

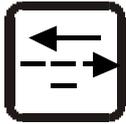
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## Safety Instructions



Before connecting the power supply, make sure the power plug is well earthen, avoiding the operators injured because the machine is electriferous.



When the machine is running, make sure that no objects obstruct the clamp moving on the chain track.



Make sure that hot melt adhesives (glue) in the two glue tanks have melted, before starting the machine.



Before adjusting or repairing the internal structure, the movable pressure plate on the spine milling box should be opened, and power **MUST BE TURNED OFF**. Wait until the milling cutter completely stopped.



When the hot melt adhesives in the two glue tanks gradually reduce, add a small portion of cold pellets of glue and not add too many cold pellets of glue at one time.



According to the book specifications, make the length, width and thickness adjustments.



Keep the working faces of the front plate and clamp body clean, to prevent uneven book clamping and unsatisfactory release of the finished book.

## Machine Features and Functions

This machine is a new-type binding machine that repeats all functions on one straight track. It adopts the frequency conversion speed regulation system, convenient for speed regulation and a faster binding speed. The side glue tank and the spine glue tank, glue on the spine and two sides at the same time. The cover is firmly glued on the book spine, so it results in a satisfactorily finished book.

This machine completes the following procedures:

1. Inserting book into the clamp by hand
2. Spine milling
3. Spine gluing
4. Side gluing
5. Cover feeding by hand
6. Cover applying and nipping
7. Collecting finished book by hand

This machine can be used for both threadless book binding and thread-sewn book binding. It is an ideal machine for the small-scale printing house that wants to produce elegant magazines, or the medium to large-scale printing house that produces books. (Figure 1 shows the operator's operating position.)

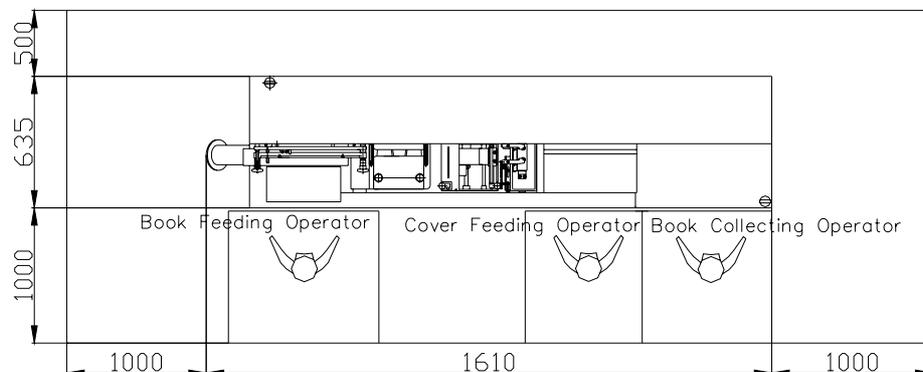


Figure 1

## Specifications

1. Machine Model: Superbinder-50
2. Binding Speed: 720 books per hour (nonstep variable speed)
3. Binding Thickness: 3 to 50 mm
4. Binding Dimension:  

Min. 130 mm by 150 mm

Max. 160 mm by 450 mm
5. Power Requirement (7.44 kw):
  - a. Main drive motor 0.37 kw
  - b. Cutter motor 4.0 kw
  - c. Glue tank motor 0.12 kw
  - d. Cover feeding motor 0.25 kw
  - e. Spine glue electric heater 2.0 kw
  - f. Side glue electric heater 0.7 kw
6. Weight of Machine: 650 kg
7. Machine Exterior Dimensions: 635 mm (width)  

2610 mm (length)

1218 mm (height)
8. Noise: ≤ 80db (tested by JB/T9123-1999 5.4)

## **Machine Driving Principles**

This machine consists of five parts: (see in Figure 2)

1. Machine Frame
2. Book Feeding Unit
3. Clamp
4. Drive Unit
5. Spine Milling Unit
6. Spine Glue Unit
7. Side Glue Unit
8. Cover Applying and Nipping Unit
9. Electric Control Unit

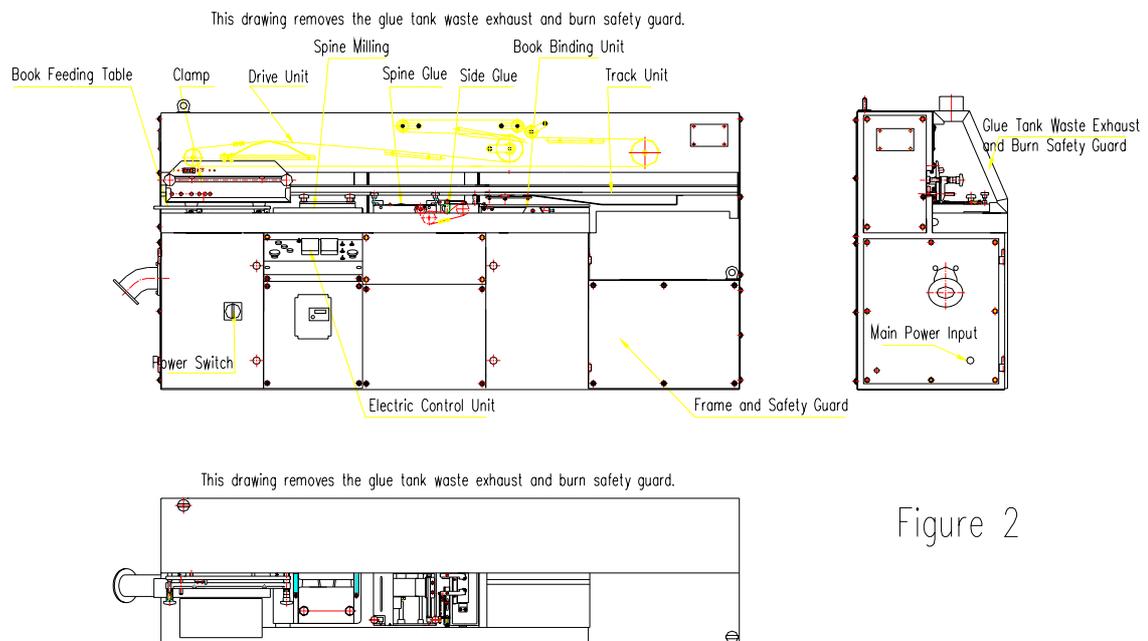


Figure 2

Among them the clamp, cutter unit, glue unit, and cover applying and nipping unit are driven by their individual motors (see in Figure 3). In the book feeding position, the clamp is opened by the left-open beveled plate, for adding the book into the clamp.

