ON

### (3) Setting up program **F**

Press 3 keys, **↑**, **↓** and **B** keys at the same time for more than 2 seconds and set the following items.

Item	Setting
VP2 (Voltage on the yield point 2)	70
⊙VL1 (Voltage on the yield point 1)	67 (80) ※
VC2 (Working mode of VC2)	LM

※ is model 4730

Only two items marked with ⊙ mark are different between the model 4710 and 4730 on the setting.

## **3** Setting up the activating speed of the air cylinder

1. When control the pulling speed of the air cylinder, adjust the air flow of the A port on the solenoid valve.
2. When control the pushing speed of the air cylinder, adjust the exhaust valve of the R port on the solenoid valve.

# PREPARATION FOR OPERATION

## 4 Adjustment of needle bar stop position

### 1. Adjust of "UP" position

When the pedal is kicked down by heel, the machine stops at "UP" position. If the marks deviate larger than 3 mm, adjust as follows.

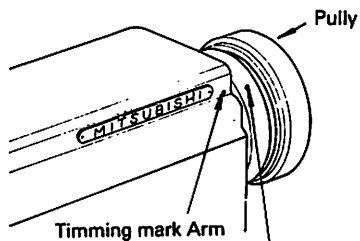
- 1. Disconnect the plug (12 pins) of cable from the machine head.
- 2. Run the machine and stop at "UP" position.
- 3. While holding the pulley, insert the "adjusting tool" in the hole (A), then remove the tool.

### 2. Adjust of "Down" position

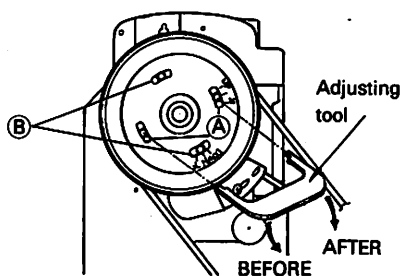
When the pedal is "Neutral" the machine stops at "Down" position. If the marks deviate large than 5 mm, adjust as follows.

- 1. Disconnect the plug (12 pins) of cable from the machine head.
- 2. Run the machine and stop at "Down" position.
- 3. While holding the pulley, insert the "adjusting tool" in the hole (B), then remove the tool.

### 3. Confirm the stop operation, then set the plug (12 pins) coming from the machine head into the receptacle



white mark	"Up" position
Black mark	"Down" position



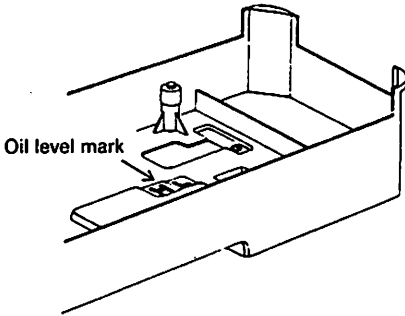


# CAUTIONS ON USE

## 1 Oiling (1)

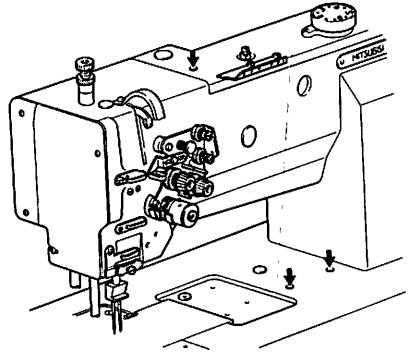
Fill the oil reservoir with oil up to "H" mark. Oil level should be periodically checked. If oil level is found below "L" level replenish oil to "H" level.

For oil, use MC70M specified by Mitsubishi.



## 2 Oiling (2)

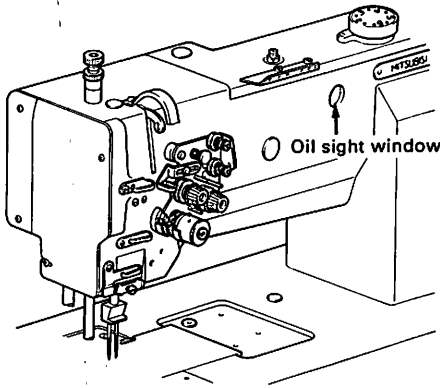
When a new sewing machine is used for the first time, or sewing machine left out of use for considerably long time is used again, replenish a suitable amount of oil to the portions indicated by arrow in the below figure.



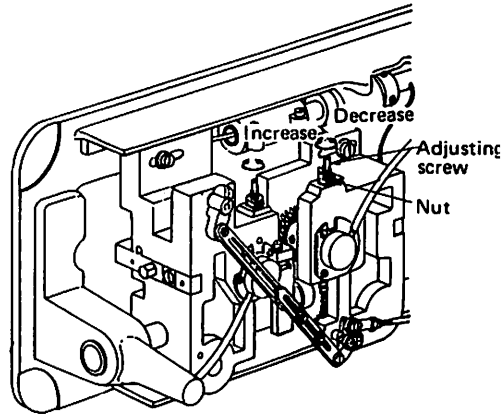
## CAUTIONS ON USE

### 3 Oiling condition

See dripping of oil through the oil sight hole to check oiling condition during operation.



### 4 Adjustment of oiling to rotating hook



### 5 Cautions on operation

- (1) When the power is turned on or off, keep foot away from the pedal.
- (2) It should be noted that the brake may not work when the power is interrupted or power failure occurs during sewing machine operation.
- (3) Since dust in the control box might cause malfunction or control troubles, be sure to keep the control box cover close during operation.
- (4) Do not apply a multimeter to the control circuit for checking, otherwise voltage of multimeter might damage semiconductor components in the circuit.

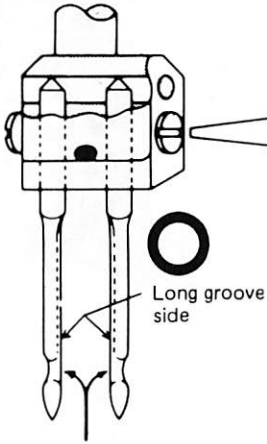
# HOW TO ADJUST AND USE THE MACHINE

## 1 Installation of needles

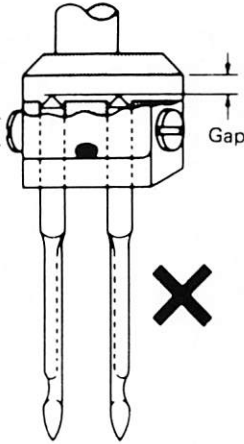
Note: Before installing the needles, be sure to turn off the power.

### Double Needle

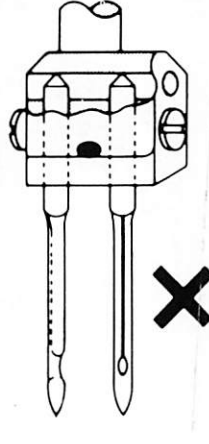
Insert the needle up to the bottom of needle clamp and tighten the screw keeping the long groove side of needle face to face



