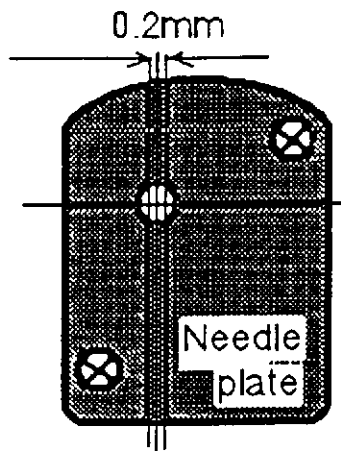
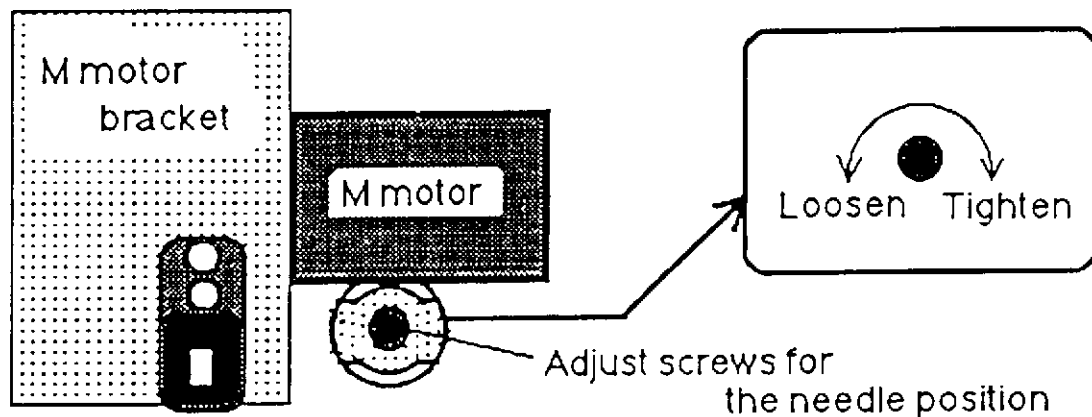


# Adjustment of Needle Position

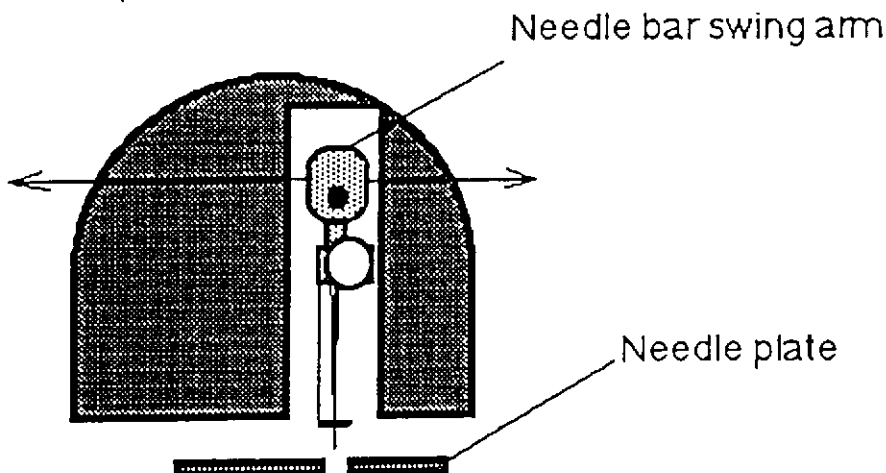


The needle remains at the center of the needle hole  $\pm 0.2\text{mm}$ .

Remove the base cover and loosen the adjust screws for the needle position with hexagon socket wrenches (width across flats 2.0mm).

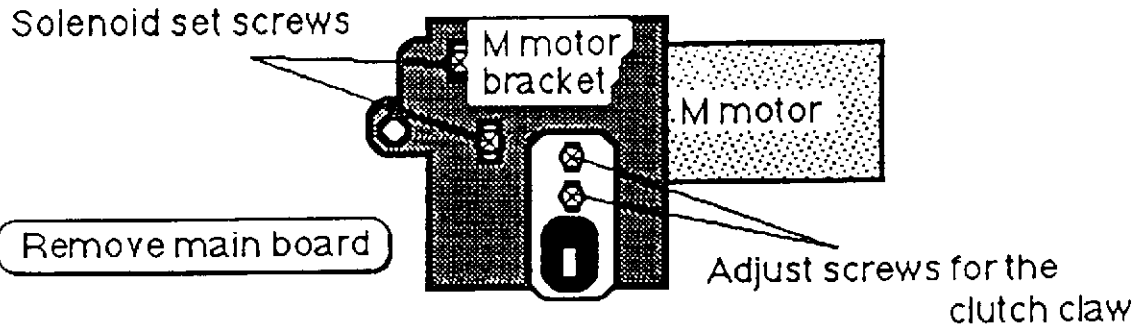


Move the needle bar swing arm with hexagon socket wrenches to adjust the needle position.

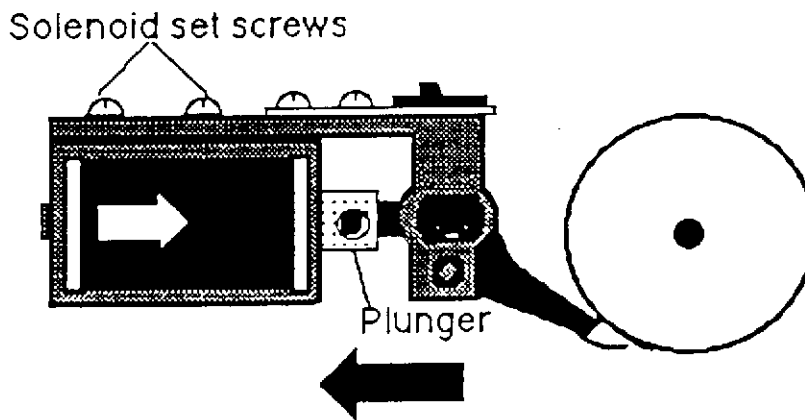


## Adjustment of Solenoid Position

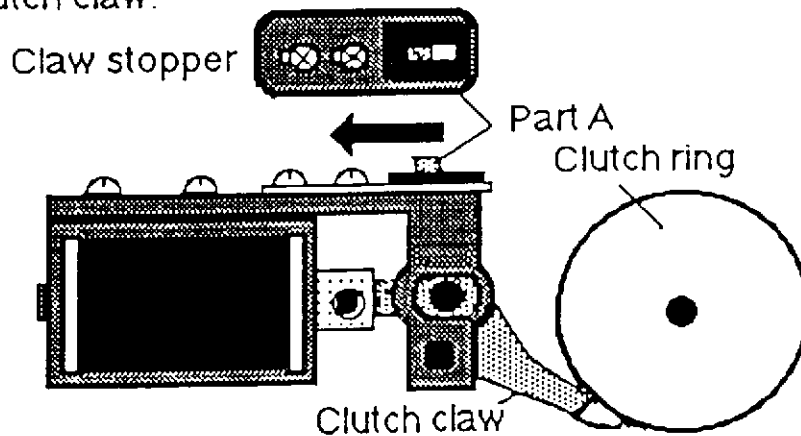
Remove the main board, and loosen the solenoid set screws and adjust screws for the clutch claw.



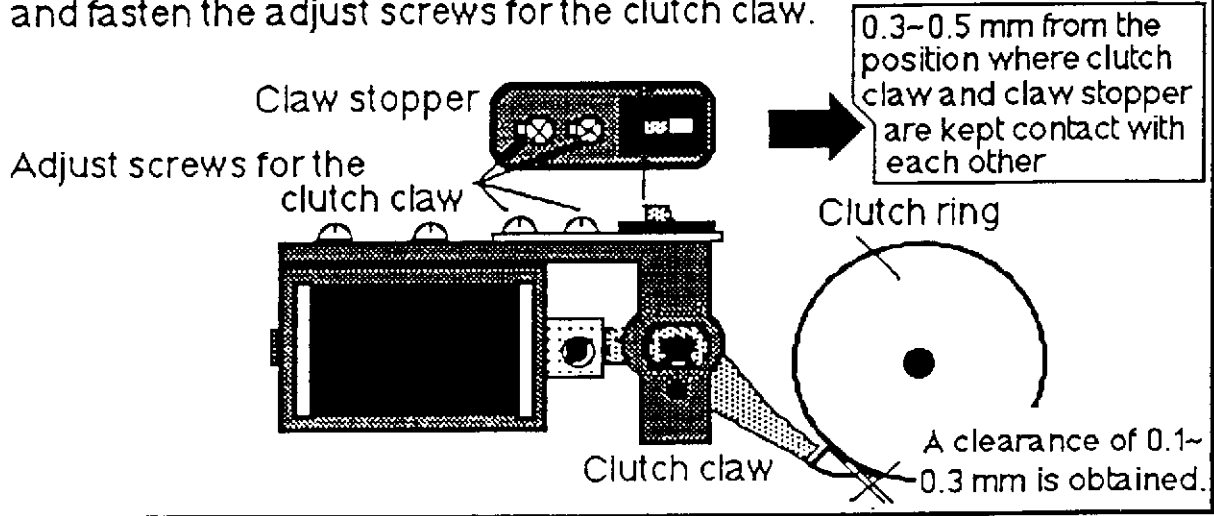
Press the plunger strongly to the left as shown in the figure. Then fasten the solenoid set screws pressing the solenoid lightly to the right as shown in the figure.



Press the part A of the clutch claw to the left as show in the figure so that the clutch claw can contact with the clutch ring (except for the projection). At the same time, bring the claw stopper into contact with the clutch claw.

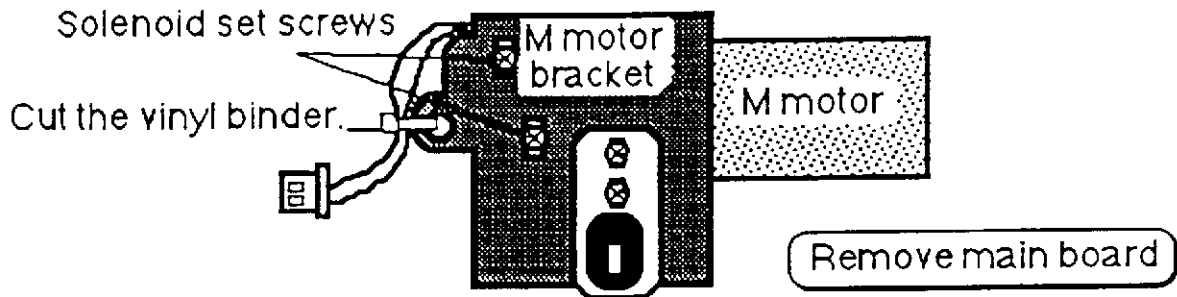


With the clutch claw and the clutch ring kept in contact with each other, slide the claw stopper 0.3~0.5 mm to the right as shown in the figure, and fasten the adjust screws for the clutch claw.

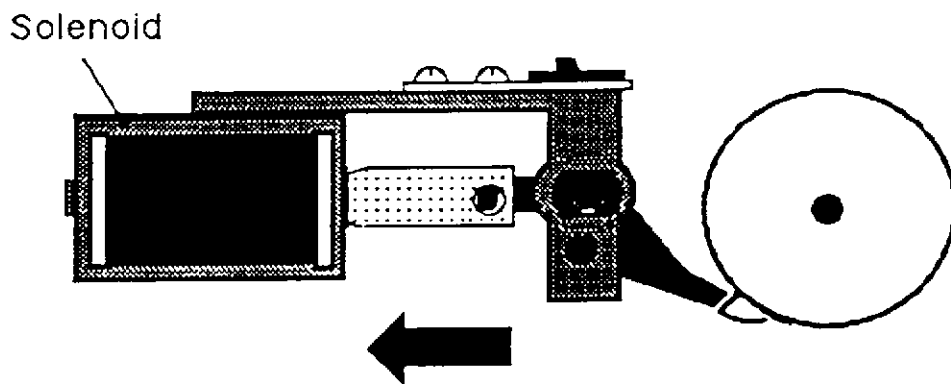


## Replacement of Solenoid

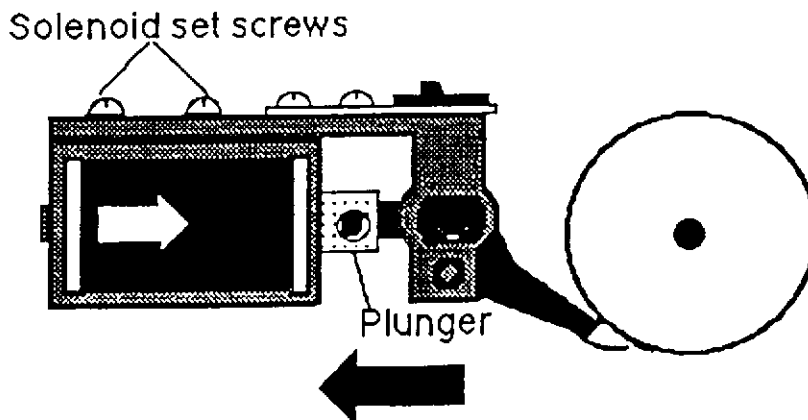
Remove the main board, and remove the solenoid set screws from the M motor bracket.



Slide the solenoid to the left to remove it. Then replace it with a new one. (Fasten the solenoid set screws temporarily.)