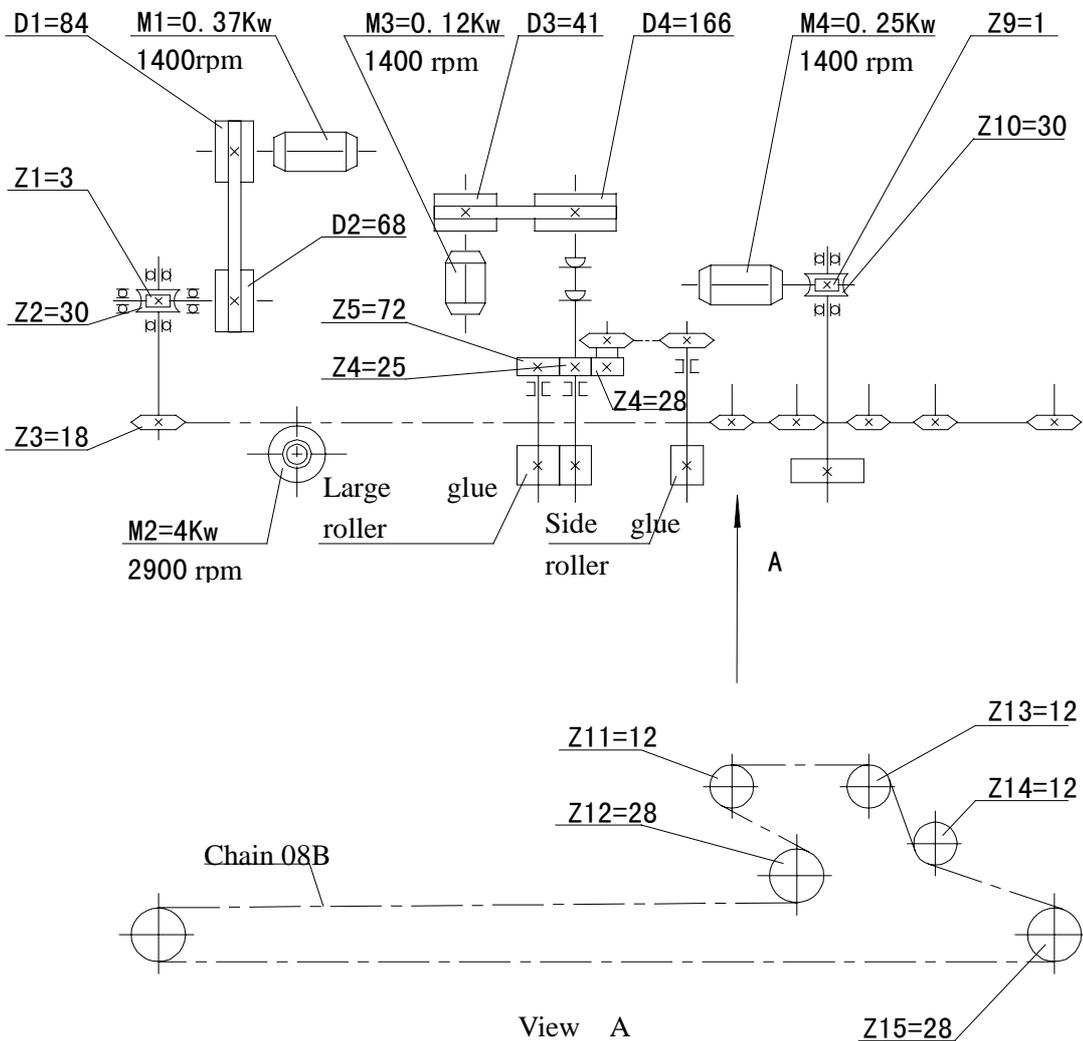
The clamp is the main moving part of the machine. The main drive motor power is transferred to the worm gear by transfer belts, and then the chain wheel transfers the

power to the chain. The drive pin, which is a part of the chain, drives the clamp along the track. The clamp moves forward from the book feeding position; passes over the glue unit; pauses when the clamp is above the cover applying and nipping unit; then moves to the end of the track, where the completed book automatically falls from the clamp; and thus quickly returns to the starting point. It completes one working cycle.

The cutter motor directly drives the milling cutter and back slotting cutters.

The glue tank motor drives the glue rollers of the spine glue unit and the side glue unit. When the glue rollers run, proper thickness of the melted glue is kept on the rollers' surfaces. The roller of the spine glue unit glues the spine directly, and the two small glue rollers attached to the inner and outer copper spring links glue the book sides. When the clamp moves above the cover applying and nipping unit, it pauses shortly. At the same time the drive pin engages the binding cycle lever to trigger the cover feeding motor, and the motor power is transferred to the double-sided cam. Under the effect of the cam, the push rod jacks up the cover applying and nipping plate to push the cover against the book back, and then the stretch rods tighten the front and rear jaws to nip the cover on the book. The double-sided cam continues running, the stretch rods loosen the two jaws, and the push rod falls down to its original position. At this time the stop cam, which coaxially rotates with the double-sided cam, engages the stop switch, turning off the cover feeding motor supply. The double-sided cam has run one cycle, and the machine has finished one binding operation.

After finishing book binding, the clamp continues moving forward to the finished book collecting position. The clamp is opened by the right-open beveled plate, and the finished book drops into the collecting unit. The clamp moves again, before quickly returning to the book adding position. The clamp engages the stop switch, disconnecting the main drive motor supply, and the brake in the motor housing stops the clamp quickly, thus it completes one binding cycle.



- M: Motor    D: Pulley
- Z: Gear Wheels (Z1, Z2, Z9, Z10 worm Gears)
- M1: Main Drive Motor M2: Cutter Motor
- M3: Glue Tank Motor M4: Cover feeding Motor

Figure 3 Driving Principle

# Machine Installation and Operation

## 1. Installing Machine

The customer should check for damages to the packing crate upon receiving machine. Check all the items against the shipping list. If there is anything abnormal, it should be reported to DeLuxe Stitcher so that it can be corrected. Remove all surface wrapping paper and anti-rust oil. Next apply a coat of machine oil to avoid rusting.

The machine should be installed on a firm, flat concrete base to ensure that the machine is stable. Install the machine refers to Figure 4. It is essential that the machine is earthen or grounded before any connection to the power supply. After connection to the supply, the cutter revolving direction must be checked. Observe the cutter direction, which should be clockwise looking from the top. If the cutter direction is clockwise, it indicates the power phase sequence is correct. And the other three motors' revolving directions are set at the factory.



