

**Auto Die Cutting Machine For Self-adhesive Trademark**

**FXD-320 MODE**

# **OPERATION      MANUAL**

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## **I. Brief Introduction**

Automatic Die Cutting Machine for Self Adhesive Trademark FXD-320 Type is a die cutting equipment with platen with high precision, while the computer controls the mainframe frequency speed control, the conveyor and slices. The two sides of printing trademarks and longitudinal route are tracked through three photoelectric eyes to position, while the die cutting trademarks, discarded delivery or auto trademark labeling can be finished through one web. The machine is applicable to die cutting paper self-adhesive trademark, Dacron film trademark and laser anti-false trademark. It is an ideal complete set of soft printing machine, continuous thread printing machine, relief printing machine and die compress machine for anti-false trademarks. It is ideal equipment for the trademark printing houses.

The machine must be well connected to the ground prior to being connected with the power supply.

## **II. Main Technical Parameters**

1. Die Cutting Speed: 25 to 170 PC/min
2. Width of Die Cutting: 20 to 300mm
3. Length of Die Cutting: 20 to 300mm
4. Positioning Precision:  $\pm 0.1$ mm
5. Voltage of Power Supply: AC220V  $\pm 10\%$
6. Mainframe Power: 2.2kw
7. Overall Dimension: 2.6(L) $\times$ 0.95(W) $\times$ 1.4(H)m
8. Weight: about 1700kg

## **III. Main Components Structure Principle and Operation Notice**

### **(1) Feeding System**

The feeding system is mainly composed of feeding support, upper roller(air-expansion cylinder), feeding cylinder, transiting cylinder, floating roller, feeding motor, feeding tension and speed-regulating plate. Loose the feeding cylinder, cross the materials(See Figure 1). Press on the feeding cylinder, adjust the floating cylinder up to the min point(before delivery) to have the feeding speed equal. Or, adjust the braking force for feeding to control the feeding tension and crossing the materials stably.

### **(2) Rectifying System**

The rectifying system is composed of two photoelectric heads, synchronous motor, ball screw rod, photoelectric support, straight bearing and so on.

There are two methods: Manual and Auto. You can set for Black Work, White Work, Single Photo-electricity and Double Photo-electricity under the method of Manual. “Single” shows that it is tracked with only one photo-electricity, “Double” shows that it is tracked with two photo-electricity.

At manual mode, press Left to move left and press Right to move right.

When it needs to have auto mode, it is to adjust the sensitivity of two photoelectric heads under the Manual state, then move the paper to a moderate position, move the photoelectric head to the position of color code, and turn to Auto, i.e. it can rectify automatically. If the automatic rectifying fails in working, and moves to a direction only, Black Work or White Work can be changed. If there are some offsets for the die cutting trace on left and right slightly, please adjust the rectifying trimming hand wheel. No matter whether it is at Manual or Auto state, once the rectifying support touches the limit switch, the buzzer will alarm. Meanwhile, press Manual backward, i.e. it can move away from the limit position.

### **(3) Die Cutting System**

The die cutting system is mainly composed of base plate, die mounting panel, die, punching plate and transmission system.

The upper base plate has been adjusted horizontally and fixed firmly before delivery. Generally speaking, it doesn't need adjusting.

Fix the die on the die mounting panel, and then fix it on the upper base plate. If the punched marks are slightly slant, then loosen the clamping screw, adjust the die longitudinal direction angle of inclination trimming screw, then re-fix it. For the vast scale of skewness, the die must be reinstalled.

For demoulding easily, sponge bars slightly higher than the surface of punching die shall be stuck to the gap of the die.

Replacing and adjusting the molding board shall be carried out by the professional operator after cutting off the power supply. Don't stretch your hands to touch the molding board while the machine is running.

For keeping the surface of punching plate from being damaged, an 1-mm organic plastics plate shall be stuck to the punching plate.

The materials have been well crossed, but the machine doesn't start, rotate the mainframe hand wheel to set the punching plate on the highest position, adjust the punching plate regulating hand wheel horizontally to reach the designated position for the punching plate.

After starting the machine, properly trim regulating hand wheel with meter according to the deepness of the punched marks(if adjust Red needle for 1 circle, then adjusts the punching plate 0.054 mm up and down). If it can't have the deepness of the punched marks uniform, stick properly thick and size paperboard to the relevant the punching plate at the light of the punched marks.

Adjust the die cutting position to and fro, move the photoelectric support for large scale adjustment, adjusting the longitudinal trimming hand wheel for trim adjustment through, moving rectifying photoelectric eye for horizontal large scale adjustment, while trim adjustment is controlled through adjusting the trimming hand wheel.

