

COM[®] WAS-250-30/50 WAS-400-30/50

AUTOMATIC TAPING MACHINE

MAINTENANCE MANUAL



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Introduction

This manual introduces instructions and explanation for replacement and adjustment which are usually practiced when changing major parts.

This manual also describes finding of causes of troubles based on the experienced troubles and problems. The cause of such troubles and the measures to be taken will be useful when operators/engineers operate check-up, adjustment, disassembly and reassembly of the machine.

Manufacturer
TAIYO SEIKI CO., LTD..



CAUTION

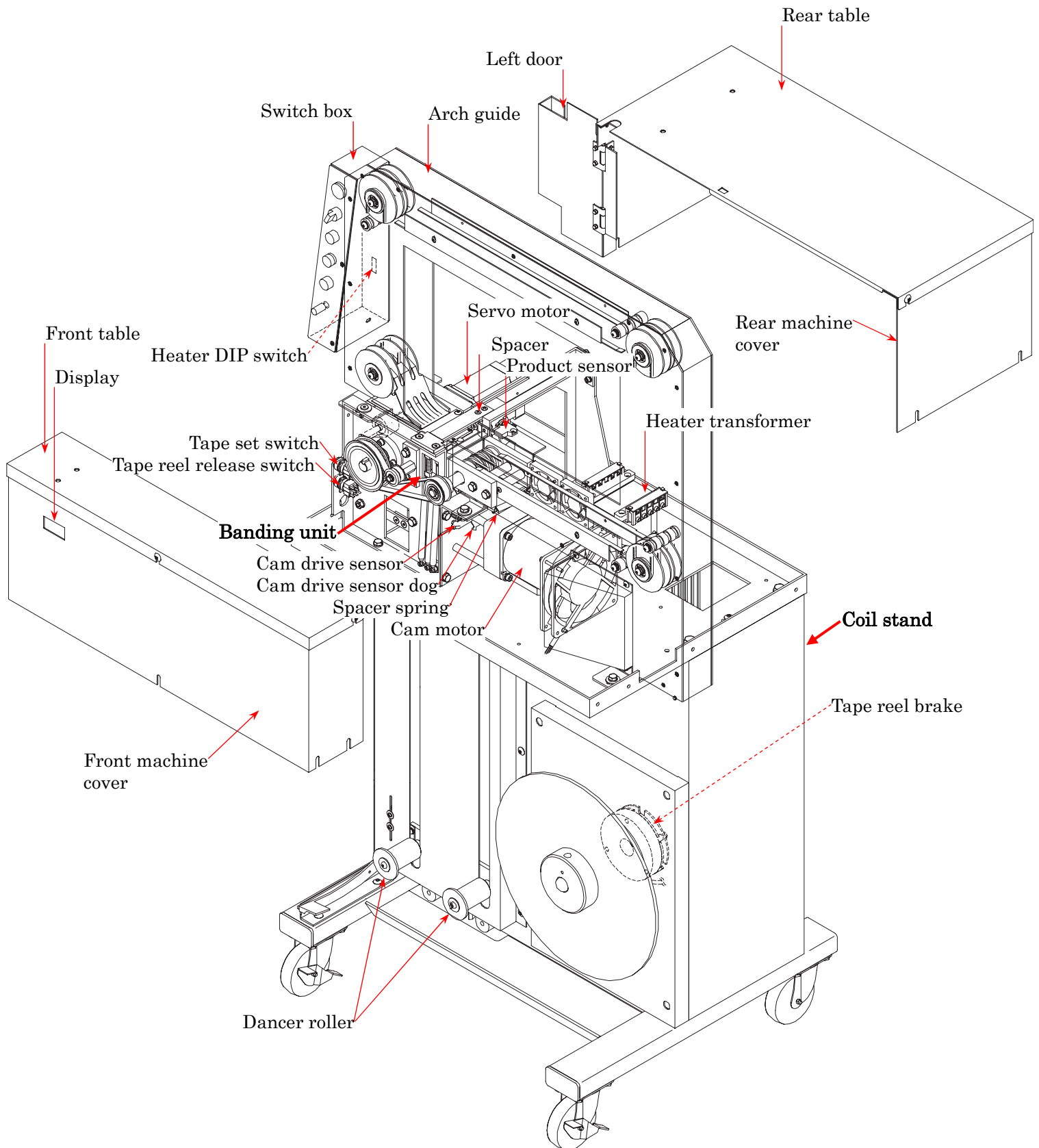
Do not fail to turn off the power switch when changing or adjusting any assy/part. Very careful work is required as there is a risk of causing accidents and physical damages. Make sure heater has been cooled down sufficiently as hot heater will cause burn when touching parts around the heater. The manufacturer of this machine cannot be responsible for any mechanical and physical damages caused during operations.



WARNING

Check, adjustment, disassembly and reassembly of this machine must be operated by the experienced or authorized engineers/operators only. These works must be practiced after reading and understanding this manual thoroughly.

Name of each component



How machine works

The machine functions must be understood thoroughly so that troubleshooting can be operated safely.

WAS features unique functioning of banding and tape setting inside the arch guide.

Banding can be started by pressing the manual switch in the manual mode or by detecting a workpiece (product) in the machine. The tape is wound around the workpiece in the machine, then the tape is sealed and cut. This is one cycle of operation. When the workpiece is take out the tape is set inside the arch guide again, so that the next cycle of operation can be started. The phase when the tape has been set and is ready to run, is the home position (origin) of the machine.

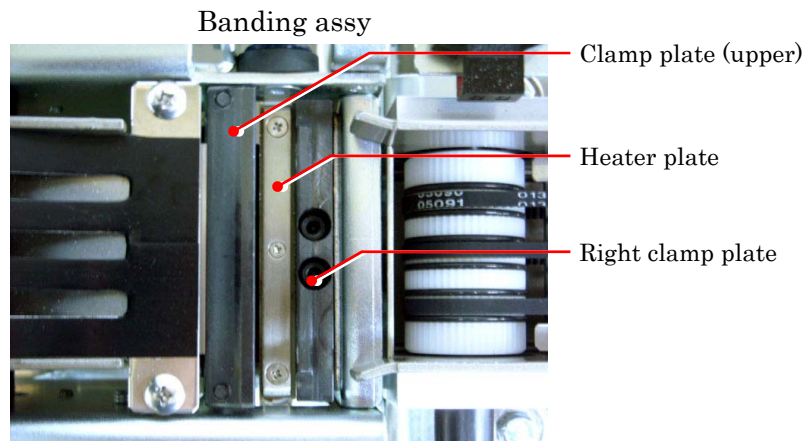


Home position

Soon after a cycle of run is started, the clamp plate (upper) grips the tape head.

Then the servo motor runs and roller pulls the tape. When the tape is wound around the workpiece in the machine, the right clamp plate and the clamp plate (lower) grip the tape keeping the tape securely tensioned, the cutter cuts the tape, and the heater seals the tape. The spacer between the work and the tape will move back permitting the spacer to move back to its home position. The taping cycle is completed now.

When the finished workpiece is taken out the product sensor will be energized to run the roller for feeding the tape into the arch guide (now back to the home position).



Troubleshooting

◆ Machine start-up failure

1. Banding cannot be operated when pressing the manual switch to on in the manual mode or when the product in the machine cannot be detected in the automatic mode.

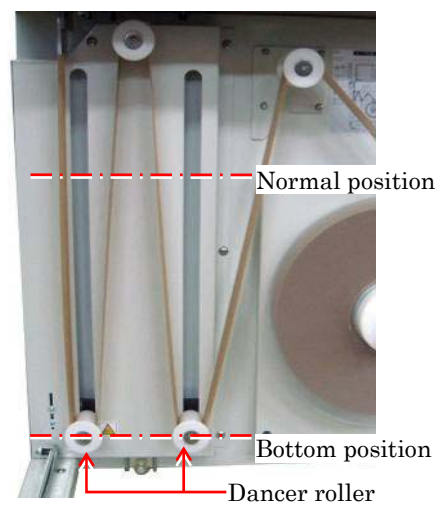
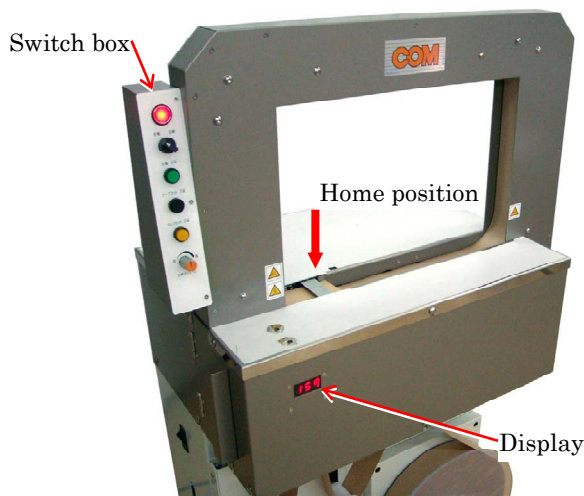
CAUSE: The machine is not in the home position or the dancer roller is at the bottom position even when the machine is in the home position.

REMEDY: Press the tape cut switch.



← Tape cut switch

Switch box



2. [Er1] is indicated on the display

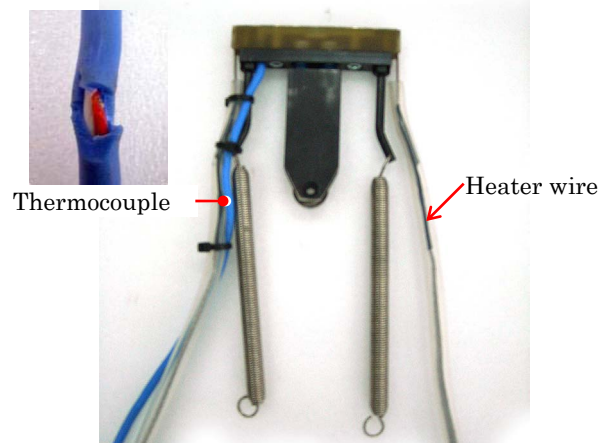
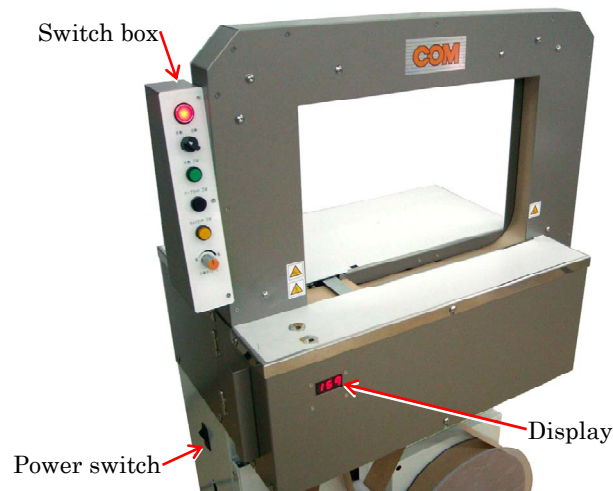
CAUSE: Heater temperature cannot rise because of thermocouple or heater wire damage.

REMEDY: Replace the heater plate assy.

REF.: Heater plate assy replacement (P.29)



Heater plate assy



Heater assy

3. [Er2] is indicated on the display

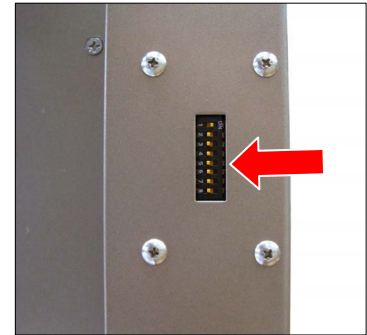
CAUSE: Data of temperature is not programmed.
 REMEDY: Set the temperature of the heater.

Method how to set heater temperature

Heater DIP switch is on the reverse side of switch box. Turn on only one of the switches out of 1 to 8, and turn off the rest of all those switches.

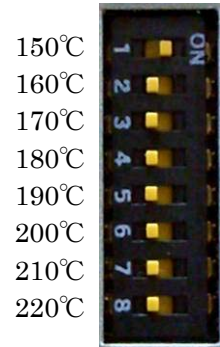
Temperature set by DIP switch will be outputted onto the display.

* When more than one switches are on, the lowest switch is on.



Switch box (reverse side)

OFF ↔ ON



Heater DIP switch

A rough guide of heater temperature

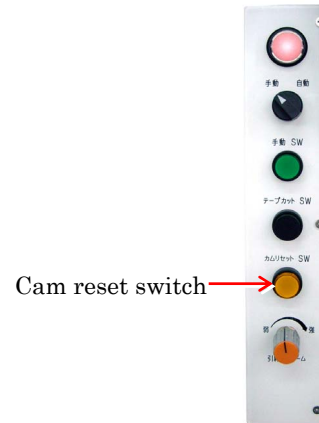
Tape type	Heater temperature	Switch No.
Film tape (OPP,40 μ)	160°C	No.2 ON
Film tape (OPP,60 μ)	170°C	No.3 ON
Film tape (OPP,80 μ)	180°C	No.4 ON
Paper tape		

4. [Er3]/[Er4]/[Er5] is indicated on the display

CAUSE: The other failure

REMEDY: Check for the alarming condition and press the cam reset switch after restart the machine.

*These alarm signals will be released by pressing the cam reset switch. If the situation cannot be improved, please contact your local agent.



Switch box

Table of error appearance

Error No.	Alarm signal	Details
Er1	Heater temperature alarm	Heater cannot keep the preset level.
Er2	Heater temperature setting alarm	Data of temperature is not programmed.
Er3	Cam motor alarm	Cam motor will stop when it continues to turn for more than 5 sec. due to timer.
Er4	Tape brake alarm	Tape brake is not fair. *There may be a case that this signal is outputted when the tape is runout completely. Set a new tape reel after pressing the cam reset switch for clearing this alarm signal.
Er5	Roller servo motor alarm	Servo motor is not fair.

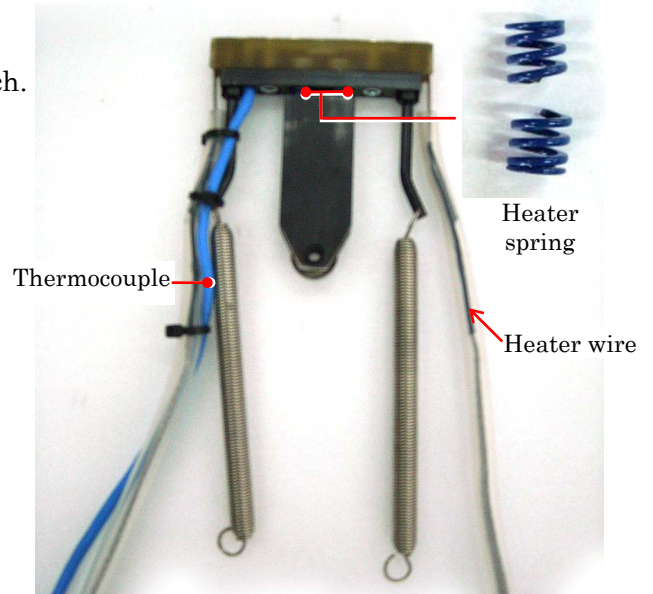
◆ **Tape sealing failure**

1. Sealing failure

CAUSE(1): Inadequate heater temperature.
 REMEDY: Select the appropriate heater DIP switch.
 REF.: Machine start-up failure (P. 5)

CAUSE(2): Heater spring damage
 REMEDY: Replace the heater spring.
 REF.: Heater spring replacement (P.30)

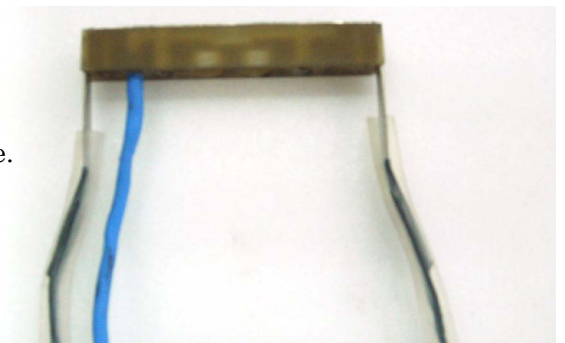
* If the sealed tape ends are not matching, the clamp plate is not adequately gripping the tape end. This causes no allowance of tape sealing area. Adjust the clamp plate function.
 REF.: Sealed tape end adjustment failure (P.8)