**Caution:** Contrary direction of each motor's revolving is **STRICTLY** forbidden.

## 2. Adjusting Procedures prior to Starting Machine

After installation of the machine, firstly adjust machine parts that require adjustment according to the binding specification (length and width):

- (1) The head register pin position,
- (2) The clamp opening size,
- (3) Gap between shear plate and pressure plate on the spine milling box,
- (4) Height of milling cutter and depth of groove
- (5) Book feeding plate height for spine milling
- (6) Glue unit height
- (7) Gap between two knurled side glue rollers applied to the side glue unit,
- (8) Height of book feeding plate
- (9) Gap between front jaw and rear jaw when nipping,
- (10) Brake gap

If milling is required, make to adjustments.

- (A) Set cutter to working height relative to milling required
- (B) Set cutter to non-working height if milling is not required.

The adjusting method of the above-mentioned positions will be introduced in the next section. The general adjusting rule is: adjusting height direction [according to item (2), (3), (4), (5)], the inside parts have been adjusted at the factory, users only need to adjust the outside parts. Adjusting length direction [according to item (1), (6)], depending on the corresponding position of book and the cover. Width direction: at the factory, the working height of the milling cutter has been adjusted as a datum, then adjusting the spine glue roller height, side glue roller height and the height of the support plate attached to the cover applying and nipping unit; therefore, users need only a small portion of adjustment according to the different glue viscosities, the glue film thickness to the spine and the binding technology.

After adjusting the machine properly, clean the machine's working table. Prepare books and covers for binding, add appropriate cold pellets of glue into the glue tank, connect the paper dust collector to the machine, and place the finished book collector in the correct position. Then start the machine when the all above preparations have been done.



**Caution:** Proper adjustments must be made before starting the machine to prevent damage to machine parts.

### 3. Starting and Running the Machine

One person is needed to feed the book. One or two other individuals are needed to feed the cover and collect the finished book.

Firstly turn on the main power button located below the control panel. Turn the heater switch to ON position, and the temperature controller's indicator's green lights light up. According to the required glue viscosities, adjust the pre-set temperature of the thermostats from 160 ° to 170 ° C. When the temperature reaches the pre-heat temperature, the red lights of temperature controllers come on. Secondly turn on the glue tank motor's switch to start the glue roller (**Note: Do not start the glue tank motor before the glue is completely melted; otherwise it could damage the machine parts.**).

Thirdly turn on the cutter motor’s start switch. Fourthly turn on the cover-feeding motor switch, and press the main motor start button. The main drive motor’s run switch should be in position.

One person puts the book into the clamp. While another person loads covers onto the cover applying and nipping table. Then the first person presses the main drive motor’s step button. The clamp runs forward immediately, and clamps the book tightly. After milling, gluing, binding, and releasing the book, the clamp quickly returns the original position.

Press the main motor step button to stop the machine after one working cycle. Switch the main motor switch to “1” position, and the clamp runs continuously. Switch to “2” position to enable photoelectric control. In this position, insert a book into the clamp the clamp runs without pushing the step button. The speed of one cycle can be adjusted by way of a dial on the speed controller located under the control panel.

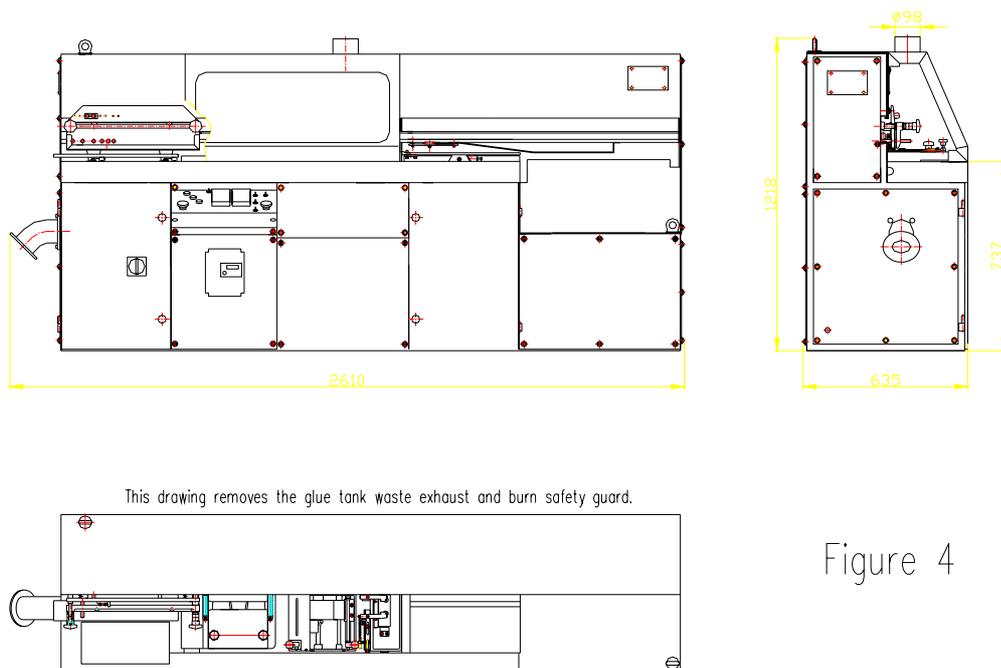


Figure 4

## Machine Adjustments

### 1. Adjusting Head Register Pin Position

Book must be in the central part of the clamp body so that book bears even clamping pressure in the clamp. There are some screw holes in different position in the clamp body. Put the head register pin into the correct hole for the different size's book.

### 2. Adjusting Clamp Opening (Gap between Front Plate and Clamp Body)

The clamp opening consists of two parts: one is net clamp opening, and the other is book thickness clamp opening.

Net opening: When the clamp moves to the two ends of the track (the book adding position and the finished book collecting position), the compression spring is compressed by the left-open or right-open beveled plate. The clamp opens for book adding and book collecting. The net opening is usually 10 to 20 mm. It is different at the two ends. The wider the net opening, the stronger the spring force is. In the normal condition, when book is added and released smoothly, selecting the smaller opening is more reasonable. To adjust: 1. Loosen the pressure screws fixed on the left and right beveled plates, 2. Move the long slot along the track to change the net opening. Note that the verges of the open beveled plates are parallel to the track, to avoid the beveled plate angle changing too much, and need to tighten the pressure screws and do not adjust the net opening frequently.

Clamp opening for book thickness: Adjust the clamp opening according to the book thickness. When the clamp moves beyond the beveled plates, it closes automatically. Check the gap between the front plate and clamp body. The book thickness opening is usually 1.5 to 2.5 mm smaller than the book thickness. To adjust: Slide the proper spacers over the two studs, so they are between front plate and clamp body. Note that thickness of the chosen spacers should be the same for both studs.