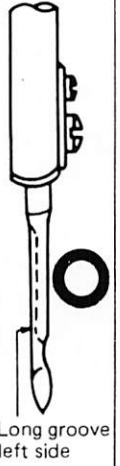
Insufficient insertion



Needle distorted



### Single-Needle



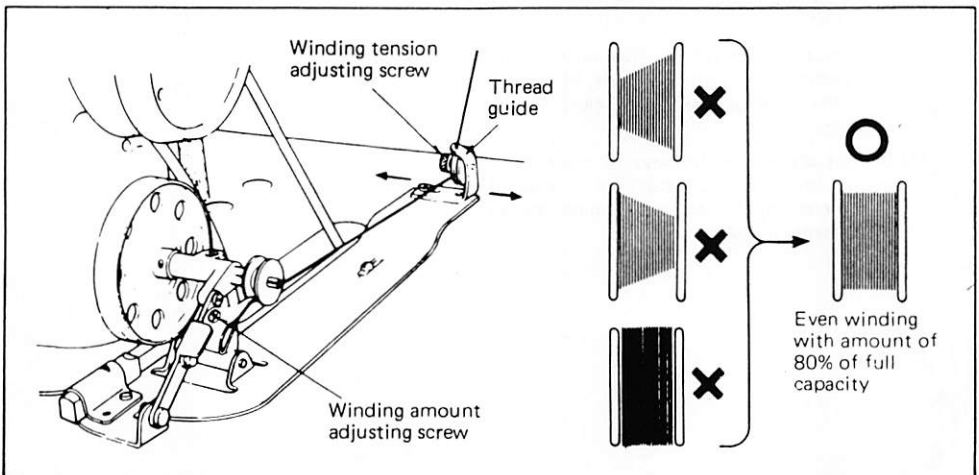
## 2 Winding of bobbin thread

Note: When bobbin thread is wound, keep the presser foot lifted.

### Adjustment:

- Tension of wound thread
- Conically wound thread
- Length of wound thread

Slack winding is recommended for polyester thread and nylon thread. Move the thread guide toward smaller diameter of wound thread layer. Loosen the thread length adjusting screw to increase length of thread and tighten the screw to decrease length of thread.

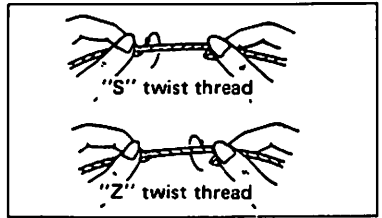


# HOW TO ADJUST AND USE THE MACHINE

## 3 Selection of thread

It is recommended to use "S" twist thread in the left needle (viewed from front), and "Z" twist thread in the right needle.

When discriminate use of needle threads is impossible, use "Z" twist thread in both the needles. For bobbin thread, "S" twist thread as well as "Z" twist thread can be used.



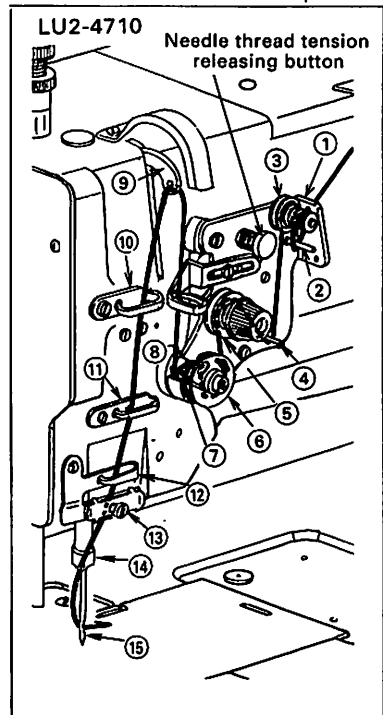
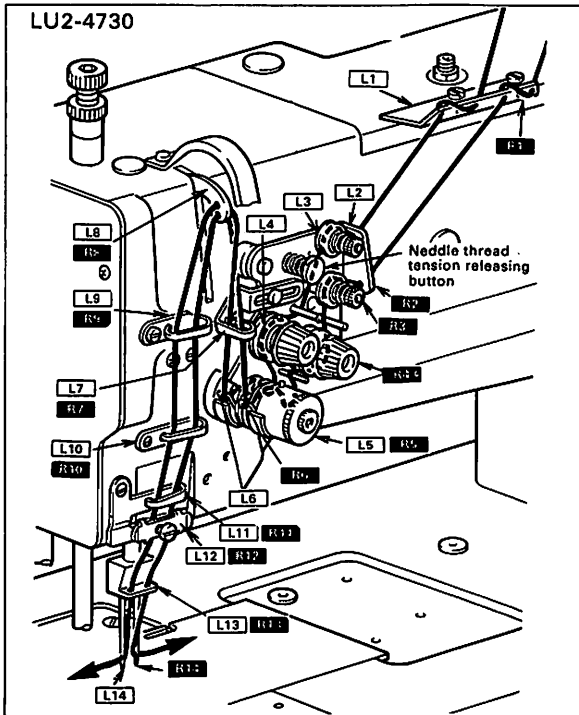
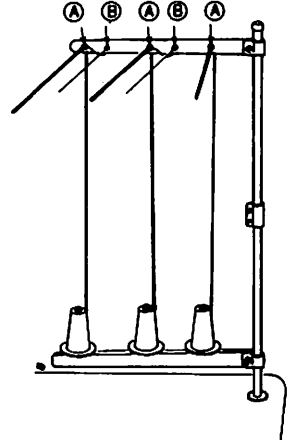
## 4 Threading of needle threads

- (1) Pass each needle thread through thread guide (A)

Note: When thin slippery thread (polyester thread or filament thread, for example) is used, pass the thread through thread guide (B) as well.

- (2) With the take-up lever located at the upper most position, pass each needle thread in the order shown in the following figure.

Note: Pressing the upper thread loosening button shown in the figure below opens the saucer of the upper thread tension adjuster, and the upper thread can easily pulled out.



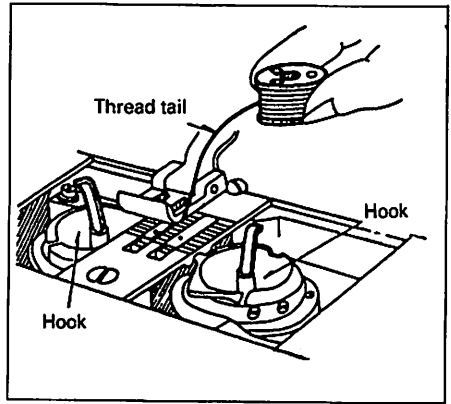
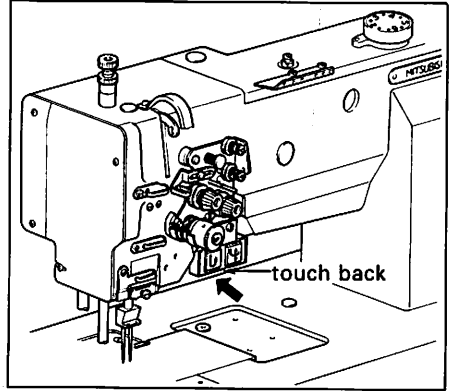
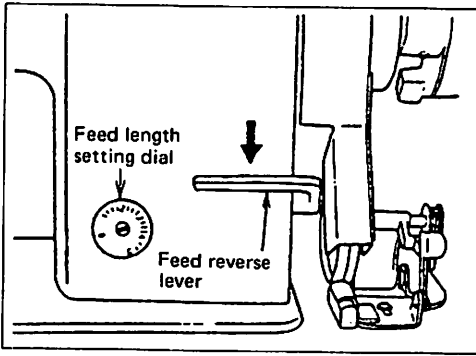
# HOW TO ADJUST AND USE THE MACHINE

## 5 Adjustment of feed (stitch) length and stitch reversing (touch back)

**NOTE:** To make feed (stitch) length smaller, depress the feed reverse lever and set the feed length setting dial to a desired position.

**NOTE:** Depending upon the stitch length, the maximum sewing speeds are different. With referring to the specifications on page 1, please operate the sewing machine at the speed less than the matching sewing speed with the stitch length.

- **Touch-back button** . . . Direction of stitching can be reversed by depressing this button. Stitching goes on in reversed direction while the button is held down, and returns to forward direction when the button is released.