Heater assy

2. [Er1] is indicated on the display

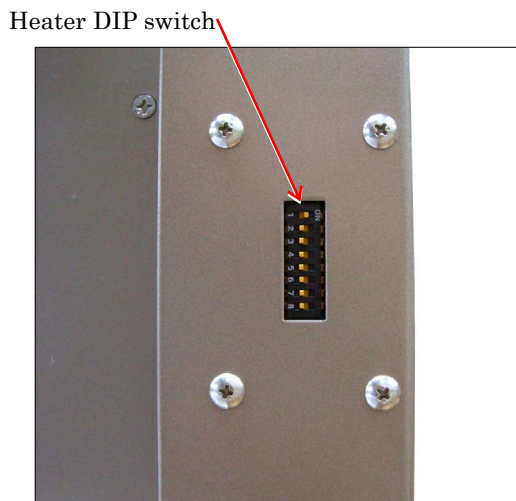
CAUSE: Heater temperature cannot rise because of thermocouple damage or heater wire damage.
 REMEDY: Replace the heater plate assy.
 REF.: Heater plate assy replacement (P.29)



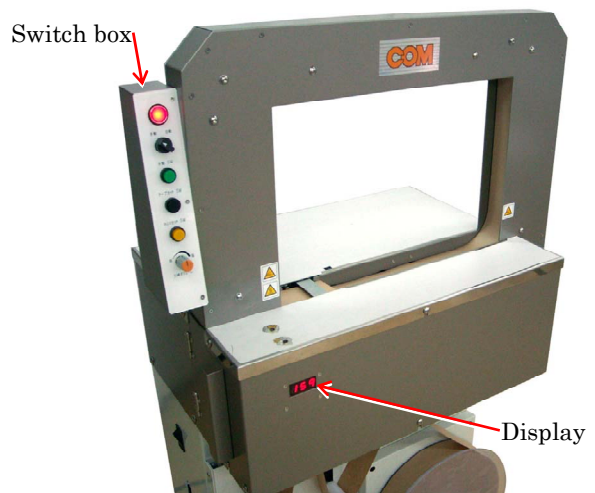
Heater plate assy

3. [Er2] is indicated on the display

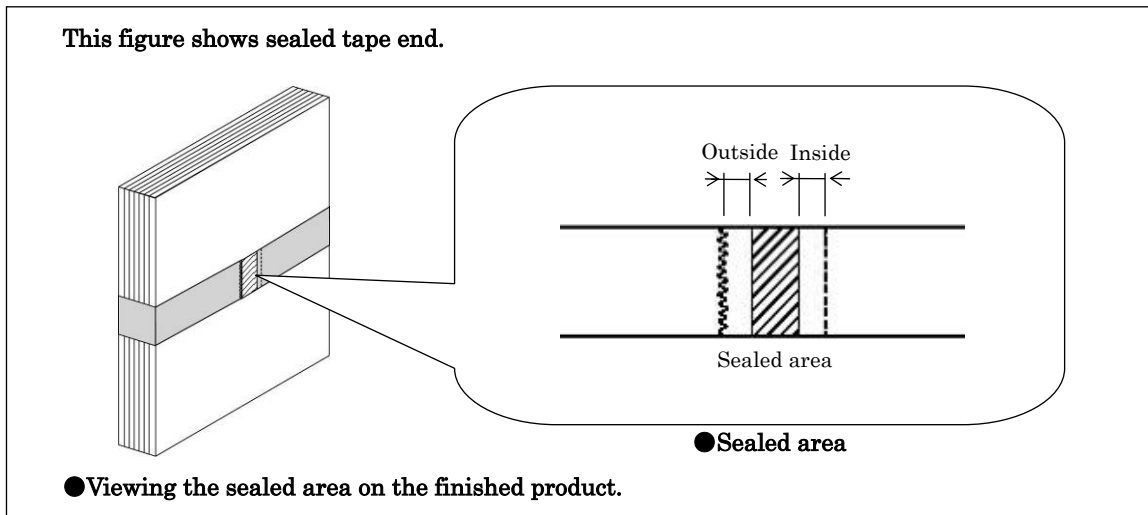
CAUSE: Data of temperature is not programmed.
 REMEDY: Set the temperature of the heater.
 REF.: Machine start-up failure (P. 5)



Switch box (reverse side)



◆ Sealed tape end adjustment failure



1. Outer end of sealed tape too short

CAUSE: Right clamp plate is not gripping tape securely.
-> Right clamp spring damage.

REMEDY: Right clamp spring replacement

REF. Right clamp spring replacement (P. 25)

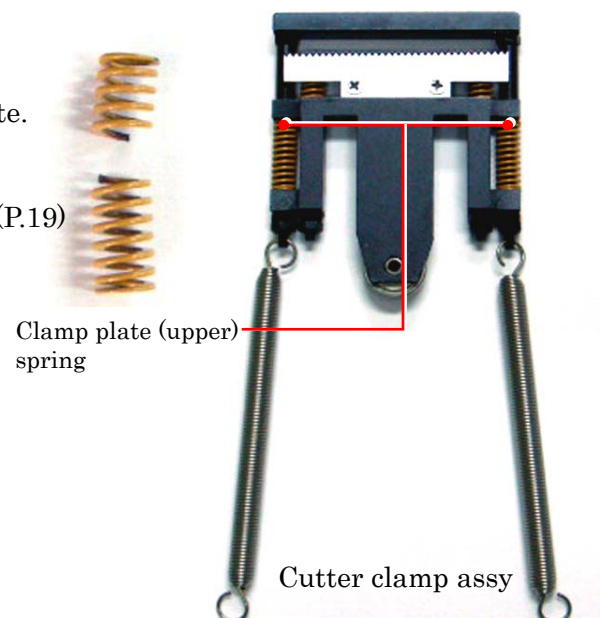


2. Inner end of sealed tape too short

CAUSE: Tape cannot be gripped tape on clamp plate.
-> Clamp plate (upper) spring damage.

REMEDY: Clamp plate (upper) spring replacement

REF.: Clamp plate (upper) spring replacement (P.19)



◆ **Tape cutting failure**

Tape cannot be cut or cutting is not smooth

CAUSE(1): Right clamp spring or clamp plate (lower) spring damage.

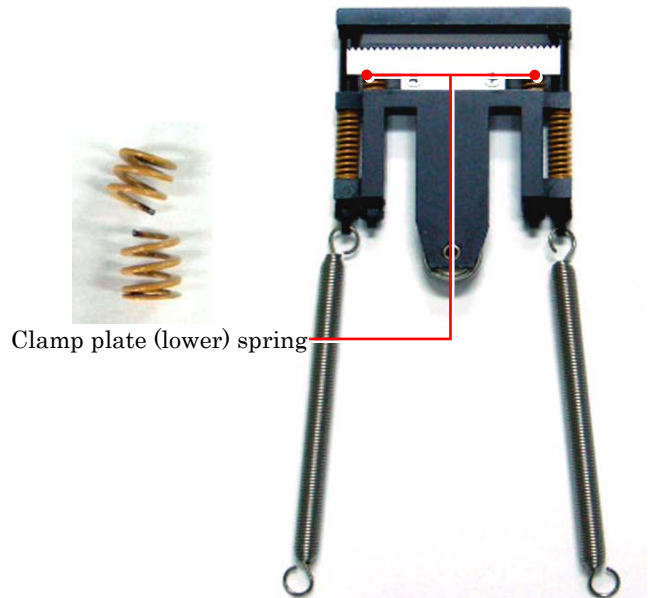
REMEDY: Right clamp spring replacement or clamp plate (lower) spring replacement

REF.: Right clamp spring replacement (P.25) , Clamp plate (lower) spring replacement (P.20)



Right clamp spring

Right clamp assy



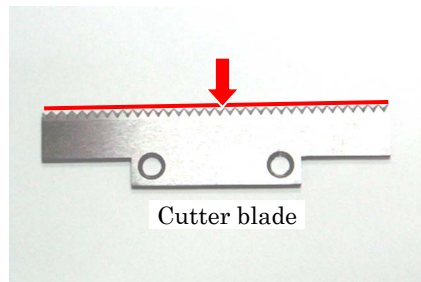
Clamp plate (lower) spring

Cutter clamp assy

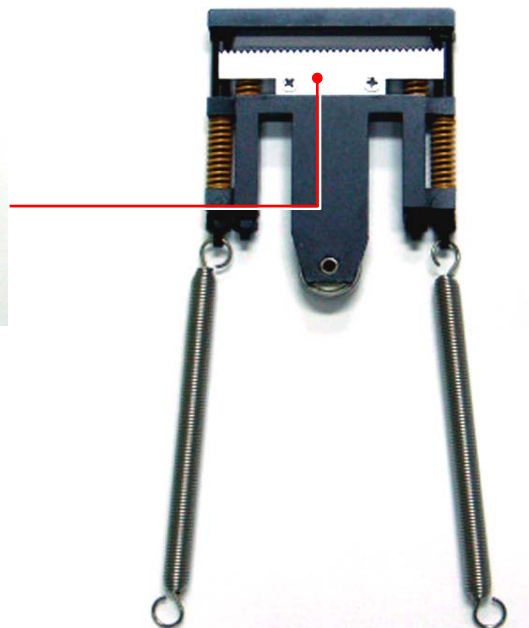
CAUSE(2): Cutter blade damage.

REMEDY: Cutter blade replacement

REF.: Cutter blade replacement (P.22)



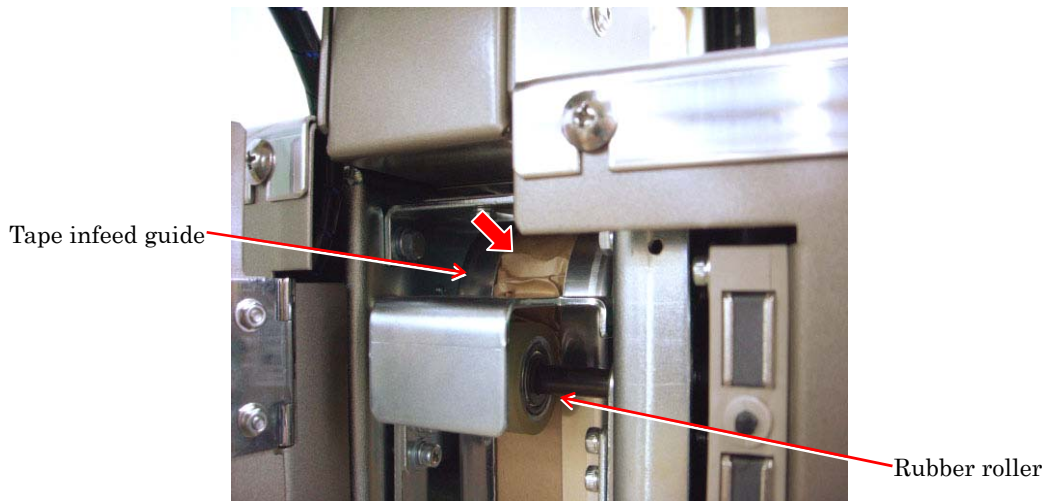
Cutter blade



Cutter clamp assy

◆ **Tape feeding failure**

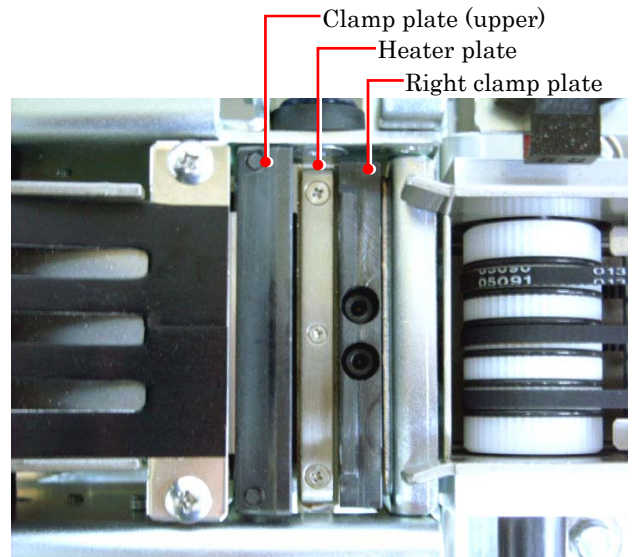
Tape is jammed at the rubber roller



CAUSE(1): A cut piece of the adhesive tape which is used to fix the tape head of every new tape roll is preventing smooth feeding of the tape.

* If the tape becomes a state of fan-folding at the rubber roller, there is possibility that the tape infeed guide or clamp plate guide has a sticky material.

REMEDY: Remove such a sticky material using a metal rule. Then clean the surface with alcohol or lacquer thinner.



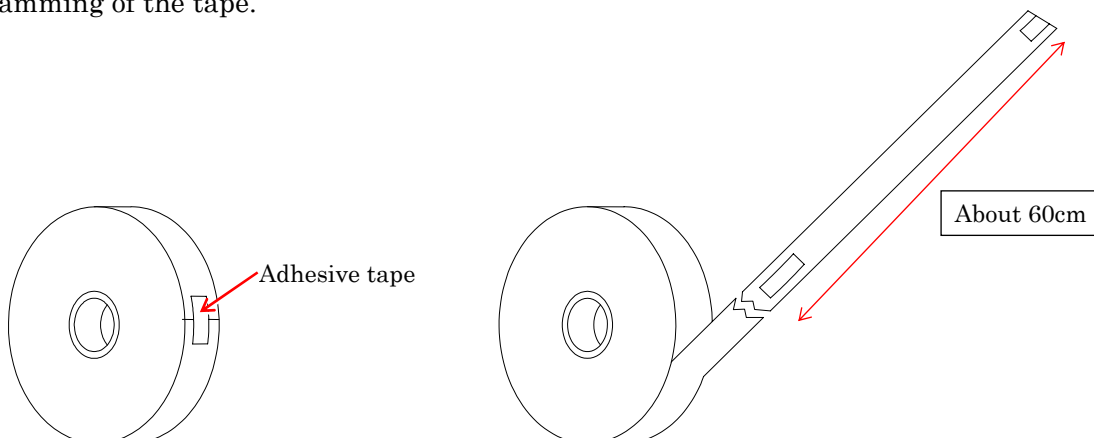
Banding assy

Problem caused by a piece of adhesive tape:

Every new roll of tape has a piece of adhesive tape to fix the tape head.

Cut about 60 cm of the tape to be used before setting it into the machine.

If not, this piece of adhesive tape will be adhered to the rubber roller and inner part of the machine causing jamming of the tape.



CAUSE(2): Wear on rubber roller causing meandering of tape.
 REMEDY: Rubber roller replacement
 REF: Rubber roller replacement (P. 32)

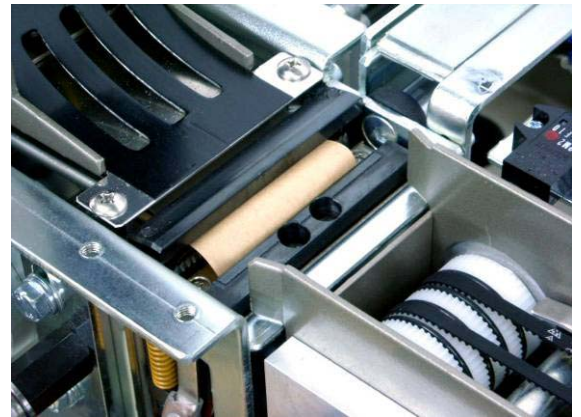


CAUSE(3): Slide plate spring damage. The clamp plate, heater plate, and right clamp plate cannot return to their home positions causing that tape feeding is prevented.
 REMEDY: Slide plate spring replacement
 REF: Slide plate spring replacement (P.33)

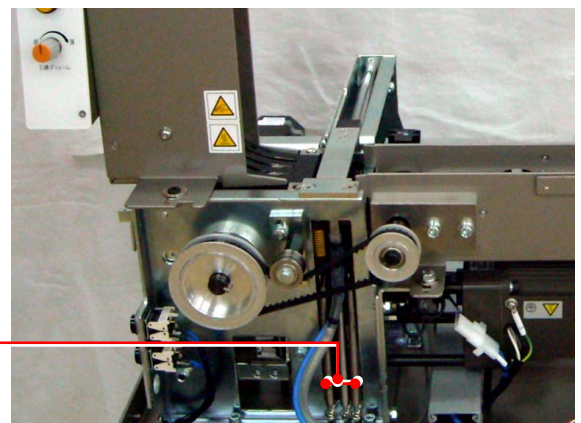
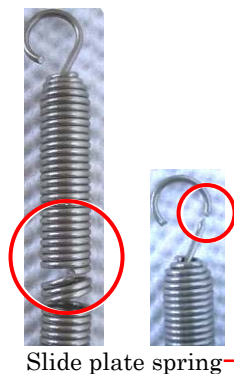
When tape feeding is in normal conditions, the clamp plate, heater and right clamp plate are placed down to their bottom positions because of the slide plate spring function. If the slide plate spring is damaged, these parts cannot be placed down causing prevention of tape feeding.