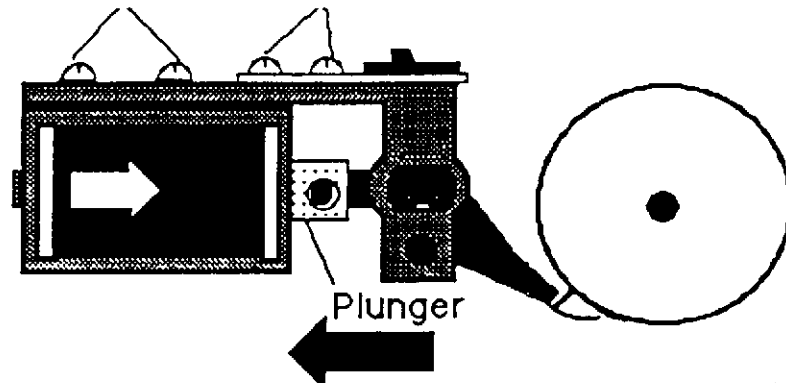


Press the plunger strongly to the left as shown in the figure. Then fasten the solenoid set screws pressing the solenoid lightly to the right as shown in the figure.

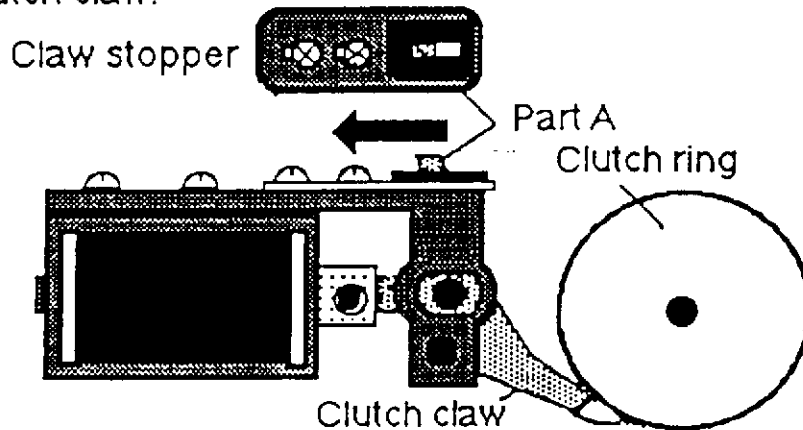


Loosen the solenoid set screws and the claw stopper set screws. Press the plunger strongly to the left as shown in the figure. Then fasten the solenoid set screws pressing the solenoid lightly to the right as shown in the figure.

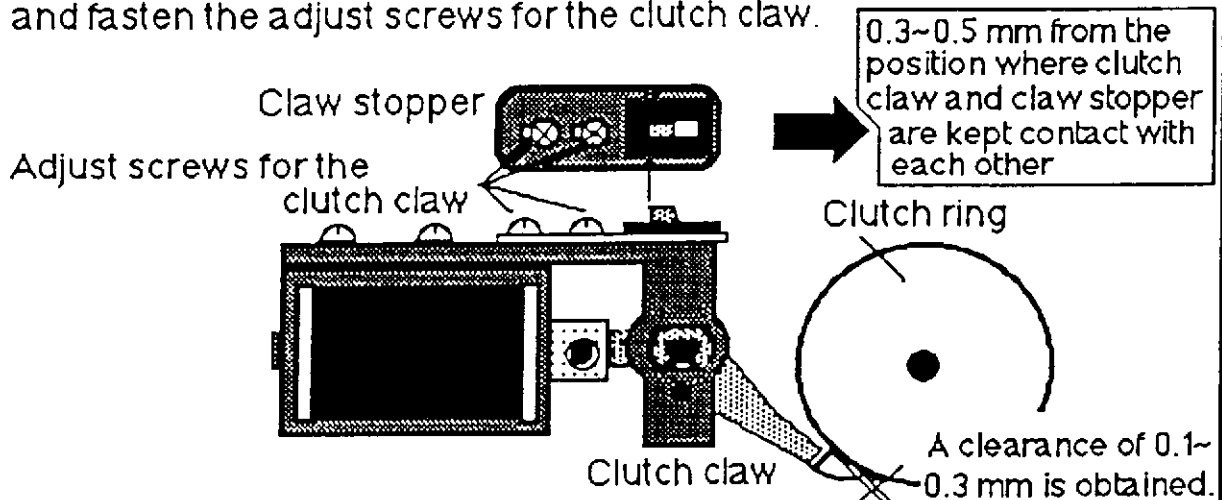
Solenoid set screws      Claw stopper set screws



Press the part A of the clutch claw to the left as show in the figure so that the clutch claw can contact with the clutch ring (except for the projection). At the same time, bring the claw stopper into contact with the clutch claw.



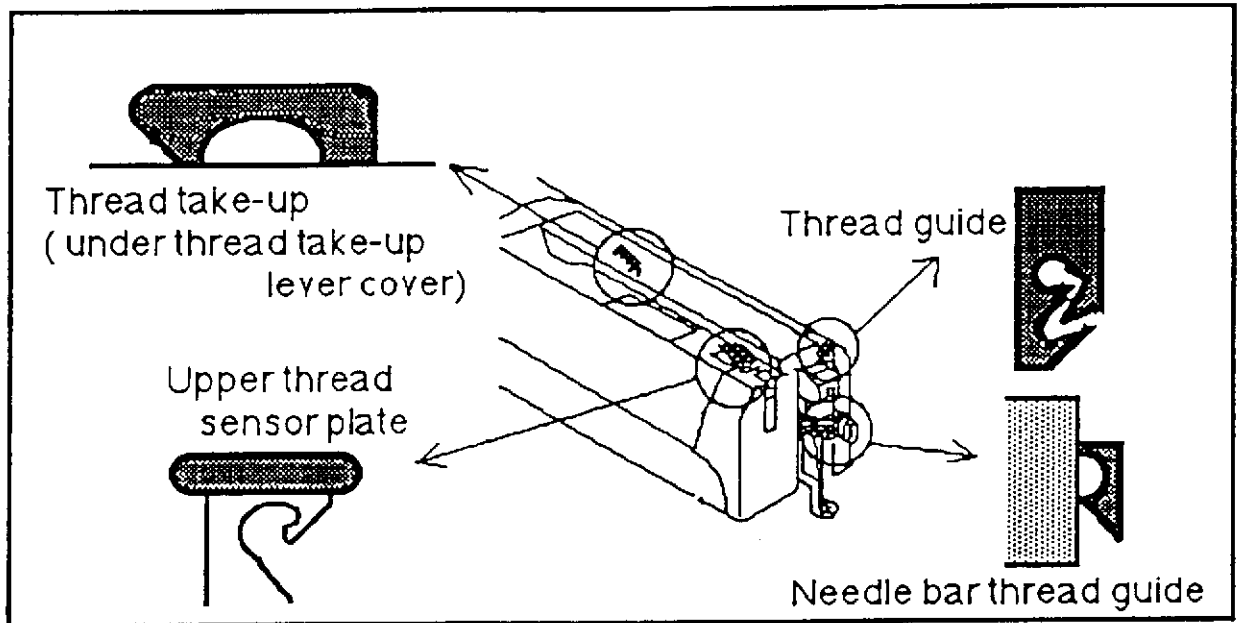
With the clutch claw and the clutch ring kept in contact with each other, slide the claw stopper 0.3~0.5 mm to the right as shown in the figure, and fasten the adjust screws for the clutch claw.



## 4. Frequent thread breakage

Make sure of the following point before a adjustment:

- Scratch in the path of thread



If no abnormality is found, check and adjust the following items:

Lower thread tension p.42

Upper thread tension p.43

Needle and rotary hook p.44

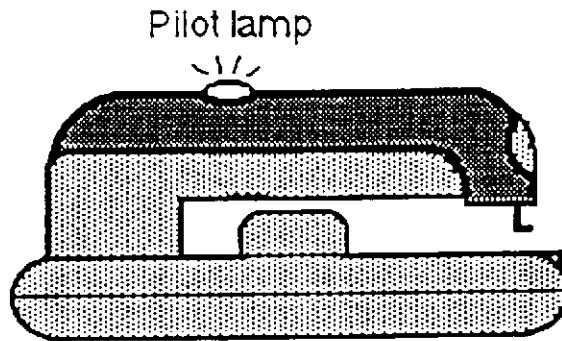
## 5. Cannot work.

Make sure of the following points before adjustment.

- Does pilot lamp light?

If the pilot lamp does not light, two causes of disconnection of the AC adaptor and a fuse can be considered.

Replace the AC adaptor and check it.

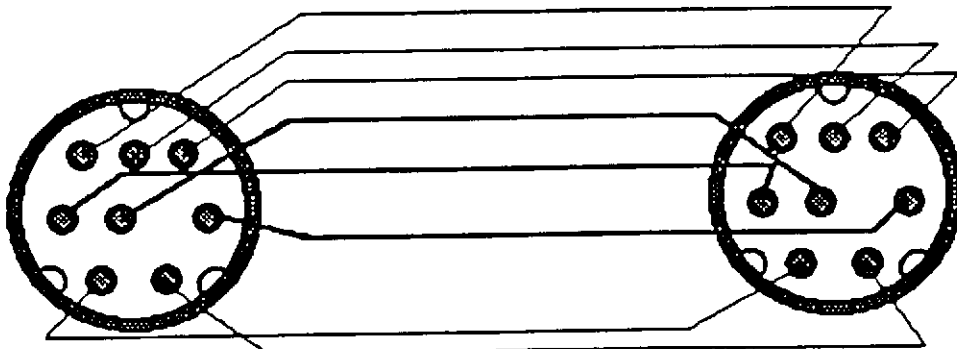


- Is interface cable connected?

Check the interface cable.

The connection of the lines are straight.

—— are actually used lines for communication. (3 lines)



Replace the interface cable and check it.

If no abnormality is found, check and adjust the following item:

Replace main board p.36

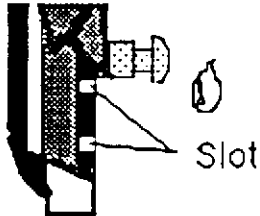
## 3. Abnormal sound

When an abnormal sound is produced, make sure of the following points before adjustment.

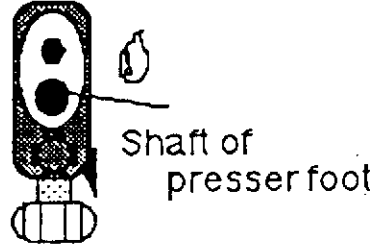
- Is lubrication proper?

### Lubrication to Rotary Hook And Presser Foot

Clean out lint or dust before lubrication. (1 or 2 drops of oil is enough.)  
Wipe off the oil in case of oiling excessively.



Rotary hook



Presser foot

- Is threading correct?

See page 42. Upper Threading and Lower Threading.

If no abnormality is found, check and adjust the following items:

Needle and rotary hook

Ting-a-ling sound

→ Adjustment of needle and rotary hook  
(p.44)

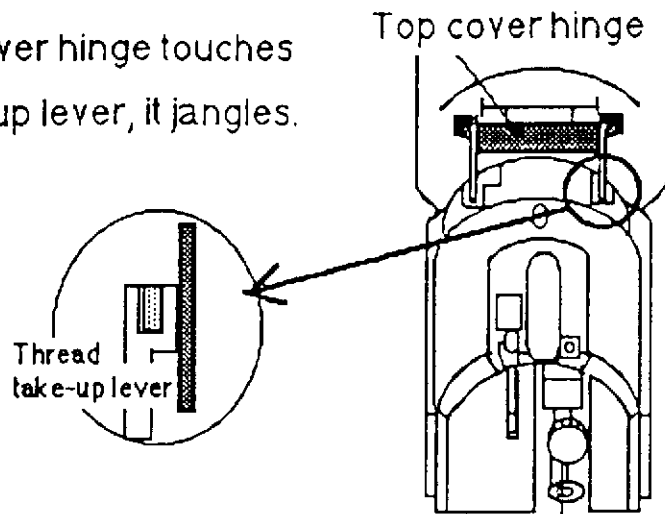
Top cover hinge

Jangle sound

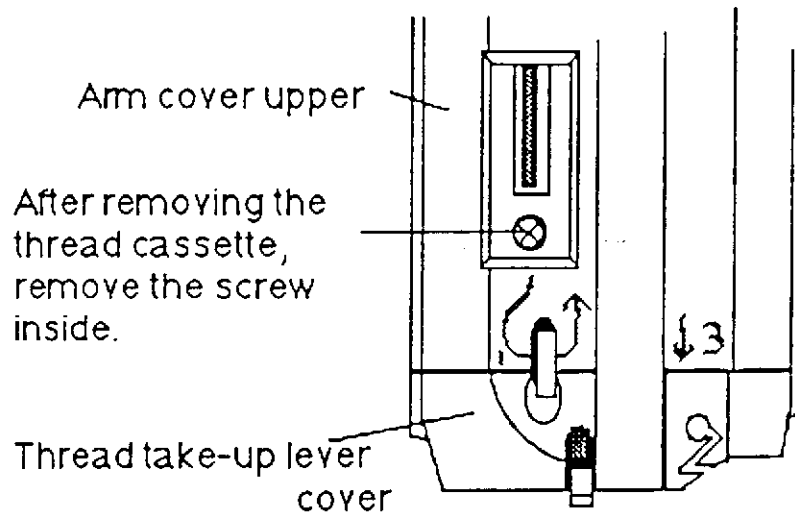
→ Adjustment of top cover hinge  
(p.58)

# Adjustment of Top Cover Hinge

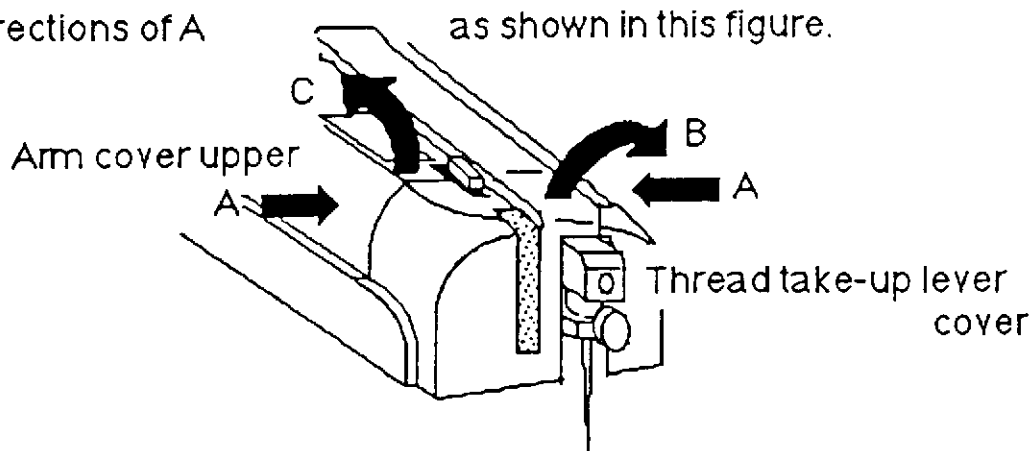
When the top cover hinge touches the thread take-up lever, it jangles.