## 6 Setting of bobbin

- (1) Pull out 5 cm thread tail from the bobbin.
- (2) Hold the bobbin so that the bobbin thread is wound in right direction and put it into the hook.

# HOW TO ADJUST AND USE THE MACHINE

## 7 Adjusting of needle thread guide

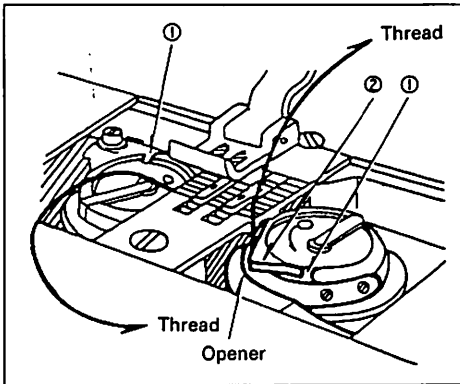
Please adjust needle thread guide of needle thread tensioner according to sewing condition.

Thread guide position	Left	Middle	Right
Materials	The thicker than standard	Standard	The thinner than standard
Needle thread supply	More	Standard	Less

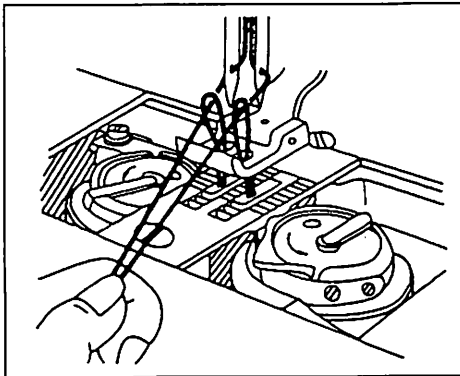
# HOW TO ADJUST AND USE THE MACHINE

## 8 Threading of bobbin threads

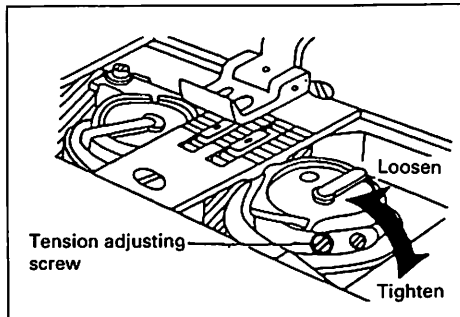
(1) Put bobbin thread into the slit (1), pass under the lug (2) and extend it above the bed.



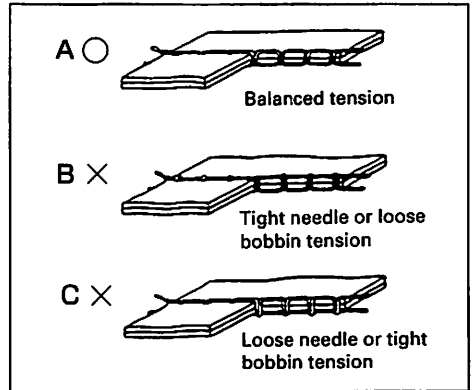
(2) While holding the two needle threads by left hand, rotate the handwheel one turn by right hand. By pulling up the needle threads, as shown in the figure, the bobbin threads will be lifted. Both of bobbin thread and needle thread should be aligned and led backward.



## 9 Tension adjustment of bobbin threads

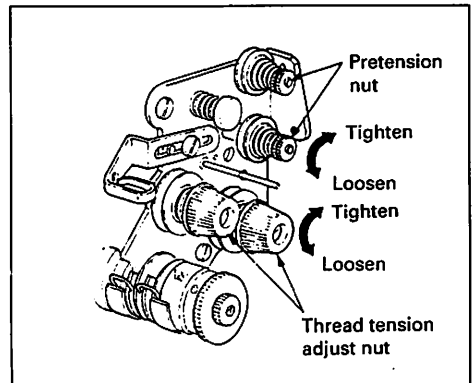


## 10 Balance of thread tension



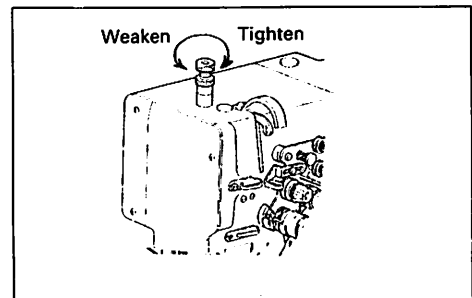
## 11 Needle thread tension

Turn the thread tension adjust nuts to adjust the needle thread tension.



## 12 Adjustment of presser foot pressure

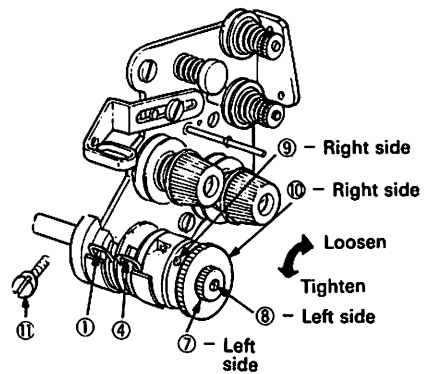
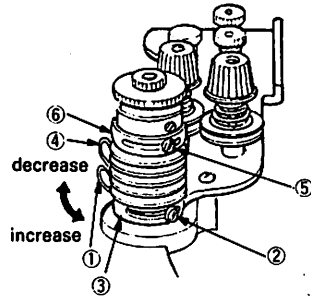
Pressure to fabric(s) can be adjusted by turning the pressure adjusting screw.



# HOW TO ADJUST AND USE THE MACHINE

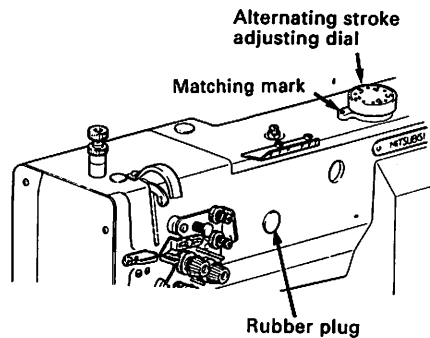
## 13 Adjustment of thread take-up spring

- 1) Adjustment of thread take-up spring length
  - To adjust the thread take-up spring ① for the left-hand thread, loosen the stopper stop screw ② and move the stopper ③.
  - To adjust the thread take-up spring ④ for the right-hand thread, loosen the stopper stop screw ⑤ and move the stopper ⑥.
- 2) Adjustment of thread take-up spring strength
  - When adjusting the left-hand thread spring, loosen the lock nut ⑦ and the screw ⑪ in the Arm and turn next the adjusting shaft ⑧. Tighten the lock nut ⑦ and the screw ⑪ after the adjustment.
  - When adjusting the right-hand thread spring, loosen the screw ⑨ and turn next the adjust nut ⑩. Tighten the screw ⑨ after the adjustment.