Feeding fair



Feeding failure



Front side of machine

◆ **Tape tensioning failure**

Tape tensioning is too low or no tensioning

CAUSE(1): Tape meandering due to wear of rubber roller.

REMEDY: Rubber roller replacement

REF: Rubber roller replacement (P. 32)



Rubber roller

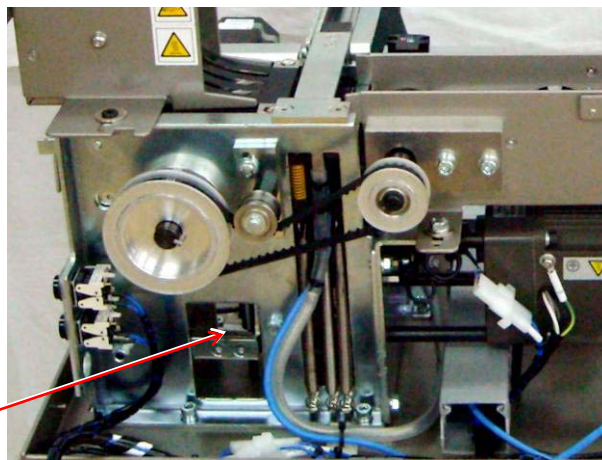
CAUSE(2): Roller spring damage

REMEDY: Roller spring replacement

REF: Roller spring replacement (P.33)



Roller spring

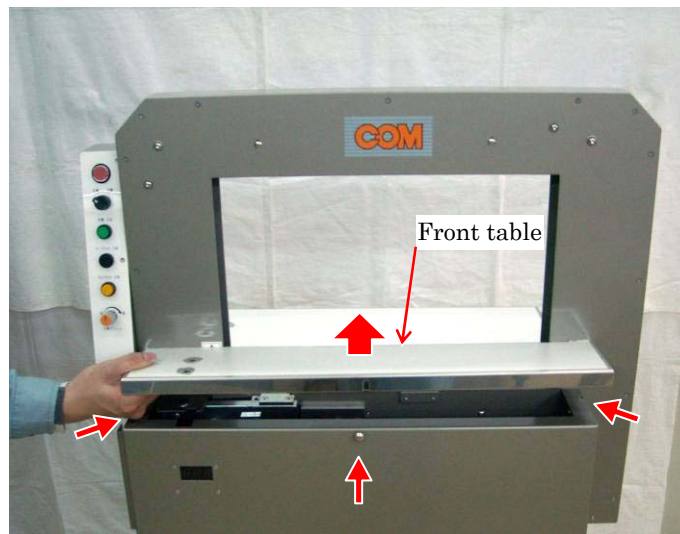


Front side of machine

Preparation for maintenance

1. Dismounting of front table

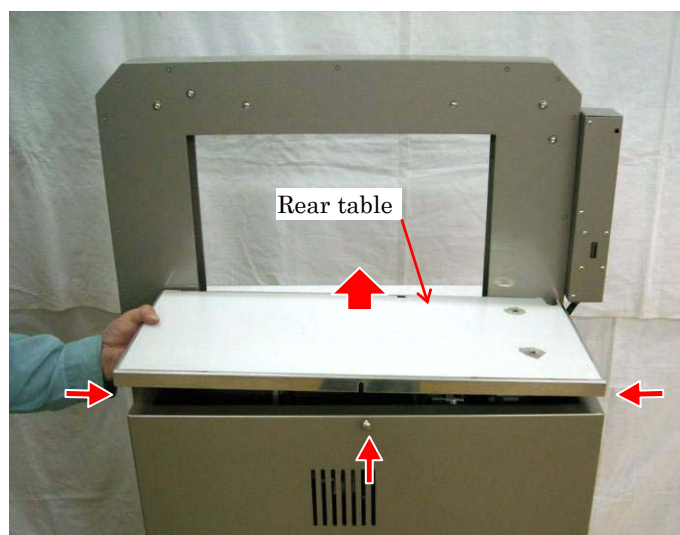
Remove three screws shown with arrows, and lift the front table.



Front view of machine

2. Dismounting of rear table

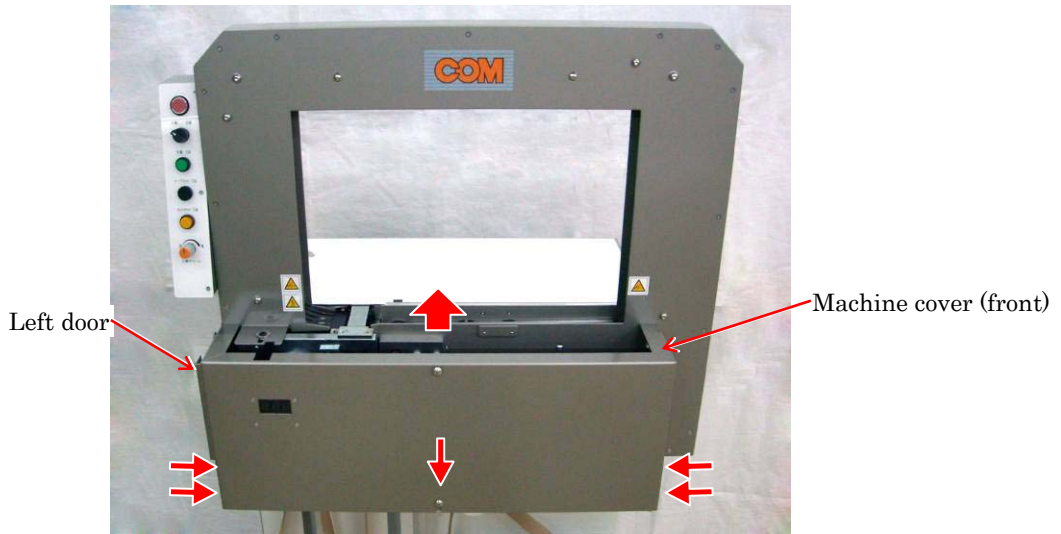
Remove three screws shown with arrows, and lift the rear table.



Rear view of machine

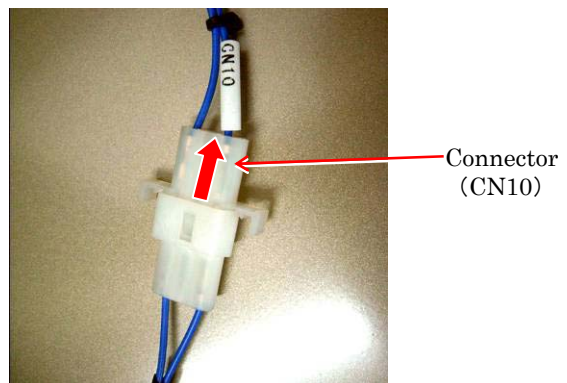
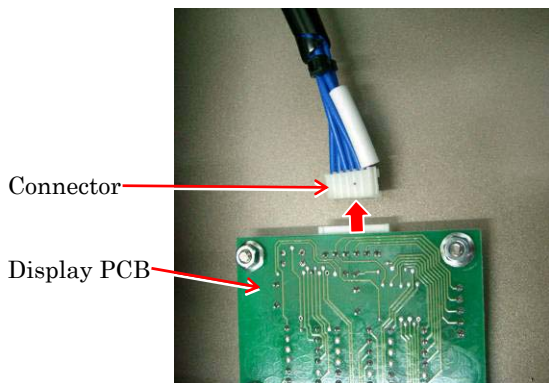
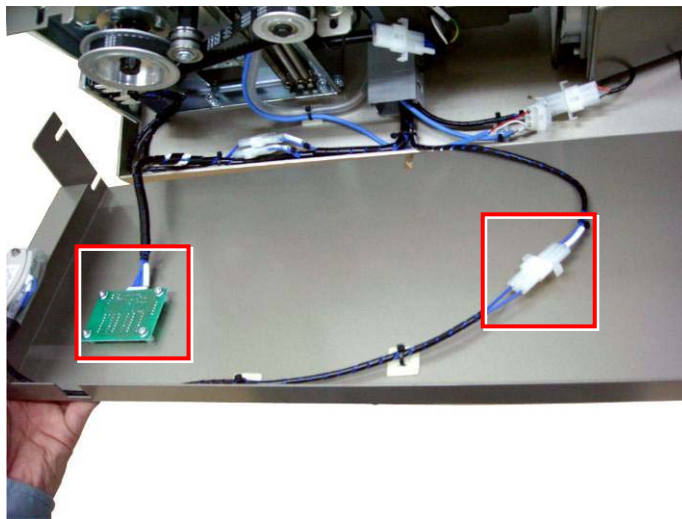
3. Dismounting of front machine cover

(1) Loosen five screws shown with arrows. Open the left door and lift the machine cover.



Front view of machine

(2) Disconnect these two lead wires (display connector, CN10) as the picture showing. The front machine cover can be removed.

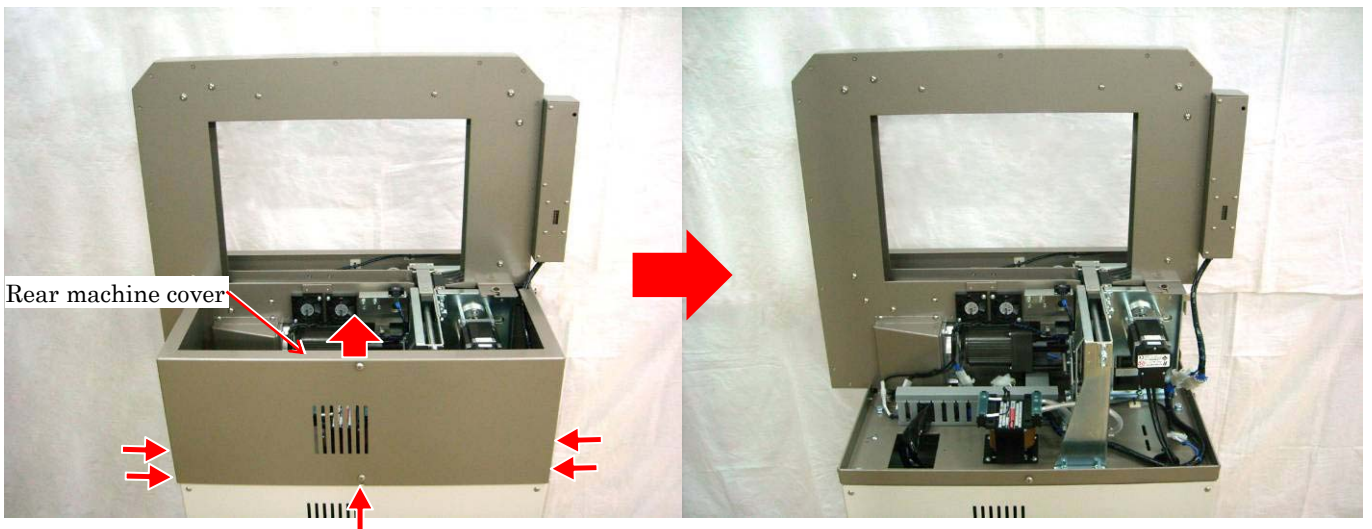




View after dismounting of front machine cover

4. Dismounting of rear machine cover

Loosen five screws shown with arrows. Open the left door and lift the machine cover.



Rear view of machine

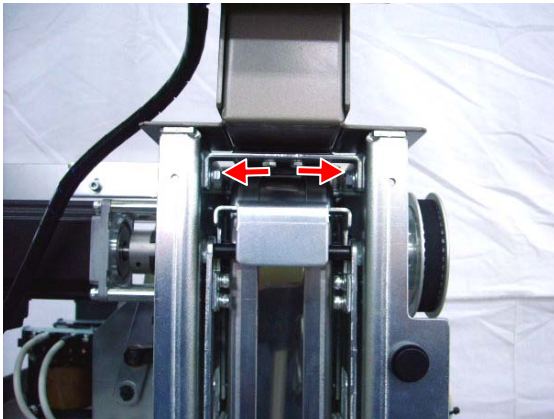
View after dismounting of rear machine cover

Replacement of cutter clamp parts

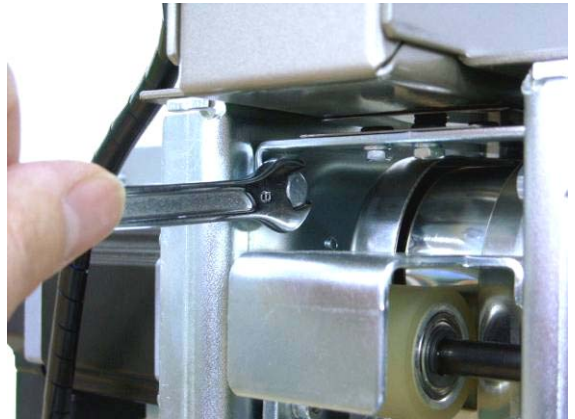
When changing the cutter clamp parts, dismantle the cutter clamp assy from the banding unit.

Dismounting of cutter clamp assy

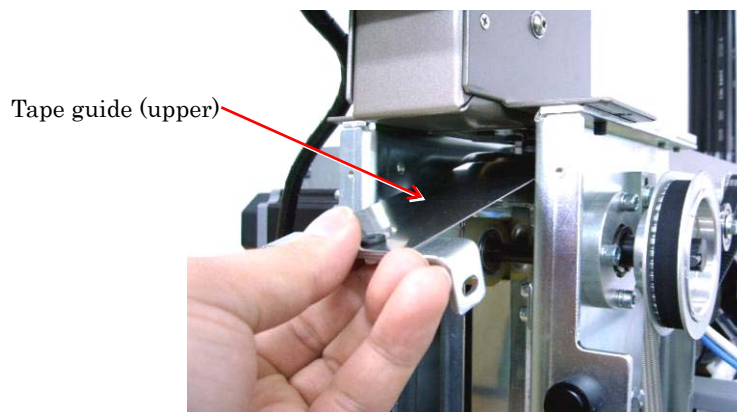
- 1) Dismount the front table, rear table, front machine cover and rear machine cover.
REF. : Preparation for maintenance (P.13)
- 2) Remove two bolts shown with arrows.



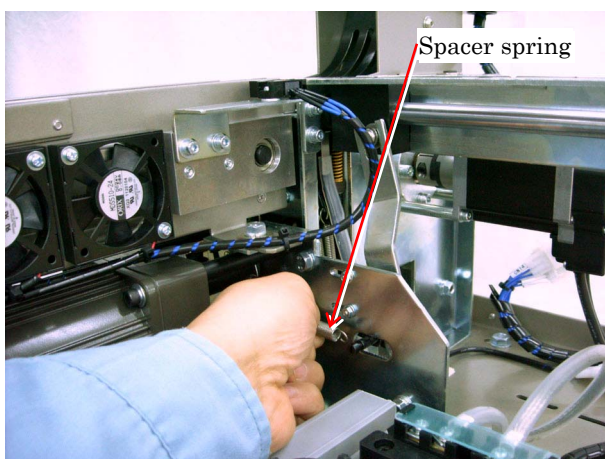
Left side of machine



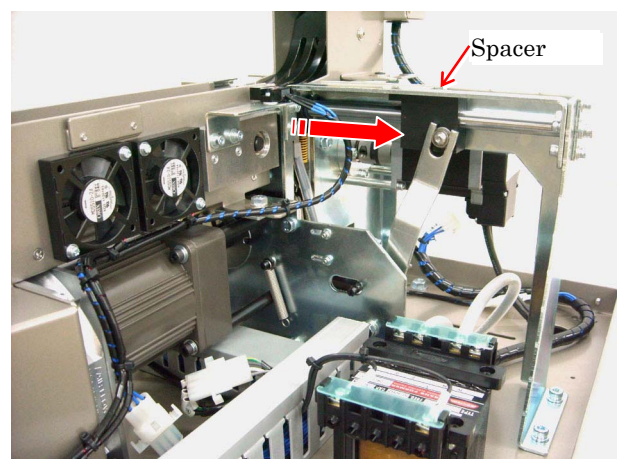
- 3) Dismount the tape guide (upper).

