

温州市鸿博印刷机械有限公司

Wenzhou Hongbo Printing Machinery CO.,LTD

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YFMA-720L model

Automatic laminating machine

# Instruction manual

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## YFMA-720L model



(Figure 1)

## Introduction

### Dear user:

Welcome to choose our products. First of all, please pay attention to the following items: the best working environment shall be the indoor workshop, the ambient temperature should be: 5-40 ° C, the humidity should not be too dry to prevent paper deformation, the relative humidity should be 20-80% RH, try to protect the electrical cabinet from too much dust, and the air should not contain acid salt and other corrosive gases.

Before using this product for the first time, in order to ensure the normal use of the equipment and make the equipment in good working condition, please read the manual in detail first and use machine according to the manual.

### 1. Overview and characteristics:

#### 1.1 Overview:

YFMA series automatic laminating machine is a lamination processing equipment for laminating BOPP film or no glue film onto printing products. This machine can be used for both BOPP film and no glue film. The main machine adopts frequency conversion and speed regulation, and runs stably. It is equipped with unique paper bending prevention device and freezing roller, and the printed matter after lamination cutting is straight and no bending. The lamination roller is driven by hydraulic pressure, and the heating roller is equipped with heating tube and filled with heat-transfer oil, and the cutting roller is driven by air cylinder. Its products have the advantages of good adhesion, high transparency, strong three-dimensional sense and so on.

This machine has advantages of advanced design, reasonable structure and stable performance, beautiful appearance, small volume, light weight and power saving, simple operation and labor saving, long service life and convenient maintenance.

This machine is mainly used for single side auto lamination of thermal BOPP film and no glue film onto printed matter. After lamination, the surface of printed matter is bright, colorful, with high strength, waterproof and moisture-resistant. Therefore, it can be widely used in the cover decoration of textbooks, books and periodicals, as well as the

mounting of New Year pictures, calendars, maps and packaging cartons. This machine has the advantages of high working pressure, fast temperature rise, low noise and stable operation, which is an indispensable post press processing in modern printing industry.

## 1.2 Characteristics:

- a. This machine can be used for both no glue film and thermal BOPP film.
- b. No need to apply glue, save process, economical and environmental protection.
- c. No need drying pipe, save power and space.
- d. The heating roller is equipped with U-shaped heating tube and filled with heat transfer oil, with uniform and stable temperature
- e. The diameter of the pressure rubber roller and the press steel roller increases, which prolongs the contact time between the paper/plastic and the two rollers.
- f. The paper is pulled apart in a bouncing way, with less covering area and convenient operation.

## 2. Description of signs

### 2.1 warning signs

There are two kinds of warning signs in this manual: one is precautions and the other is prohibitions.

**Caution:** wrong operation can cause danger. It will cause equipment damage and endanger personal safety.

**Prohibition:** wrong operation will cause injury or even death.



**Caution injure hand:** Warning mechanical injury.



**Do not touch:** Please don't touch with your hands, caution scald.

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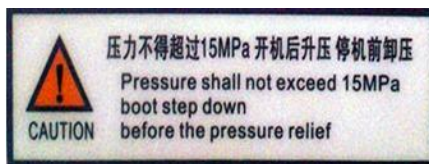
**Caution Hot:** Please don't touch with your hands, caution scald.



**Caution injure hand:** Warning mechanical injury.



**Electric hazard:** Live electrical equipment, there is electricity dangerous.



**Pressure notice sign:** it means that the pressure of the pressure roller shall not exceed 15MPa. The pressure can only be increased after the machine is started, and after the machine stopped, it must be relieved.

## 2.2. Operation mark



**Emergency stop button:** If the machine needs emergency shutdown during operation, press this button, the machine will stop running. If you want to start again, you must turn and lift this button, otherwise the machine will not start.



**Inching button:** press and hold this button, the machine will run slowly, and release the button, the machine will stop.



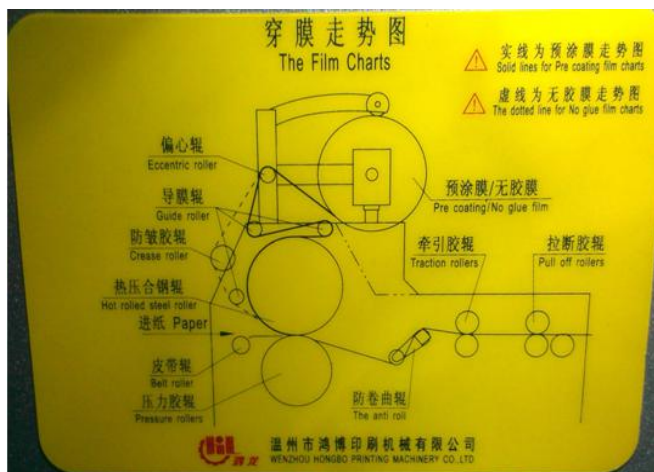
**Main power switch and panel power switch:** before starting the machine, please turn on the main switch first, and then turn the panel switch to the "on" state. After the machine stops, please first turn the panel switch to the "off" state, and then turn off the main switch.



**Power indicator:** when the light is on, it means power on; when the light is off, it means no power.



**Pneumatic break ON/OFF:** press the button once to force a paper cutting action and the cutting will automatically according to the working paper length.



**Schematic diagram of film passing through:** Please pass the film through the rollers according to the schematic diagram.



**Traction rubber roller:** this knob is the lifting control of the traction rubber roller in front of the breaking roller. When the knob is turned to the right side, the traction roller is in the lifting state, and when the knob is turned to the left side, the traction roller is in the pressing state.



**Traction rubber roller pressure adjustment and pressure display:** before adjustment, first pull out the knob, then adjust the pressure as required, and then press the knob to lock itself.



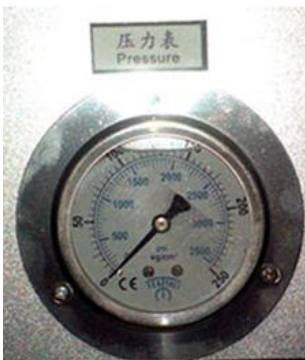
**Inflatable shaft pressure adjustment and pressure display:** the knob here can control the tension of the inflatable shaft during the operation, which can only be turned when it is pulled up during the adjustment, and then press down the knob for self-locking after the adjustment.



**Acceleration and deceleration button:** press the green button to speed up the running speed of the main engine. The best operation mode is to press three times in a row at a time. If you press it continuously, there will be stacking instability. Red is the deceleration button. Press it to slow down the running speed of the main engine.



**Up and down buttons of the paper feeding table:** Here you can control the rise and fall of the paper feeding table of the automatic paper feeder. Press the green button, the paper table will rise, and press the red button, the paper table will fall.



**Pressure regulation and pressure display of oil pump:** turn the knob clockwise to increase the pressure, and turn the knob anticlockwise to decrease the pressure.

## 3. Technical parameters

### 3.1 Model and description

# YFMA - 720L



The maximum width of the paper (The maximum paper width of this machine is 680mm)

Design code of Laminating machine.

### 3.2 Main technical data:

Maximum surface of lamination	L1050mm*W680mm
Minimum surface of lamination	L210mm*W260mm
Applicable paper thickness	105-500g/m <sup>2</sup>
Maximum speed of lamination	0-60 m/min
The working power supply	220/380V, 50/60HZ
Temperature of lamination	≤130°C
Compaction-Pressure	5 ~ 15MPa
The total power	24KW
Covering area of the machine	L5600mm*W1400mm
Total weight of the machine	2200 kg
Noise of the machine	≤80 dB(A)
Relative humidity of working environment	20%~80%RH
Temperature of working environment	5-40°C

## 4. Structure and working principle

### 4.1 Structure

The machine is composed of automatic paper feeding system, front stop gauge stack control system, hot pressing lamination system, unwinding system, thin paper anti-curved system, paper punching system, paper cutting system, finished product collecting system and electrical control system. See figure 1.