### 3. Adjusting Gap between Shear Plate and Pressure Plate on the Spine Milling Box

Adjust the gap between shear plate and pressure plate on the spine milling box according to the book thickness, in order to avoid book deformation during spine milling and back slotting. The lower book part should be clamped firmly, but must still allow the book to pass through smoothly. The outlet needs to be a little wider than the front. Put the book between shear plate and pressure plate and drag it left and right. Feel a little resistance, but can still move the book freely. Adjust by loosening the two hand knobs on the pressure plate, and then lock them when the gap is set correctly.

When the cutter unit is not required, adjust the gap to allow the book to pass through freely.

4. Adjusting Height of Milling Cutter and Depth of Groove (Power Should Be Turned Off When Adjusting)

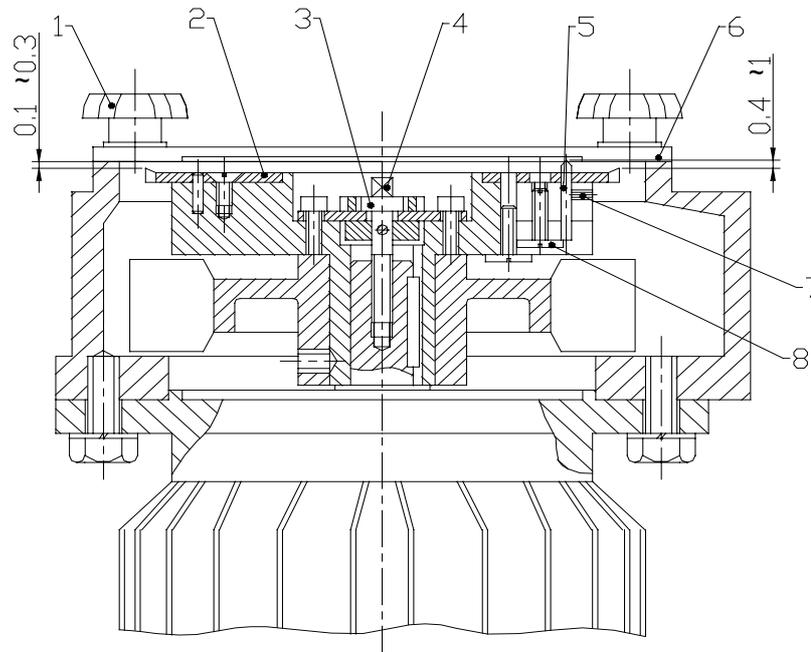


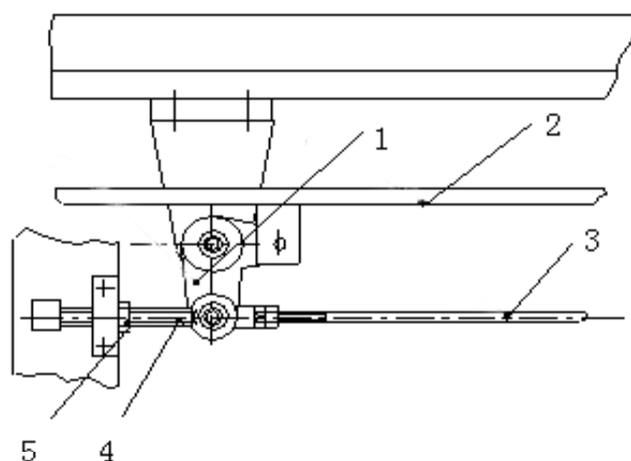
Figure 5 Adjusting Milling Cutter Height and Groove Depth

- 1 hand knob 2 milling cutter 3 ring nut (right-handed) 4 square head screw (left-handed) 5 back slotting cutter 6 pressure plate and shear plate
- 7 socket head set screw 8.adjusting screw

Strictly speaking, the milling cutter has only two positions: (1) the working height position for books requiring milling, and (2) the non-working height position when no milling is required. To adjust: 1. Open the pressure plate, and loosen the ring nut. 2. Adjust the square head screw by the spanner for square nut (the thread is left-handed). The milling cutter will rise if the screw is turned clockwise, or drop if turned anti-clockwise. 3. When the milling cutter is rotating, the gap between the teeth plane of

the milling cutter and the bottom of the shear plate is 0.1 to 0.3mm. If the gap is too small, the cutter can be easily damaged; if the gap is too big, it will result in an unsatisfactory spine (see in Figure 5). 4. If the cutter unit is not required, adjust the milling cutter to the lower position, and let the book pass over it. Note: whether the cutter unit is required or not, the ring nut should be locked after properly adjusting to avoid the square-headed screw loosening. The cutter working height is a datum for adjusting the machine's other parts. Adjust four supporting bolts under the spine milling box for the correct height. Four back slotting cutters are incorporated in the cutter blade, when the teeth are adjusted to the raised position they will cut grooves of 0.4 to 1.0 mm across the milled book spine to give improved adhesion. To adjust: 1. Loosen four socket head set screws in the edge of the cutter arbor that holds the slotting cutter. 2. Turn the adjusting screw beside the slotting cutter for the required slotting depth. Usually one or two cutters are needed. Note: Ensure the teeth of the back slotting cutter are at the same height and in the correct direction. 3. Then lock the four socket head set screws after properly adjusting.

#### 5. Adjusting Book Feed Plate Height for Spine Milling



**Figure 6** Adjusting Book Feed Plate Height for Milling

- 1 adjusting holder    2 book feed plate    3 double end screw rod  
4 adjusting screw rod    5 locking nut

The book feed plate is at the book feed position, and it limits the book's lowest position in the clamp. Its height needs to be adjusted according to whether spine milling is

required or not, and if required, how much to be milled. When spine milling is not required, the height of the feed plate is equal to the working height of the milling cutter blade. Then the height of glue rollers and cover feed plate does not need changing. When spine milling is required, the book feed plate is lower than the working height of the milling cutter plane. The height difference is generally 0.8 to 1.5mm, and the quantity to be milled is determined by this height difference. Too more milling will cause book deformation and influence binding quality; too little milling may cause uneven spine and bad binding quality. In addition, the book feed plate should be parallel to the chain track; otherwise the two ends of book will not be milled equally. This will result in crooked printing and pictures in the books. If spine milling is not required and the glue film thickness on the two ends of book are not equal, carefully adjust the book feed plate so that it is parallel to the chain track. To adjust the parallel (see in Figure 6):

1. Loosen the locking nuts on the adjusting screw rod.
2. Turn the adjusting screw rod with the wrench to make the book feed plate parallel.

Normally the difference in height between the book feed plate and the cutter plane is adjusted by lowering or raising the cutter blade. If necessary, the book feed plate can be raised or lowered by way of the square screw.