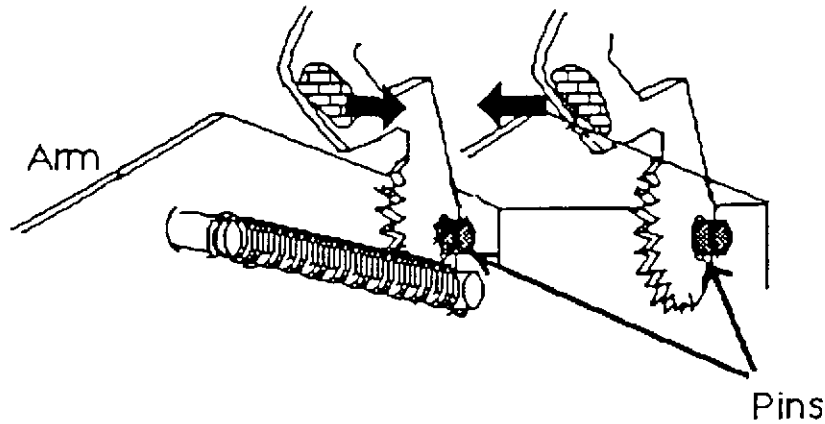
First, remove the arm cover upper and the thread take-up lever cover.



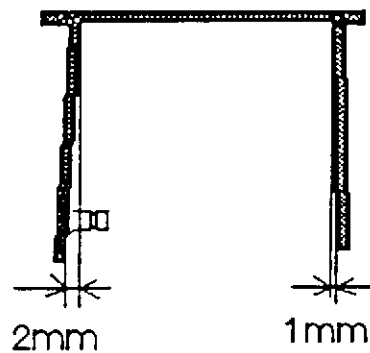
Lift the thread take-up lever cover in the direction of B and the arm cover upper in the direction of C while holding the arm cover upper in the directions of A as shown in this figure.




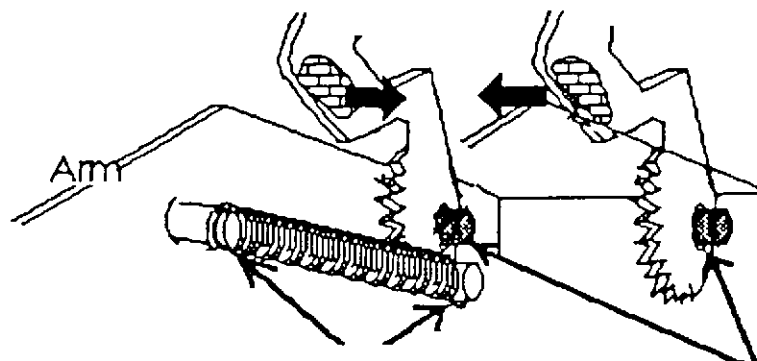
Hold the parts of the hinge marked with  and warp them in the direction of arrows to remove the hinge from the pins.



If the hinge is found deformed, correct it as shown in the figure (or replace it with a new one).



Hold the parts of the hinge marked with  and warp them in the direction of arrows to set the hinge over the pins.

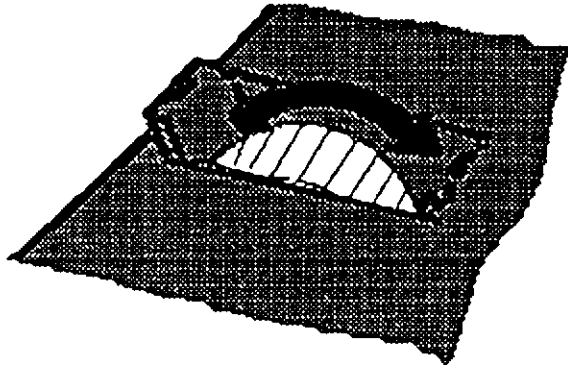


2. Attach the top cover spring to the arm pins with pliers.

1. Set the hinge securely over the pins.  
(both sides)

7. Slow rotation, cannot rotate.

Can you turn the handwheel smoothly?



Rotate

Not rotate

## Rotate

Energize the M motor and check if the motor can run.

While the motor is running, check the clutch to see if it slides.

(Remove the base cover to run the motor.)

When the clutch slides,  
the M motor runs but the  
M timing pulley and the  
M shaft do not follow it.

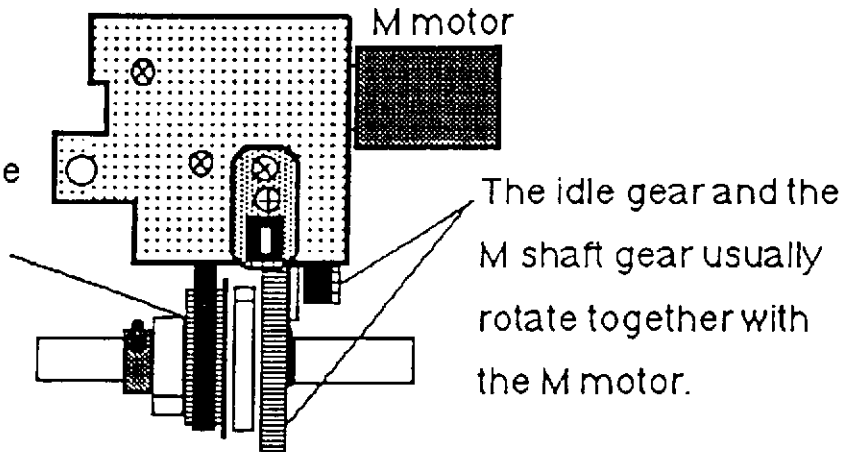


The clutch slides.

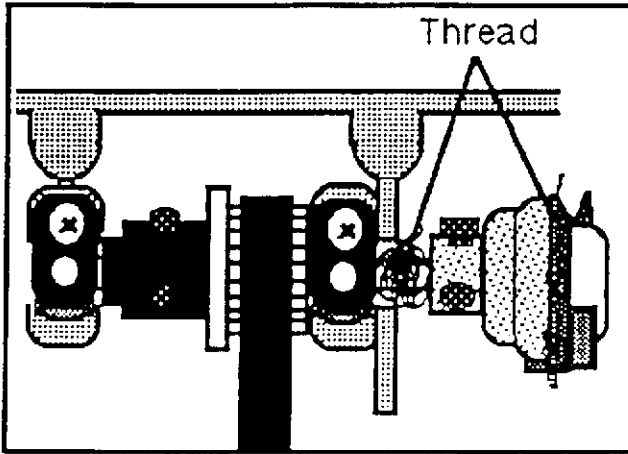
→ Replacement of clutch (p.63)

The motor does not run.

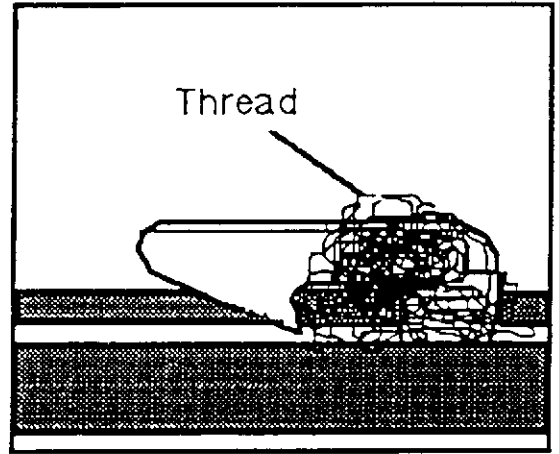
→ Replacement of main motor  
(p.69)



Check the rotary hook and thread take-up lever to see if the thread twined around them.



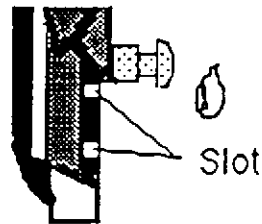
Rotary hook and its shaft



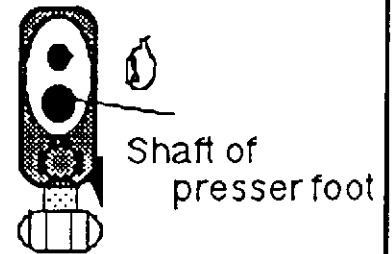
Thread take-up lever (under its cover)

Check the rotary hook and the presser foot to see if lubrication is proper.

Clean out lint or dust before lubrication. (1 or 2 drops of oil is enough.)



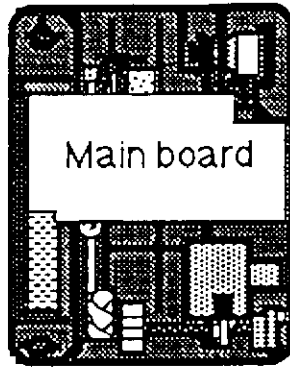
Rotary hook



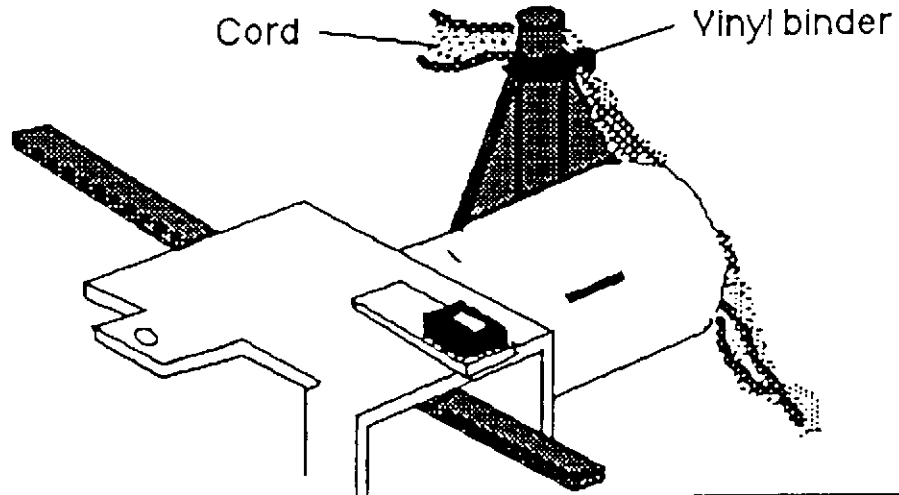
Presser foot

# Replacement of Clutch

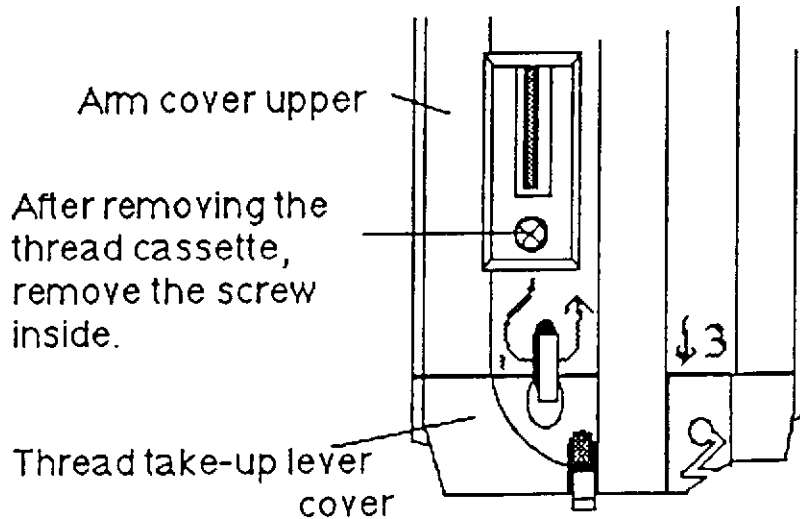
Remove the base cover and remove the main board.



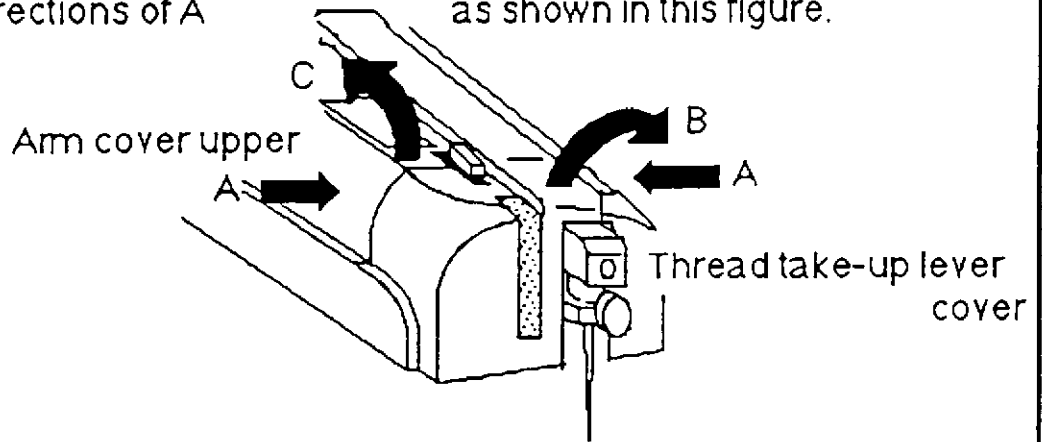
Pull out or cut the vinyl binder attached to the boss of base. Be careful not to scratch the cord.