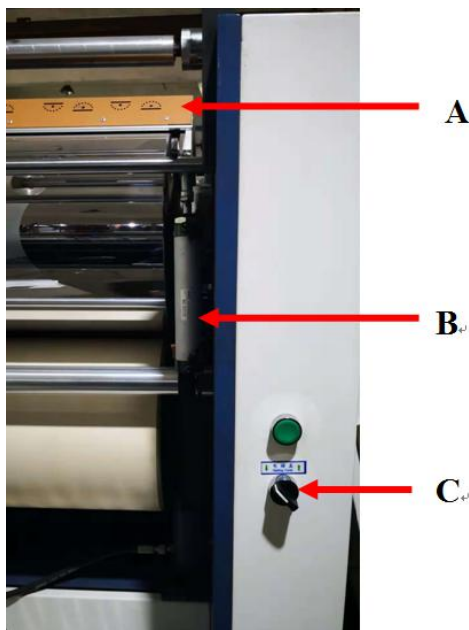
## 4.2 Working principle

### 4.2.1 Principle

The papers are sent out by the automatic paper feeder, overlapped which controlled by the front stop gauge, and transported to the hot pressing lamination roller to be laminated with the film, which is laminated under the action of certain temperature and pressure; then enter into the slitting system through the thin paper anti-curved mechanism for pull cutting, then enter into the paper collecting platform, so as to complete the whole process flow. The electromagnetic heating system of the heating roller is fast, stable and uniform in heating and temperature control.

### 4.2.2 Heating roller

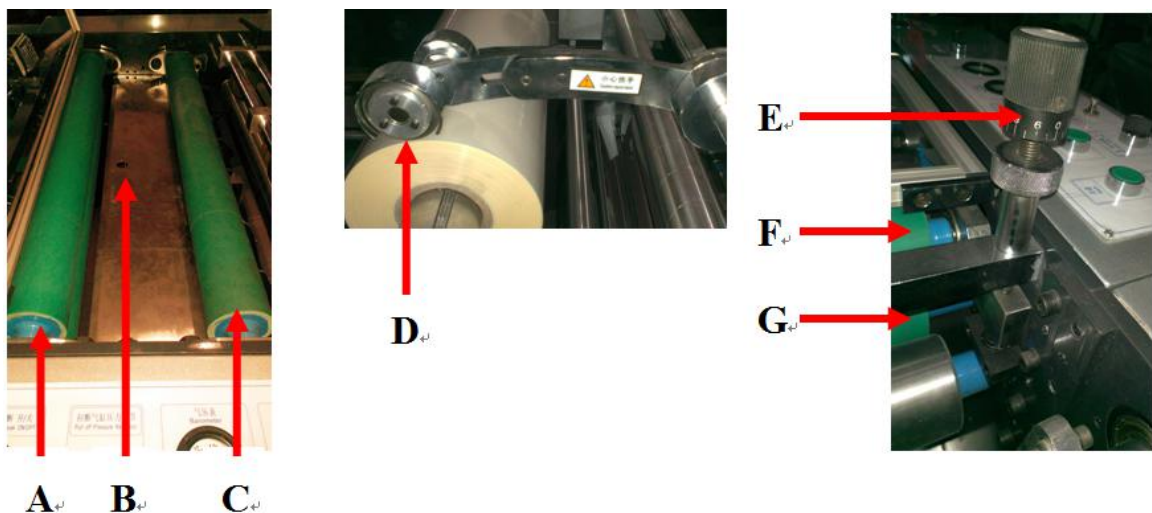
The steel heating roller adopts electromagnetic heating, the upper part of which is equipped with an electromagnetic heating cover body. The reasonable distance between the arc sheet of the electromagnetic cover and the steel roller surface is 5-8mm. Refer to the following figure 2, “A” is the electromagnetic cover body, “B” is the lifting cylinder, “C” is the lifting control button. The lifting function is to facilitate the cleaning of the roller surface.



(Figure 2)

## 4.2.3 Bouncing slitting system:

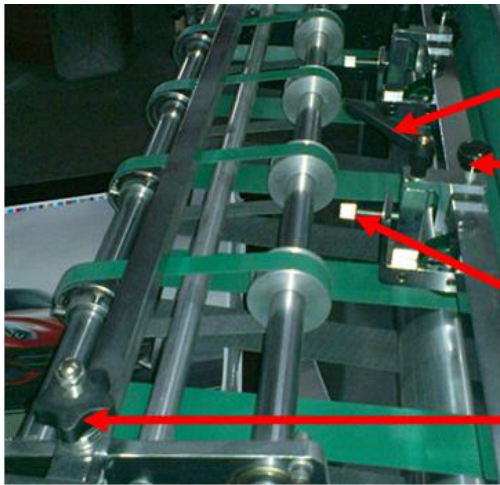
4.2.3.1 The bouncing roller group (Figure 3-1 “A”) is composed of the upper rubber roller (Figure 3-1 “F”) and the lower rubber roller (Figure 3-1 “G”). One end of the bouncing upper rubber roller is controlled by the adjusting bolt (Figure 3-1 “E”) to control its space, and the other end is controlled by the swing arm of the cylinder to control the bouncing up and down. The bouncing slitting process is: Use the perforating cutter (Figure 3-1 “D”) to perforate holes in the edge of the film, then laminate the film onto the paper. When the laminated paper passing through the bouncing slitting system, the bouncing rollers bounce up and down according to the signal of the photoelectric probe (Figure 3-1 “B”) and the encoder. When the bouncing roller is pressed, because the linear speed of the bouncing roller is faster than that of the front traction pressing roller group (Figure 3-1 “C”), the film at the overlap of two papers is pulled apart by the speed difference to achieve the purpose of slitting. When slitting, it is no need to move the rollers according to the length of the paper, so the covering area of the machine is small.



(Figure 3-1)

- A: Bouncing roller group
- B: Photoelectric probe
- C: Front traction pressing roller
- D: Perforating cutter
- E: Adjusting bolt for bouncing rubber roller
- F: Upper bouncing rubber roller
- G: Lower bouncing rubber roller

## 4.2.3.2 Operation of breaking point wheel:



**H**: Tightening handle of point wheel angle  
(The wheels here swing angle to arch the paper for easy pull cutting)

**I**: Tightening handle of point wheel transverse shift

**J**: Adjustment nut for point wheel pressing force

**K**: Adjustment handle for corrugated high and low

(Figure 3-2)

## 5. Installation and adjustment of the machine

### 5.1 Installation of the machine

#### 5.1.1 Preparation

5.1.1.1 Before installation, check whether all parts of the machine are complete and whether the attached accessories are complete.

5.1.1.2 There are four parts in the packing box: main machine, finished product paper collecting platform, air compressor (optional) and toolbox, which should be checked carefully.

5.1.1.3 Install the machine on a level, firm ground. Adjust the anchor screw to ensure the main machine position is horizontal. Adjust the support screws of the finished product collecting platform, and adjust the platform to a proper slope (according to the user's experience and habits), so as to facilitate the collection of finished products.

5.1.1.4. Hoisting and handling: the equipment parts to be hoisted and handled include the main machine and the paper collecting platform. When hoisting, pay attention to the level and handle with care, so as not to damage the shell of the machine or even loosen or damage the parts.

#### 5.1.2 Connection of parts

##### 5.1.2.1 Connection of main machine power

The professional electrician shall connect the power supply. Schneider's circuit breaker (model NC125H-C 125A / 2p + VM) is recommended to be used as the external circuit breaker. Please use 4-core 5-square copper wires for the power line, and the shell of main machine must be effectively grounded.

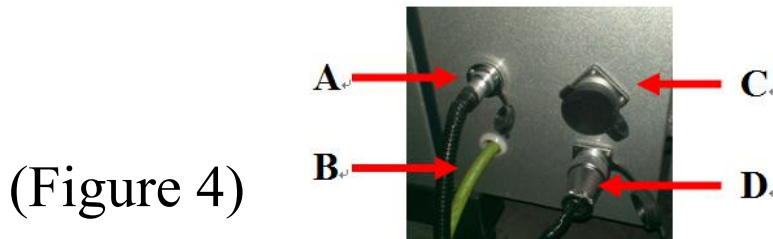
(Figure 4) is the schematic diagram of power supply position.