## 14 Adjustment of Outside presser foot and Inside presser foot

1. Adjustment of alternating movement
  - (1) The alternating movement on the outside presser foot and inside presser foot can be adjusted by using the adjusting dial located on the top cover.
  - (2) Face the desired number printed on the dial to the matching mark located on the top cover.
  - (3) The number printed on the dial represents the possible protrusion of the outside presser foot and inside presser foot from the throat plate when the alternating movements on these are evenly set.
  - (4) If the alternating movements are evenly set, they can be readjusted up to 2.0-6.0mm



# HOW TO ADJUST AND USE THE MACHINE

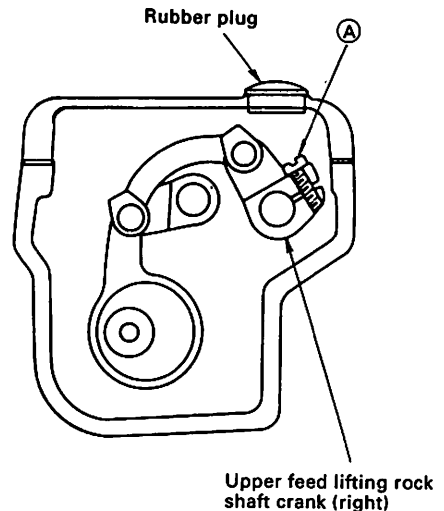
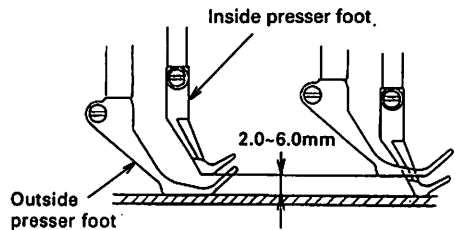
## 2. To change the balance of the alternating movements between the outside presser foot and inside presser foot.

(1) For example, to increase the rise of the inside presser foot, and decrease the rise of the outside presser foot:

- ① Remove the rubber plug located on the top cover.
- ② Rotate the pulley until the outside presser foot is slightly raised from the throat plate.
- ③ Loosen set screw (A) located on the upper feed lifting rock shaft crank (right).
- ④ The built-in spring pulls down the outside presser foot until it makes contact with the throat plate. Then, tighten set screw (A).
- ⑤ This completes the adjustment, i.e., the protrusion of the outside presser foot has been decreased by a set distance. And, the vertical motion of the inside presser foot has been increased by that same distance.

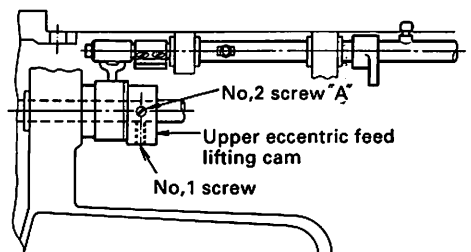
(2) As a contrary case (1), to decrease the rise of inside presser foot, and increase the rise of the outside presser foot:

First, rotate the pulley until the inside presser is slightly raised from the throat plate. Next, loosen screw (A). Finally, tighten screw (A). This decreases the rise of the inside presser foot.



## 3 Mounting the Upper eccentric feed lifting cam

- (1) Turn the balance wheel by hand to bring the thread take-up lever at the lowest position.
- (2) In this state, remove the rubber plug located on the arm. Locate No.2 screw "A" in the upper eccentric feed lifting cam as shown in the figure. And tighten it.





# HOW TO ADJUST AND USE THE MACHINE

## 15 Instant alternating switch

During the sewing operation, if a sewing material has a step, hit the instant alternating switch, then the alternating stroke of the walking foot instantly becomes much bigger to get over the step.

Hit once, ON  
(Blinking LED lamp)



The alternating up and down movement becomes highest (It is adjusted 6mm is the highest when the sewing machine is shipped from the factory.)

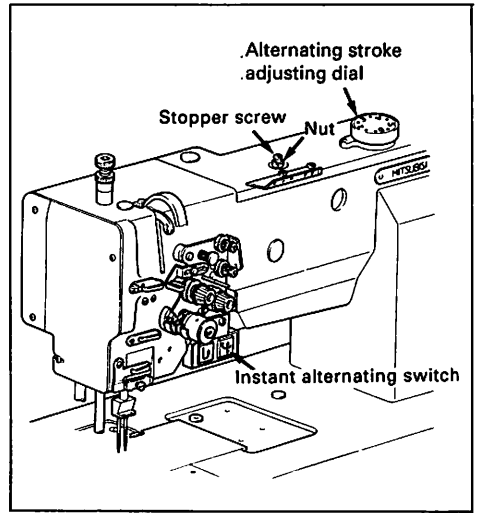
Hit twice, OFF



The alternating up and down movement becomes the normal stroke controlled with the alternating stroke adjusting dial.

NOTE 1: The knee switch also can be used as the instant alternating switch.

- 2: It also can be set the alternating up and down movement most highest only while pressing the instant alternating switch.



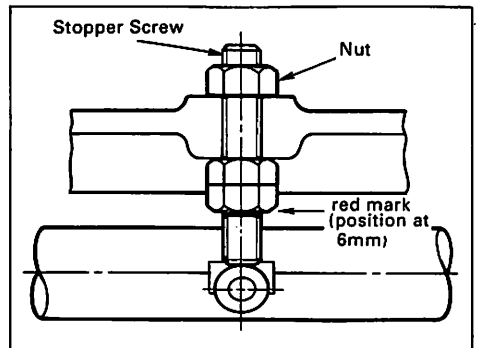
## 16 The stopper screw for adjusting the instant alternating stroke.

The maximum alternating stroke the time when the instant alternating function is activated can be adjusted with the stopper screw shown on the right figure.

- ◎ The maximum alternating stroke is fixed at 6mm when the sewing machine is shipped from the factory.

If the maximum alternating stroke is required to make smaller somehow, take the following procedures.

1. Set the alternating stroke adjusting dial to the desired number of the stroke.
2. Loosen the nut shown on the right figure.
3. Tighten the stopper screw until it hits with the pin.
4. Tighten the nut.



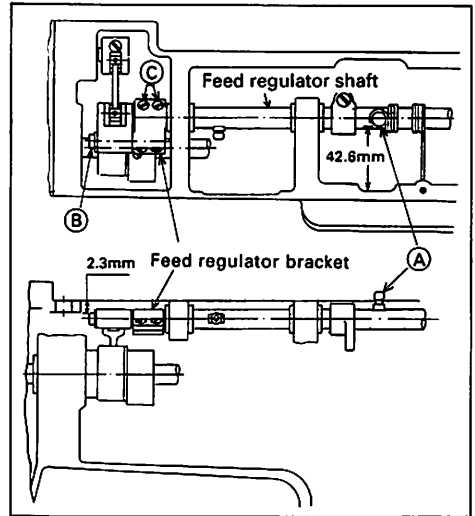
# HOW TO ADJUST AND USE THE MACHINE

## 17 Installing the Feed regulator bracket

Should it be necessary to dismount and the feed regulator bracket and its related parts, use the procedure explained below.

**CAUTION:** If the feed regulator bracket is poorly positioned, the resultant alternating movements may be too short or long, causing defective machine operation.

- (1) Set the clearance between special screw (A) located on the regulator shaft and the side wall of the machine arm to 42.6mm as illustrated to the left. (Use a 42.6mm spacer between these parts. This facilitates the operation.)
- (2) With the feed regulator stud held as explained in step (1) above, adjust the feed regulator bracket. This adjustment should insure a clearance of 2.3mm between the periphery of pin (B) located on the feed regulator bracket and the top cover mounting face located on the arm. Tighten screws (C).

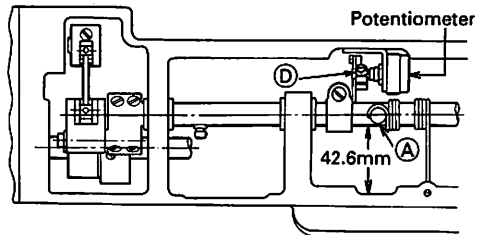


## 18 Adjustment of the alternating stroke sensing potentiometer

(Please refer to the instruction manual for Limi-servoX BMFY also.)

Please note that if fault the adjustment, the proper sewing speed can not obtained.