#### **(4) Cutter System**

The cutter system is mainly composed of clutch, brake, and relevant eccentric wheel unit, high position switch and cutter.

In cutting, relieve the brake; the clutches attract to have the cutter work up and down. In working, the brake and the clutch are interchanging.

Adjust the cutting position for the cutter. Lift the regulating roller through regulating cutting position hand wheel.

Adjustment of the gap between the cutters must be done by the professional operator. In any case, don't stretch your fingers into the cutter port.

#### **(5) Slice, rolling and wasting system**

In receiving waste sides or edges, rewind them on the wasting paper wed, and adjust properly the wasting force of friction to get a proper tension. If the paper drum is smaller, the force of friction reduces and vice versa.

In slicing, the worktable shall be firmly fixed. Set for 1 to 99, standing for die cutting from 1 to 99 pieces, the cutter will work once, according to the actual requirement.

If the rolling of finished product is used for auto labeling machine, the worktable shall be dismantled. And set the number of slicing for ZERO, the cutter will lift to the position of high level lamp, and then it stops working. At this time, it still continues rolling, but the rolling tension is controlled same to that of the wasting collecting. If the paper drum is smaller, the force of friction reduces and vice versa.

#### **(6) Adjust the position of the cam and photoelectric eyes switch**

The positions of cam and photoelectric eyes switch are described in Figure 2. They have been well adjusted before delivery. They should not be moved at random.

#### IV. Lubrication and Maintenance

The lubricating point is in the body. It is lubricated centrally through a hand oil pump twice per run. Observe the oil level line of the oil pump and make up timely with machine oil N30. The outside lubricating points are lubricated with oil pot by operators twice per run.

See Figure (5)

#### V. Installment and Debugging

Check if the machine is well and the spare tool parts are completely referring the packing list after opening the box. Install the machine according Figure (6) to. The machine should be installed on the flat and firm ground. The operating room size requires an enough room shown in Figure (7). Lay iron pedals under the four feet, adjust the levels with bolts. It must be well connected to the ground, then connect the power supply. Rotate the mainframe hand wheel by hand before starting the machine, making sure that there is no blocking, and then start the machine to have a test. Then operate each part of the machine according to the Section 3 and Section 7.

#### VI. Common Troubles and Remedy

(I) (1) Press the run key, the mainframe fails to work (the main control contactor works)

Trouble Display	Resolution
1. The key "Emergency Stop" is power-off (Press ON/OFF again)	Rotate the switch clockwise to popup the key "ON/OFF".
2. Speed regulating potentiometer is out of connection.	Connect the frequency converter terminal 5V, AI1 <sub>1</sub> , if it can run at a full speed, maybe there is something wrong with the potentiometer, please replace it.
3. The frequency converter protects automatically, the nixie tube shows "L", "O.U" or ";", Make reference to the instruction of the frequency converter.	Turn off the general power supply switch, wait for 3 minutes (the nixie tube displays disappear completely), then turn on the power supply switch.
4. Transducer have no "run" signal	Press run key, then check if there is voltage D.C 24V between V+ and LI1 .

**(2) Press the run key, the mainframe fails to work (also the main control contactor fails to work)**

<p>1. The main control contactor fails to work, also the main controller fails to work. The PC signal isn't output.</p>	<p>Press the run key to check terminal Y3, 12V, seeing if DC 12V is output. If it is output, the PC is normal. If it isn't output, please mend or replace the PC.</p>
<p>2. The relay on the rectifying main board fails to work.</p>	<p>Check if L2 input on the rectifying main board is normal. Press the key "ZJK1", seeing if it is output. Checking methods: If power supply output AC 220V from L2 and the N terminal ON/OFF exist; press the key "ZJK1" and N terminal, seeing if they output AC 220V. If they aren't output, please mend or replace the rectifying main board.</p>

**(II) The run key mainframe works, but the servomotor for the conveyor fails to work.**

Trouble Display	Resolution
<p>1. The height indicator lamp for the touch screen isn't on.</p>	<p>Check the height signal for the magnet and the Hall switch on the transmission shaft for the cutter.</p>
<p>2. The conveyor signal isn't received.</p>	<p>Check (see Figure 3) the magnet and Hall switch No.1.</p>
<p>3. The driver for the servomotor fails to work, or protects automatically.</p>	<p>Check if interconnecting plug is good; or check its protecting number displayed by the nixie tube for the driver, referring to the instruction of the driver (Remark: the nixie tube shows for the driver "Run" is if normal).</p>
<p>The above mentioned are normal.</p>	<p>Maybe the PC signal isn't output, please contact the manufacturer and to replace the PC.</p>

(III) The cutter fails to work.