A is the aviation plug of the vibration motor of the vibratory paper collecting table (in case of equipped with vibratory paper collecting table);

B is the import of the main power line;

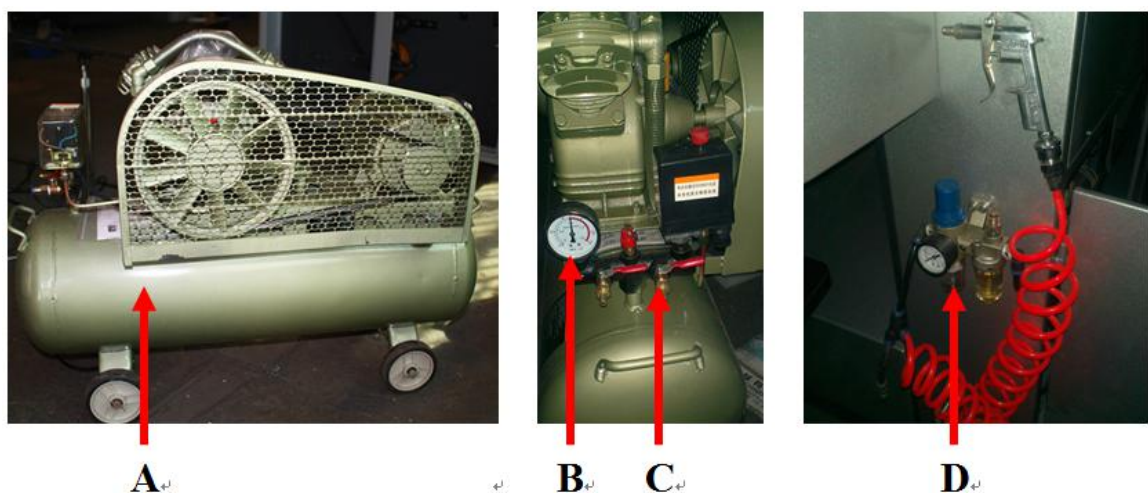
C is the aviation plug of the air compressor power supply;

D is the aviation plug of the vacuum pump power supply.



## 5.1.2.2 Connection of air compressor plug and air tube (see Figure 5)




Connect the aviation plug of the air compressor (see A in Figure 5) to the main engine (see Part C in Figure 4). Connect the air tube of the air compressor with the atomized lubricator of the main engine. The method is: connect the air inlet tube on the left side of the water separator at the tail of the machine (see Part D in Figure 5) to the position shown in part C in Figure 5 of the air compressor, turn on the air compressor switch and open the air tube ball valve of Part C before starting the machine, and close the ball valve after the machine is closed.

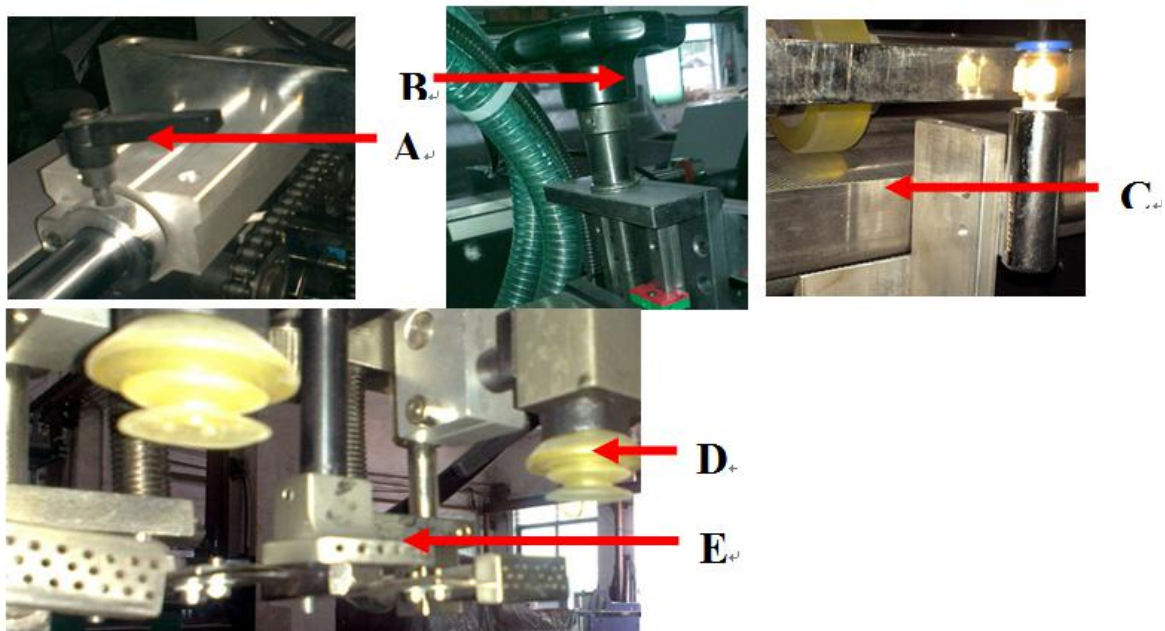


(Figure 5)

## 5.2 Adjustment of the machine


### 5.2.1 Operation of automatic paper feeder

(a) During paper feeding, press and hold the  (red button) to lower the paper table to the automatic stop, and stack the paper neatly on the paper table. Loosen and level the paper to avoid double sheet or paper shortage. Then press and hold  (green button) to raise the paper table to automatic stop, press  (host start) in the touch screen to start the machine, move the feeder head so that the end of the paper can be contacted around the rubber of a suction nozzle (D in Figure 6). That is, the paper presser foot (E in Figure 6) stretches into the paper about 5-6mm. Lock the left and right positioning handles (A in Figure 6) of feeder head, rotate the high and low hand wheels (B in Figure 6) of feeder head, and adjust the paper surface to be flush with the paper baffle (C in Figure 6).



(Figure 6)

(b) When the feeder switch is started, it is necessary to see whether the automatic rising action continues.

(c) After the automatic rise stops, press the vacuum pump switch  and observe the direction of the vacuum pump. There is a direction indication on the vacuum pump. When the vacuum pump is started, check the data of the pressure gauge and the vacuum gauge (air meter). It is better if the pressure gauge pointer reaches 50kPa, and the maximum value cannot exceed 60kpa. The vacuum indicator should be between 20-30 kPa. The left and right knobs of the air pump are adjustment knobs, and the error can be

adjusted. (the pressure of vacuum pump has been adjusted to the best value at the time of delivery, no need of further adjustment).

See Figure 7 below: A is vacuum pressure gauge. B is compression pressure gauge.



(Figure 7)



(Figure 8)

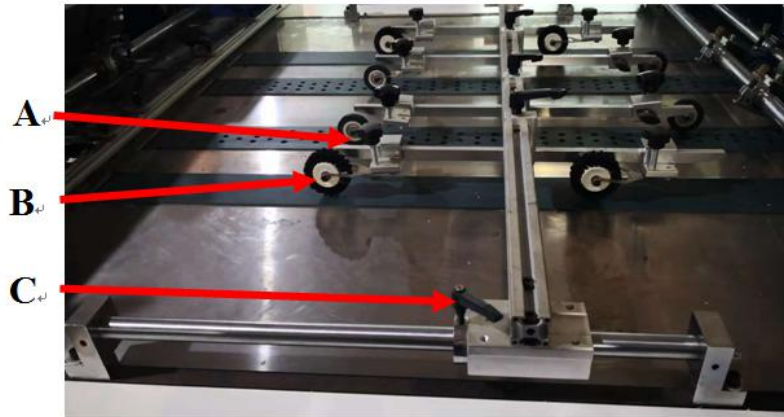
A. Blowing pressure adjustment knob

B. Suction pressure adjustment knob

C. Clean the filter once a week

D. The rotation direction sign of vacuum pump, it shall ensure that the operation direction is consistent with the sign, and the reverse rotation direction will damage the vacuum pump.