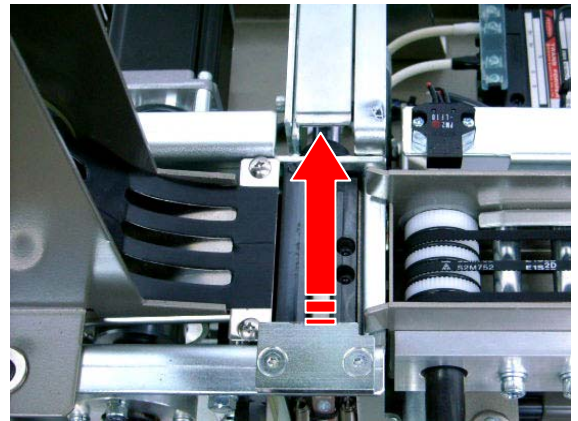
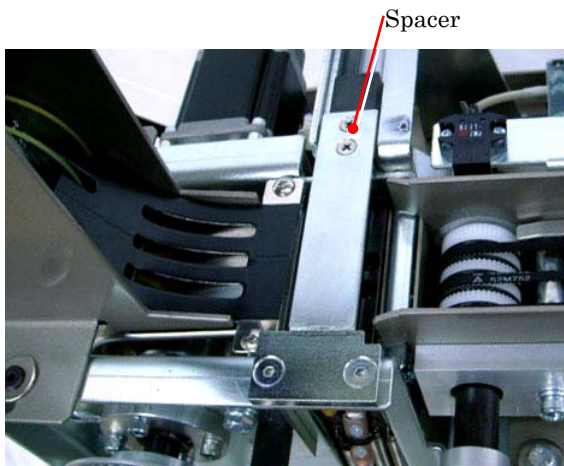


- 4) Unhook the spacer spring and slide the spacer toward the arrowed direction.

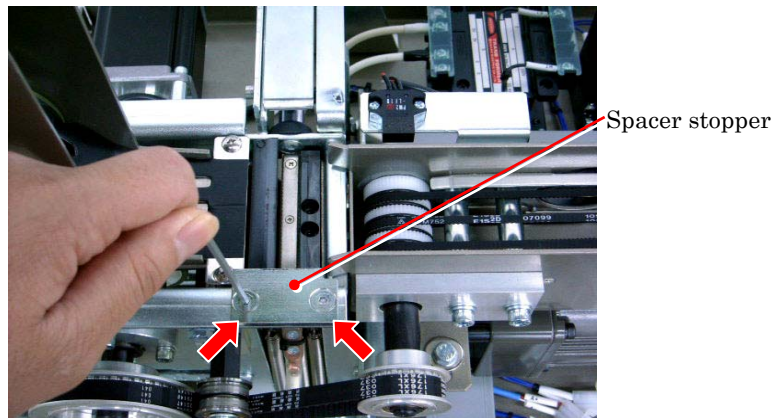


Rear side of machine

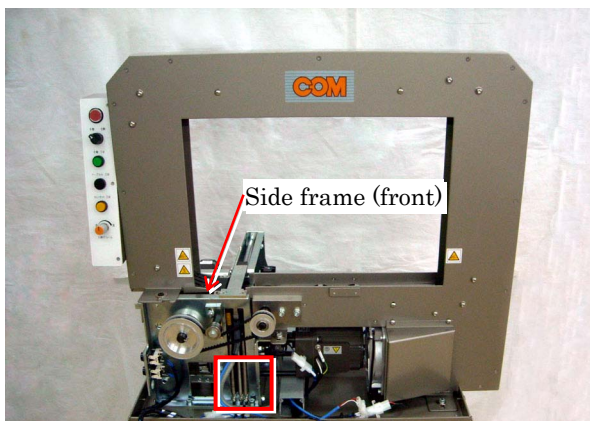




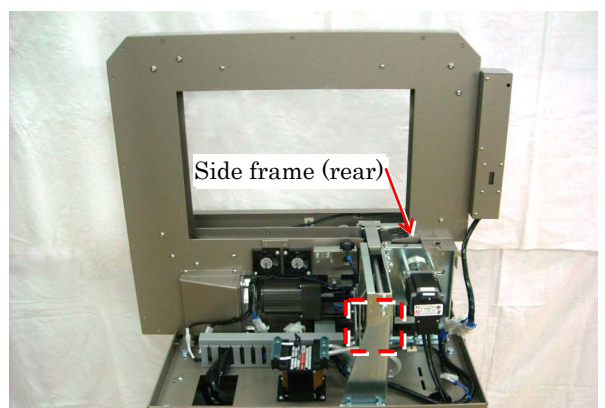
5) Remove two bolts shown with arrows and then dismount the spacer stopper.



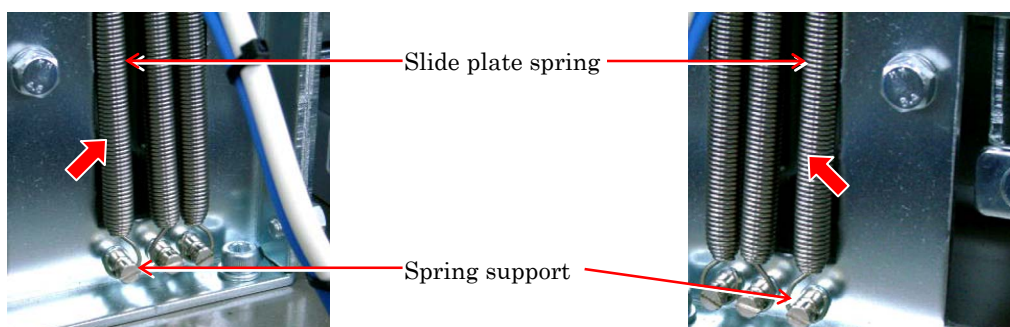
6) Unhook two slide plate springs shown with an arrow from the spring support. These springs are located below the side frames (front and rear).



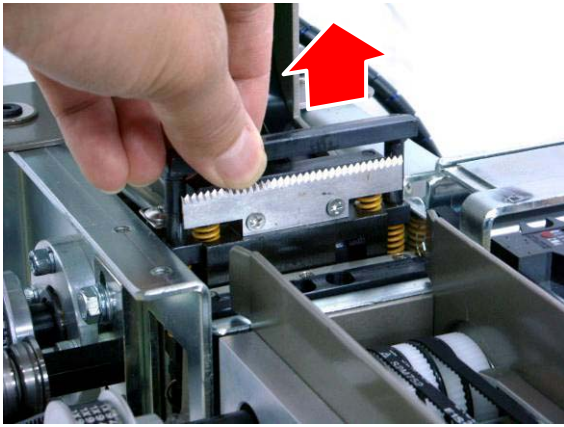
Front view of machine



Rear view of machine



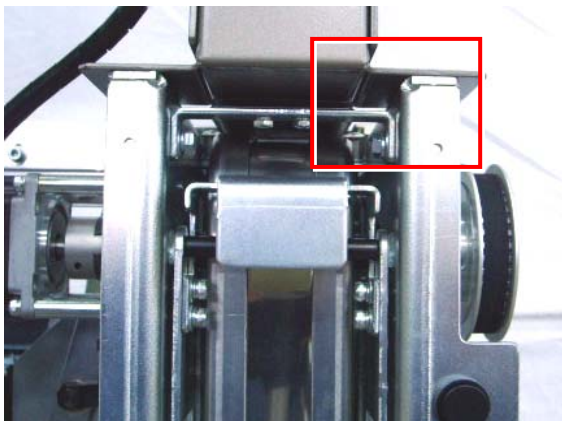
- 7) Now pull up the cutter clamp assy as shown in the photo.
 ⚠ Carefully handle this assembly as the cutter blade may damage your fingers.



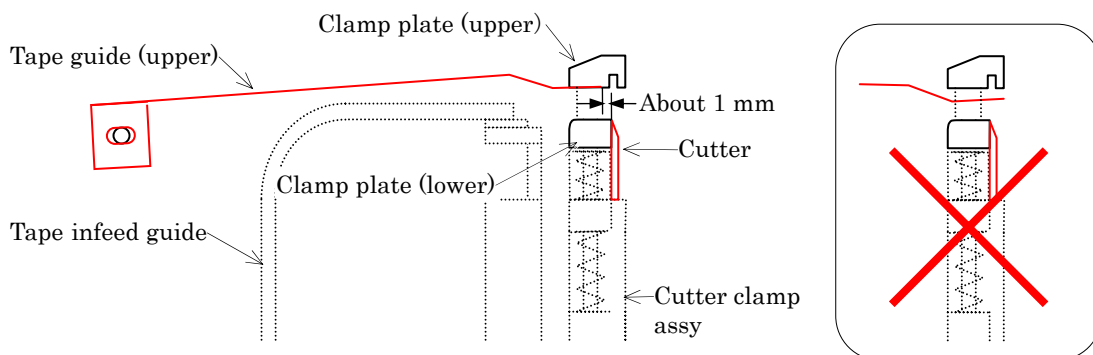
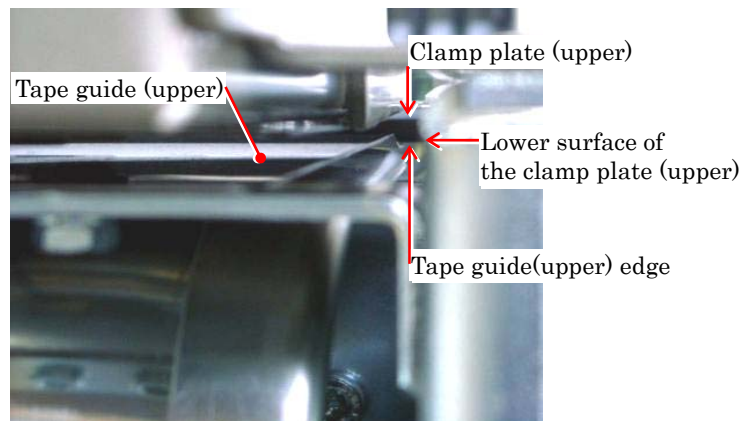
Cutter clamp assy

*Reverse the procedures which are used to dismount this cutter clamp assy.
 Special cares must be taken when remounting the tape guide (upper) --.

Position when remounting tape guide (upper)



Left side of machine



The tape guide (upper) should be mounted after inserting the edge of this guide between the clamp plate (upper) and clamp plate (lower). At this time of mounting, adjust the tape guide (upper) allowing that the tape guide(upper) edge contacts the lower surface of the clamp plate (upper). There must be a gap of about 1 mm between the tape guide (upper) edge and the cutter blade. If the cutter blade position exceeds this allowance, the cutter blade will be damaged by tape guide edge.

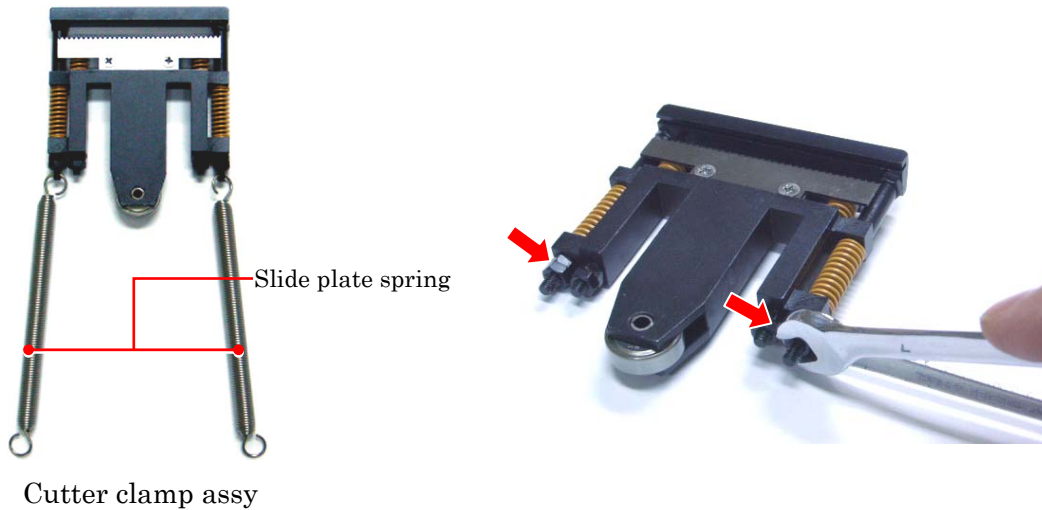
* This allowance is a suggested gap only. Do not fail to adjust it after mounting all parts.

◆ Clamp plate (upper) spring replacement

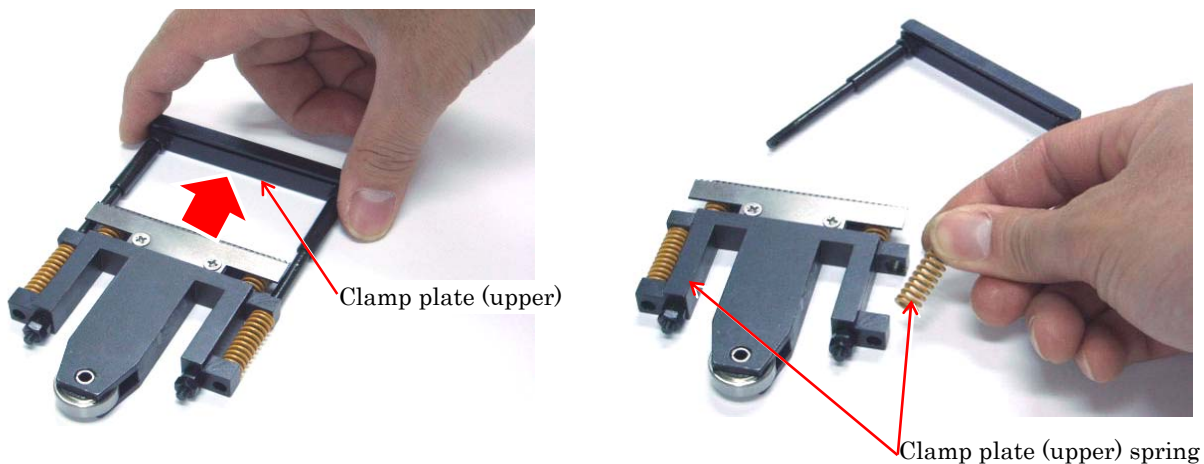
When changing the clamp plate (upper) spring, dismount the cutter clamp assy first.

REF.: Dismounting of cutter clamp assy (P.16)

- 1) Unhook the slide plate spring from the cutter clamp assy. Remove two nuts shown with arrows.

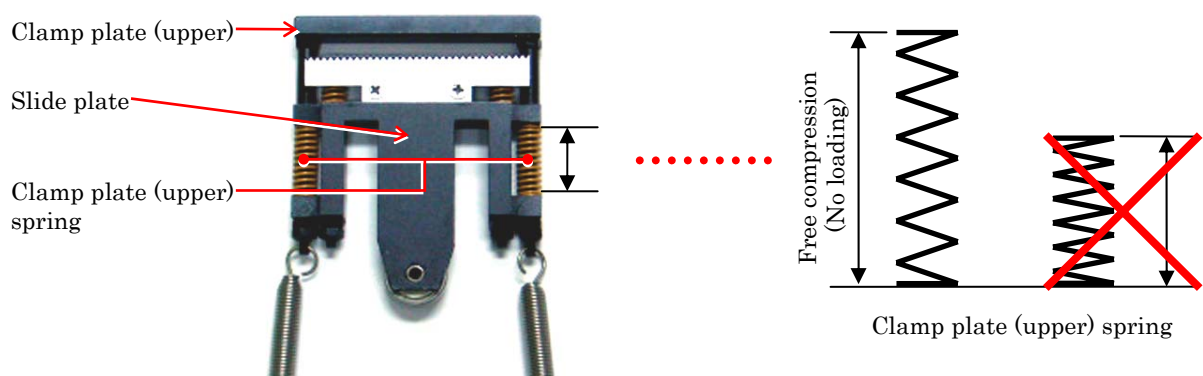


- 2) Clamp plate (upper) spring can be replaced easily after the clamp plate (upper) is pulled out toward the arrowed direction.



* Do not fail to remount this assy in the way it was fixed.

When mounting the clamp plate (upper to the slide plate), the clamp plate (upper) spring must not be pressed (free compression). Do not allow this spring pressed.



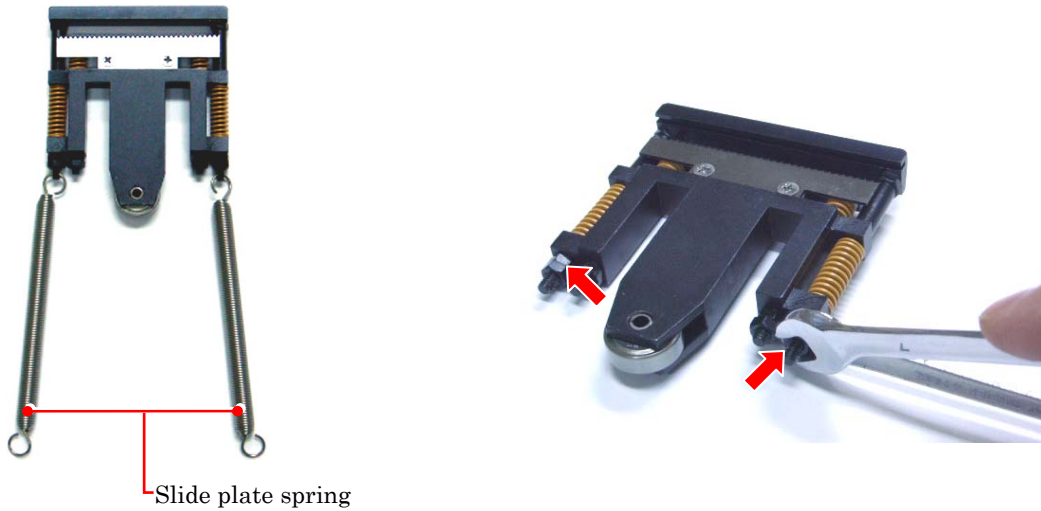
◆ Clamp plate (lower) spring replacement

When changing the clamp plate (lower) spring, dismount the cutter clamp assy first.