Trouble Display	Resolution
1. The cutter signal isn't received.	Check (Figure 3) the magnet No.2.
2. The PC signal isn't output.	Check if GND and LH terminal on the braking clutch board under the machine running output the Voltage (DC 12V) alternately. (The clutch sign is output.) Check if GND and ZD terminal output the Voltage (AC 12V) alternately while the machine is running.(The brake signal is output.)
3. The braking clutch board fails to work.	Check the power supply input: If 20V, GND terminal input (AC 20V). Check if COM, ZD2 terminal output the voltage (DC 23V) alternately to the brake under the while the machine is running. Check if COM, LH2 terminal is output alternately the voltage (DC 24V) to the clutch under the machine running.

(IV) The run keys stop and alarm automatically for the conveyor for one time.

Trouble Display	Resolution
1. The rectifying feeding support moves along one side and touches the limit switch.	Manually inch the feeding support and move it to the center position.
2. The number for warnings is set too small and set the stop for 3.	Reset the stop for 1.



(V) The discharging motor fails to work.

Trouble Display	Resolution
1. The touch screen rolling is not turned on.	Set the touch screen for “Turn on for Rolling”
2. The miniature relay on the rolling control panel fails to work.	Check if the power supply is input into ZJK (co). Turn on the touch screen “Turn on for Rolling”, check if the power supply is output from L1 (yo). If the power supply isn’t output from L1 (yo), maybe there is something wrong with the control panel.
3. There is something wrong with displacement sensor or speed-regulating plate.	At first, check the displacement sensor. Methods: connect two terminals, -12V and 5 on the speed-regulating plate, if the motor can run at full speed, maybe there is something wrong with the displacement sensor. If the motor can’t run, please check if DC 220V is output from C2, H1 terminal on the speed-regulating plate. (Remark: the above mentioned checking should be carried out while the machine is running), if it isn’t output, maybe there is something wrong with the speed-regulating plate; if it is output, check the connecting wire for the motor or the motor.

(VI) In Automation mode, rectify feeding support moves to along one side.

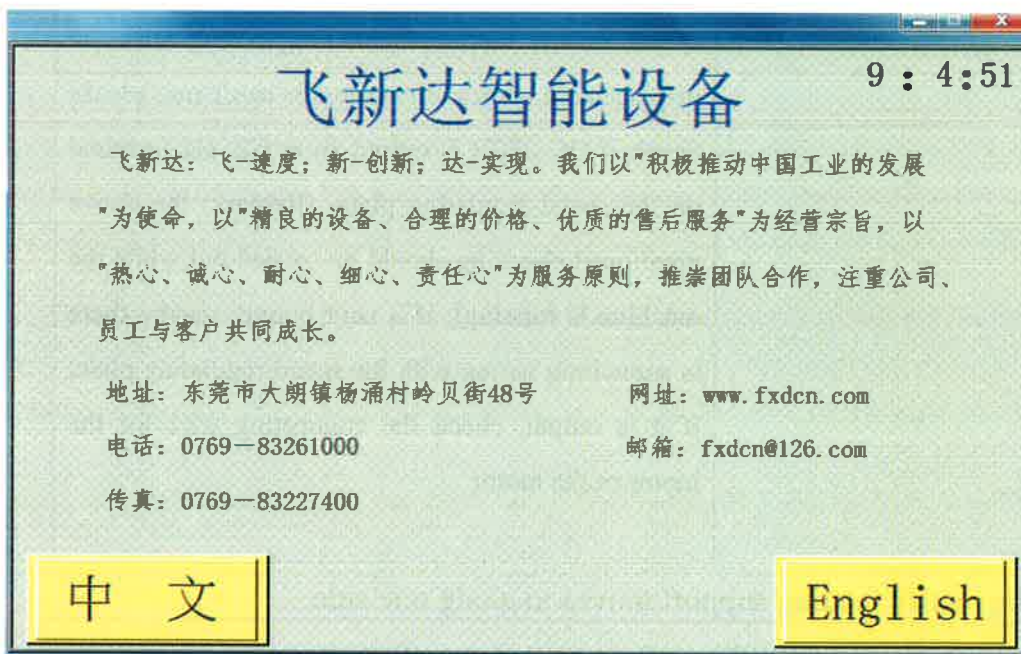
Trouble Display	Resolution
1. The sensitivity of the photoelectric eyes switch isn’t adjusted well.	Adjust well the sensitivity of the photoelectric eyes switch (Remark: Adjust the sensitivity of the photoelectric eyes switch to the register color code till the indicator becomes dark, and move the color code away, the indicator light shall go on.)
2. Make a mistake for rectifying selection for “Work(Black)” and “Work(White)”	Open the pages of rectifying for the touch screen and switch “Work (Black)” to “Work (White)” or vice versa.