(d) After the air pump is started, adjust the pressure of the paper pressing wheel and the brush wheel when the paper is fed out. Pressing paper wheel cannot be too tight, adjustment depends on the thickness of the paper. (Figure 9 below)



A: Adjusting screw of brush wheel

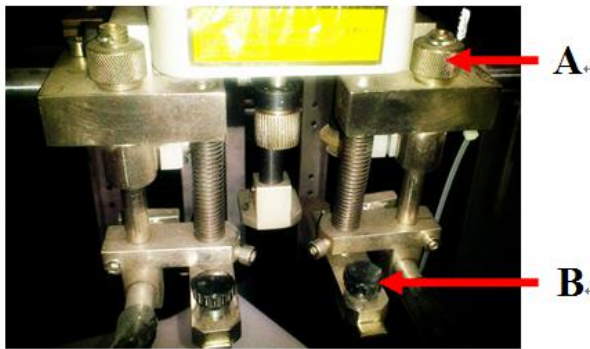
B: Brush wheel

C: Handle for move left and right of pressing paper sheet

(Figure 9)

(e) To adjust the height of the paper carrier, the top paper must be flush with the height of the paper stopper (as shown in Figure 6, position C). If the paper is uneven and wavy and the adjustment cannot reach the position, can rotate the high and low hand wheels of the feeder head (as shown in Figure 6, position B) or insert the triangle block under the paper. You can also adjust the height of the presser foot to make the paper reach the correct height.

(f) The distance between the paper separation tablet and the edge of the suction nozzle is 3-5mm (as shown in Figure 10, B). The pressure should not be too heavy. It can be adjusted according to the thickness of the paper (as shown in Figure 10, A). When the paper is thin, the paper separation tablet should be close to the paper. When the paper is thick, the brush is about 1mm away from the paper, which is convenient for the paper to be blown away by air.



A: Adjustment nut for high and low of the paper separation tablet.

B: Adjustment nut for front and back of the paper separation tablet.

(Figure 10)

(g) See Figure 11 for adjustment of auxiliary blowing of feeder head

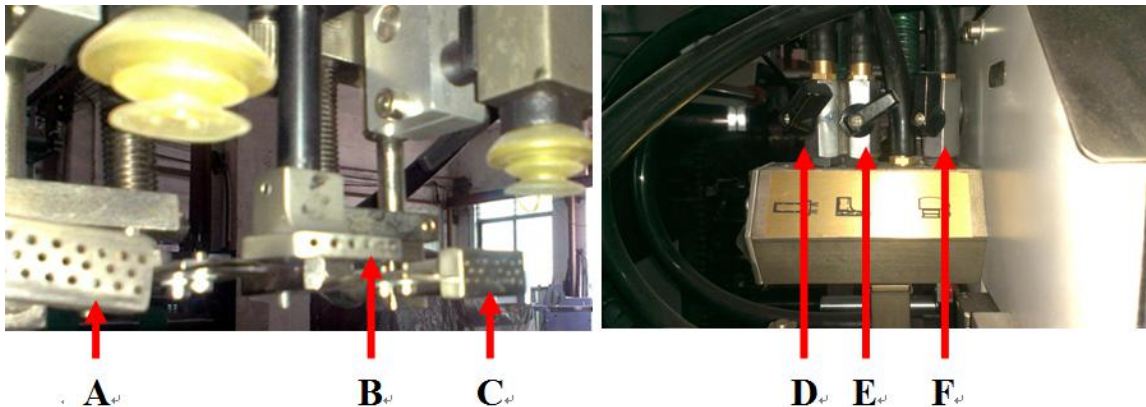
A / C: left and right blowing

B: paper presser foot blowing

D: air volume adjustment knob of left and right sides

E: air volume adjustment knob of paper presser foot blowing

F: suction adjustment knob of suction nozzle



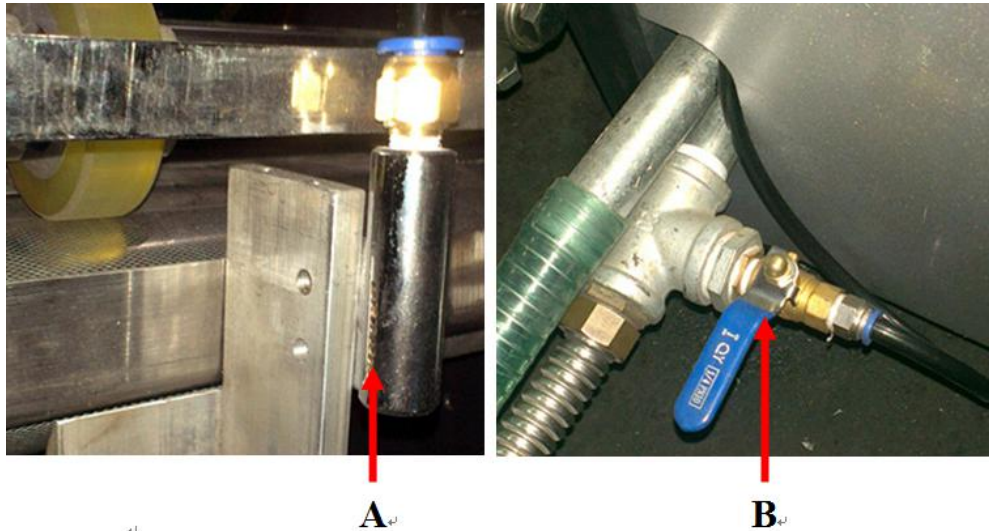
(Figure 11)

(h) Auxiliary air blowing of baffles on both sides

When the paper surface is raised to the level of the paper baffle, an auxiliary blowing mechanism which is installed in the both sides baffles (as shown A in Figure 12), will blow off the feeding paper on the paper carrier by blowing, so as to prevent the paper from sticking together and avoid the occurrence of sending double sheet of papers. (B in Figure 12 is the switch of the ball valve of control blowing. If it is more than 200 g / m<sup>2</sup>,

the ball valve can be closed, and if it is less than 200 g / m<sup>2</sup>, the ball valve can be opened)

(as shown in Figure 12)



(Figure 12)

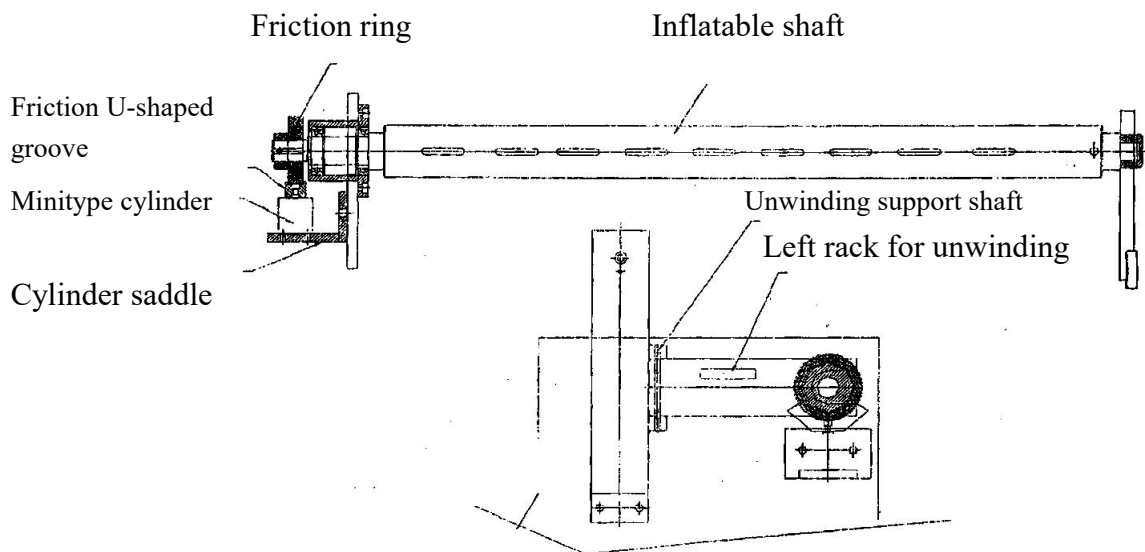
## 5.2.2 Operation of the film unwinding device