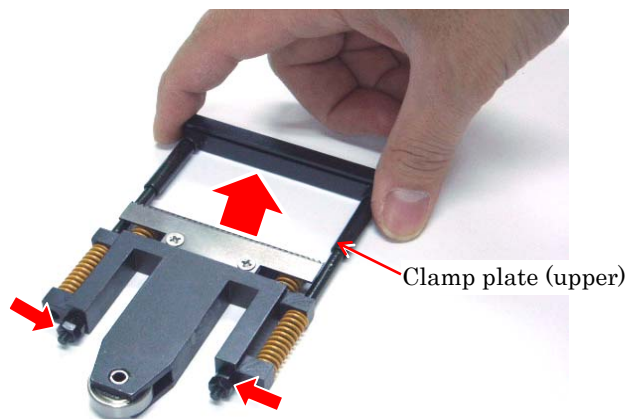
REF.: Dismounting of cutter clamp assy (P.16)

- 1) Unhook two slide plate springs from the cutter clamp assy, and then remove two nuts shown with arrows.

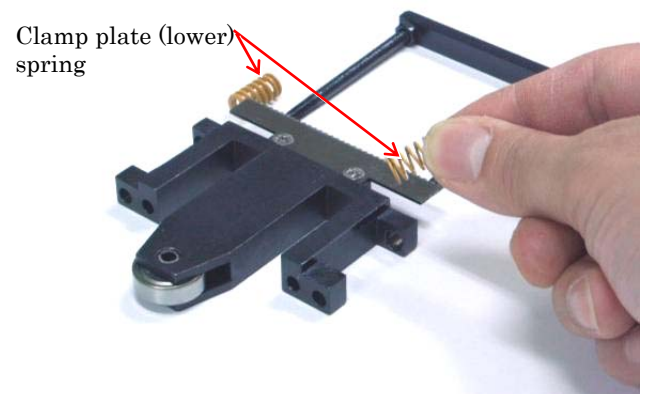
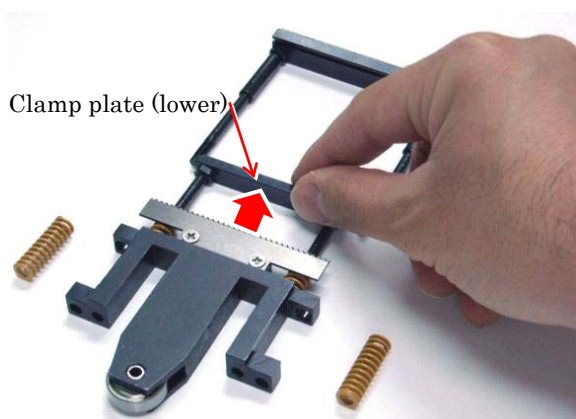
Cutter clamp assy



- 2) After dismounting the clamp plate (upper), remove two nuts shown with arrows.

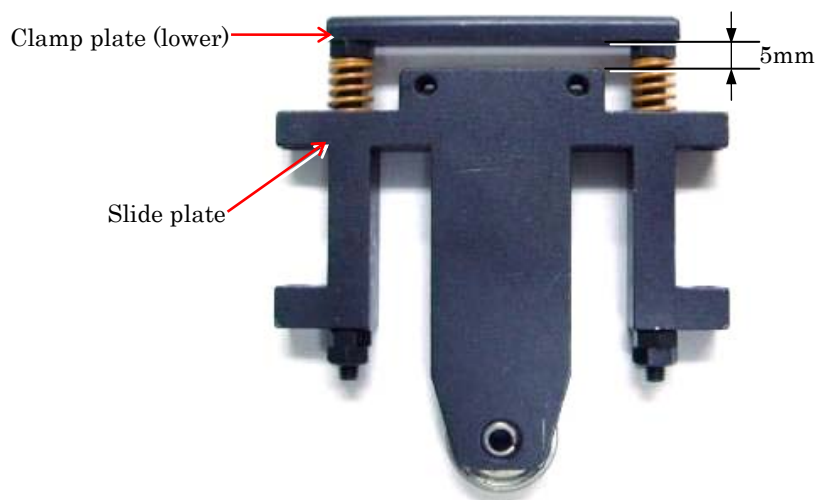


- 3) The clamp plate (lower) spring can be replaced after dismounting the clamp plate (lower) toward the arrowed direction.



* Remount this assembly as it was fixed.

When fixing the clamp plate (lower) to the slide plate, there must be a gap of 5 mm between the lower face of the clamp plate (lower) and the upper face of the slide plate.



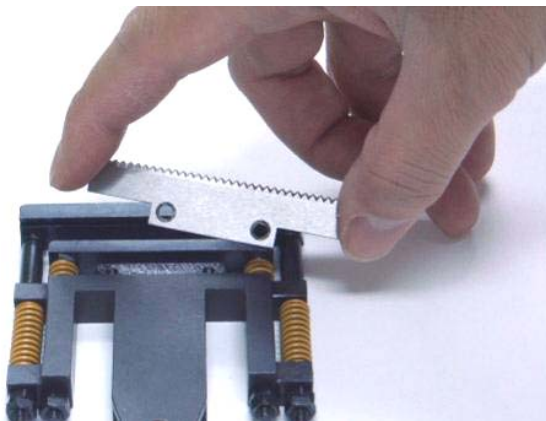
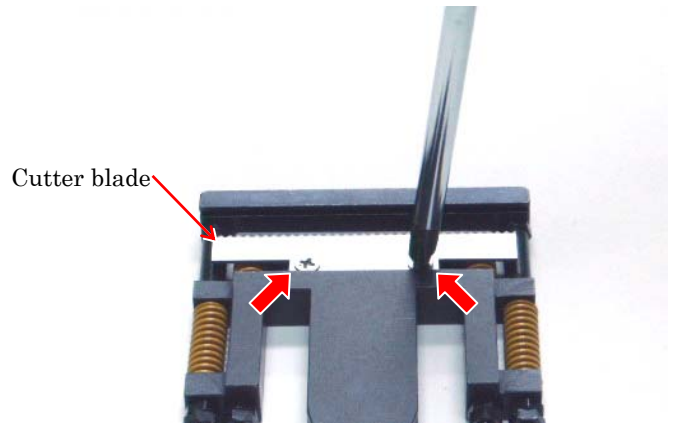
◆ Cutter blade replacement

When changing the cutter blade, dismantle the cutter clamp assy first.
REF.: Dismounting of cutter clamp assy (P.16)

Remove two screws shown with arrows for dismounting.



Cutter clamp assy



⚠ Carefully handle the blade so that your fingers cannot be damaged.

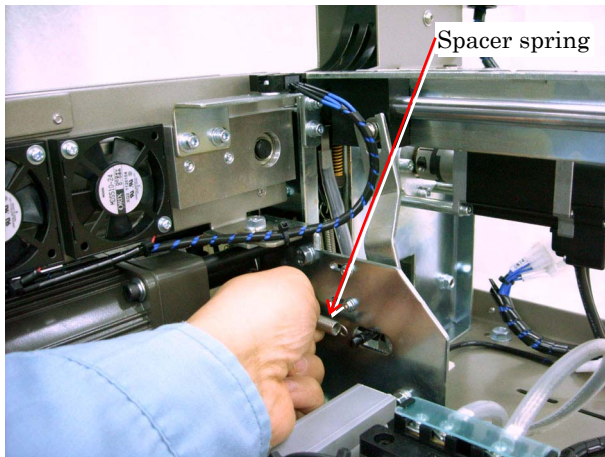
* Securely fix the blade as it was fixed.

Right clamp part replacement

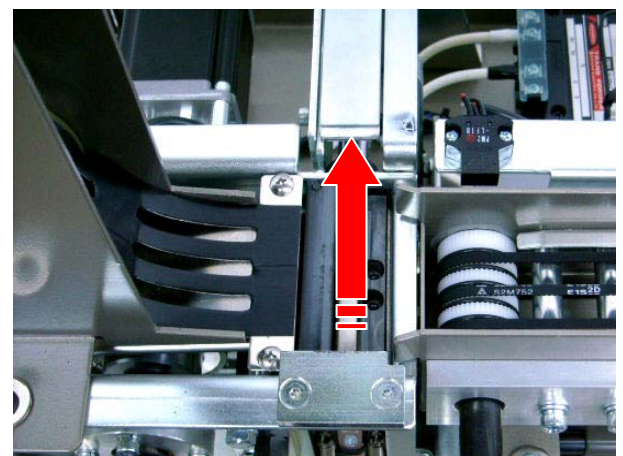
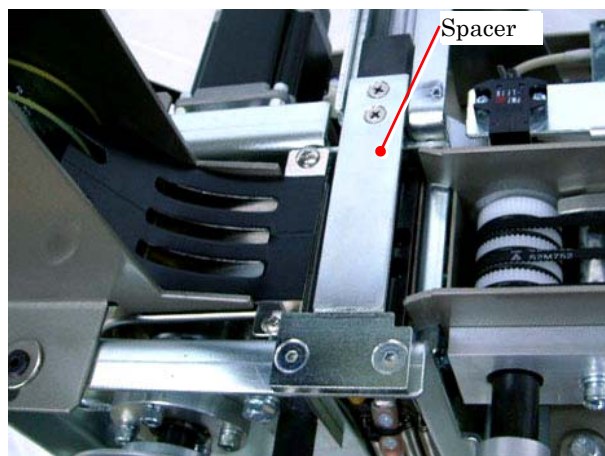
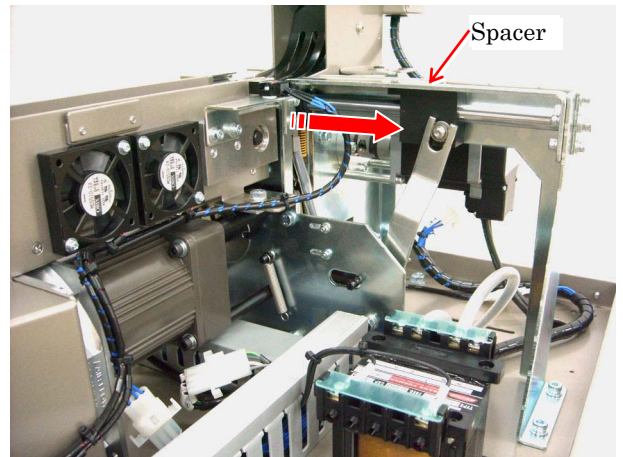
When changing the right clamp part, dismantle the right clamp assy from the banding unit.

Dismounting of right clamp assy

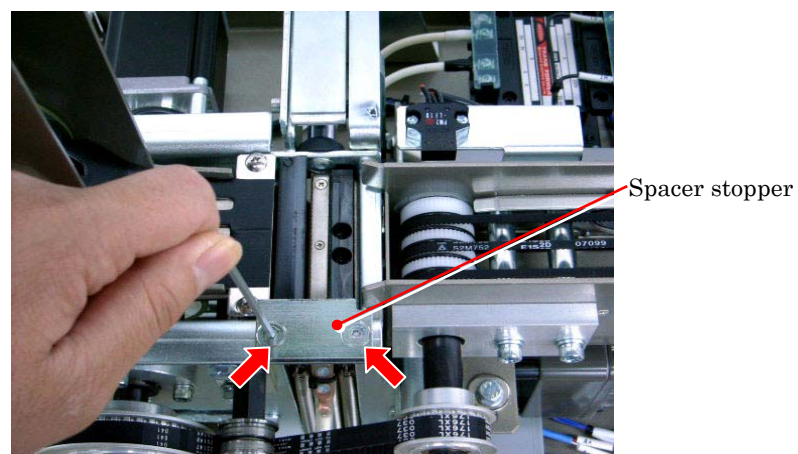
- 1) Dismount the front and rear tables.
REF: Preparation for maintenance (P.13)
- 2) Unhook the spacer spring and slide the spacer toward the arrowed direction.



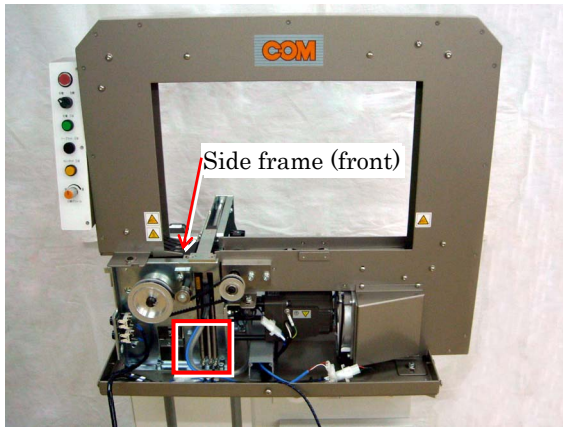
Back side of machine



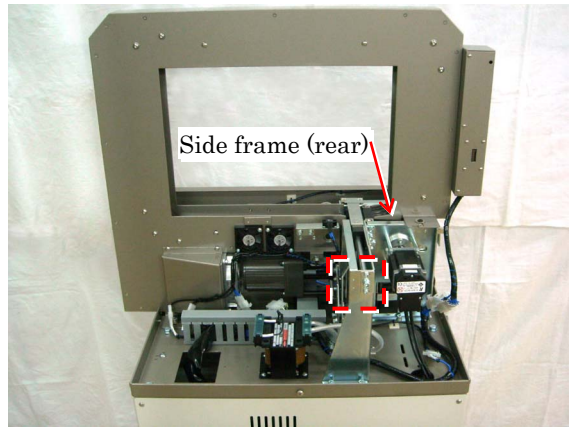
- 3) Remove two bolts shown with arrows and dismount the spacer stopper.



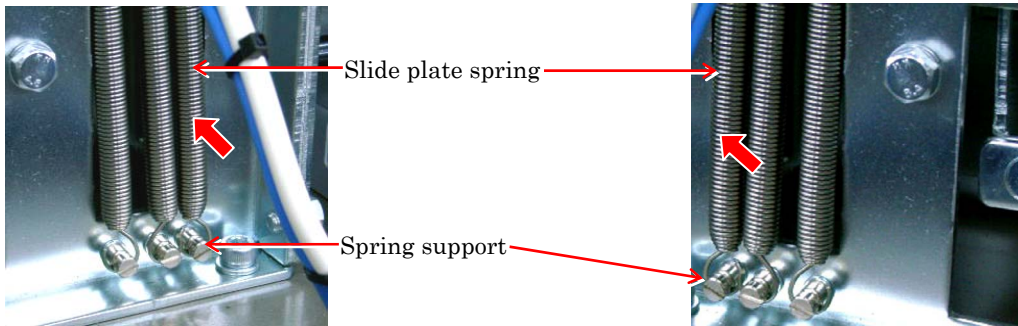
- 4) Unhook two slide plate springs from the spring support. These are located below the side frames (front and rear).



Front view of machine

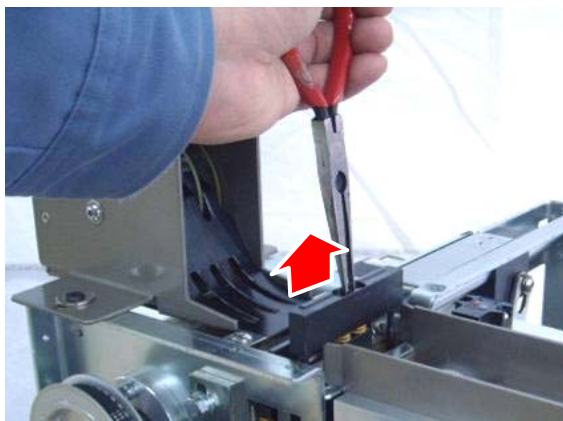


Rear view of machine



- 5) Grip the right clamp plate using a tool (like long nose pliers) and pull up this plate toward the arrowed direction, so that the right clamp assy can be disconnected easily.

* Do not allow the part damaged.