(VII)The feeding support moves along to one side under the state of “Manual” and “Automation” all the time.

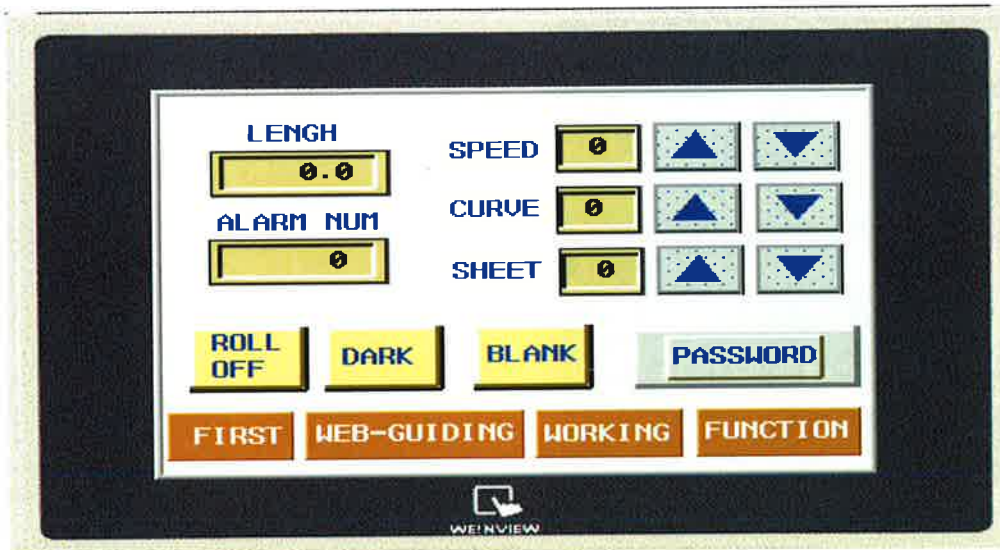
Trouble Display	Resolution
1. There is something wrong with the rectifying main board.	Check if the rectifying main board L2, and resistance or capacity terminal is short of circuit? If so, there is something wrong with the rectifying board, please mend or replace it.

### VII. Description of Electric equipment for touch screen control:

1. Turn on the general power supply switch on the control box after the machine is connected to the power supply, the touch screen displays the “First Page”.



2. Press the key “Set” to set the pages:



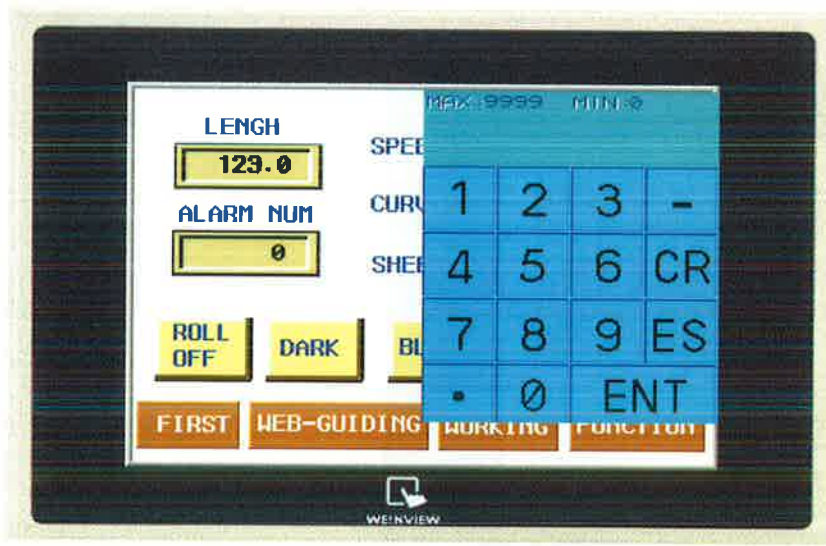
(1) Cursive: Press “ $\triangle$ ” to enlarge the number, while press “ $\nabla$ ” to smaller the number. And to set for cursive from 0 to 9, the bigger the number is, the faster it is to convoy, and vise versa.