5.2.2.1 In the process of production, it is necessary to adjust the unwinding tension of BOPP film or no glue film irregularly to maintain a certain tension of the film, so that the surface of the product will be smooth (the tension cannot be too large, otherwise the deformation of the film will cause severe deformation or tear if it exceeds its allowable amount). Turn the adjusting knob (B in Figure 13) on the panel to observe the tension of the inflatable shaft according to the pressure displayed on the pressure gauge. When replacing the film, lift and fix the film perforating cutter and film slitting cutter pressed on the film, loosen the fastening handle at the left film bracket (C in FIG. 13) to slightly adjust the film roll to move left and right, rotate the inflatable shaft to the outside of the right cover (as shown in Figure 14), press and hold the valve at the side of the inflatable shaft (at D in Figure 13) to loosen the inflated strip, record the corresponding scale number of the film roll and the inflatable shaft, remove the film roll to be replaced, install a new film roll and push it to the last scale, rotate the inflatable shaft to the groove of the left bracket, lock the fastening handle and fasten it, use the air gun to fill air through the

valve, the inflated strip is inflated by air to tighten the film roll, press down the perforating cutter then thread the film according to the Schematic diagram of film threading.



(Figure 13)

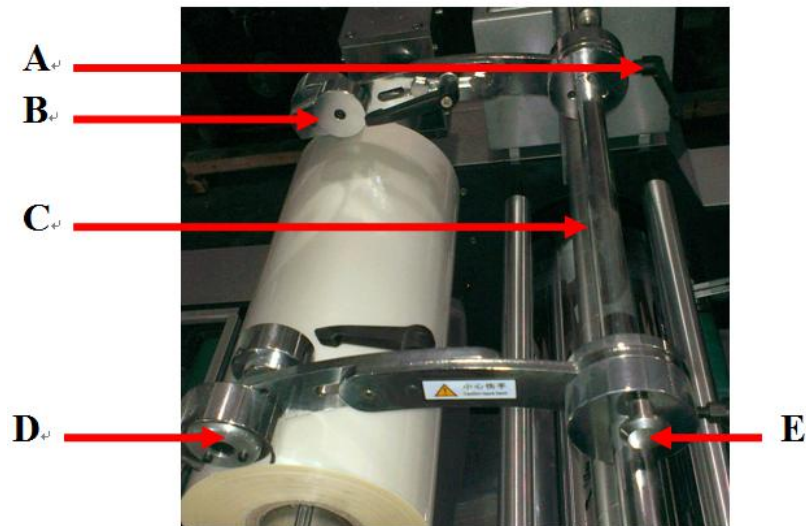


(Figure 14) Schematic of inflatable shaft

### 5.2.3 The usage of film slitting cutter and perforating cutter

5.2.3.1 Align the working paper with the film and place it on the film, release the fastening handle (A in FIG. 15) on the holder of the film slitting cutter (B in FIG. 15),

pull out the locating pin (E in FIG. 15), lower the cutter holder and hold it by hand and slowly move it on the fixed axis (C in FIG. 15) to the corresponding cutting position and press the circular blade on the film (the width of the film is generally less than the width of the paper). Use adhesive tape to stick the unused film. With the machine running, the film is cut off. The cut film remains on the paper cylinder. When the perforating cutter (as shown in Figure 15, Part D) is not needed, just lift the cutter holder, and the locating pin on the cutter holder will be automatically inserted into the cutter holder and locked on the cutter holder shaft, to keep the cutter from rotation and descend.



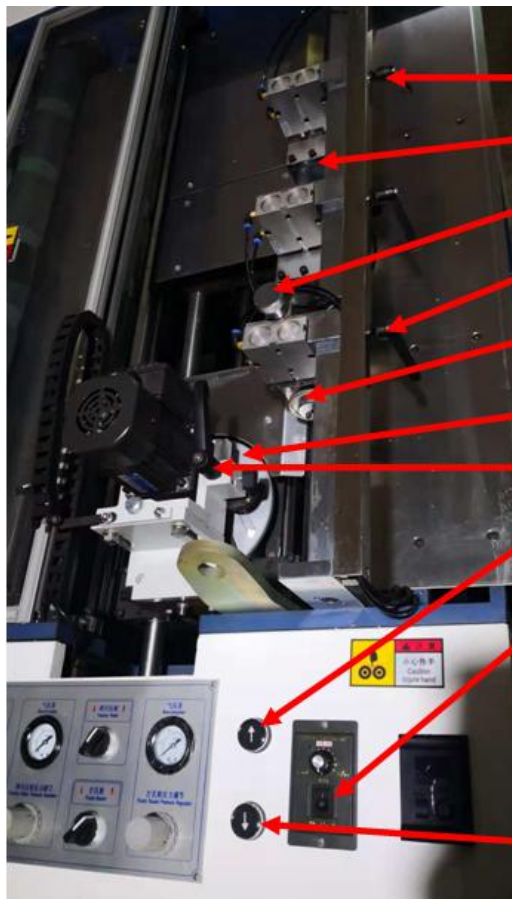
(Figure 15)

5.2.3.2 Usage of film perforating cutter: hold the cutter holder by hand, pull up the pin on the cutter holder (A in Figure 16), put down the cutter holder gently, and press the blade on the film 2-3mm away from the film edge (B in Figure 16 is the perforating cutter).



(Figure 16)

5.2.4 Usage of perforating cutter and paper cutter on finished paper (as shown in Figure 17 below).

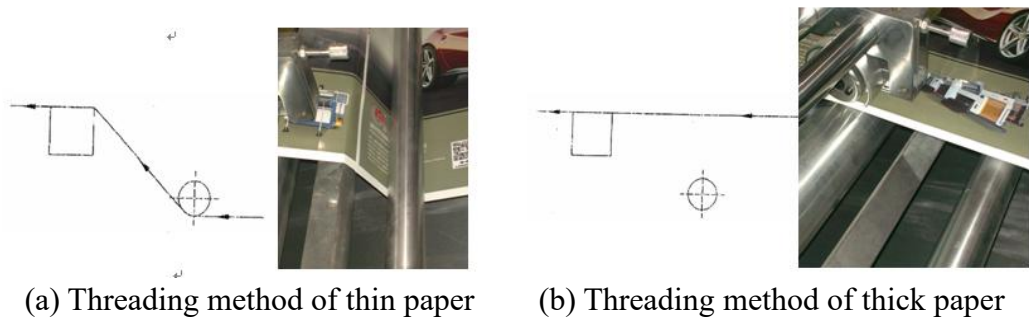


- A: Fixing screw of pressing wheel.
- B: Paper pressing rubber wheel.
- C: Fixing screw of perforating cutter.
- D: Pressure adjusting nut of perforating cutter.
- E: Perforating cutter.
- F: Paper cutter.
- G: Angle adjustment screw for paper cutter.
- H: The forward button for paper cutter.
- I: Back and forth switch for paper cutter.
- K: The return button for paper cutter.

(Figure 17)

#### 5.2.5 Usage of anti-curved device

The function of the anti-curved device is to prevent the bending of the thin paper after lamination. When laminating paper less than 200gsm, anti-curved device shall be used, as shown in Figure 1 (a); When laminating paper more than 250gsm, anti-bending device shall not be used, as the Figure 4(b) shows.