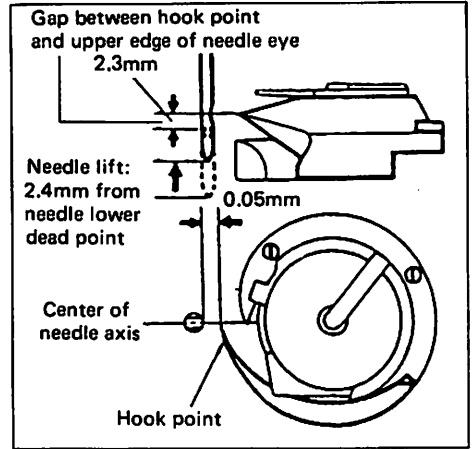
- (1) Turn OFF the power switch.
- (2) Remove all the connectors except the optional 1 connector.
- (3) Remove the top cover in the condition which set the alternating dial for scale 2.
- (4) Turn ON the power switch then, set the operation panel of the control box to the input display VC at the programming mode E.
- (5) Loosen the slotted head bolt (D) of the potentiometer crank.  
At this time, please pay attention not to give any bending torque to the potentiometer shaft.
- (6) Fix the distance between the feed adjusting shaft special screw (A) and the inner wall of the sewing machine arm 42.6mm.  
(It is recommended to use the spacer sized 42.6mm for quick fixing.)
- (7) Turn the potentiometer shaft so that the input display VC indicates 280-289.
- (8) Tighten the slotted head bolt (D) of the potentiometer crank.  
At this time, please pay attention not to give any bending torque to the potentiometer shaft.
- (9) Make sure again that the input display VC indicates 280-289.  
If the display indicates the different number from 280-289, adjust the potentiometer shaft again.
- (10) Turn OFF the power switch.
- (11) Put the top cover back in the condition which set the alternating dial for scale 2.
- (12) Connect all the connectors back to the original condition.



# HOW TO ADJUST AND USE THE MACHINE

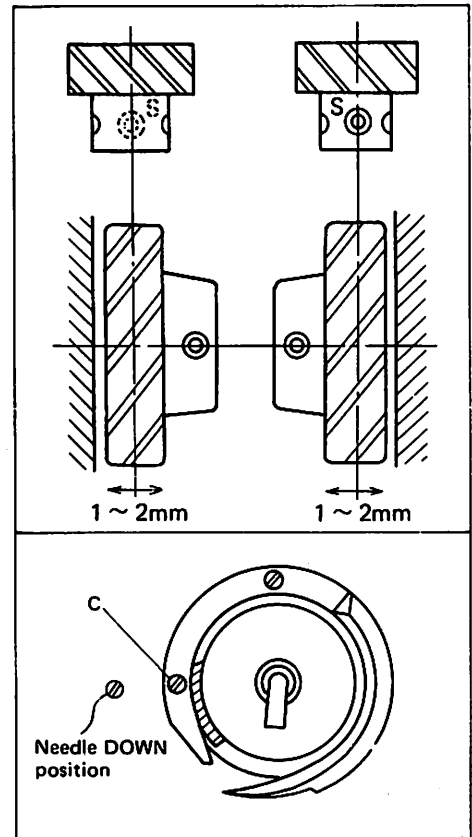
## 19 Timing between rotating hook motion and needle motion

- (1) Set feed length (stitch length) to "6" on the feed setting dial.
- (2) When needle is lifted 2.4mm from the lower dead point, as shown in Figure, the following positional relationship should be maintained.
  - The upper edge of needle eye should be 2.3mm below the hook point.
  - The hook point should be located at the center of needle axis.
  - Gap between the hook point and the side face of needle should be 0.05mm.
- (3) Needle/rotating hook position can be adjusted as follows.  
(For easy adjustment, it is recommended that the presser foot, throat plate and feed dog assemblies are removed.)



### ● Positioning of hook point

- (1) When the needle is at DOWN position, the smaller crossed herical gears on the right side and left side should be engaged with the larger wheel so that the "S" screw of the former gear comes on the front side, and that of the latter gear on the reverse side.
  - (2) Tighten each "S" screw, where is punched for set screw, on the hook shaft.
  - (3) Approximate position of hook "C" screw of hook should be found close to the needle when the needle is at DOWN position.
- \* To finely adjust timing between the needle motion and hook motion, loosen the set screw of larger gear wheel and move the gear wheel in its axial direction within a range from 1mm to 2mm.



# OPERATION

## 20 Adjustment of feed dog height

Height of feed dog and pressure of presser foot should be adjusted for individual fabric(s) with the following cautions:

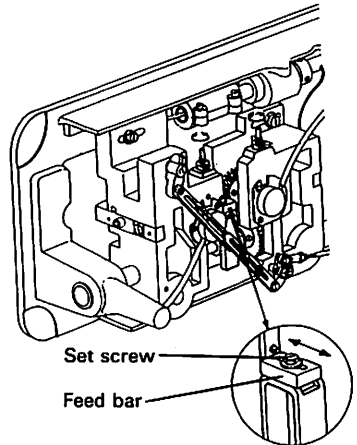
- ◆ Fabric will be damaged if the feed dog extends too high, or pressure of presser foot is too large.
- ◆ Even stitch length cannot be assured if the feed dog is too low or pressure of presser foot is too small.
- ◆ Feed dog height should be measured at the point where the needle is at the top position.



### Adjustment procedure

- (1) Lean the machine head backward.
- (2) Turn the handwheel by hand and stop when the feed dog rises to the maximum height.
- (3) Loosen the feed bar set screw.
- (4) Vertically move the feed bar (in the direction indicated by arrow in the figure) to adjust it to adequate height.
- (5) After the adjustment, tighten the feed bar set screw.

**The feed dog height is factory-adjusted to 1.0 mm**

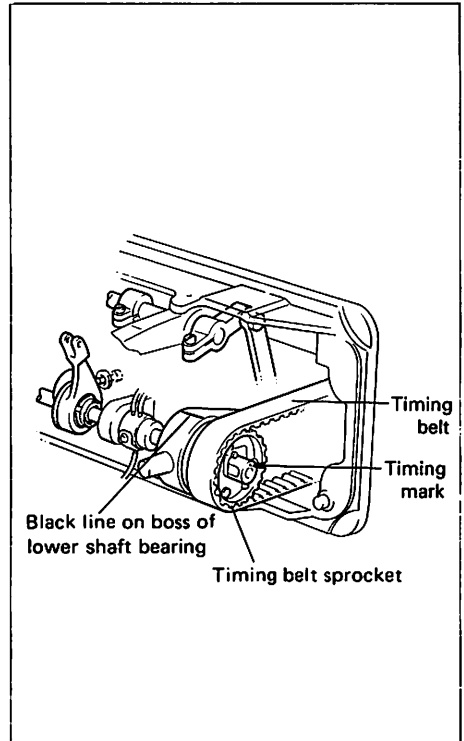


# HOW TO ADJUST AND USE THE MACHINE

## 21 Relationship between rotating hook motion and take-up lever motion

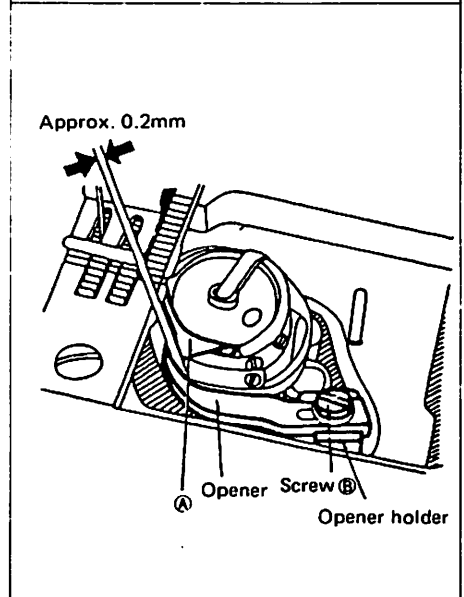
When the timing belt (toothed belt) was removed for its replacement, for example, the relationship between rotating hook motion and take-up lever motion should be adjusted as follows:

- (1) Turn the balance wheel and stop when the take-up lever is lifted to its upper dead point.
- (2) Lean the machine head backward and make sure the arrow (timing mark) put on the timing belt is in line with the black line on the boss of lower shaft bearing.
- (3) If the timing mark is not in line with the black line, remove the timing belt and install it again to adjust.