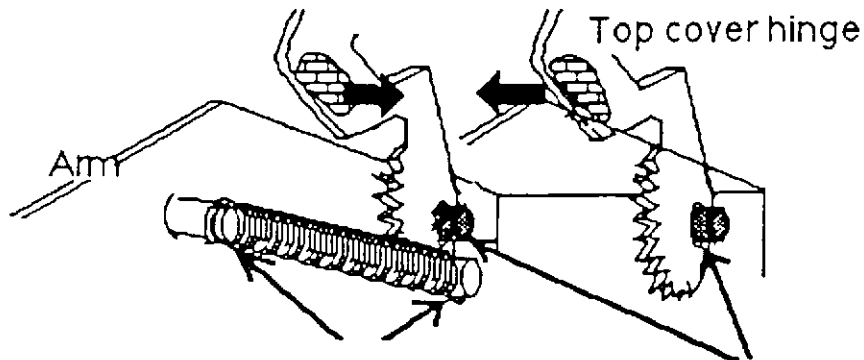
Then remove the arm cover upper and the thread take-up lever cover.



Lift the thread take-up lever cover in the direction of B and the arm cover upper in the direction of C while holding the arm cover upper in the directions of A as shown in this figure.



Hold the parts of the hinge marked with  and warp them in the direction of arrows to remove the hinge from the pins.

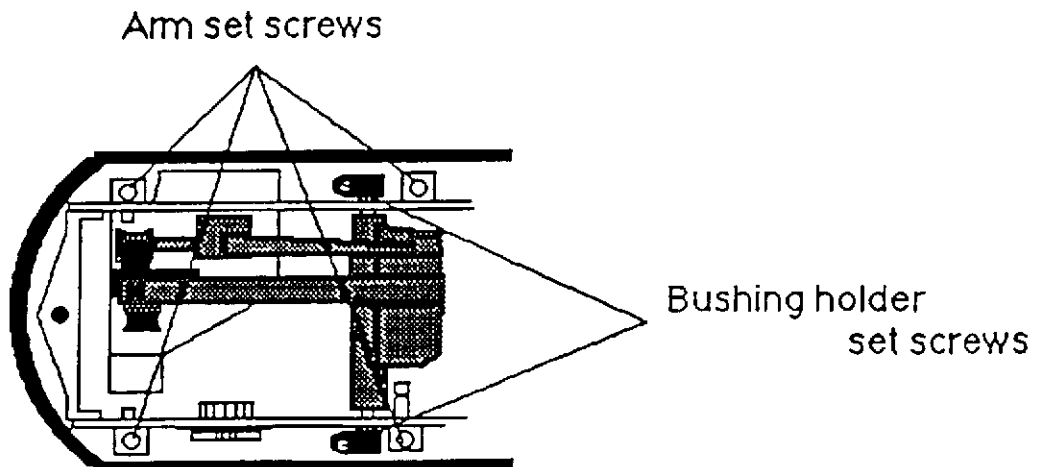


1. Remove the top cover spring from the arm pins.

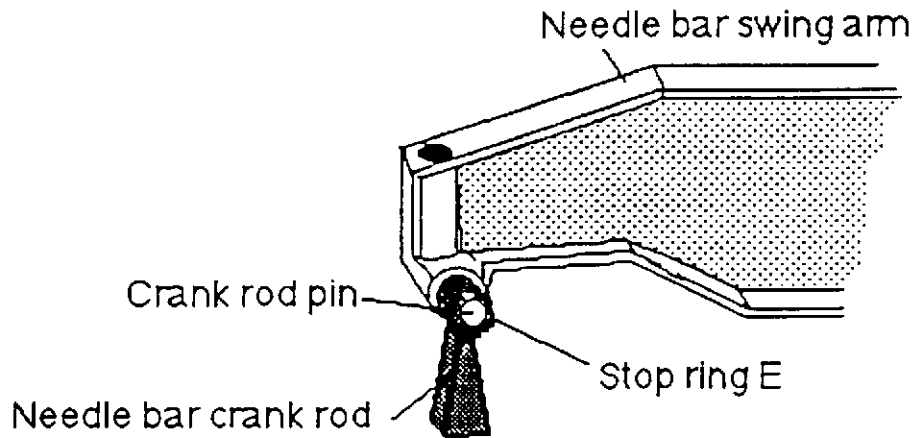
2. Remove the hinge from the pins.

(both sides)

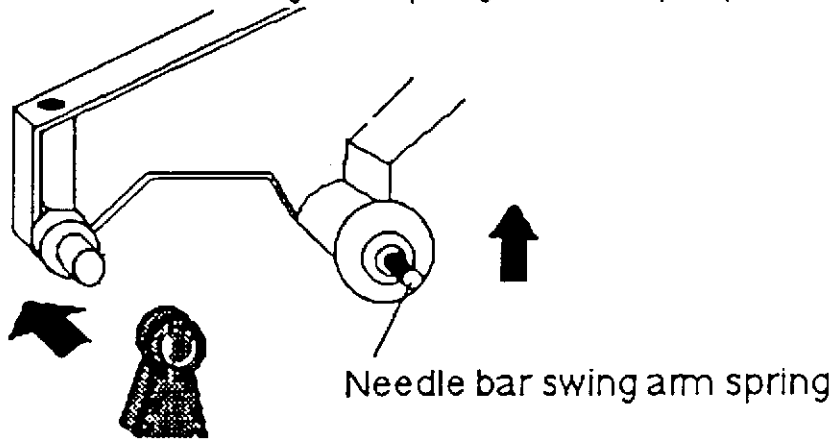
Remove four arm set screws and two bushing holder set screws.



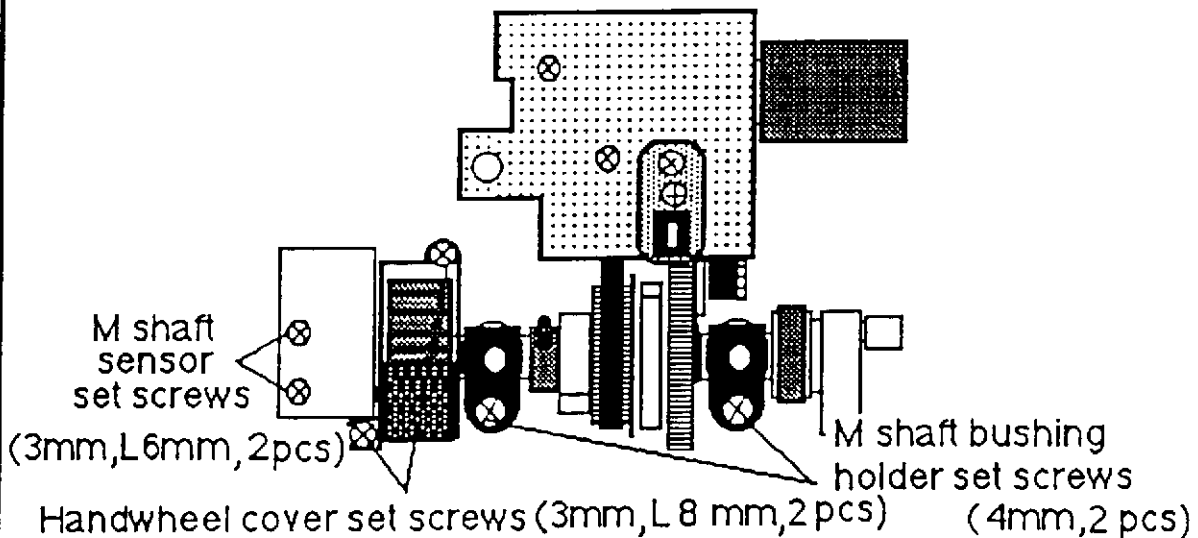
Remove the stop ring E which connects the needle bar crank rod and the needle bar swing arm. Then remove the needle bar crank rod from the crank rod pin.



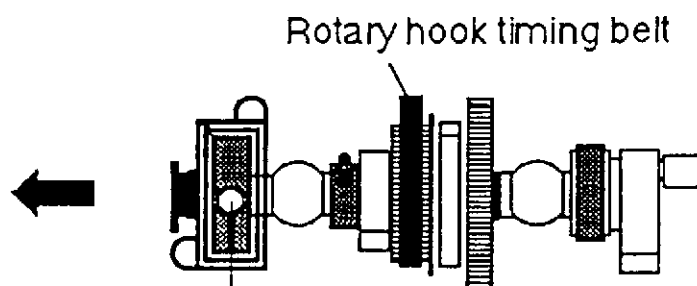
Lift the arm related items and separate them from the base related items.  
See to it that the needle bar swing arm spring does not jump out.



Remove the M shaft from the base.

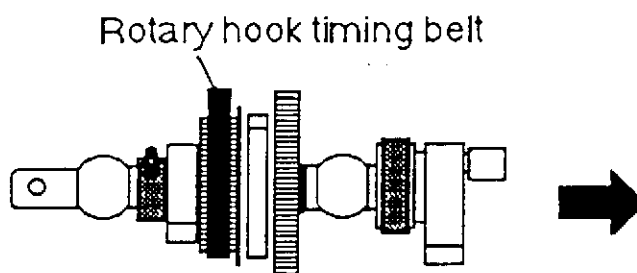


Remove the handwheel set screw and pull the handwheel out of the M shaft, together with the handwheel cover and the M shaft sensor disk.



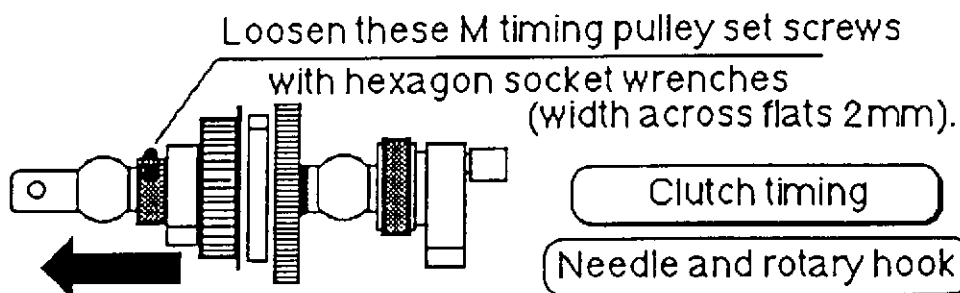
Remove this handwheel set screw with hexagon socket wrenches (width across flats 2.5mm).

Remove the M shaft from the rotary hook timing belt.



Loosen the M timing pulley set screws and pull out the clutch related items (M timing pulley, clutch ring, M shaft gear) from the M shaft. Replace the clutch related items.

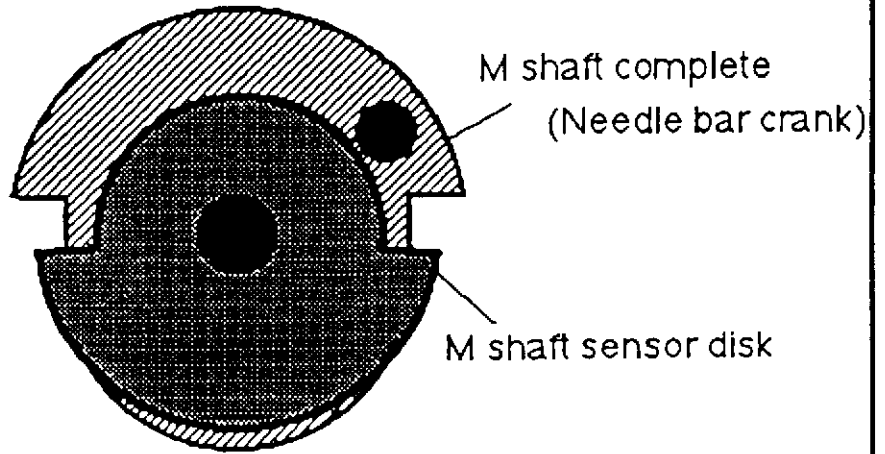
**Be sure to adjust the clutch timing and the needle and the rotary hook after the replacement of the clutch.**



p.68

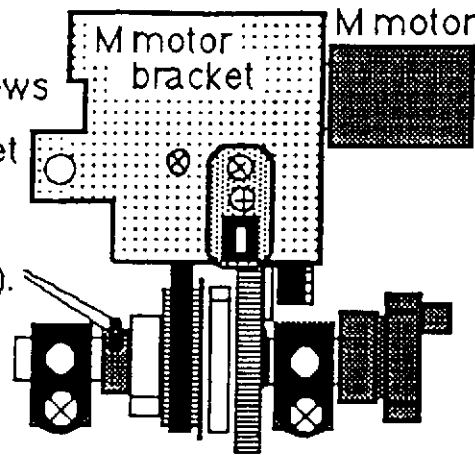
p.44

Take care that the M shaft sensor disk and the M shaft complete come to the position as shown in the figure.