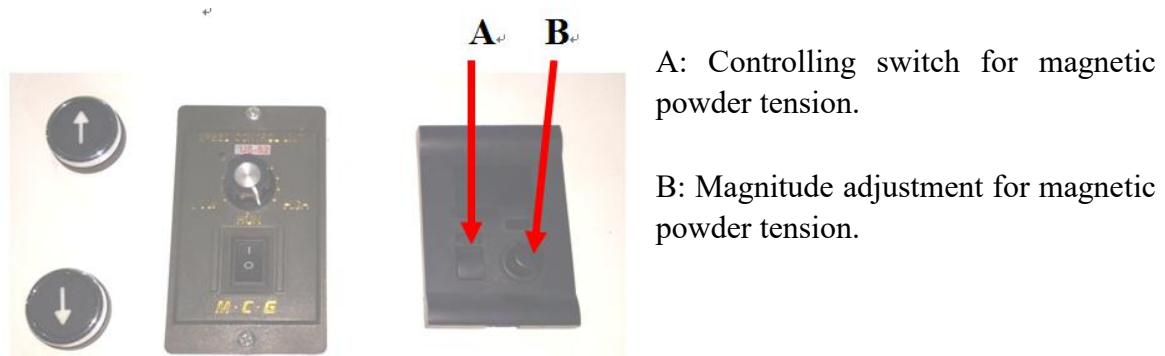
(Figure 18)

## 5.2.6 Cutting part adjustment

### 5.2.6.1 Usage and adjustment of traction rubber roller

The speed of the traction rubber roller is slightly faster than that of the lamination pressure steel roller. When the paper is not tensioned between the traction rubber roller and the lamination pressure steel roller after lamination, it means that the magnetic powder tension of the traction rubber roller is too small; when the paper is pulled off before the traction rubber roller, it means that the magnetic powder tension of the traction rubber roller is too large. At this time, the magnetic powder tension coefficient of the traction rubber roller should be adjusted.

(As the Figure 19 shows)

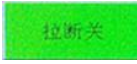



(Figure 19)

## 5.2.6.2 Usage of cutting and breaking rubber roller.



When the machine needs to cut and break the paper, press once (pneumatic break switch) when the overlap of the paper runs between the traction rubber roller and the breaking rubber roller. At this time, the breaking rubber roller will press down once to break the paper, indicating the beginning of the cutting and pulling. This equipment is equipped with PLC computer automatic system, which will automatically cut the paper when the first paper is cut and pulled. When it is not necessary to perform slitting, it is

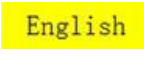
necessary to press the  (pull off) button in the touch screen (this button will change from the green background to the yellow background  (pull on)), indicating that the slitting pull off stops. (please refer to the instructions on page 12 in "4.2.3" for the clearance adjustment of the slitting and breaking roller group)

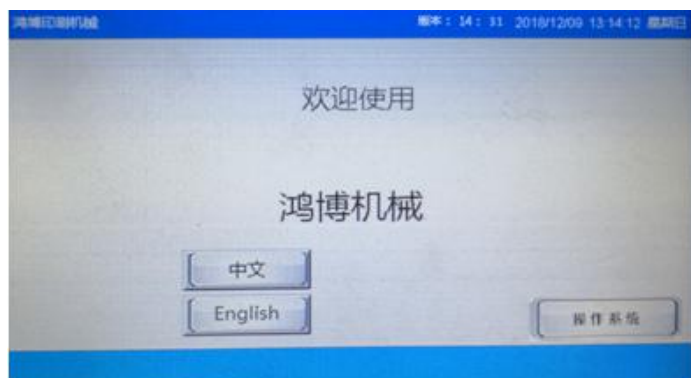
## 5.2.7 Touch screen setting and adjustment

The touch screen is mainly for the control of paper cutting after laminating, so as to achieve the same cutting position of different paper sizes. Therefore, before laminating paper of different sizes, some settings should be made for the text screen so that the equipment can work smoothly.

### 5.2.7.1 Boot screen: as shown in Figure 20, touch "enter the system" to enter the production

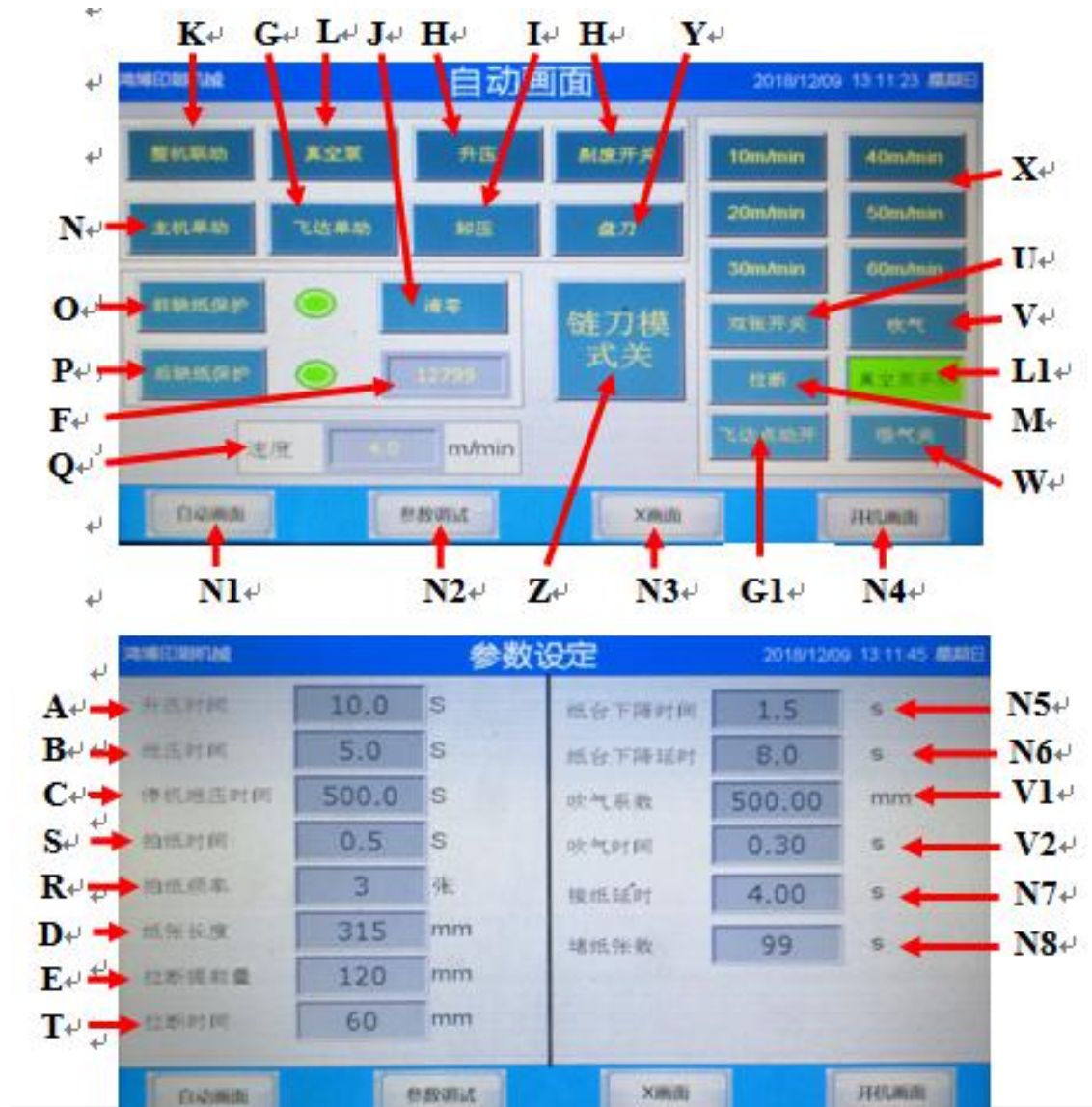
operation screen, which is displayed in Chinese. Pressing  (Chinese)

And  (English) will switch between Chinese and English.



(Figure 20)

5.2.7.2 Production operation screen of this machine: as shown in Figure 21.



(Figure 21)

- A: Set the boost time (click the display frame on the right to enter the digital input frame) default 10;
- B: Pressure relief time setting (click the display frame on the right to enter the digital input frame) default 5;
- C: Shutdown and pressure relief delay setting (click the display frame on the right to enter the digital input frame) default 500;
- D: Paper length setting (click the display frame on the right to enter the digital input frame);
- E: Pull off lead setting (click the display frame on the right to enter the digital input frame) default 120;

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T: Press down time setting of paper drawing roller (click the display frame on the right to enter the digital input frame) default 120;

N5: Time setting of each descent of the paper collecting table;

N6: Setting the time required from that the paper surface on the paper collecting table exceeds the photoelectric level to that the descent of the paper collecting table.