## 6. Adjusting Glue Unit Height

The glue units consist of a spine glue unit and a side glue unit. After moving over the cutter unit, the clamp with book enters the glue units. First the large applicator roller applies glue on the spine, and then the smaller scraper roller removes surplus glue. If the roller position is too high, it causes spine deformation or inadequate glue film thickness; if too low, no glue or uneven glue will be applied. Generally, the height of the large applicator roller is about 1.0 to 1.8mm lower than the cutter blade, or the gap between the milled spine bottom and the top of the large applicator roller is 1.0 to 1.8mm (this gap is determined by the operator's experience with glue viscosities and different paper). And this gap is necessary for the proper glue film thickness to be applied on the book spine by the large applicator roller. The smaller scraper roller is about 0.5 mm higher than the large applicator roller, which causes the glue to be applied evenly on the spine. The spine glue tank unit is mounted on the two eccentric sleeves, which are used to adjust the height of the spine glue unit. To adjust: Turn the two hand knobs attached to the glue tank, to adjust the gap between the glue roller and its scraper and adjust the glue film thickness applied on the spine. The two knurled side glue rollers' bottom should be parallel to or a bit higher than the book bottom (do not allow the book spine touch the bigger side glue roller). Adjust the height of the side glue unit by four supporting screws under the side glue tanks. To adjust: 1. Loosen the socket head set screws attached to the machine frame, 2. Turn the supporting screws to adjust the height. Adjust the glue film thickness on the surfaces of the bigger side glue roller and the two knurled side glue rollers, by slightly adjusting their individual glue

scrapers.

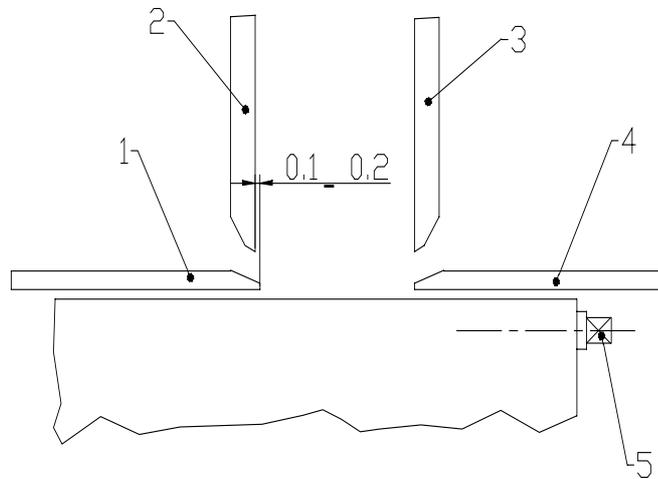
## 7. Adjusting Gap between Two Knurled Side Glue Rollers on the Side Glue Unit

The pivots of two knurled side glue rollers are riveted on two copper swing links, and the pressure spring or leaf spring is installed on the other end of the swing link to make the link swing. Before the book moves through the side glue rollers, the gap between the two wheels is less than the book thickness. The spring is compressed or stretched, causing the two swing links to swing away and let the book pass through, while the two side glue rollers apply glue. While the book is moving on, the linear velocity of the two side glue rollers caused by the friction with the book is the same as the speed of the book. Since there is always a layer of hot glue on the two side glue rollers, the glue is applied evenly on the two sides of the book.

In order to adjust side glue rollers for the proper pressure, the original angle of the swing link is generally 2 to 3 degree, adjusted by the stop-push screw. After properly adjusting, it should be seldom required. According to the book thickness, the gap between the two side glue rollers should be 6 to 12mm less than the book thickness. Each side of the wheels can be adjusted 3 to 6mm. To adjust: 1. Loosen pressure bolt on the adjusting plate. 2. Rotate the adjusting rod, to let the adjusting plate move in and out. 3. Lock the pressure bolt after properly adjusting.

## 8. Adjusting Gap between Front Jaw and Rear Jaw on Cover Applying and Nipping Table When Nipping

The gap between front jaw and rear jaw on the cover applying and nipping table directly influences the binding quality. Generally the rear jaw does not need adjusting, and its working face should protrude normally about 0.1 to 0.2mm (see in Figure 7) in front of the clamp body. Only adjust front jaw for the different book thickness. Adjust the lead screw under the front jaw with the spanner for square nut. Different gaps produce different nipping strength. Too much or too little nipping strength will cause a rippled spine.



**Figure 7** Adjusting two nipping jaws distance

1 rear jaw 2 clamp body 3 front plate 4 front jaw 5 screw

Note: 1. Measure gap when the jaws are in the nipping state. Set distance by screw. Adjustment should be under the condition that is not including the screw gap. 2. Adjust the gap. Do not adjust too much at one time which could result in too small of a gap for the book thickness. This could result in extreme pressure on machine parts and breakages.

#### 9. Adjusting Height of Cover Feed Plate

The height of the cover feed plate attached to the cover applying and nipping unit directly influences the binding quality. The height should be parallel to or a little lower than the plane of the milling cutter. It can be adjusted by altering the length of the push rod, which is located below the cover applying and nipping table. Wrinkles on the spine, indicates that the cover feed plate height is higher than the plane of the milling cutter and the push rod length should be shortened. If the cover is not firmly bound to the book spine, this indicates that the cover feed plate is lower than the plane of the milling cutter, and the push rod should be lengthened. The cover feed plate should be parallel to the chain track on which the clamp moves. If the book is unevenly bound on the two ends, it indicates that the cover feed plate is not parallel to the chain track from left to right. If the book is unevenly bound on the two sides, it indicates that the book feed plate is not parallel to the chain track from front to back. To adjust: 1. Loosen the four lock nuts that connect guide to the machine frame. 2. Adjust the bolts to ensure that the cover feed plate is parallel to the chain track. 3. Lock the nuts after carefully adjusting.

Note: Adjust the parallel prior to the height. Then adjust the height. Be careful not to set too high, otherwise the machine parts will be damaged when the cover feed plate rises up against the book tightly.

After the cover applying and nipping unit runs one cycle, it needs to stop at the lowest position (some error is allowable). If it acts incorrectly, loosen the pressure screw fixed to the cam center, and adjust its circumferential position opposing to the double-sided cam.

#### 10. Adjusting the Brake Gap

The main drive motor brake is power-off braking. When the power is turned on, the brake's magnet coil produces magnetic force to overcome the spring force. The magnetic force attracts the friction plate, producing a gap, so the shaft can rotate freely. When the power is turned off, the magnet coil loses magnetic force. The spring expands freely, pressing the friction plate against the rotating plate. Adjust the friction plate gap or the spring force to change the braking force.

- a. Adjust the gap: Loosen the 3 hex setting screws on the motor's brake housing, and adjust the three nuts as required.
- b. Adjusting the spring force: In the brake housing there are three small adjustable hex screws to change the spring's force. Usually a slight adjustment is all that is required.