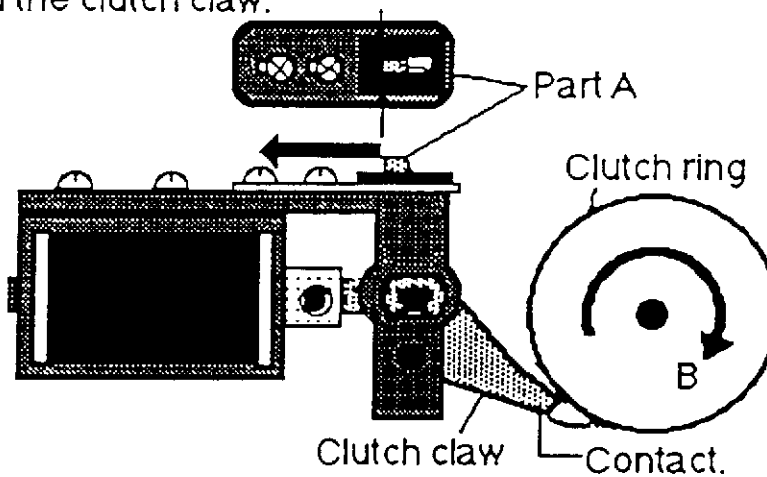


# Adjustment of Clutch Timing

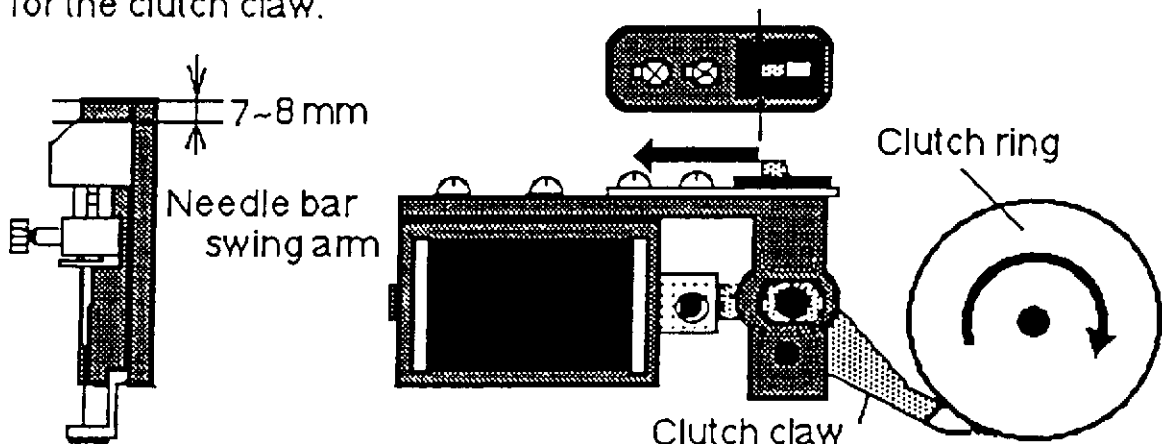
Loosen the set screws with hexagon socket wrenches (width across flats 2.5mm).



Press the part A of the clutch claw to the left as shown in the figure. Turn the handwheel so that the clutch ring rotate toward B and it can contact with the clutch claw.

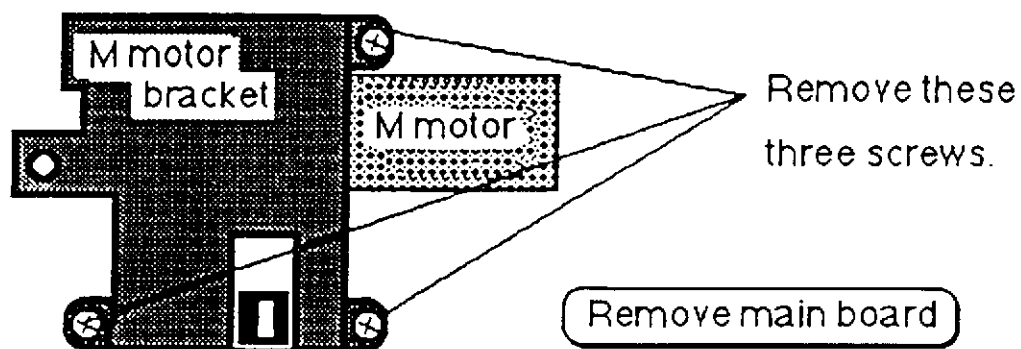


Turn the handwheel further so that the needle bar swing arm goes down 7~8 mm from its highest position and fasten the adjust screws for the clutch claw.

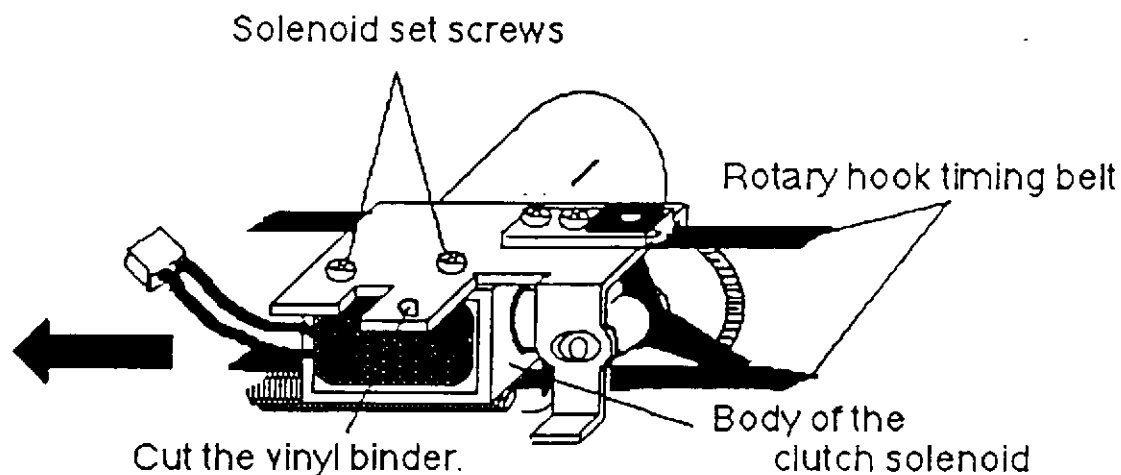


## Replacement of Main Motor

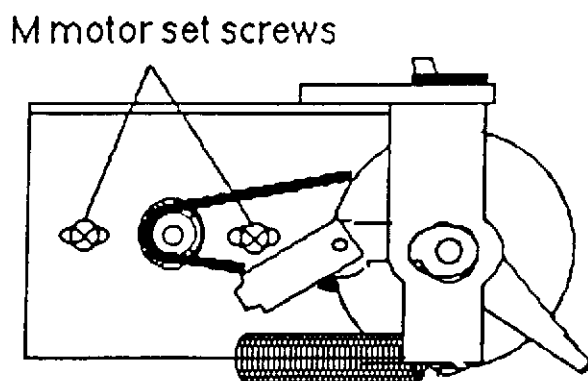
Remove the main board and remove the M motor bracket.



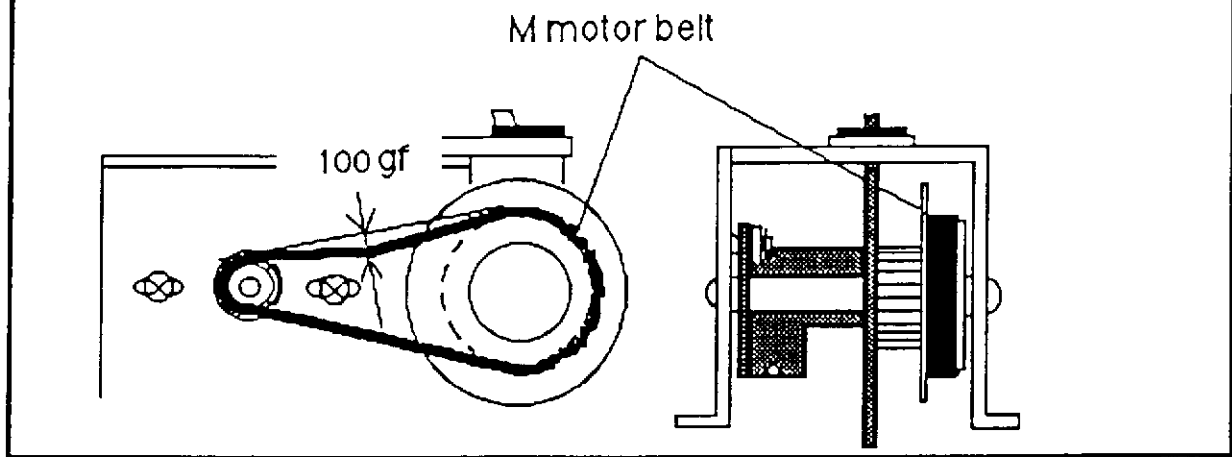
Remove the solenoid set screws and remove the body of the clutch solenoid from the M motor bracket.



Remove the M motor set screws. Remove the M motor from the M motor bracket and replace it with a new one.



When applying 100 gf load to the M motor belt, set the deflection to 2~4 mm by sliding the M motor position.



## 8. Incorrect trouble detection

Select a trouble detected incorrectly.

- Thread broken!      See page 72.
- Cover opened!      See page 75.
- Thread twined!      See page 77.
- Frame overloaded!      See page 78.

Make sure of the following points before adjustment.

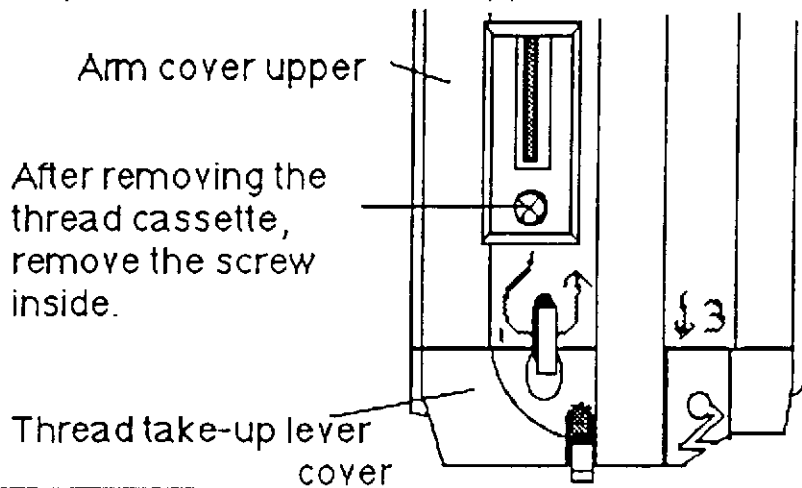
- Is the thread exclusive for POEM used? See page 40.
- Is threading correct? See page 41.

If no abnormality is found, check and adjust the following items:

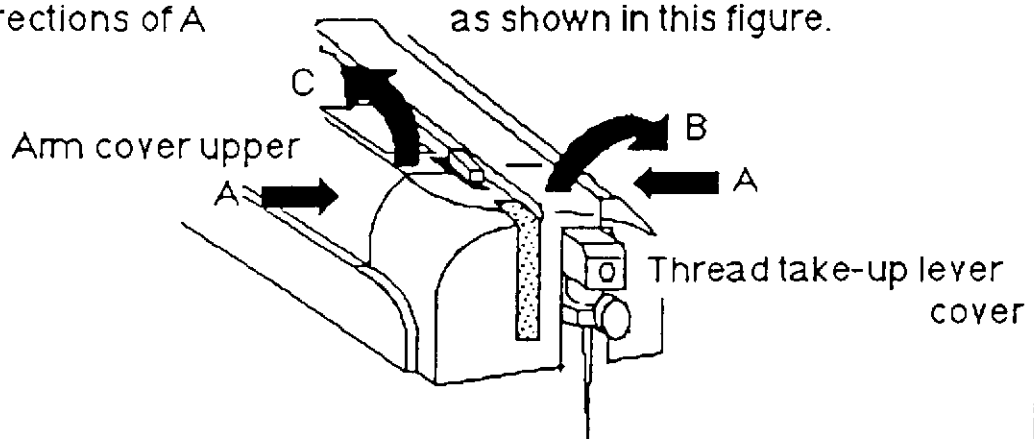
- Lower thread tension p.42
- Upper thread tension p.43
- Upper thread sensor p.73

## Adjustment of Upper Thread Sensor

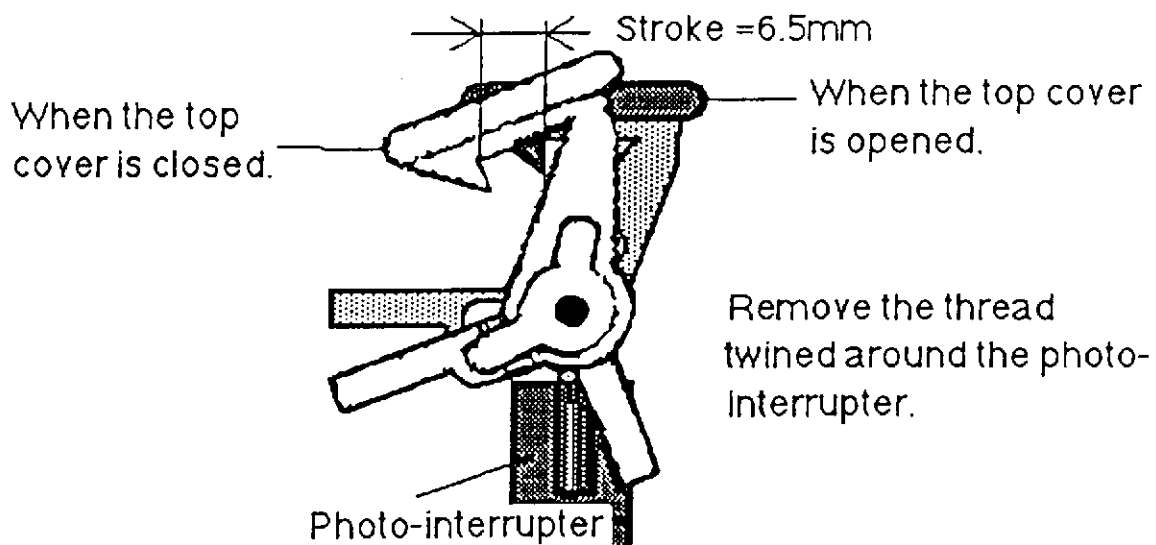
First, remove the arm cover upper and the thread take-up lever cover.