N7: Setting the time required for the main table of the paper feeding table rising. When the table rises, after the paper surface is detected by photoelectricity, it will stop rising automatically when the rise time reached the set value;

N8: Setting the number of blocked paper. When the paper collecting is not smooth, it will stop automatically and give an alarm when the set number of blocked paper is reached;

F: Display the number of counting papers;

G: Open and stop for independently running of the feeder;

G1: Press and hold this button, feeder will run separately;

H: Click this button to operate the hydraulic pump motor (the operation time shall be subject to the set time at A), at this time, the pressure rubber roller rises and presses with the steel roller;

I: Click this button to operate the solenoid valve of the hydraulic pump (the operation time shall be subject to the time set at B), at this time, the pressure rubber roller will fall and separate from the steel roller;

J: Click this button, the display number in F will change to 0;

K: Click this button, the background color will switch between blue and green, green means the whole machine is started and running, blue means the whole machine is closed;

M: Click this button and the background color will switch between blue and green. Green indicates that the cut-off is in the start state, and blue indicates that the cut-off is in the off state;

L: Click this button, the background color will switch between blue and green, green means the vacuum pump is in the start state, blue means the vacuum pump is in the off state;

L1: The default value here is that the vacuum pump "L" starts automatically (on the blue background). When the whole machine starts, the vacuum pump does not need to be started manually. When the transmission line reaches a reasonable position, it will start automatically. When the start here is on the green background, the vacuum pump "L" must be started manually;

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N: Click this button and the background color will switch between blue and green. Green indicates that the main engine is running separately, and blue indicates that the main engine is stopped;

O: Click this button and the background color will switch between blue and green. Green indicates that the front paper shortage protection is on, blue indicates that the front paper shortage protection is stopped. When the front paper shortage protection is on and the paper shortage is detected, the machine will stop running and give an alarm. The machine can only be started again after this item is closed;

P: Click this button and the background color will switch between blue and green. Green indicates that the rear paper shortage protection is on, blue indicates that the rear paper shortage protection is stopped, and the operation principle is the same as that of item O. when "Z" is on, this item shall not be opened, otherwise will cause failure;

Q: Operation speed display;

R: Setting the paper patting frequency. When the collecting paper number reach the set value, the patting paper board on the side of the paper collecting stacker will pat the paper once;

S: Setting the time of patting paper for the paper patting board that on the side of the paper collecting stacker;

U: Double sheet detection switch for paper feeding;

V: Air blowing switch for paper collecting;

V1: When collecting paper, when the paper head is detected by the photoelectric, distance calculation starts, when the set value is reached, start blowing;

V2: Setting the time of each air blowing for paper collecting;

W: Suction switch of paper feeder;

X: Operation speed selection of the whole machine;

Y: Paper cutter switch of paper pulling section;

Z: When the chain knife mode is started, it is on a green background. When it is started, the rear paper shortage detection switch is not available and cannot be used at position M. when the chain knife mode is turned off, it is on a blue background. When it is turned off, the rear paper shortage detection can be turned on and can be used at position M; (in case of equipped with chain knife device).

N1: Main control screen

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N2: Parameter setting screen

N3: PLC parameter display

N4: Boot screen.

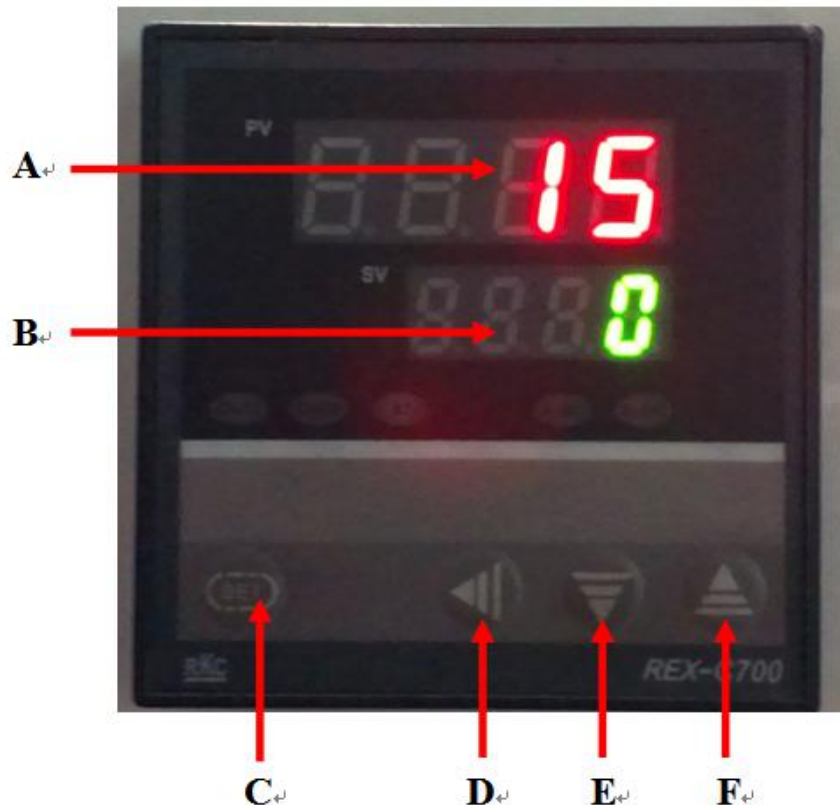
Operation precautions:

- 1) When any part of O or P is opened, in case of shutdown because of paper shortage, items N and K cannot be started;
- 2) If the emergency stop knob is pressed, the main engine stops running. If the emergency stop button is not reset, items N and K cannot be started;
- 3) When the transparent cover above the cut-off is opened, items N and K cannot be started.



## 5.2.8 Temperature control setting:

The temperature setting is operated on the panel of the temperature controller. As shown in Figure 22. Please set the electric heating temperature of the heating roller of the main engine on the temperature controller according to the actual production speed and the ambient temperature, as well as the laminating material and laminating requirements.





(Figure 22)


A. PV: Display the current temperature of the steel laminating roller;

B. SV: Display the preset temperature of the steel laminating roller;

C. SET: Press the set button to enter the temperature set state;

D. : Press this button to exit the temperature set status;

E. : Press this button to decrease the preset temperature;

F. : Press this button to increase the preset temperature.

## 5.3 Preparation before production

5.3.1 Connect all the power lines on the equipment (including the external main power supply, air compressor power supply, vacuum pump power supply and the vibration motor power supply of the paper collecting table), turn the "emergency stop" knob on the machine clockwise to unlock, turn on the main power supply, and rotate clockwise the "power switch" switch in the panel to ON. At this time, the power indicator is on. At the same time, the temperature controller and the touch screen are powered on, and the nixie tube display appears (as shown in Figure 20).

### 5.3.2 Opening of gas source

Turn on the power switch on the air compressor (as shown in Figure 23). At this time, the air compressor starts to work with power on. After the air pressure is stable, open the valve (position C in Figure 5) to supply air to the main engine.



(Figure 23)

## 5.3.3 Debugging and production

### 5.3.3.1 Film threading

Please thread the film as required and as shown in the Schematic diagram of film threading. When it is necessary to run the host machine sometimes during the film threading process, please press the "run" button, as shown in Figure 10. Press to run the engine, release to stop the engine.



(Figure 24)

## 5.3.3.2 Host operation

**Start:** please press the **主机启动** (host start) and **飞达** (Feeder) buttons on the touch screen, and the background color of the button will change from yellow to green, and the host will operate continuously.

**Speed regulation:** please press the speed regulation buttons of "host acceleration" and "host deceleration" in the electrical panel, as shown in Figure 25. The running speed of the host will be displayed on the touch screen (Q in Figure 21) in real time and dynamically.



(Figure 25)

## 5.3.3.3 Host stop

**Normal shutdown:** please press the **主机启动** (host start) button on the touch screen, and the background color of the button changes from green to yellow, and the host will stop running (0 will be displayed at Q in Figure 21).