## 22 Relationship between hook motion and opener motion

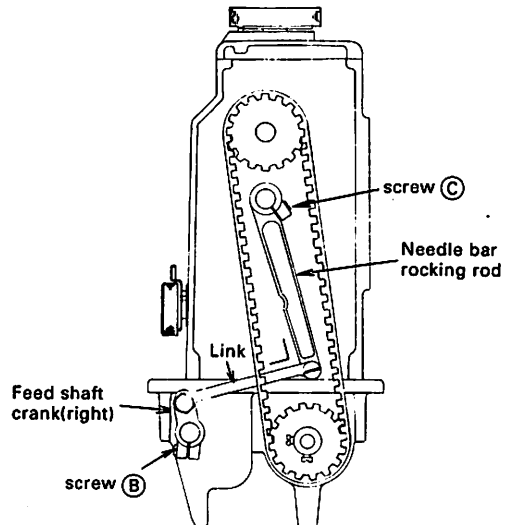
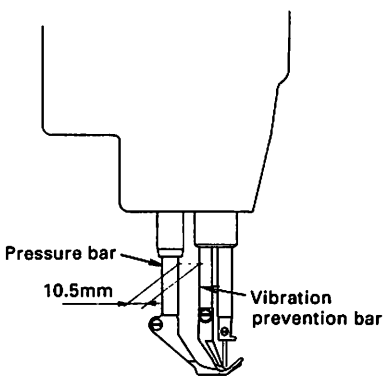
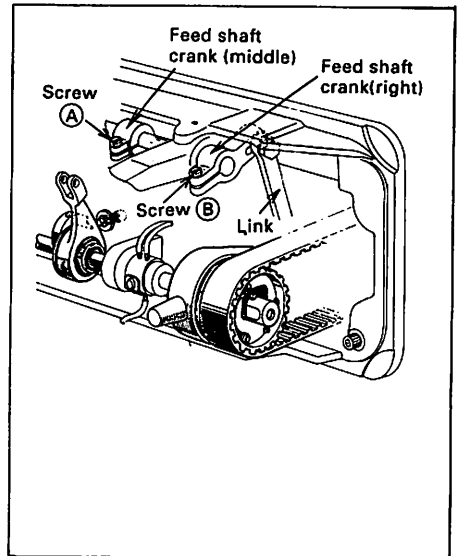
- (1) Turn the balance wheel by hand and stop when the opener holder is located most remotely from the throat plate.
- (2) Make sure gap between the bobbin case holder (A) and the opener is approximately 0.2mm.
- (3) If the gap is too large or small, loosen the opener holder set screw (A) and adjust position of the opener.



# HOW TO ADJUST AND USE THE MACHINE

## 23 Relationship between needle motion and feed dog motion

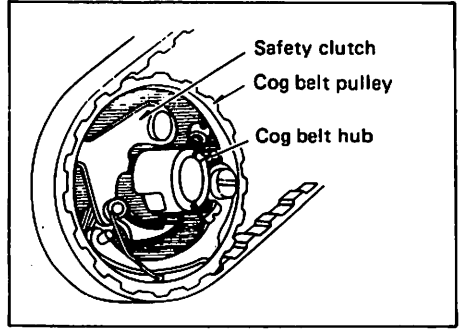
- The feed dog should be adjusted so that the needle can plunge into the feed dog needle hole at the center of the hole.
- (1) Set stitch length to "0" on the stitch length setting dial.
- (2) Lean the machine head backward.
- (3) Loosen the feed shaft crank set screw (A) and (B)
- (4) Lower the needle to the lowest position.
- (5) Adjust the distance between the pressure bar and the Vibration prevention bar to be 10.5mm, and tentatively tighten the screws (A) and (B) of the feed shaft crank.
- (6) Check that the right feed shaft crank is connected with the link at right angle, as shown in Figure.
- (7) If the connection is not at right angle, remove the back cover, loosen the screw (C) and move the needle bar rocking rod in the arrow direction to adjust.
- (8) After the completion of adjustment, fully tighten the screws (A), (B) and (C)



# HOW TO ADJUST AND USE THE MACHINE

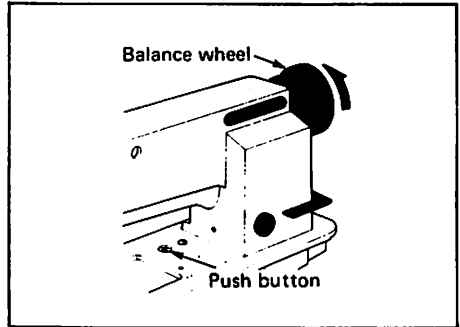
## 24 SAFETY CLUTCH DEVICE:

Safety clutch device is installed to prevent the hook and cog belt from damage in case the thread is caught into the hook when the machine is loaded abnormally during operation.



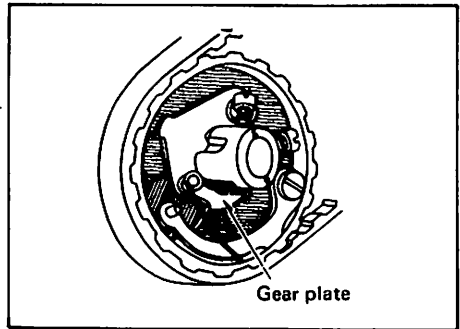
### 1) FUNCTION OF SAFETY CLUTCH.

- 1) When the safety clutch acts, the cog belt pulley will be unloaded, then the rotation of hook shaft will stop. The arm shaft only will rotate. Stop the operation of machine.
- 2) Clean the thread thoroughly which is caught into the hook.
- 3) Turn the cog belt hub by hand, and check whether the hook shaft rotates lightly and properly, place the clutch device as follows.



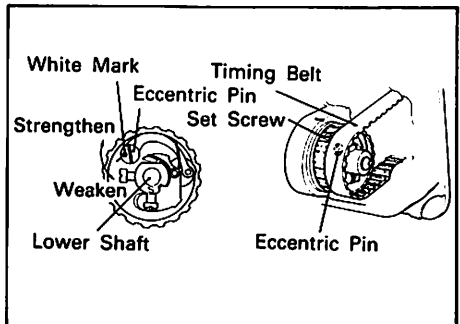
### 2) HOW TO SET THE SAFETY CLUTCH.

- 1) While pressing down the push button on the opposite side of bed by left hand, turn the balance wheel slowly by right hand away from you as shown in the figure.
- 2) The balance wheel will stop by the gear plate, but turn the balance wheel more firmly.
- 3) Release the push button.
- 4) As shown in the Figure, the safety clutch device is set.



### 3) FORCE APPLIED TO THE SAFETY CLUTCH.

- 1) The force applied to the safety clutch is the smallest when the white mark of the eccentric pin faces the center of the lower shaft. The force proportionally increases as the white mark faces the outside.
- 2) To adjust the force, slide the timing belt, loosen the set screw, and turn the eccentric pin.
- 3) After the adjustment, make sure to fasten the set screw.