Right clamp assy

* Remount the right clamp assy as it was fixed.

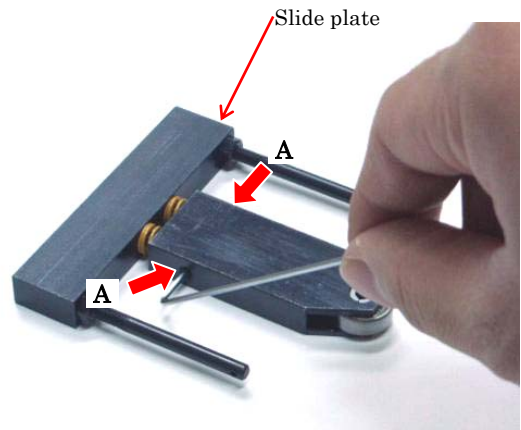
◆ Right clamp spring replacement

When changing the right clamp spring, dismantle the right clamp assy from the banding unit.
 REF.: Dismounting of right clamp assy (P.23)

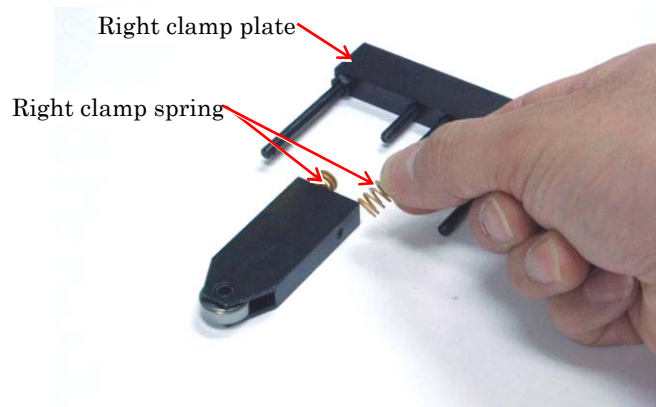
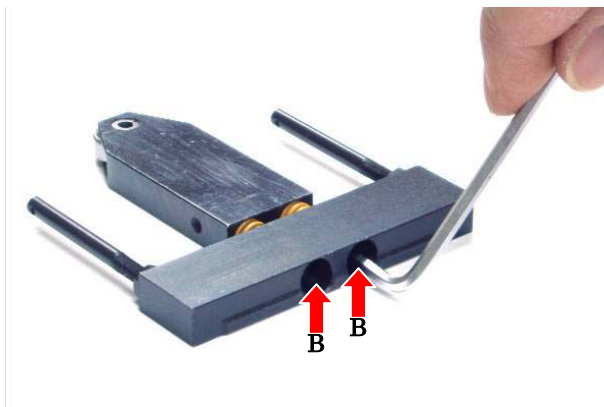
- 1) Loosen two set screws (locking screws) shown with arrows A, which are located at both sides of the slide plate.



Right clamp assy



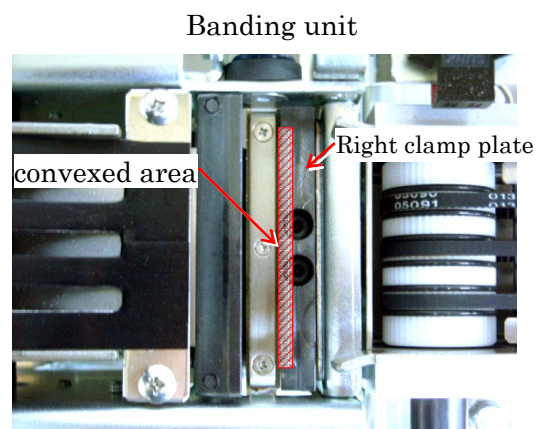
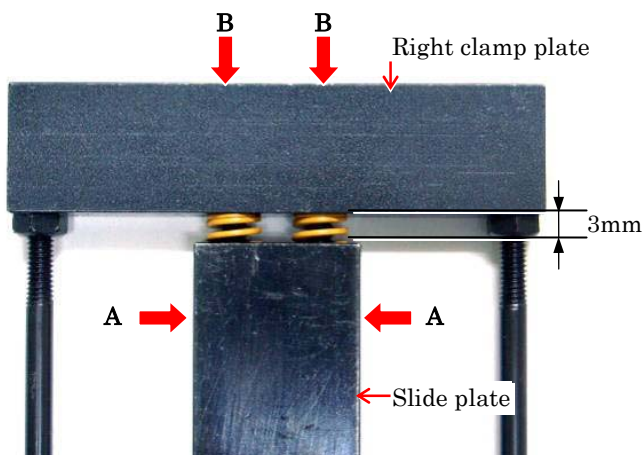
- 2) Remove two bolts shown with B from the slide plate, dismantle the right clamp plate and then replace the right clamp spring.



* Do not fail to remount the plate as it was fixed.

When remounting the right clamp plate using bolts B to the slide plate, there must be 3 mm between the right clamp plate lower face and slide plate upper surface. Then tighten set screws A.


When remounting the right clamp assy, make sure that the face to be contacted to the banding unit is correct. The convexed area must be at left when viewing the machine from front.



Front side of machine

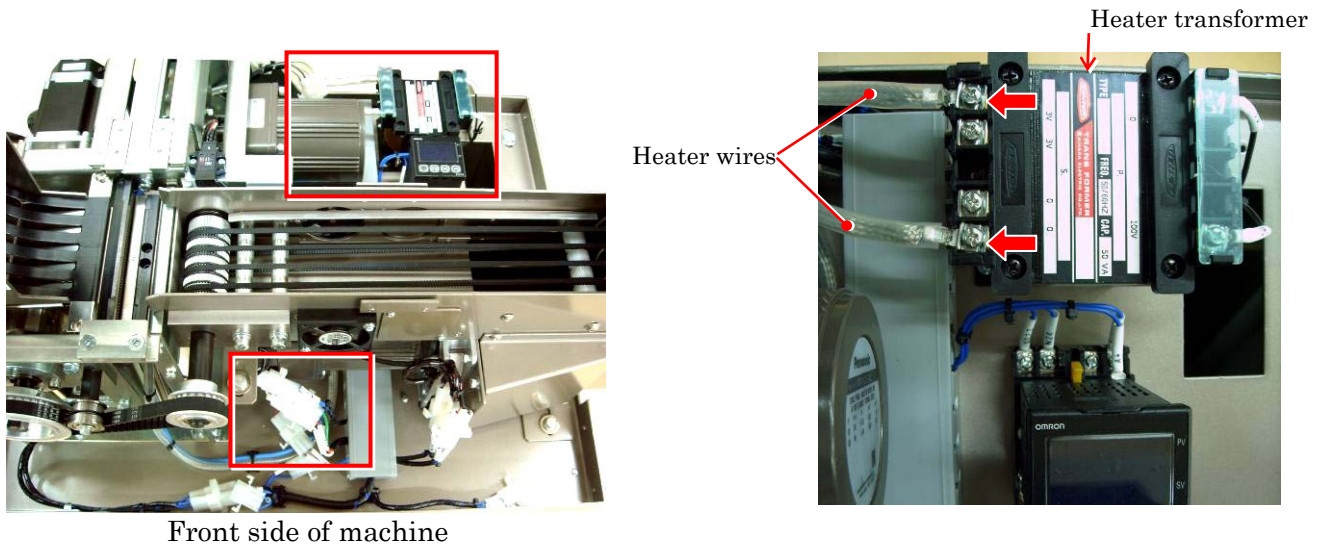
Heater assy part replacement

When changing the heater part, dismantle the heater assy from the banding unit.

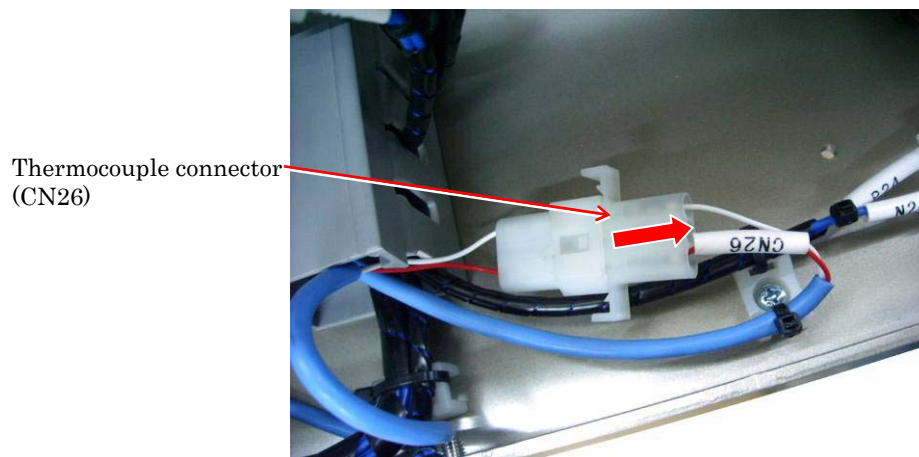
-  Make sure the power switch is turned off when changing heater assy parts.
Make sure this assy has been cooled down so that your fingers cannot suffer from burning.

Dismounting of heater assy

- 1) Dismount the front table, rear table, front machine cover and rear machine cover.
REF. : Preparation for maintenance (P.13)
- 2) Loosen two screws shown with arrows and disconnect the heater wires from the heater transformer.

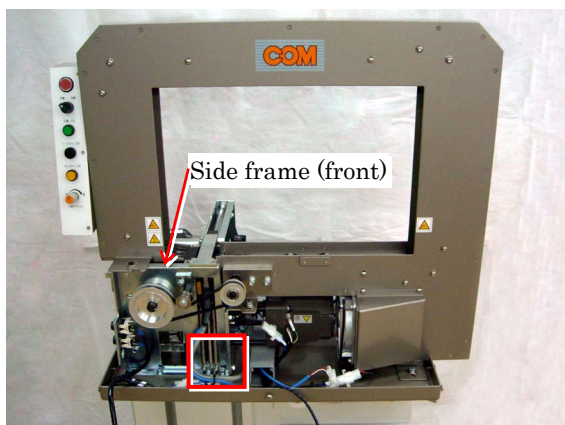


- 3) Disconnect the thermocouple connectors (CN26).

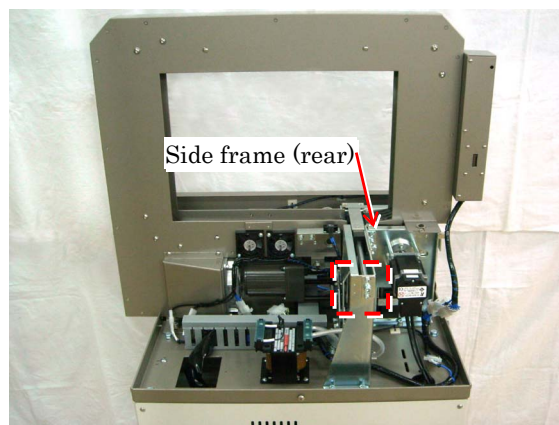


- * Plastic band for binding heater wires, thermocouple wires, etc. can be cut away using tools.
Do not allow wires to be damaged.

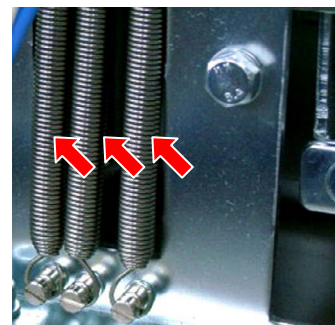
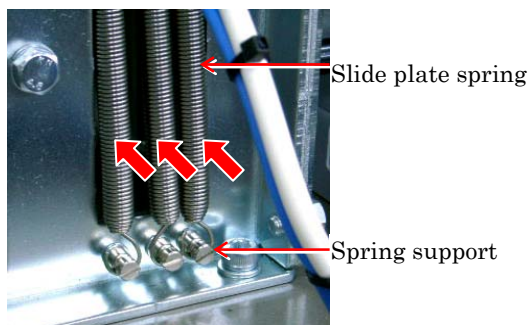
- 4) Unhook all slide plate springs below the side frames (front and rear) from their spring supports.



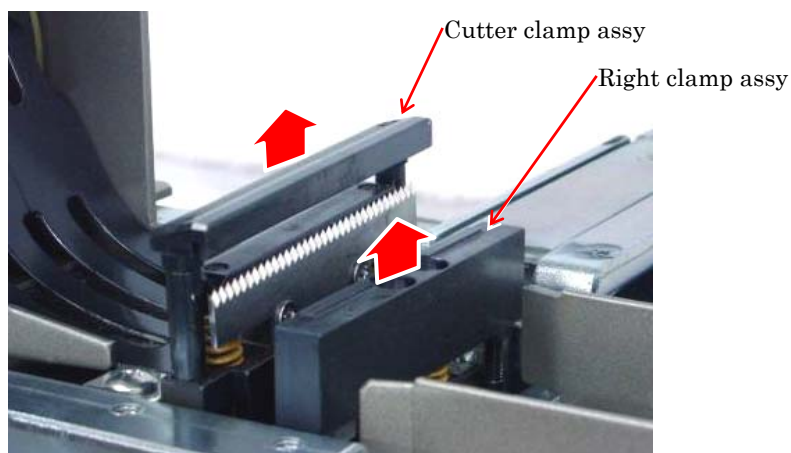
Front view of machine



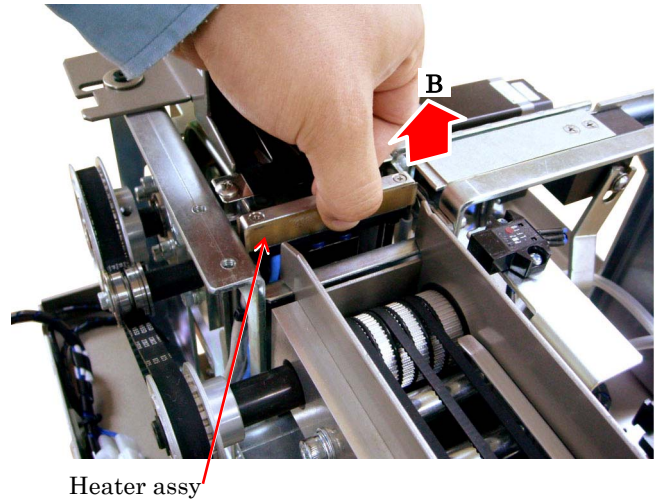
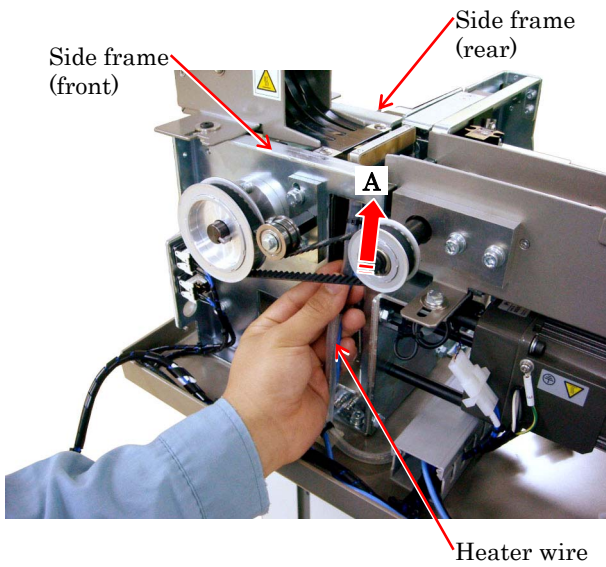
Rear view of machine



- 5) Dismount the cutter clamp assy as well as right clamp assy.
REF.: Dismounting of cutter clamp assy (P.16)
REF.: Dismounting of right clamp assy (P.23)



- 6) Hold one of the heater wires which are ready in the side frames (front and rear), push up toward the direction of the arrow A, and pull up the heater assy toward the direction of the arrow B.
- * Carefully dismount the heater assy because it is connected with heater wires and thermocouple.



- * Heater assy, cutter clamp assy, and right clamp assy must be remounted to the banding unit as they were fixed.

◆ Heater plate assy replacement

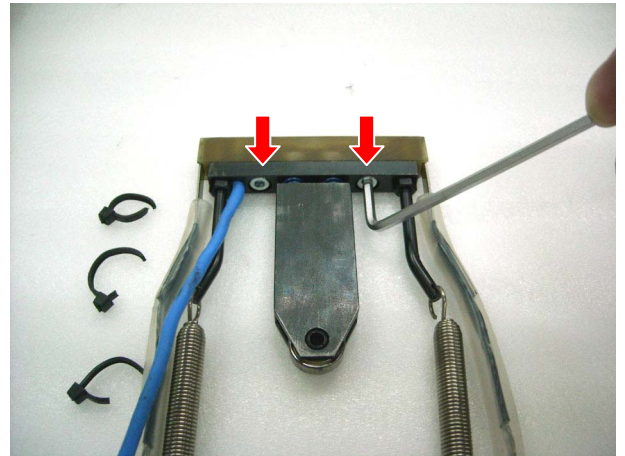
Dismount the heater assy from the banding unit when replacing the heater plate assy.