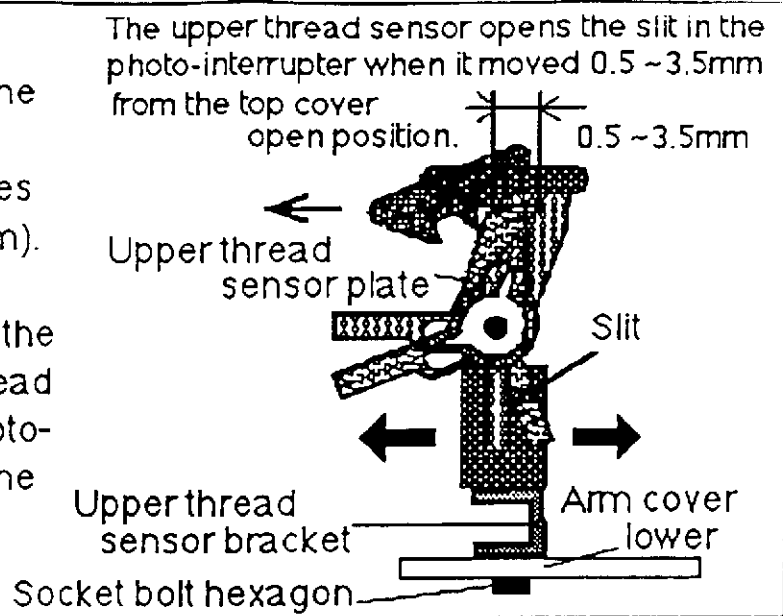
Lift the thread take-up lever cover in the direction of B and the arm cover upper in the direction of C while holding the arm cover upper in the directions of A as shown in this figure.



Check the upper thread sensor to see if it works smoothly.



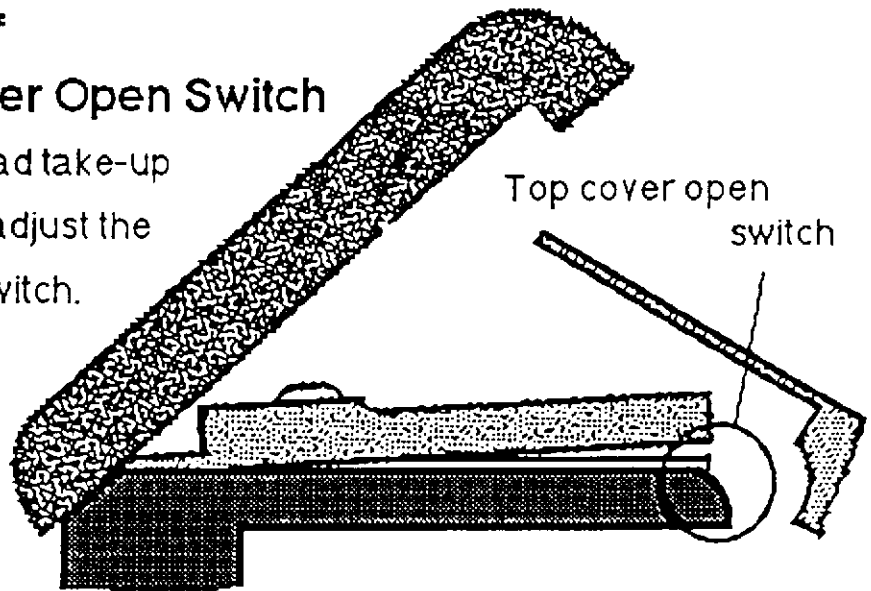
Loosen the socket bolt hexagon at the back of the arm cover lower with hexagon socket wrenches (width across flats 2.5mm). Slide the upper thread sensor bracket to adjust the position of the upper thread sensor plate and the photo-interrupter as shown in the figure.



□ Cover opened!

## Adjustment of Top Cover Open Switch

Remove the thread take-up lever cover, and adjust the top cover open switch.

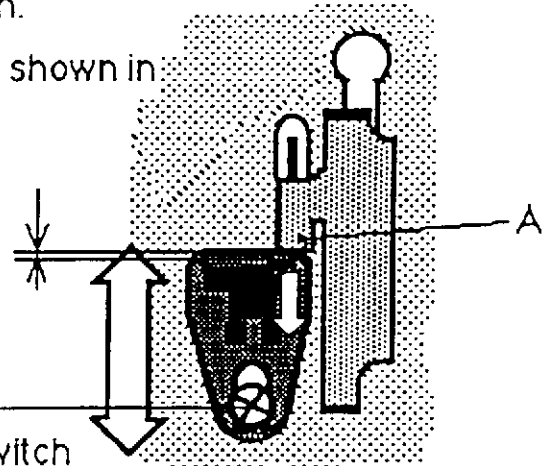


Remove the thread take-up lever cover, and loosen the adjust screw for the top cover open switch.

Adjust the position of the switch as shown in the figure.

When you shut the top cover, the clearance between A and the top of the switch lever pressed fully should be  $0.7 \pm 0.5$  mm

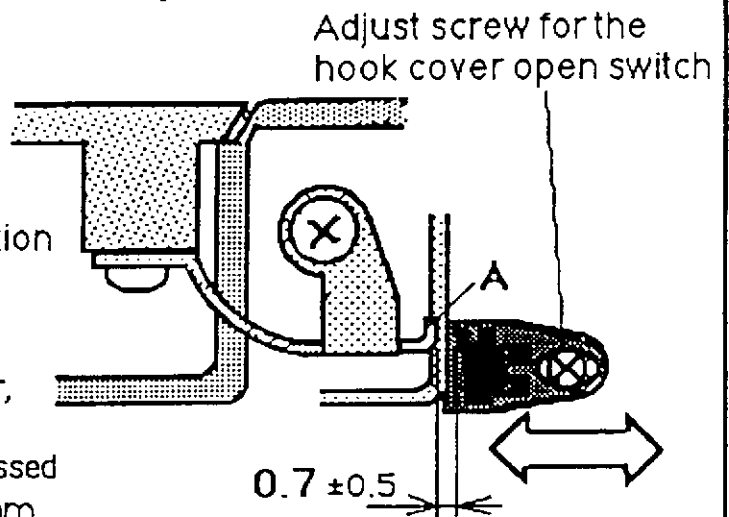
Adjust screw for the top cover open switch



## Adjustment of Hook Cover Open Switch

Remove the base cover.  
Loosen the adjust screw for the hook cover open switch and adjust the position of the switch as shown in the figure.

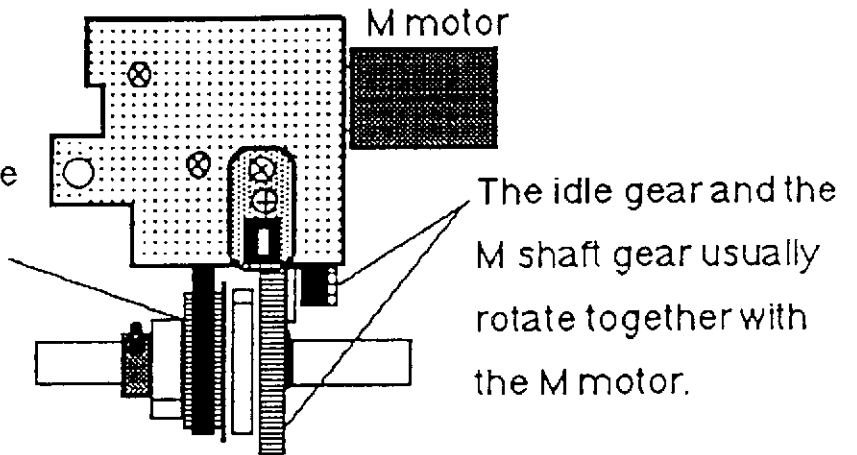
When you shut the hook cover, the clearance between A and the top of the switch lever pressed fully should be  $0.7 \pm 0.5$  mm



□ Thread twined!

When the thread twined message is indicated, a cause of defective clutch can be considered. Remove the base cover and check the clutch to see if it slides.

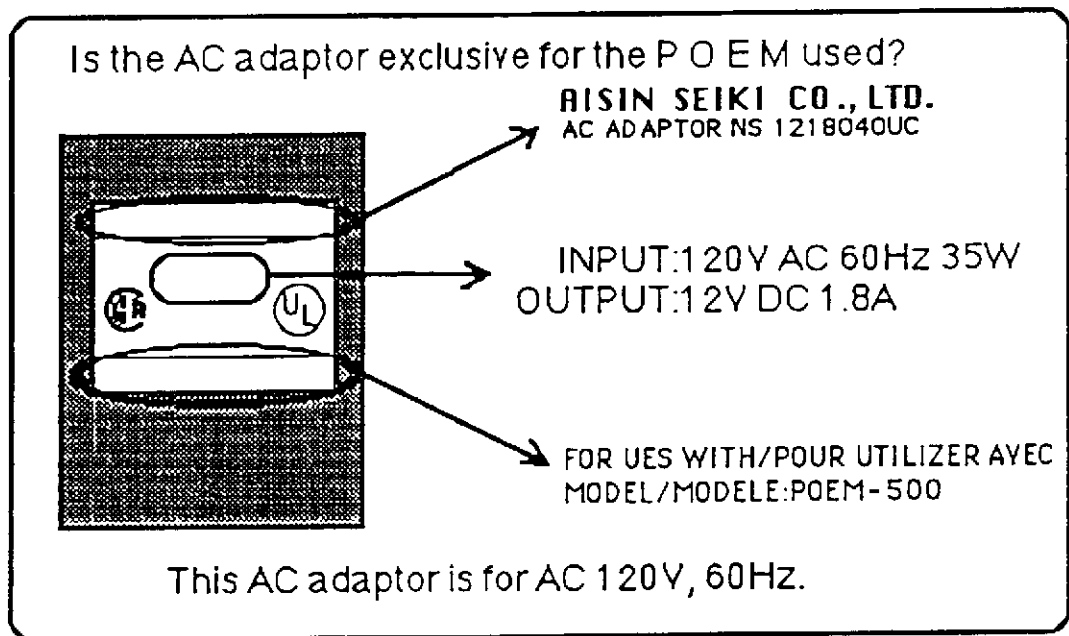
When the clutch slides, the M motor runs but the M timing pulley and the M shaft do not follow it.



- The clutch slides. → Replacement of clutch (p.63)
- The clutch does not slide. → Replacement of M shaft sensor board (p.35)
- The motor does not run. → Replacement of main motor (p.69)

Frame overloaded!

Make sure of the following points before adjustment.



What happens after restart embroidering when frame overload!  
message is indicated?

Restart embroidering.

—————> **Replacement of X motor and Y motor**  
(p.79)

Provide incorrect compensation for X direction.

—————> **Replacement of X motor and X sensor board**  
(p.33)

Provide incorrect compensation for Y direction.

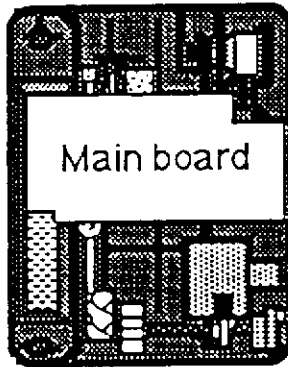
—————> **Replacement of Y sensor board**  
(p.82)

Frame overload! message again.

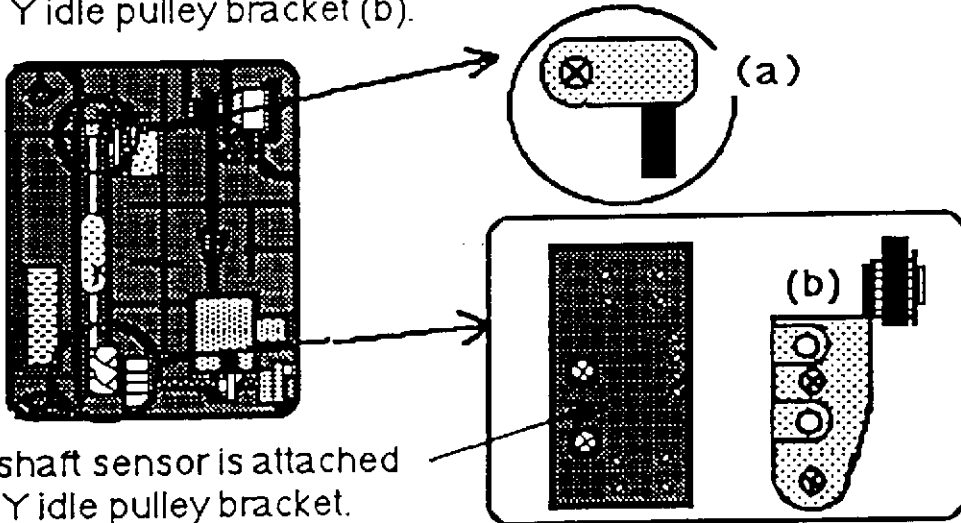
—————> **Replacement of X motor and Y motor**  
(p.79)

# Replacement of X Motor And Y Motor

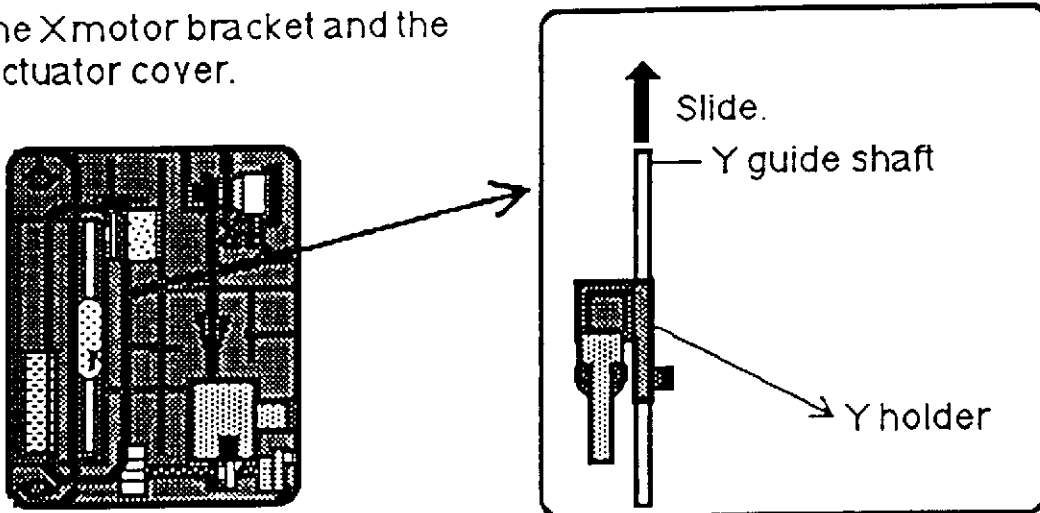
Remove the base cover and remove the main board.