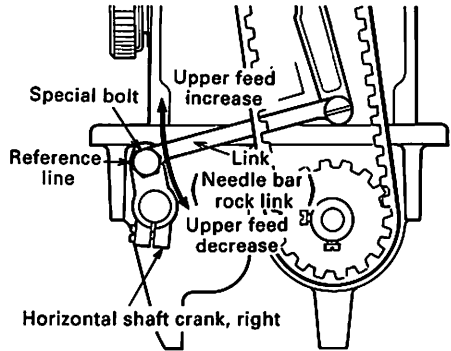
## OPERATION

### 25 UPPER FEED ADJUSTMENT (NEEDLE SIDE)

If the uneven feeding occurs according to the fabric, adjust the long hole of the horizontal feed shaft crank (right) to adjust the upper feed length.

(How to adjust)

- 1) Loosen the special bolt.
- 2) Move the special bolt upward to increase upper feed.
- 3) Move the special bolt downward to decrease the upper feed. The upper feed and the lower feed theoretically becomes equal at the reference line on the horizontal feed shaft crank.
- 4) Securely tighten the special bolt after adjustment.

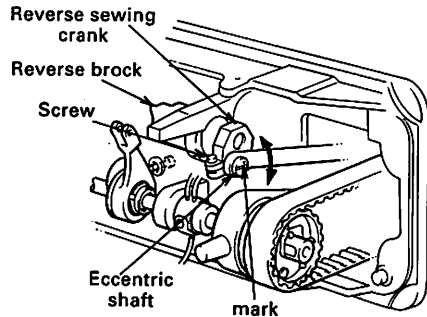


### 26 Adjustment of forward/backward stitch length

Forward / backward stitch length can be adjusted by moving the eccentric shaft shown in the figure, as follows :

- (1) Loosen screw of reverse sewing crank.
- (2) To increase forward stitch length, turn the eccentric shaft clock-wise.  
To increase backward stitch length, turn the eccentric shaft counter clock-wise.

**NOTE :** please adjust the forward / backward length in the range where the mark point of the eccentric shaft is facing to the reverse block side as shown on the figure.



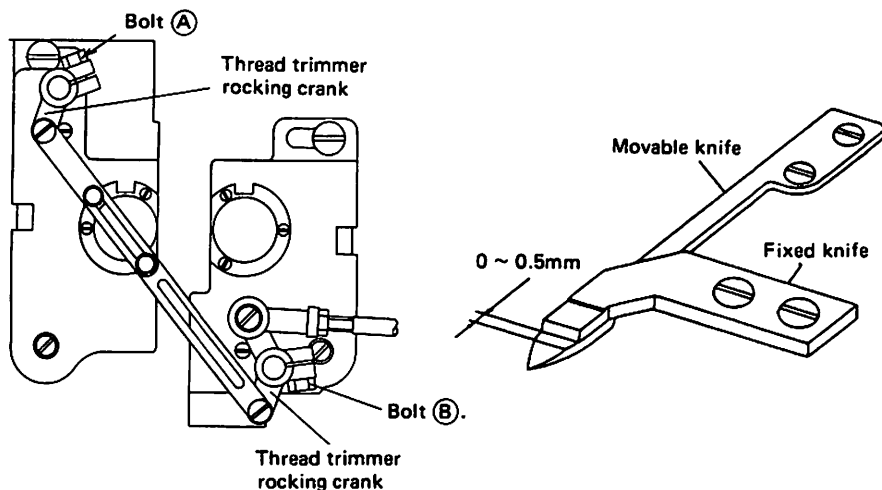


# HOW TO ADJUST AND USE THE MACHINE

## 27 Installation of movable knife

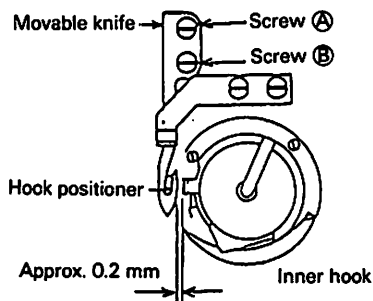
### 1. Initial position of movable knife

- (1) Turn the balance wheel and lower the needle bar to the lowest position.
- (2) Push the cam follower crank so that the cam roller enters into the thread trimmer cam groove.
- (3) Turn the balance wheel until the black mark point on the arm meets the white mark point on the balance wheel.  
Set the cam follower crank at this position with a screwdriver temporarily preventing the cam roller coming out from the cam groove.
- (4) Loosen the thread trimmer rocking crank clamp bolts (A) and (B).
- (5) Adjust the movable knife so that the movable knife end slant portion protrudes 0 – 0.5 mm from the fixed knife, as shown in Figure and tighten the bolts (A) and (B).



### 2. Gap between movable knife and bobbin case holder stopper

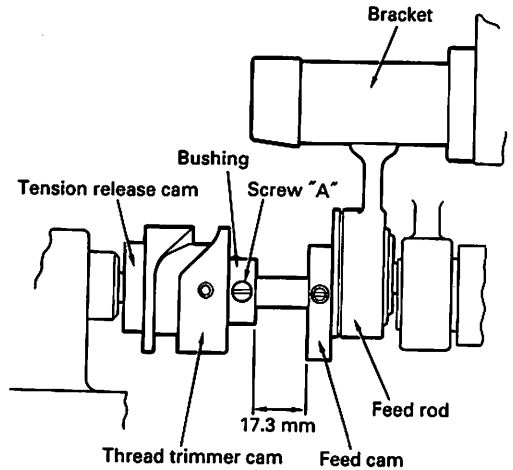
- (1) Turn the balance wheel by hand until needle reaches the lowest position.
- (2) With the needle at the lowest position, depress cam follower crank, turn the balance wheel until the movable knife reaches the extremity of its stroke.
- (3) Manually rotate the inner hook in the direction indicated by arrow in Figure and adjust gap between the movable knife and the inner hook stopper to about 0.5 mm (the screws (A) and (B) should be loosened for this adjustment).



# HOW TO ADJUST AND USE THE MACHINE

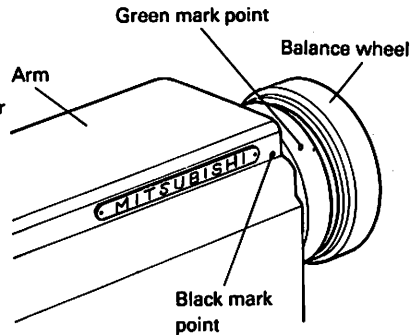
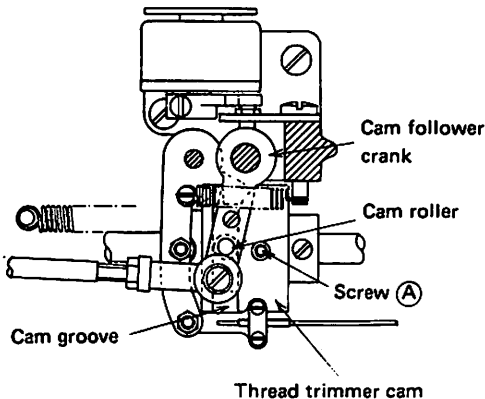
## 28 POSITIONING OF THREAD TRIMMER CAM

- (1) Adjust the gap between the feed cam and the bushing to 17.3 mm and tighten the hook shaft set screw "A".
- (2) After bringing the thread trimmer cam into contact with the bushing, and the tension release cam with the thread trimmer cam (i.e. after eliminating gap), tighten set screws.