## Machine Lubrication

In order to enable the machine to run normally and extend its service life, cleaning and maintenance are very essential.

1. At the beginning of each work shift, add lubricating oil to the axle behind the middle of the clamp body.
2. After 40 working hours, add diluted grease with a brush to upper and lower surfaces of the edge of the clamp track.
3. After 40 working hours add lubricating grease with a brush to all gears, chains and movable parts under: (1) book cover applying and nipping unit, (2) the glue tanks.



**Caution: When lubricating, do not dirty the place where the books and covers touch, with the oil or grease.**

## Machine Remove

Operators should take the two following methods to remove machine, to prevent their injury and machine's damage.

- 1) Use the hydraulic chief-trunk of capacity above 3-ton, and need at least two operators.
- 2) Use the bridge crane of capacity above 3-ton, with the attached machine fittings (hanger) to remove the machine, see in Figure 8.

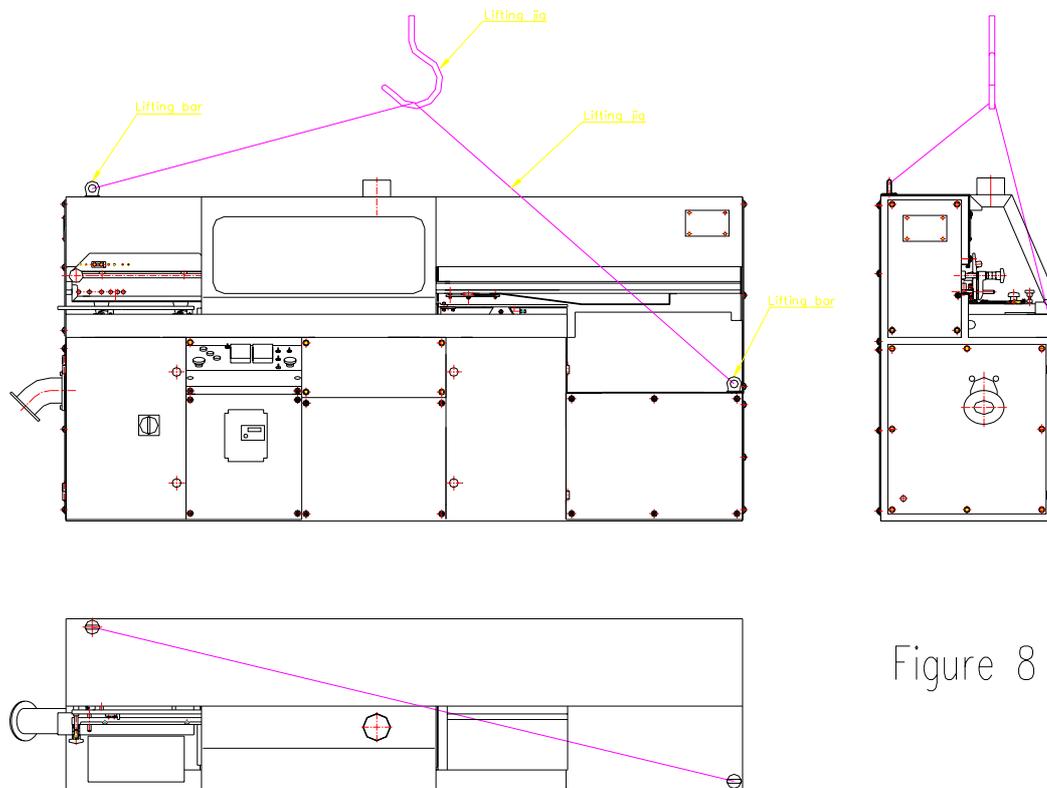
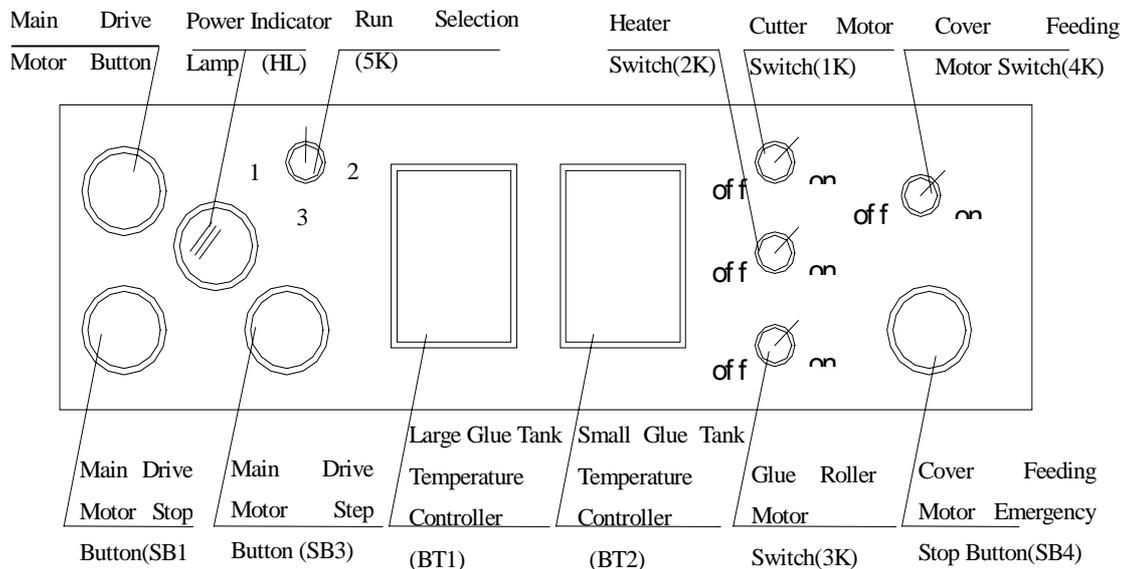


Figure 8

# Electrical Instructions

## 1. Control panel



## 2. Main Drive Motor

The motors are supplied by 3-phase power supply (Power Frequency: 50/60HZ, Rating: 230 VAC). There are 4 motors and 2 electrical heaters, and the 4 motors function as overload and short-circuit protections with their individual parts QF1, QF2, QF3, and QF4. The main motor (clamp motor) M1 regulates speed by the frequency conversion device. Close QK, the indicator HL on the control panel lights up. Turn on the frequency converter, its screen flashes continuously. The knob on the control panel controls the frequency converter (it is set at the factory): turn the knob clockwise to increase the frequency; turn the knob counter clockwise to reduce the frequency. The operations are explained in detail in the speed controller manual.