REF.: Dismounting of heater assy (P.26)

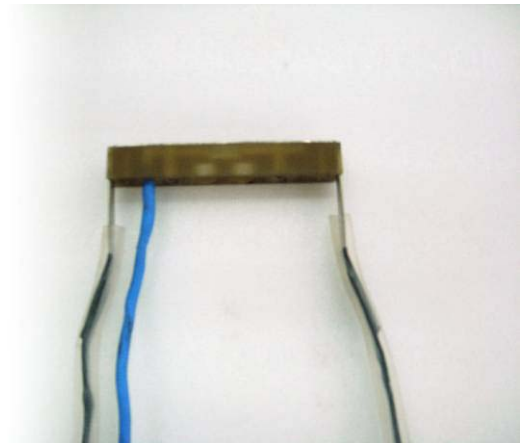
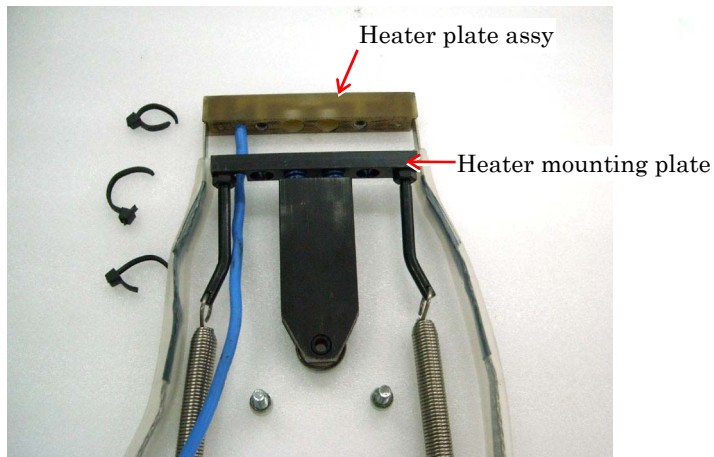
- 1) Remove two bolts shown with arrows which are used to fix the heater plate assy.
*Plastic band for binding heater wires and thermocouple wires can be cut away using tools.
Do not allow wires to be damaged.



Heater assy



- 2) After dismounting the heater plate assy from the heater mounting plate, replace the heater plate assy.



Heater plate assy

- * Remount the heater plate assy as it was fixed.

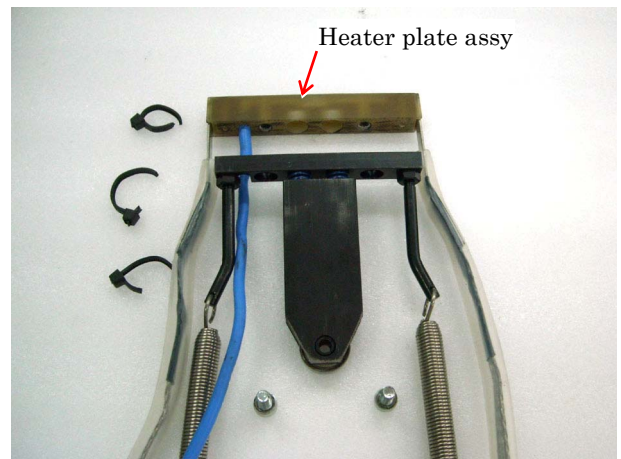
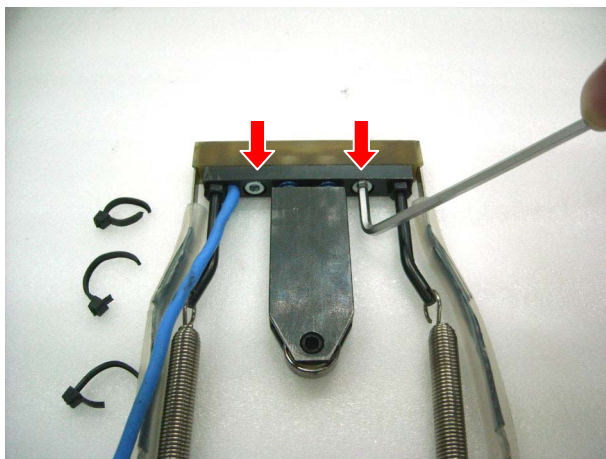
◆ Heater spring replacement

Dismount the heater assy from the banding unit
before replacing the heater springs
REF.: Dismounting of heater assy (P.26)

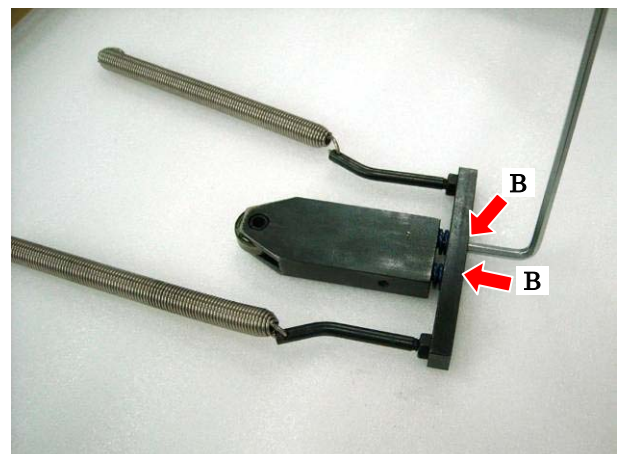
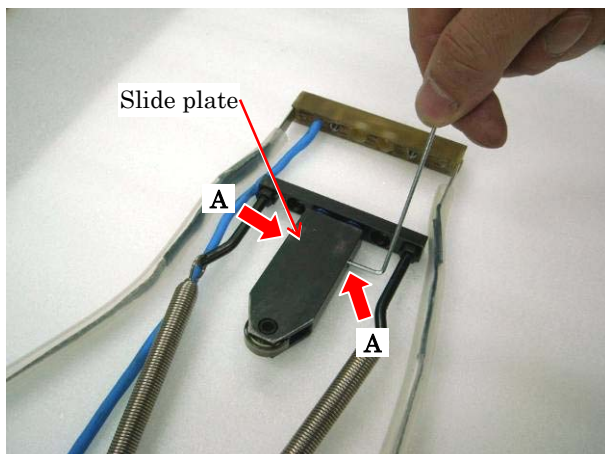


Heater assy

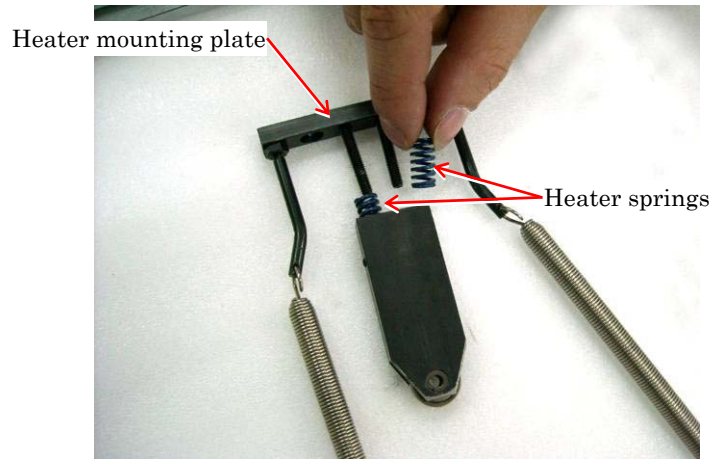
- 1) Remove two bolts shown with arrows and dismount the heater plate assy.
*Plastic band for binding heater wires and thermocouple wires can be cut away using tools.
Do not allow wires to be damaged.



- 2) Loosen two set screws (locking screws) shown with arrow A at both sides of the slide plate and take out two bolts shown with arrows B from the slide plate.

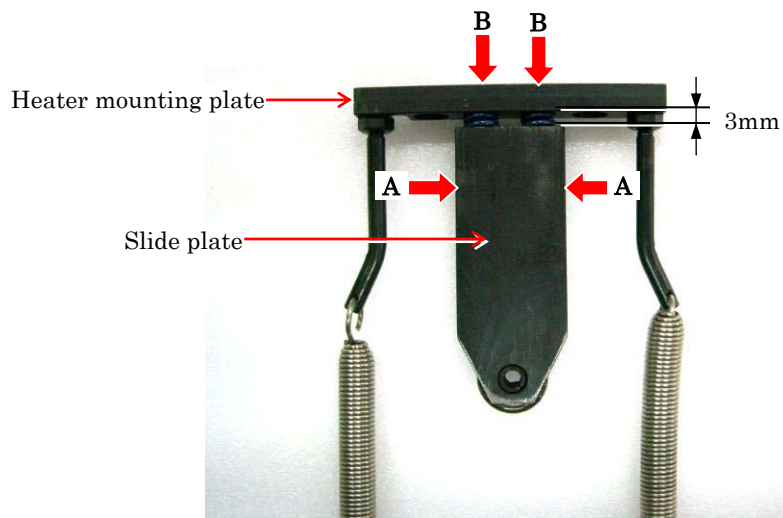


3) The heater springs can be replaced easily when the heater mounting plate is dismantled.



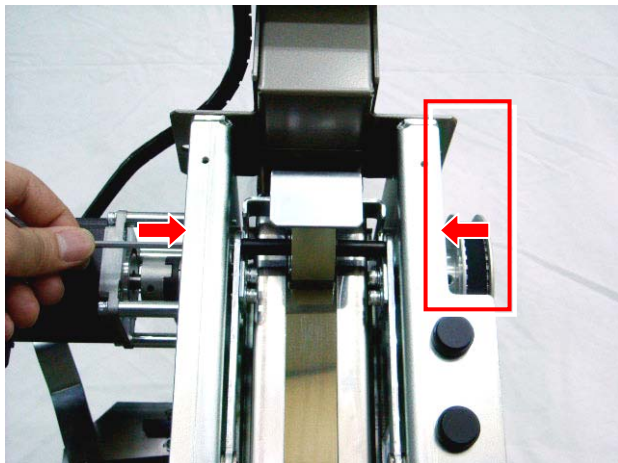
* Make sure these parts must be remounted as they were.

When fixing the heater mounting plate to the slide plate using bolts B, make sure there is a gap of 3mm between the heater mounting plate and the slide plate upper surface. Then tighten the set screws A.

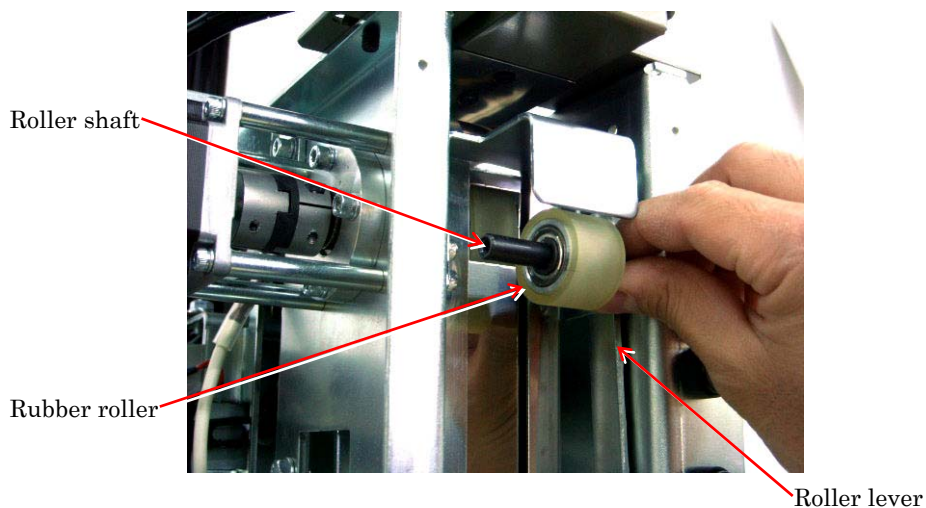
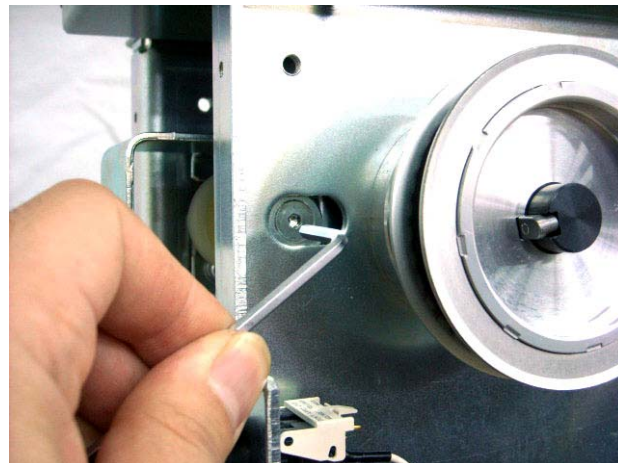


Rubber roller replacement

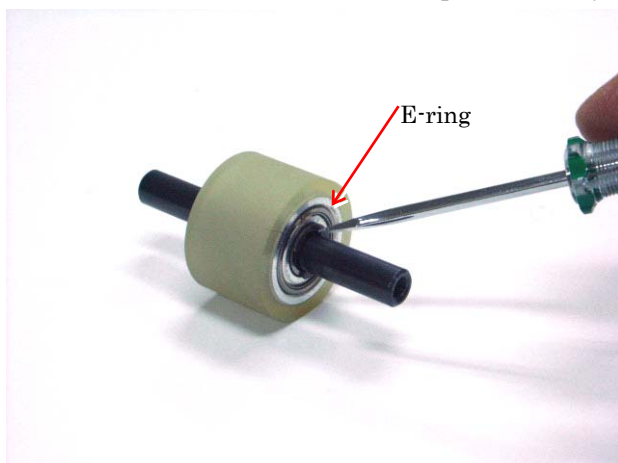
- 1) Dismount the front table, rear table, front machine cover and rear machine cover.
REF. : Preparation for maintenance (P.13)
- 2) Remove two bolts shown with arrows. The rubber roller can be dismantled when the roller shaft is dismantled from the roller lever.



Left side of machine



- 3) Remove one of the E-rings at both sides of the rubber roller using a hand tool (long nose pliers, etc.), so that the rubber roller can be replaced easily.



* Remount these parts as they were.

Slide plate spring replacement

Two pieces of the slide plate spring are used in the heater assy, right clamp assy, and cutter clamp assy. If one of these slide plate springs is damaged, dismantle the assy with this broken spring from the banding unit.

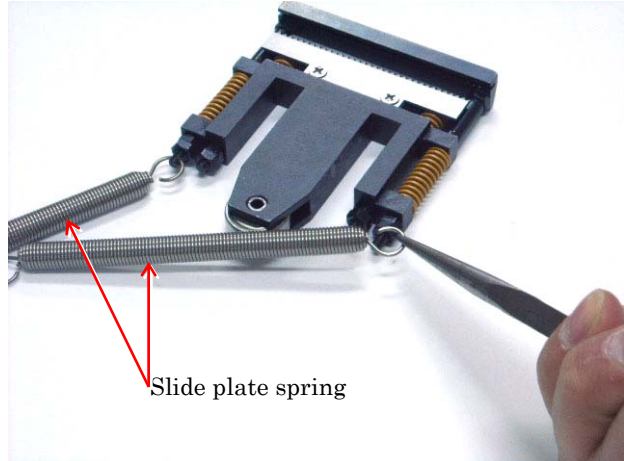
REF.: Dismounting of cutter clamp assy (P.16)

REF.: Dismounting of heater assy (P.26)

REF.: Dismounting of right clamp assy (P.23)



Front side of machine

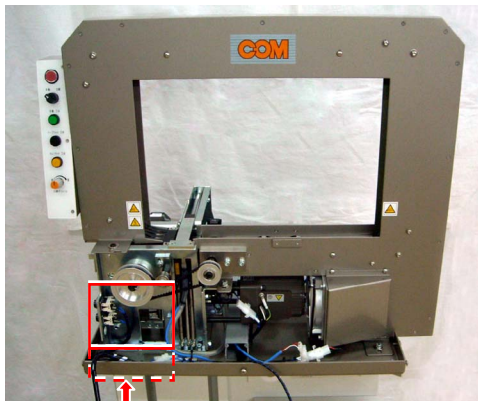


Replacement of slide plate springs of cutter clamp assy

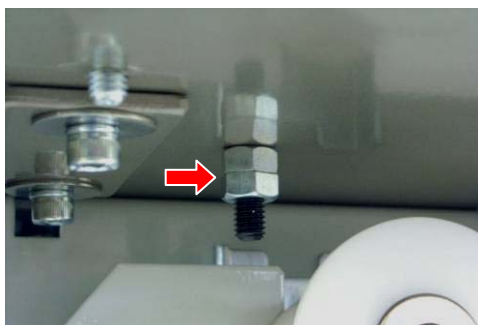
Roller spring replacement

1) Dismount the front table and front machine cover.
REF. : Preparation for maintenance (P.13)

2) When you remove the nut shown with the arrow which is located at the left side bottom of the coil stand (upper), the roller spring can be replaced easily.