## 29 Adjustment of thread trimmer cam

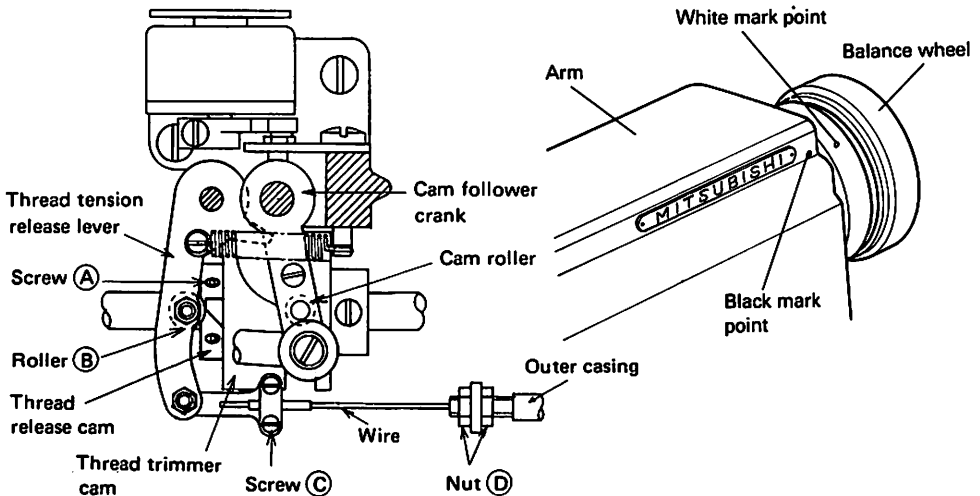
- (1) Turn the balance wheel by hand until the needles reach the lowest position.
- (2) Maintaining the needle position, depress the cam follower crank and put the cam roller into the groove of thread trimmer cam.
- (3) Turning the balance wheel by hand, adjust the thread trimmer cam so that the movable knife starts moving when the green mark point on the balance wheel comes in line with the black mark point on the arm.  
To adjust, loosen two thread trimmer cam clamp screws (A).



# HOW TO ADJUST AND USE THE MACHINE

## 30 Adjustment of needle threads tension release assembly

- (1) Turn the balance wheel by hand until the needles reach the lowest position.
- (2) Maintaining the needle position, depress the cam follower crank and put the cam roller into the groove of thread trimmer cam.
- (3) Turning the balance wheel by hand, adjust the thread tension release cam so that the tension disc close when the white mark point on the balance wheel comes in line with the black mark point on the arm.  
To adjust, loosen two tension release cam clamp screws (A).
- (4) Opening degree of tension disc should be adjusted with the tension release roller (B) mounted on the convex portion of thread release cam, as shown in Fig.  
To adjust, loosen the screws (C) and draw the wire.
- (5) Make fine adjustment by loosening the nut (D).
- (6) Loosen the nut (D) and make the outer casing approach rightward to increase the opening value.



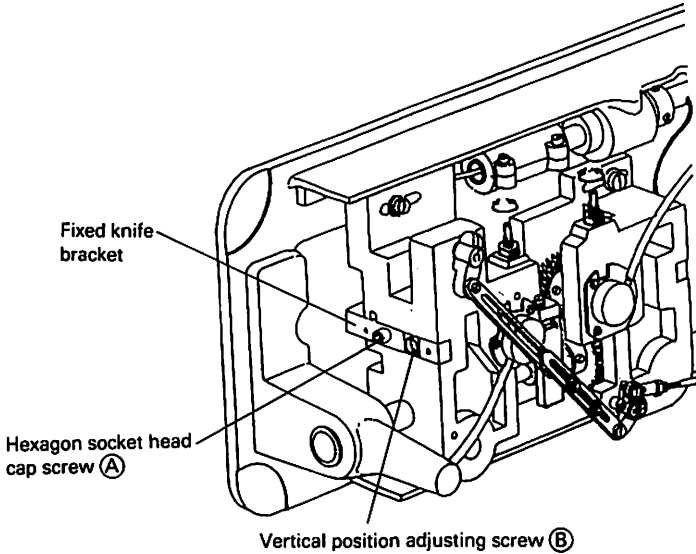
# HOW TO ADJUST AND USE THE MACHINE

## 31 Adjustment of scissoring pressure of movable knife and fixed knife

- (1) Loosen the fixed knife bracket clamp bolt (A).
- (2) Turn the vertical position adjusting screw (B) to adjust meshing pressure and then tighten the hexagon socket head cap screw (A).

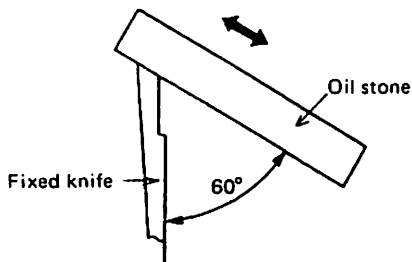
**Note:** Since excess pressure causes large torque to the thread trimming mechanism and trimming failure, adjust it so that thread can be trimmed with minimum pressure.

- (3) Move the movable knife and check that the thread can be sharply trimmed.



## 32 Sharpening of fixed knife

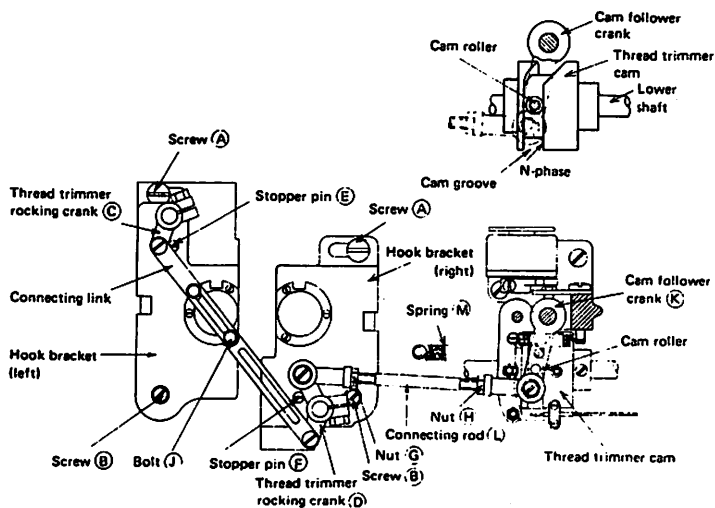
When the knives dull, the fixed knife should be sharpened as illustrated in Fig. Since it is very difficult to sharpen the movable knife, replace it with a new one when it dulls.



## OPERATION

### 33 Adjustment for change of needle-to-needle distance (LU2-4730)

- (1) Replace the throat plate, feed dog, presser foot, and needle clamp.  
(Since the throat plate and feed dog are special parts designed for thread trimming machine, be sure to use those specified by us.)
- (2) Lean the machine head backward.
- (3) Loosen two connecting link clamp bolts (J).
- (4) Remove the spring (M).
- (5) Loosen the hook bracket clamp screws (A) and (B) and adjust gap between each needle and hook.
- (6) When the needles and hooks have been adjusted, install the spring (M).
- (7) Contact the rocking cranks (C) and (D) to the stopper pins (E) and (F) and tighten the connecting link clamp bolt (J).
- (8) Turn the balance wheel by hand until the needles reach the lowest position.
- (9) Loosen the nuts (G) and (H).
- (10) Depress the cam follower crank (K) and adjust the connecting rod (L) so that the cam roller can smoothly enter the groove of thread trimmer cam.
- (11) Adjustment of the cam groove and the cam roller
  - (a) Push the cam follower crank (K) so that the cam roller enters into the cam groove.
  - (b) Turn the connecting rod (L) and adjust the clearance between the cam roller and the cam groove surface N as small as possible, and tighten the nuts (G) and (H).
  - (c) Push the cam follower crank (K) again and check that the cam roller enters into the thread trimmer cam groove smoothly.



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