## 3. Control Circuits (See in Electrical Diagrams for Circuits)

Connect the power supply, press SB2, the contactor KM7 picking up, so the main drive motor will start. Turn on the button-switch (5K) to the position "1", KM1 picks up, and the main drive motor runs; turn on 5K to position "3", and press SB3 to enable the main drive motor to step-run; turn on 5K to position "2", the photoelectric control starts, and when adding the book into the clamp, the main drive motor runs. The speed of the main

motor is controlled by the speed controller, and its setting is set according to the user's requirements.

Turn on the button-switch (1K) to ON, KM2 picks up, and enables the cutter motor (M2) to run.

Turn on the button-switch (2K) to ON, the temperature controllers of the large and small glue tanks is alive, the contactors KM5 and KM6 pick up, and the temperature of the glue tank rises. When the temperature reaches the setting value, KM5 and KM6 picks up all the time, and while turning on the button-switch (3K) to ON, the glue roller starts running. The delay relay (KT) acts to ensure the glue roller motor is not started at the moment when connecting the power supply. Turn on the button-switch (4K) to ON, close SQ1 in the moment of the clamp running, KM4 and KM8 picks up, and close the circuit in advance by B3, and then the cover feeding motor starts. Open SQ2 during one of the cam's return, the cover feeding motor stops, and it finishes one cover feeding. Owing to the cover feeding motor's inertia, B3 closes, and prepares for the next cover feeding. And there are emergency stop buttons (SB4) and the thermo relay (FR) being set for the overload protection of the cover feeding motor.

#### 4. Electrical System Feature

- a. The speed controller and the photoelectric control: improve the working efficiency, and reduce the worker's labor strength.
- b. The glue tank temperature: chain control with the glue tank motor, avoids the glue tank motor being damaged when the temperature is low.
- c. The cover feeding motor set with the thermo relay: ensure the cover feeding motor is not damaged when it is overloaded.

## Attached Tools

No.	Name& Specification	Quantity	Remark
1	Toolbox	1	
2	Oil Can	1	
3	Inner-hexagon Spanners 1.5 to 10 (metric)	1 set	
4	Open Ended Wrenches 6 to 22 (metric)	1 set	
5	Adjustable Wrench 10"	1	
6	Phillips Screwdriver	1	
7	Regular Screwdriver	1	
8	Special Square Spanner	1	

## Repaired or Replaced Parts

No.	Name& Specification	Requirement after replacing
1	Leaf spring	When clamp runs at the max. speed, it can still position correctly at the book feeding and book binding positions.
2	Milling cutter	The distance between the milling cutter and the shear plate is 0.1~0.2mm. And the distance between the milling cutter and the shear block left is 0.1~0.2mm.
3	Slotting cutter	Generally the slotting cutter is 1.5~2.0mm higher than the milling cutter's knife point.
4	Triangle belt A-1230	Suitable tightness.

## High Usage Parts

No.	Figure No.	Name	Material	Remark
1	-3-4	Copper sleeve	H62	
2	-3-11	Upper / Lower copper plate	H62	
3	-3-13	Leaf spring	65Mn	
4	-3-15	Round end guide	45	
5	-3-16	Flat end guide	45	
6		Stud type roller	Standard part	Outer diameter $\phi$ 25
7	-7-9	Drive pin	40Cr	
8	-7-12	Plate support I	Phenolic plate	
9	-7-13	Plate support II	Phenolic plate	

## Faults - Causes – Remedies

Faults	Causes	Remedies
1. Paper dust extractor hose is plugged by paper dust.	The milling paper dust is too big.	Reduce the milling size to make the paper dust be small enough for being easily extracted.
2. Faulty book spine after milling	<p>A. Book is added carelessly, causing pages uneven.</p> <p>B. Inadequate spine milling</p> <p>C. Gap between milling cutter and shear plate is too large.</p> <p>D. Shear block is worn.</p> <p>E. Milling cutter is damaged or dull.</p> <p>F. Back slotting cutter is at incorrect height, angle is incorrect, or back slotting cutter is dull.</p>	<p>A. Make sure pages are even before adding book into the clamp.</p> <p>B. Lower book feed plate (2 to 3mm).</p> <p>C. Raise milling cutter to reduce the gap (the smaller the gap, the better).</p> <p>D. Replace shear block.</p> <p>E. Replace milling cutter.</p> <p>F. Adjust back slotting cutter's height and angle, sharpen or replace back slotting cutter.</p>
3. Vibration of milling cutter motor and paper dust extractor	<p>A. Spine milling base's locking screws are loose.</p> <p>B. Paper dust extractor hose is plugged by paper dust.</p>	<p>A. Tighten four locking screws.</p> <p>B. Clear paper dust.</p>
4. Uneven spine gluing	<p>A. Large applicator roller and small scraper roller are set too high or too low.</p> <p>B. Bearing sleeve is worn.</p>	<p>A. Adjust height of both glue rollers.</p> <p>B. Replace bearing sleeve.</p>
5. Glue is not heated	<p>A. Thermal control apparatus fault</p> <p>B. Thermocouple fault</p> <p>C. Fuse is blown</p> <p>D. Heating plate outlet terminal is disconnected.</p> <p>E. Heating plate is damaged.</p>	<p>A. Check and repair, or replace.</p> <p>B. Check and repair, or replace.</p> <p>C. Replace the fuse.</p> <p>D. Re-connect the wire.</p> <p>E. Replace the heating plate.</p>
6. Faulty side gluing	<p>A. Too much side glue</p> <p>B. Side glue tank is set too high.</p>	<p>A. Adjust gap between two side glue scrapers and two knurled side glue rollers (gap is 0.5 to 0.8mm).</p> <p>B. Adjust side glue tank's height so that the bottom of</p>

	<p>C. Bigger side glue roller is not rotating.  D. Gap between bigger side glue roller and its scraper is too small.  E. Spring pressure or tension spring pulling force is weak.</p>	<p>height , so that the bottom of bigger side glue roller is parallel to book spine.  C. Clear obstacle from the bigger side glue roller.  D. Adjust gap( 0.5 to 0.8mm ).  E. Adjust spring pressure or pulling spring pulling force.</p>
<p>7. Faulty cover application and nipping  A. One end straight , one end round.    B. One side straight , one side round.    C. Spine is fatter than book.    D. Glue permeates into book.    E. Pages of book are loose, or not firmly attached to the book spine.  F. Different books are bound different.    G. Book spine wrinkles.</p>	<p>A. Uneven pressure is applied on cover applying and nipping unit's copper support plate.  B. Front plate and back plate (clamp body) are not parallel, or book is added evenly into clamp.  C. Cover applying and nipping unit's copper support plate is jacked up too high, or gap between inner and outer nipping jaws is too small.  D-1. Spine glue is too thick, or too thin.  D-2. Back slotting cutter is dull, or its height is too low.  E-1. The glue viscosity is not enough.  E-2. Glue is not completely solidified.  F. Location of book in three clamps is not the same.    G-1. Book is loose.  G-2. Glue permeates into book.</p>	<p>A. Adjust so there are equivalent pressures on both ends.    B. Make sure front and back plate is parallel, or book is evenly placed into clamp.  C. Adjust push rod under the copper support plate, or adjust the outer nipping jaw to loosen nipping.    D-1. Adjust spine glue thickness.  D-2. Replace the back slotting cutter, or adjust its correct height.  E-1. Replace the glue  E-2. Fan pages till glue is solidified.  F-1. Insert head register pin in the same location in each clamp.  F-2. Locate book in proper location in each clamp.  F-3. Make sure book datum position is the same (The front of book faces the operator, and the top of book is against the head register pin.).  G-1. Choose the correct spacer for front plate of clamp.  G-2. Make sure to choose the</p>