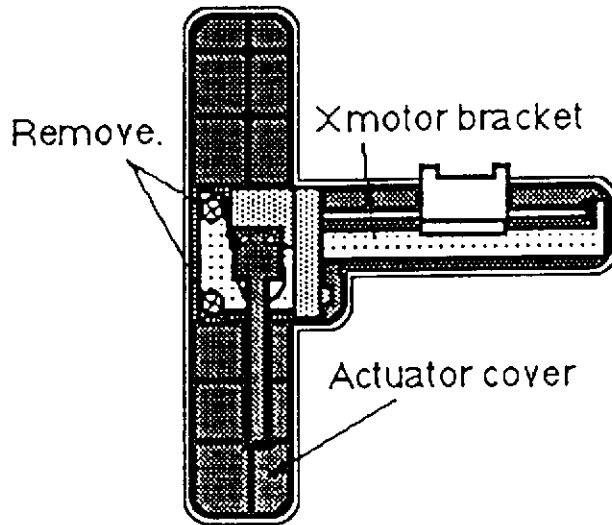
Remove the M shaft sensor, and remove the Y guide shaft bracket (a) and the Y idle pulley bracket (b).



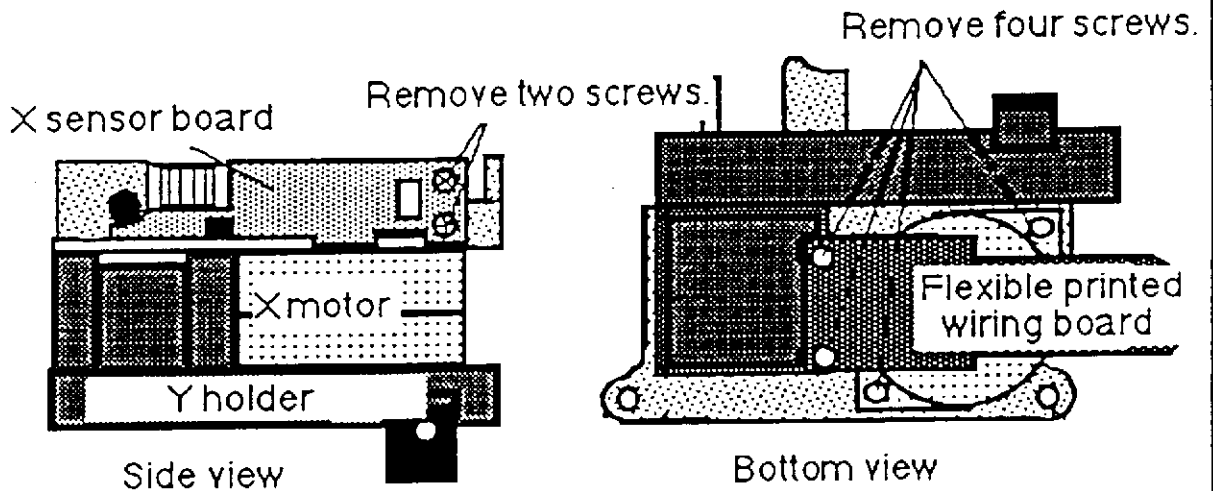
Remove the Y guide shaft and take out the Y holder together with the X motor bracket and the actuator cover.



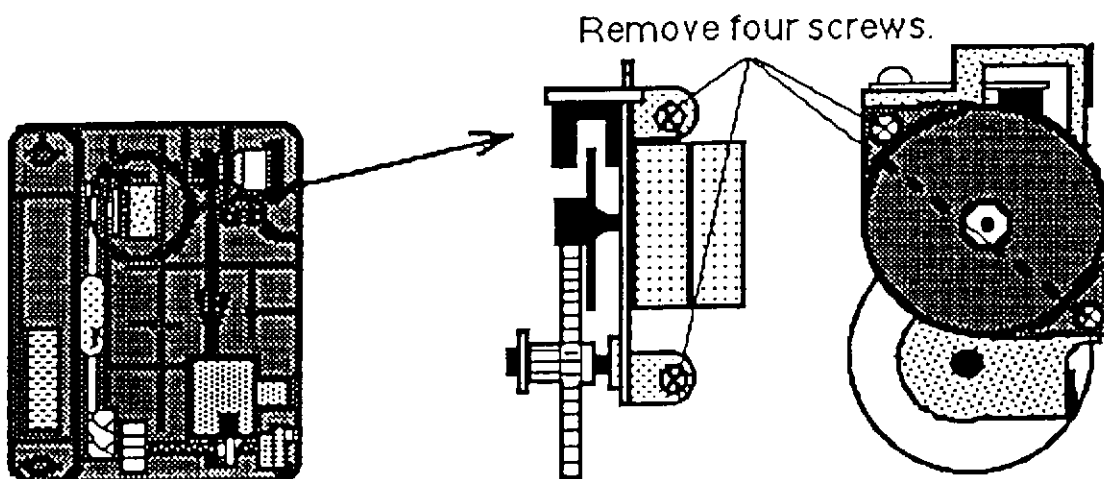
Remove the X motor bracket from the actuator cover.



Replace the X motor with a new one.

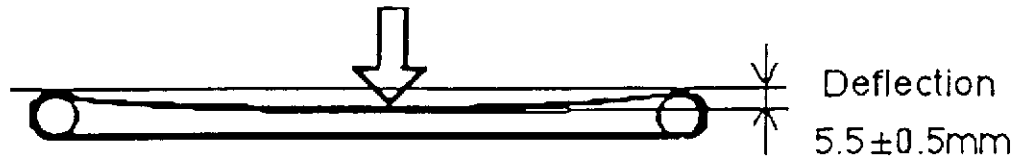


Remove the Y motor bracket and replace the Y motor.



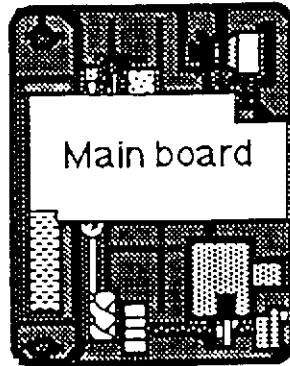
When assembling the Y motor bracket, set the Y timing belt tension as shown in this figure.

Apply 100gf static load to the middle of the belt.

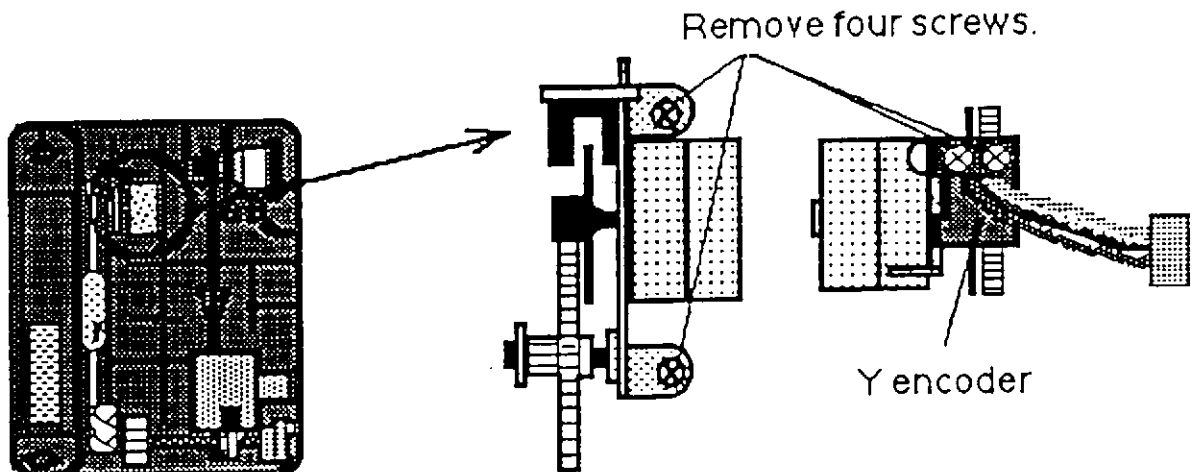


## Replacement of Y Sensor Board

Remove the base cover and remove the main board.

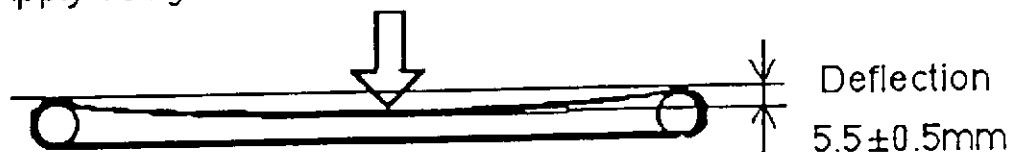


Remove the Y motor bracket and replace the Y encoder.



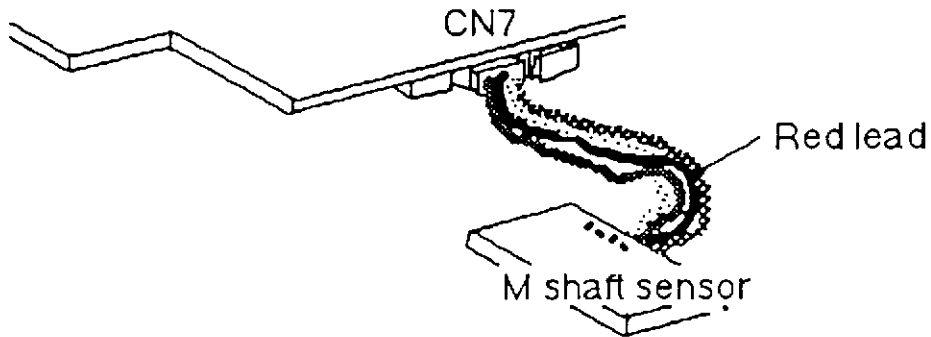
When assembling the Y motor bracket, set the Y timing belt tension as shown in this figure.

Apply 100gf static load to the middle of the belt.



## 9. Tear in the cloth, coming off of the frame

Remove the base cover. Check the leads of the M shaft sensor to see if they shorted.



The leads shorted.

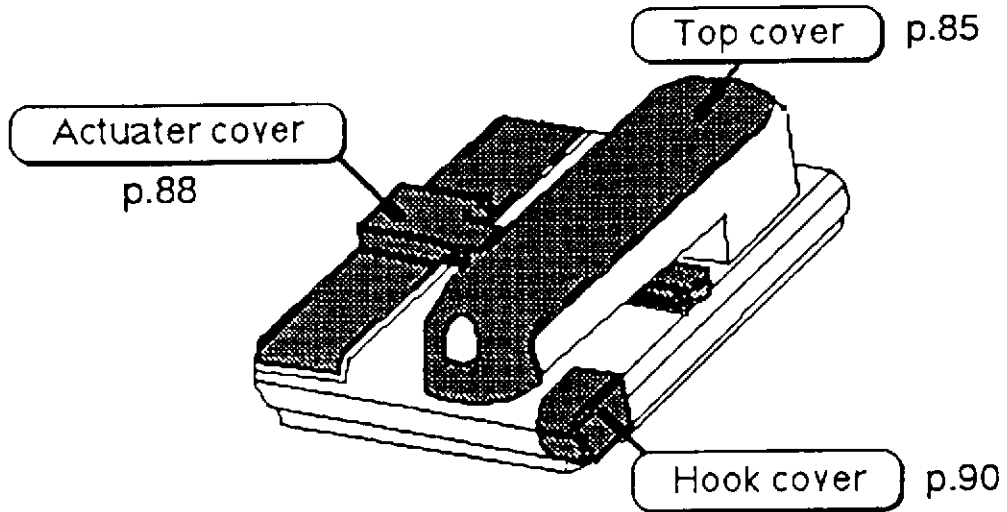
→ Replacement of M shaft sensor board  
(p.35)

OK

→ Adjustment of clutch timing  
(p.68)

## 10. Failure and breakage of covers

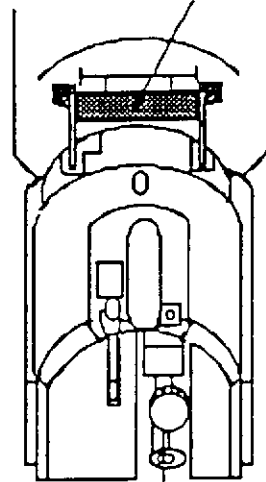
Select the fault cover.



## Replacement And Adjustment of Top Cover

Check the top cover hinge to see if it comes off.

Top cover hinge



Come off

Not come off

p.86

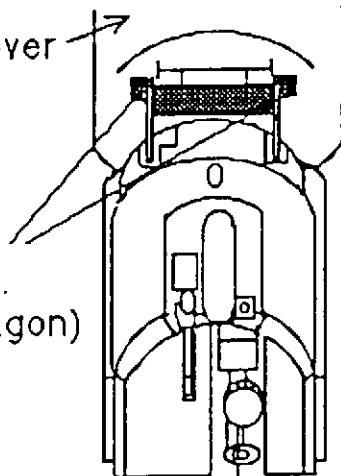
p.85

Not come off

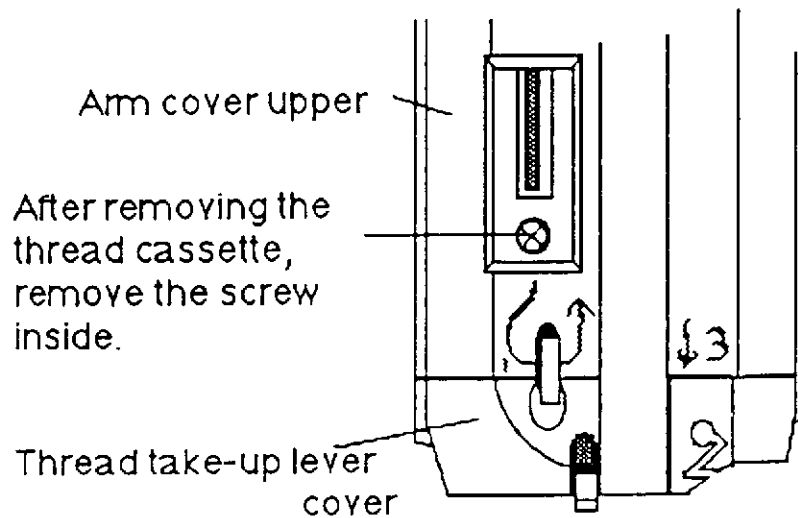
Remove the top cover set screws and correct the position of the top cover or replace it with a new one.