Front view of machine



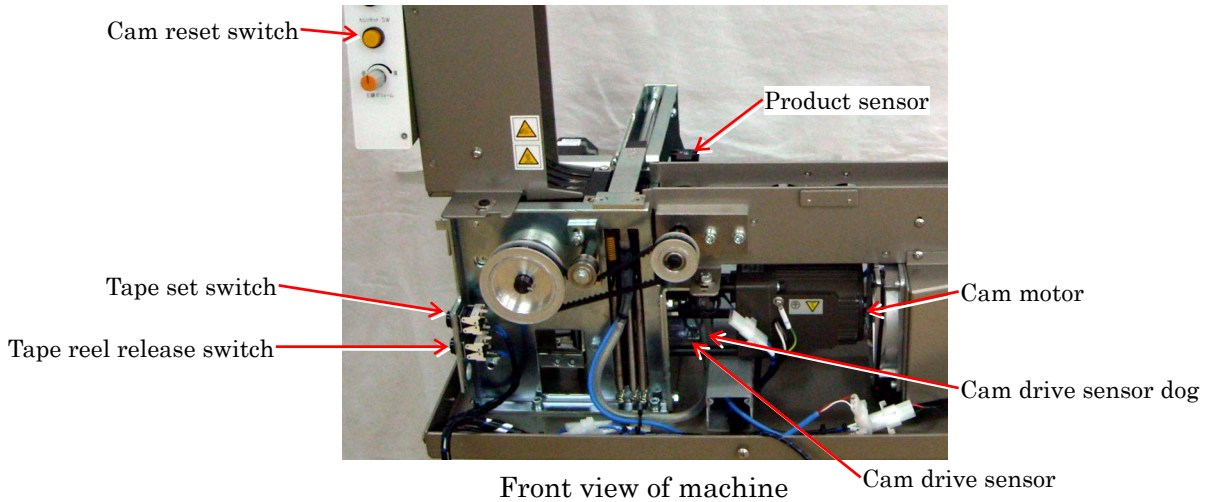
Roller spring

* Do not fail to remount these parts as they were.

Cam home position adjustment

Set the machine mode to JOG when adjustment of the cam home position is required.
 JOG mode: The cam motor can jog while the cam reset switch is pressed.

⚠ Do not touch the heater as there may be a danger of burning your hands. Also do not touch operating areas so that your hands cannot be injured.

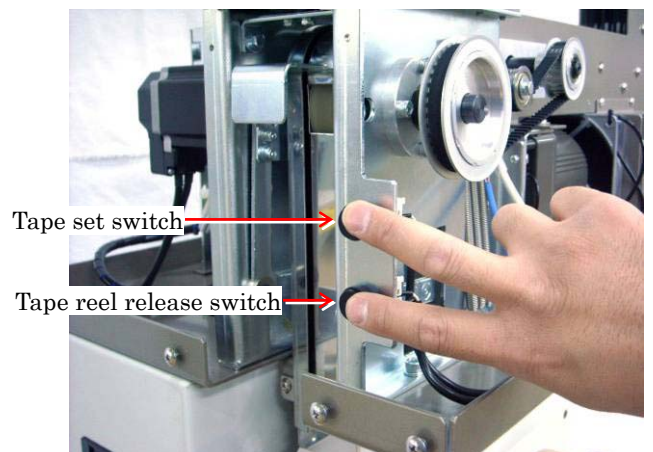
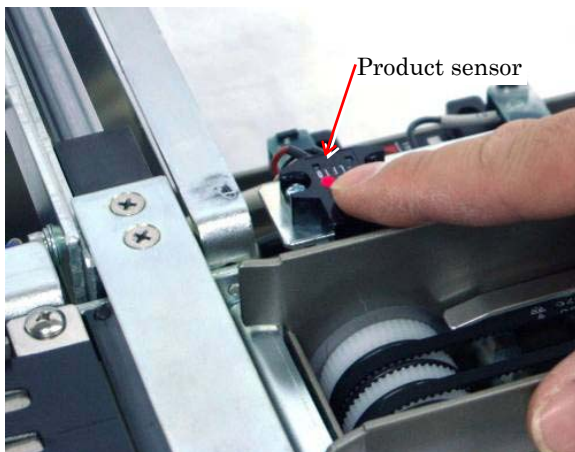


- 1) Dismount tables (front and rear) and machine covers (front and rear).
 REF. : Preparation for maintenance (P.13)
- 2) Turn the power switch on.
 The run lamp light will flicker. 20–60 seconds after energizing the machine, the light will be turned on. Then the machine is ready to work.
- 3) Set the mode selector of MAN/AUTO to MAN.

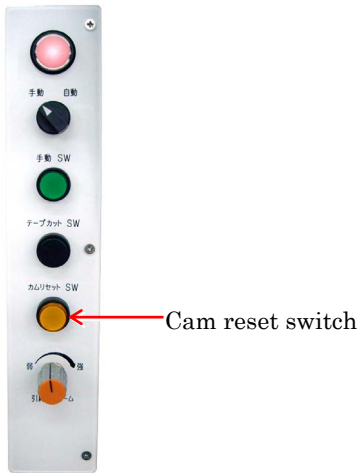


Switch box

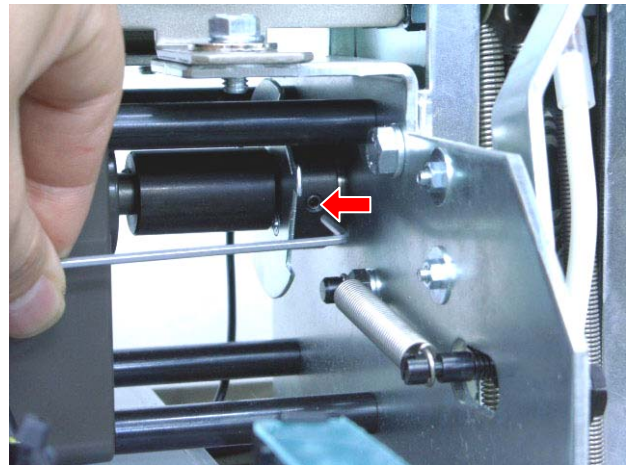
- 4) Cover the product sensor keeping the mode that the machine has detected a product ready in the sensor. Press the tape set switch and tape reel release switch simultaneously for more than 3 seconds which are located at the left side of the machine. The machine is ready in the JOG mode, the run pilot lamp will change from the state of lighting to the state of high speed flickering. As soon as this flickering of the light is ready, release both switches.



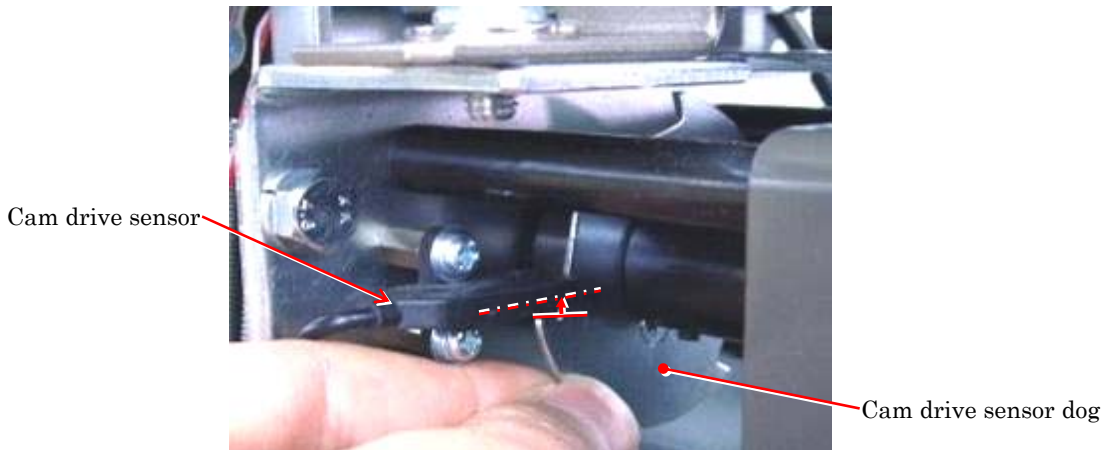
- 5) Keep the cam reset switch pressed until the set screws shown with arrows comes to the access position. Turn the set screw counterclockwise. Then the cam drive sensor dog can be adjusted.



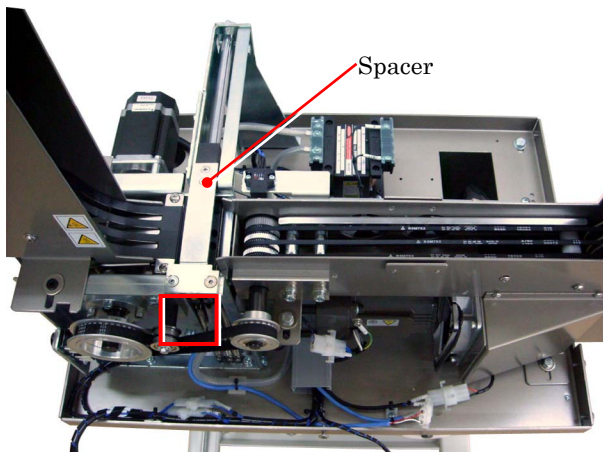
Switch box



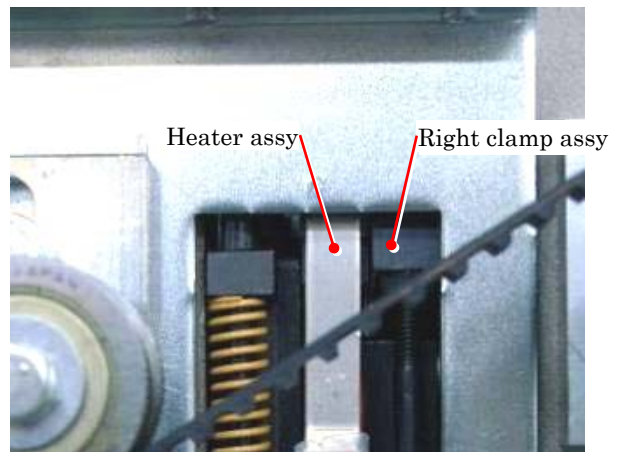
- 6) Adjust the cam drive sensor dog angle. Fix it in the cam home position properly adjusted.



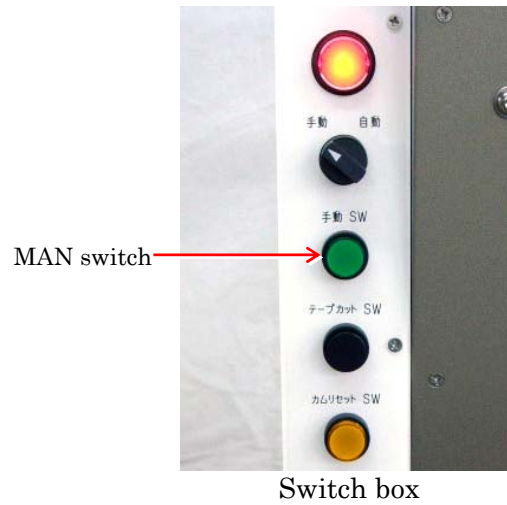
- * Properly adjusted cam home position
The heater assy and right clamp assy are in the bottom positions and the spacer is set back to the forward position when the cam motor stops at its home position.



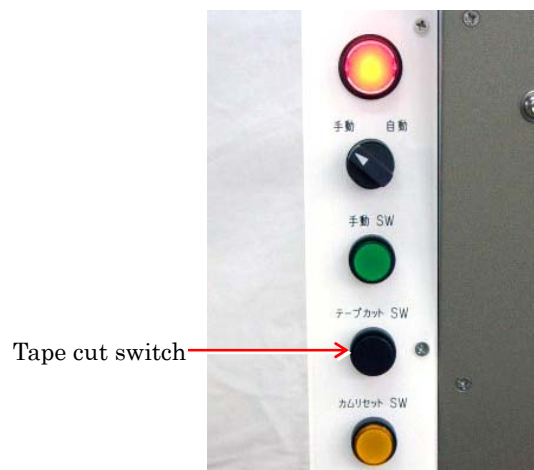
Front side of machine



- 7) Press the MAN switch in the switch box for setting the machine back to the normal mode. The run lamp lighting changes from high speed flickering to full lighting.



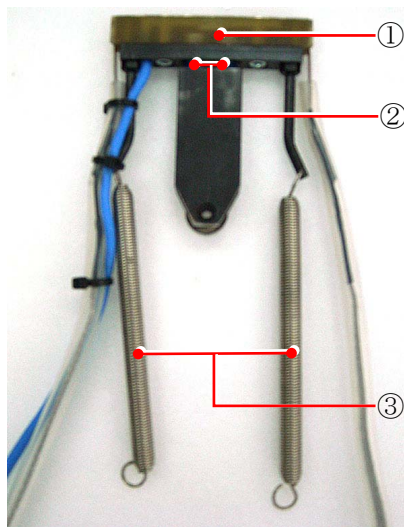
- 8) Press the tape cut switch.
The machine will be set back to the home position.



- * Do not fail to check cycling of the machine. Make sure the banding function is fair. If not, proper adjustment again will be required.

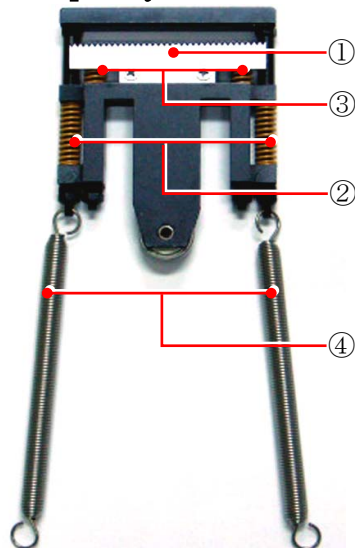
Parts list (consumable parts)

Heater assy



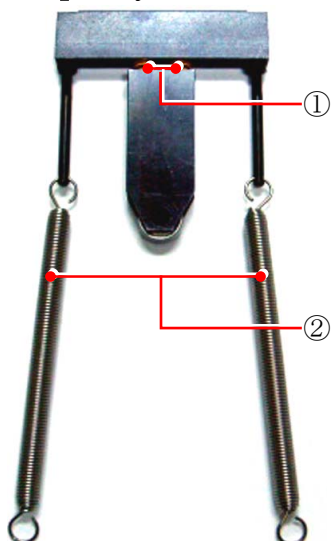
No.	Name of part	PART No.
	Heater assy	
①	Heater plate assy	
②	Heater spring	2690046
③	Slide plate spring	2690058

Cutter clamp assy



No.	Name of part	PART No.
	Cutter clamp assy	
①	Cutter blade	2610700
②	Clamp plate (upper) spring	2690045
③	Clamp plate (lower) spring	2690044
④	Slide plate spring	2690058

Right clamp assy



No.	Name of part	PART No.
	Right clamp assy	
①	Right clamp spring	2690044
②	Slide plate spring	2690058

<p>Heater plate assy</p> 	<p>Heater spring</p>  <p>PART No. 2690046</p>	<p>Slide plate spring</p>  <p>PART No. 2690058</p>						
<p>Cutter blade</p>  <p>PART No. 2610700</p>	<p>Clamp plate (upper) spring</p>  <p>PART No. 2690045</p>	<p>Clamp plate (lower) spring Right clamp spring</p>  <p>PART No. 2690044</p>						
<p>Rubber roller</p>  <table border="1" data-bbox="204 1420 555 1525"> <thead> <tr> <th>Tape width</th> <th>PART No.</th> </tr> </thead> <tbody> <tr> <td>30mm</td> <td>2501200</td> </tr> <tr> <td>50mm</td> <td>2501202</td> </tr> </tbody> </table>	Tape width	PART No.	30mm	2501200	50mm	2501202	<p>Roller spring</p>  <p>PART No. 2590027</p>	<p>Spacer</p>  <p>PART No. 2700100</p>
Tape width	PART No.							
30mm	2501200							
50mm	2501202							
<p>Spacer spring</p>  <p>PART No. 2790029</p>								



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