<p>H. Cover binding is not uniform.</p> <p>I. Finished book does not fall from clamp.</p>	<p>H-1. Push rods under applying and nipping table or cam is out of adjustment.</p> <p>H-2. Copper plates on upper and lower slide blocks of three clamps are worn, or gap between guide and upper or lower block is not the same because of fixing screw being loose.</p> <p>H-3. Worn rollers inside cam</p> <p>I-1. Clamp opening is too small.</p> <p>I-2. Glue or dirt is on clamp.</p>	<p>correct spacer, adjust spine glue thickness and the height of back slotting cutter.</p> <p>H-1. Adjust push rods and cam's position.</p> <p>H-2. Replace copper plates, or tighten the fixing screw.</p> <p>H-3. Replace rollers.</p> <p>I-1. Add spacer, so clamp opening is about 5mm bigger than book thickness.</p> <p>I-2. Clean Glue or dirt.</p>
<p>8. Binding with no glue.</p>	<p>A. Height of the cover applying and nipping plate is too low, so the pressure is not enough.</p> <p>B. Too much inside the glue.</p> <p>C. The smaller glue scraper roller does not scrape glue even.</p> <p>D. The glue thickness is too thick.</p> <p>E. The book thickness is too thick.</p>	<p>A. Raise the cover applying and nipping plate.</p> <p>B. Start the machine till glue is completely melted.</p> <p>C. Adjust the smaller glue scraper roller.</p> <p>D. Adjust the glue thickness properly.</p> <p>E. Slightly tap the finished book against the plate when glue is not completely solidified, to make glue on the book firmly.</p>
<p>9. Finished book with the imperfect cover</p>	<p>A. When the finished book is moving along its passage, its cover is damaged because of hitting the chute or other items.</p> <p>B. Too much oil is added to the track, so the excess oil drops onto the cover.</p> <p>C. There is some glue left</p>	<p>A. Check and clean the passage, to avoid cover hitting the foreign objects.</p> <p>B-1. Add the machine oil frequently, but not much at one time.</p> <p>B-2. If too much is added one time, immediately clean excess oil off the track.</p> <p>C. Clean the cover applying</p>

	on the cover applying and nipping plate.	and nipping plate immediately.
10. Fault in the driving units.	<p>A. There is a gap between the slide block and the track.</p> <p>B. Copper plate on the slide block is worn.</p> <p>C. Driving pin is worn.</p> <p>D. Fuse is blown.</p> <p>E. Motor start switch is not turned on.</p> <p>F. Fault in transfer belt</p> <p>G. Clamp is running unevenly.</p>	<p>A. Loosen the fixing screw on the slide block; reduce the gap to the minimum; and then tighten the screw.</p> <p>B. Replace copper plate.</p> <p>C. Replace driving pin.</p> <p>D. Replace fuse.</p> <p>E. Turn on the switch.</p> <p>F-1. Adjust the belt's tightness.</p> <p>F-2. If belt pulley is loose, tighten the setscrew.</p> <p>G-1. Driving pin worn, replace it.</p> <p>G-2. Flat end guide or circular end guide worn, exchange the side or replace it.</p>
<p>11. Fault in electrical unit</p> <p>A. Clamp is running unevenly.</p> <p>B. Clamp runs very slowly.</p> <p>C. Clamp does not move when main drive motor switch is in step run or photo electricity run positions.</p> <p>D. The temperature of glue tank does not rise.</p> <p>E. The temperature controller pointer points at the full-scale range.</p>	<p>A-1. Frequency converter input wiring is loose.</p> <p>A-2. Connector 125#, or 128# looses.</p> <p>B-1. Fuse is blown.</p> <p>B-2. Motor brake, or rectifier is burned out</p> <p>C-1. Limit switch position is incorrect.</p> <p>C-2. Limit switch is worn.</p> <p>D-1. Fuse is blown.</p> <p>D-2. The wire connection of heating plate on the glue tank looses.</p> <p>E-1. Thermocouple connector to the temperature controller becomes loose.</p>	<p>A-1. Tighten the wiring.</p> <p>A-2. Check the wiring and connect the wire</p> <p>B-1. Replace fuse.</p> <p>B-2. Replace the brake, or the rectifier.</p> <p>C-1. Set limit switch to correct position.</p> <p>C-2. Replace limit switch.</p> <p>D-1. Replace fuse.</p> <p>D-2. Re-connect the wire.</p> <p>E-1. Re-connect it.</p>

<p>F. Binding does not function.</p>	<p>E-2. Thermocouple burns out.                      F-1. Self-locking switch below the cam is not in the correct position.                      F-2. Limit switch is not pressed to the correct position.                      F-3. Limit switch damaged.                      F-4. The nipping between the front and rear jaw is too strong and the motor overloads. The thermo relay trips automatically.</p>	<p>E-2. Replace it.                      F-1. Re-adjust its position.                      F-2. Re-adjust its position.                      F-3. Replace it.                      F-4. Loosen the two jaws, and stop the motor for 10 minutes. Press the thermo relay button in the electrical panel until the motor runs normally.</p>
<p>G. Binding does not fully finish.</p>	<p>G-1. The limit switch of the cam does not press onto the correct position, or the position is incorrect when the position changes.                      G-2. The limit switch of the cover feeding cam damages.</p>	<p>G-1. Re-adjust it (refer to the manual).                      G-2. Replace it.</p>
<p>H. The main motor does not run.</p>	<p>H-1. The motor brake gap is not large enough.                      H-2. The motor brake or the rectifier burns out.</p>	<p>H-1. Increase the brake gap.                      H-2. Check it, and then replace the brake and/or rectifier.</p>

## Appendices

1. Electrical Diagram      DY-1  
                                 DY-2
2. Electrical Wiring Diagram    DJ-1  
                                 DJ-2
3. Whole Machine Electrical Elements Layout Diagram DW-1
4. Components in Control Box Array Diagram      DW-2