Top cover

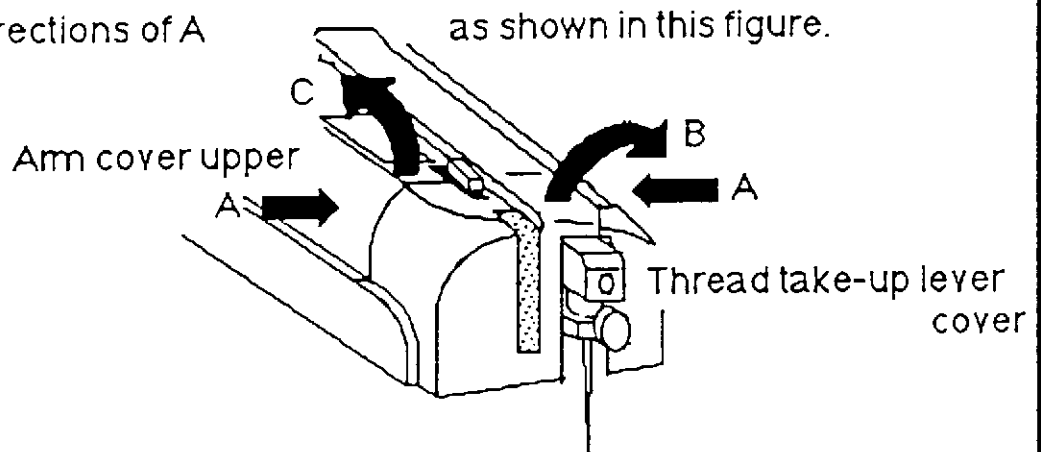
Remove these.  
(Socket bolt hexagon)




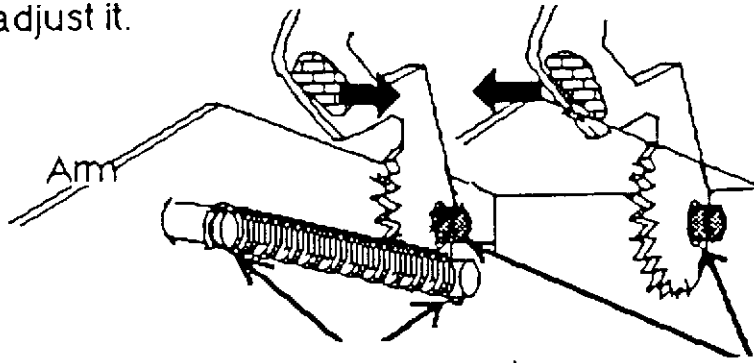
First, remove the arm cover upper and the thread take-up lever cover.



Lift the thread take-up lever cover in the direction of B and the arm cover upper in the direction of C while holding the arm cover upper in the directions of A as shown in this figure.



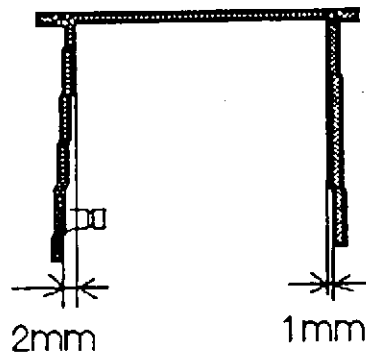
Hold the parts of the hinge marked with  and warp them in the direction of arrows to remove the hinge from the pins. Then adjust it.



2. Attach the top cover spring to the arm pins with pliers.

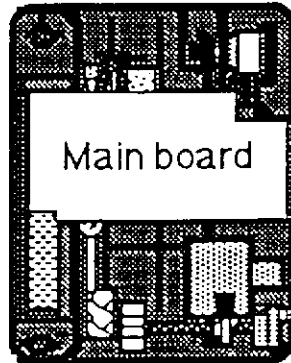
1. Set the hinge securely over the pins.  
(both sides)

If the hinge is found deformed, correct it as shown in the figure (or replace it with a new one).

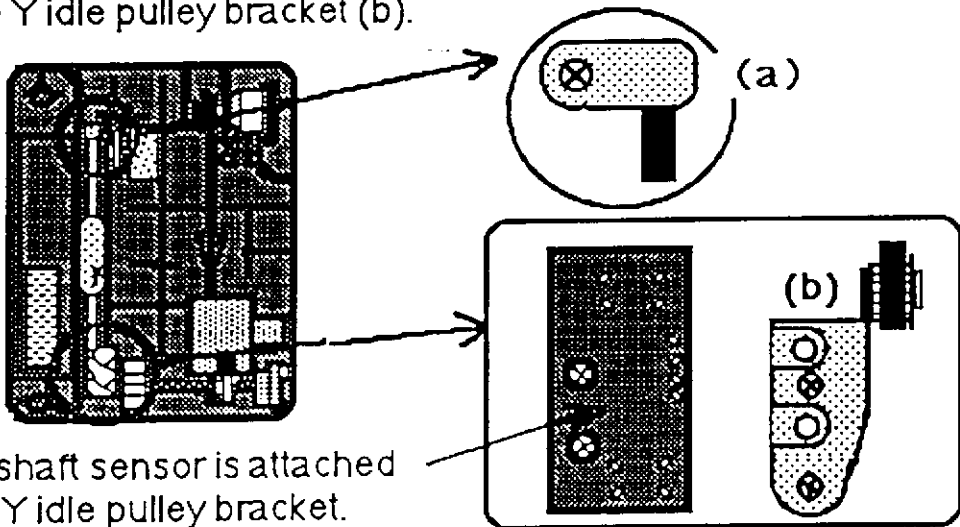


## Replacement of Actuator Cover

Remove the base cover and remove the main board.

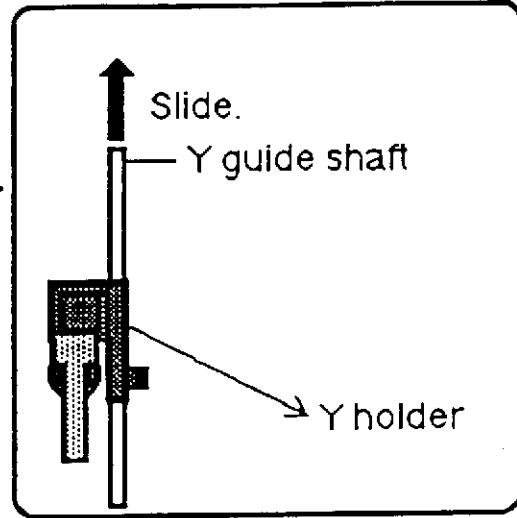
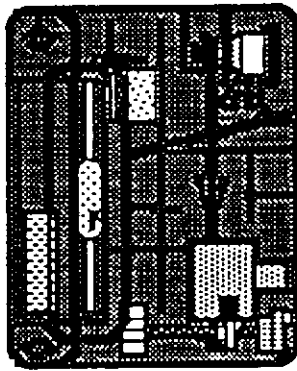


Remove the M shaft sensor, and remove the Y guide shaft bracket (a) and the Y idle pulley bracket (b).

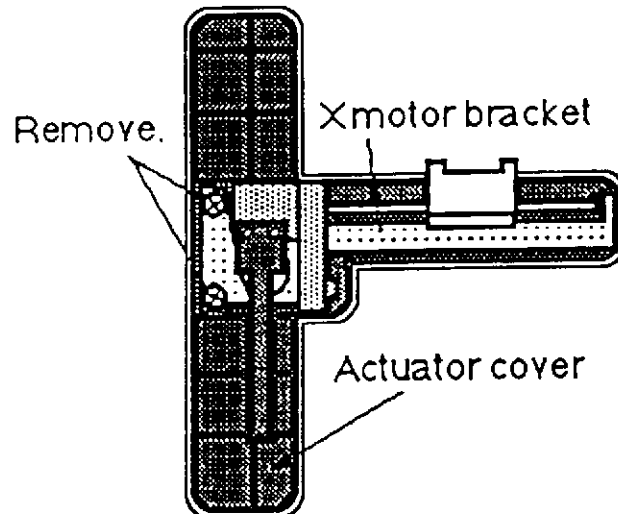


The M shaft sensor is attached to the Y idle pulley bracket.

Remove the Y guide shaft and take out the Y holder together with the Xmotor bracket and the actuator cover.

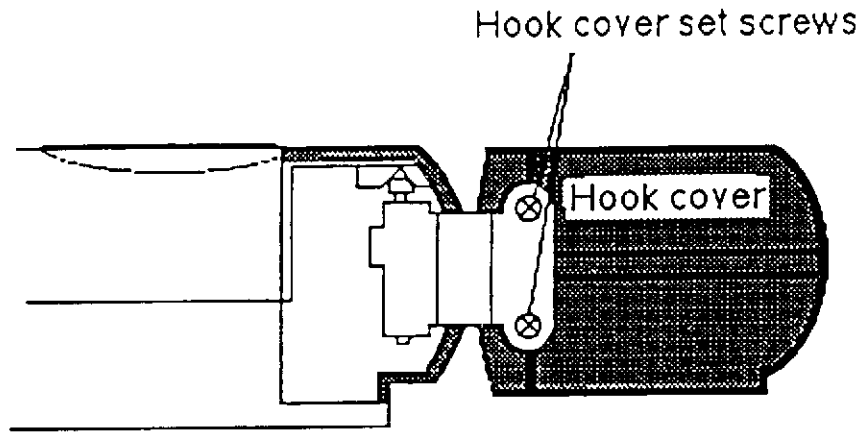


Remove the Xmotor bracket from the actuator cover and replace it with a new one.



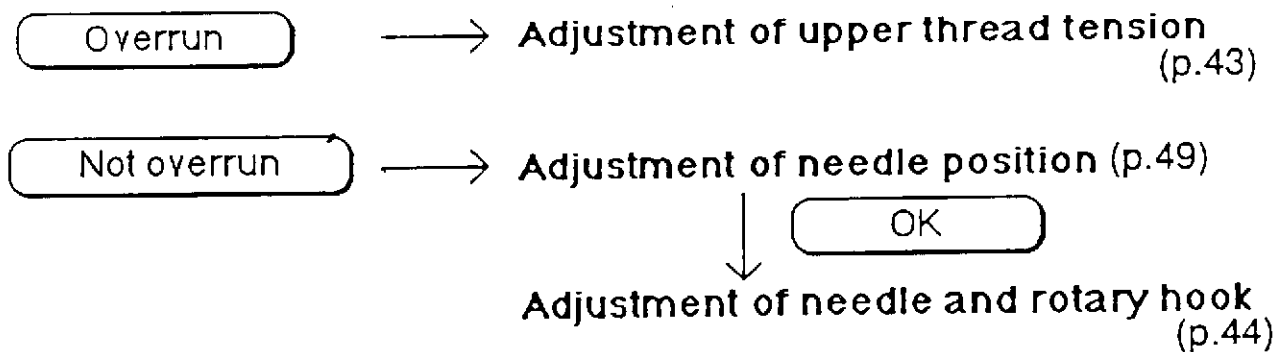
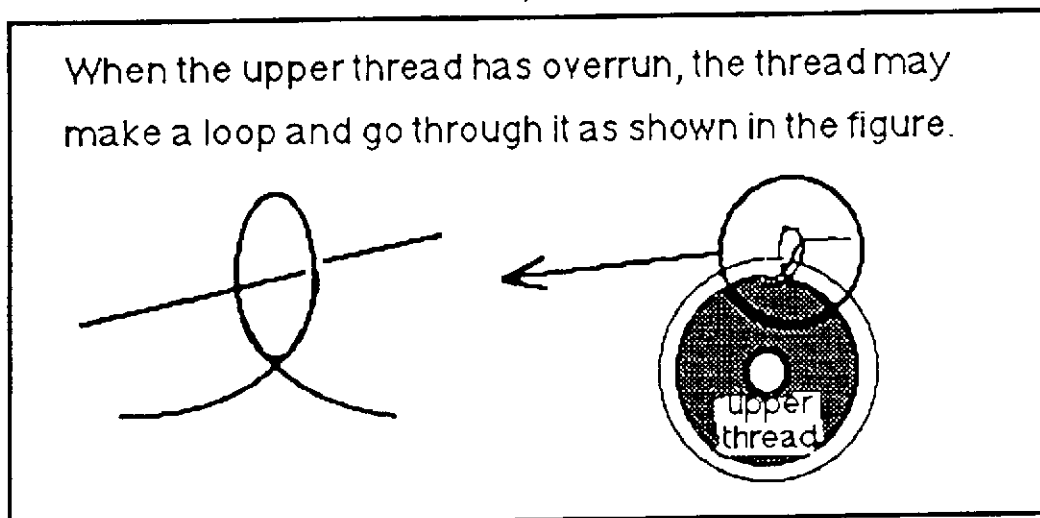
## Replacement of Hook Cover

Remove the hook cover set screws and replace the hook cover with a new one.



## 11. Needle breakage

When the needle has broken, check the upper thread to see if it overruns in the cassette before adjustment.



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