**Abnormal stop in case of emergency:** please press down the "emergency stop" button on the electrical panel (as shown in Figure 26), and the main engine will stop running. Or open the transparent cover on the top of the cutting and pulling off device to stop the main engine.



(Figure 26)

## 6. Debugging and Production

6.1 Check whether there is looseness and falling off at each connection, and whether the electrical and grounding are in good condition.

- 6.2 Clean the tools and sundries on the paper conveying board, finished product collection platform and cutting bridge board.
- 6.3 Connect the power supply, turn on the power switch, and the power indicator is on. Check whether all emergency stop switches and limit switches work normally
- 6.4 Press start to run the main engine, at this time, let the machine run at a slow speed to observe whether all parts are running well, and if there is no problem, press again to stop the main engine.
- 6.5 When filling for the first time, the heat transfer oil in the heating roller must be full, and there must be no air inside the roller.
- 6.6 Start the air compressor and observe the pointer of the pressure gauge until the pressure is stable.
- 6.7 Install the film on the inflatable shaft and fix it after confirming the position.
  - 6.7.1 Put down the slitting cutter according to the width of the paper.
  - 6.7.3 Press down the perforating cutter, place the blade at the edge of the film 2-3mm, and lock the hand wheel.
  - 6.7.3 Adjust the tension of the inflatable shaft.
- 6.8 When the displayed temperature reaches the requirement of lamination, the film can be threaded according to the Schematic diagram of film threading show on the host shell. Pay attention to the difference between no glue film and BOPP film.
- 6.9 Put the paper neatly on the conveyor, and the paper must be evenly sorted.
- 6.10 Click the "host start", "Feeder open" and "vacuum pump" buttons on the touch screen to let the machine run slowly and suck paper.
- 6.11 Adjust the paper front baffle and the pressure of the pressing wheel to keep the pressure of pressing wheels on both sides consistent.
- 6.12 Click "boost pressure" in the touch screen, and then the laminating steel roller and the pressing rubber roller will perform hot pressing lamination on the paper and the film.
- 6.13 Pull the paper through the anti-bending device.
- 6.14 Pull the thick paper passes through the traction roller group.
- 6.15 Open the transparent cover, when the host stops, tighten the paper, turn the "traction rubber roll switch" to make the upper traction rubber roll press the paper, and then cover

the transparent cover.

6.16 Click "main machine start" in the touch screen again to make the main machine run. When the first sheet of paper and the second sheet of paper are overlapped and transported through the traction rubber roller, press the "pneumatic break switch" to perform the paper cutting and pulling operation.

6.17 Adjust the breaking point wheel and the corrugating mechanism according to the paper breaking condition.

6.18 Adjustment in operation

6.18.1 pressure adjustment of heating roller

The pressure of the pressing roller should be adjusted according to the thickness of the paper. If the paper is wrinkled, the pressure should be reduced. If the lamination is not firm, the pressure should be increased.

6.18.2 Film position adjustment

If the position of the film deviates during operation, fine adjust the position of the film as described before.

6.18.3 Adjustment of traction roller

If the traction roller is not adjusted properly, the following two situations will occur: 1. The paper is disconnected before it enters the slitting roller group; 2. When the paper overlap part enters the traction roller, the traction roller stops rotating. In case of the above two situations, stop the machine immediately and adjust the traction roller according to the above mentioned instructions about the traction roller.

6.19 Increase the running speed of the machine and keep the machine in normal working condition. The normal working speed of this machine is between 0-30m / min. if the processed paper is too thin, the speed should be reduced accordingly.

6.20 When the work is finished, release the pressure between each group of rollers and then stop the machine.

## 7. Safety matters

7.1 The user shall make a detailed inspection on the new machine, check whether there is looseness and falling off at each connection, whether the electrical and grounding are in

good condition, and be familiar with the operation method of the machine. Only after the test run, the machine can be put into production.

7.2 During idling test, the machine shall rotate smoothly without stagnation and abnormal noise.

7.3 When cleaning the machine, it is not allowed to put hand under roller for cleaning, so as to avoid the accident of industrial injury caused by rolling the hand in. It must be inched for cleaning to ensure the safety of life.

7.4 It is forbidden to open the protective cover when the machine is running or just stopped. The pressing roller is in high temperature then. Be careful of scalding.

7.5 During the operation of the machine, it is forbidden to open the glass cover and extend your hand into the middle of the traction roller group and the paper breaking roller group, be careful of pressing hand.

7.6 The frequency converter will be electrified for a period of time after shutdown, the distribution box cannot be opened immediately after then for maintenance to prevent electric shock.

7.7 Before installation, check electrical equipment, components, etc., fasten all wire connection terminals, connect all aviation plugs to ensure good contact.

7.8 The machine must be reliably grounded for protection

## **8. Repair and maintenance**

8.1 All pressing roller components of the machine must be pressurized after startup and depressurized before shutdown.

8.2 For machines in normal use, lubricate the sprocket and bearing every half month.

8.3 When the machine is not in use for a long time, the pressure of the front and rear two groups of rubber roller shall be released to prevent the rubber roller from long-term compression and deformation. Each plated part shall be coated with antirust oil and covered with plastic bags to prevent moisture.

8.4 Each rubber roller shall be kept clean. If there is any stain, it can be wiped with cotton alcohol or acetone.

8.5 In the normal operation process, if the temperature rise is too fast or too slow, it is

abnormal. It should be shut down for inspection. Generally, the possibility of failure of heating parts is relatively high, and can replace the heating parts after inspection.

## 8.6 Attentions

8.6.1 Clean the machine once a day.

8.6.2 Grease the transmission part every month.

6.3.3 Lubricate the transmission part of each roller every two months.

8.6.4 The surface of each roller must be clean. Do not damage the roller with metal tools or other items.

8.6.5 The water in the water separator shall be drained timely and add the lubricating oil into the atomized lubricator regularly.

8.6.6 The reducer should be replaced oil once a year. Check the oil level regularly at ordinary times.

8.6.7 In case of air leakage, all joints of air tube shall be replaced timely.

## 9. Attached: circuit diagram.

## 10. Common faults and treatment methods

No.	Failure phenomenon	The cause	Method for correction
1	Can't boot up the machine	① The fuse blew ② Voltage instability	① Replace the fuse ② Check power voltage
2	Measured temperature is much different from the set temperature	① The thermocouple failed to press the surface of the roller	① Recalibration installation position, and press it against the surface of the roller
3	The heating rate is too slow or can not heat up	① Electric heating tube is damaged ② Temperature control system failure	① Replace the electric heating tube ② Repair or replacement
4	Wrinkles on the surface of the finished products after lamination	① Both sides of the film tension is different ② Rubber roller and pressure roller are not properly adjusted	① Adjust the tension of the air-expansion shaft, replace the film ② Adjust electric heating roller and rubber roller, and make the pressure more even
5	The surface of the finished product has haze or obvious spots	① Temperature setting is too low ② Velocity is too fast	① Raise the temperature ② Reduce speed
6	Poor adhesion of film and paper	① The pressure of the pressure roller is not enough ② Surface condition of printed matter is not good, such as the powder, the ink layer is too thick, the ink mark is wet	① Adjustment mechanism, increasing the air pressure ② Remove the powder from the printed matter and dry the printed matter
7	The finished product is upwarped	① Inadequate adjustment of anti-bending device	① Adjust anti-bending device

## 11. Various accessories

Instruction manual: One copy

Perforating blade: Two pcs, slitting blade: One pc (spare for perforating in the film and slitting waste film)

Monkey wrench: One pc

Double ended spanners 17-19, 12-14, 8-10: Each one pc

Screwdriver: One pc

Test pencil: One pc

Cross point screwdriver: One pc

Oil pot: One pc

Triangle oblique insert block: Four pcs

Hexagon bar wrench: One set

Shrapnel for pressing paper: Four pcs (Feeder head spare)

Suction nozzle: Four pcs (Feeder head spare)

Baseboard: Four pcs

Tool box: One box



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