Note: it will result in poor precision of convoy if the cursive numbers were set too large. But if it is too small, it will disturb the production capacity. So the cursive numbers should be set from 3 to 6 to assure the precision of convoy and production capacity.

(2) Speed: Press “ $\triangle$ ” to enlarge the number, while press “ $\nabla$ ” to smaller the number, while to set speed from 0 to 9, the bigger the number is, the faster it is to convoy, and vise versa. If it is too slow to discard, set the speed for a lower one.

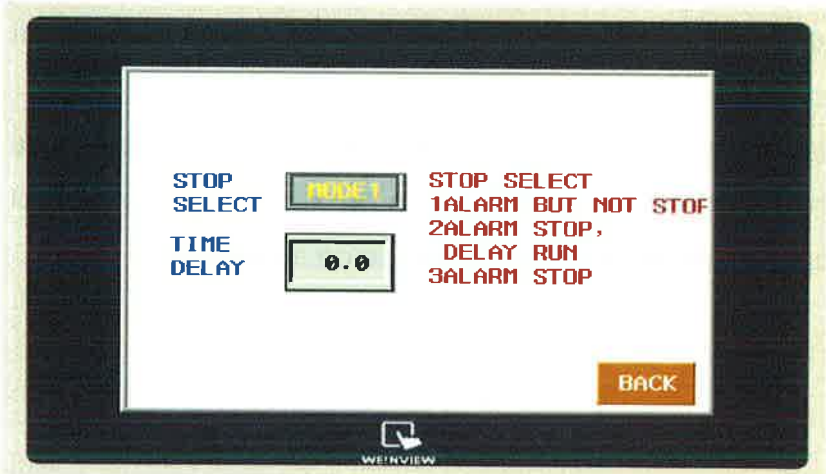
(3) Slice: Set for “0”, then the slitter doesn’t work. Set “1”, then the die cutting works once and the slitter works once. Set “2”, then the die cutting works twice and the slitter works once. Set “3”, then the die cutting works thrice and the slitter works once, and so on so forth.

(4) Length: press “Length” to set length to convoy, and it will display the pages of length set:



- ① Press CLR to clear the numbers.
- ② Set length.
- ③ Press ENT to confirm it.
- ④ Press BACKSPACE, then the screen displays it has restored the page SET.

(5) Set warnings: press “Warnings” to set warnings pages:



There are three choices available to stop the machine.

1. Warn without stopping the machine.
2. Warn and stop the machine and delay to start the machine.
3. Warn and stop machine.

Please set DELAY to choose 2 to stop the machine while warning and delaying to start the machine. After setting, press the key “Backspace” to back to the page set.

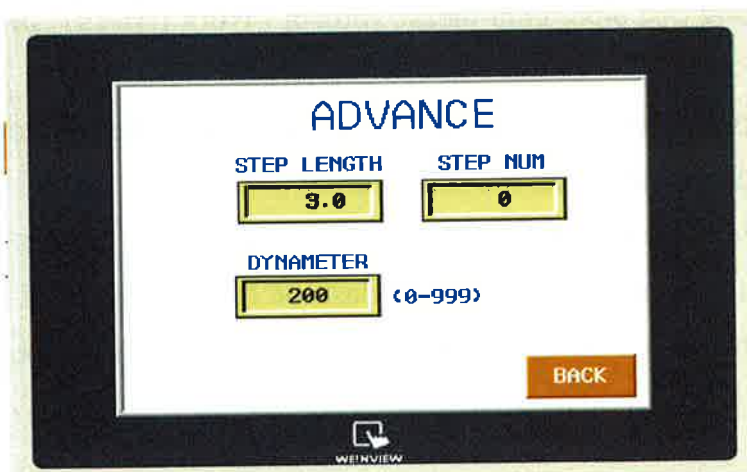
(6) Press the key “Work (Black/White)” repeatedly to set “Black and White”, and make a good choice of cursor dark color or white of die cutting materials. If it is dark color, please choose “Work (Black)”, and the white, press the key “Work (White)”.

(7) Repeatedly press the key “Print/ Blank Label” to set printing label and blank label. And make a good choice of die cutting materials with printing label or blank label. If it is printing label, please choose “Print Label”, and the blank, choose the “Blank Label”.

(8) Repeatedly press the key “Rolling On/Off” to set for rolling motor run or stop. If the die cutting label needs rolling, please set “Rolling On”, while the die cutting label needs slicing, please set “Rolling Off”



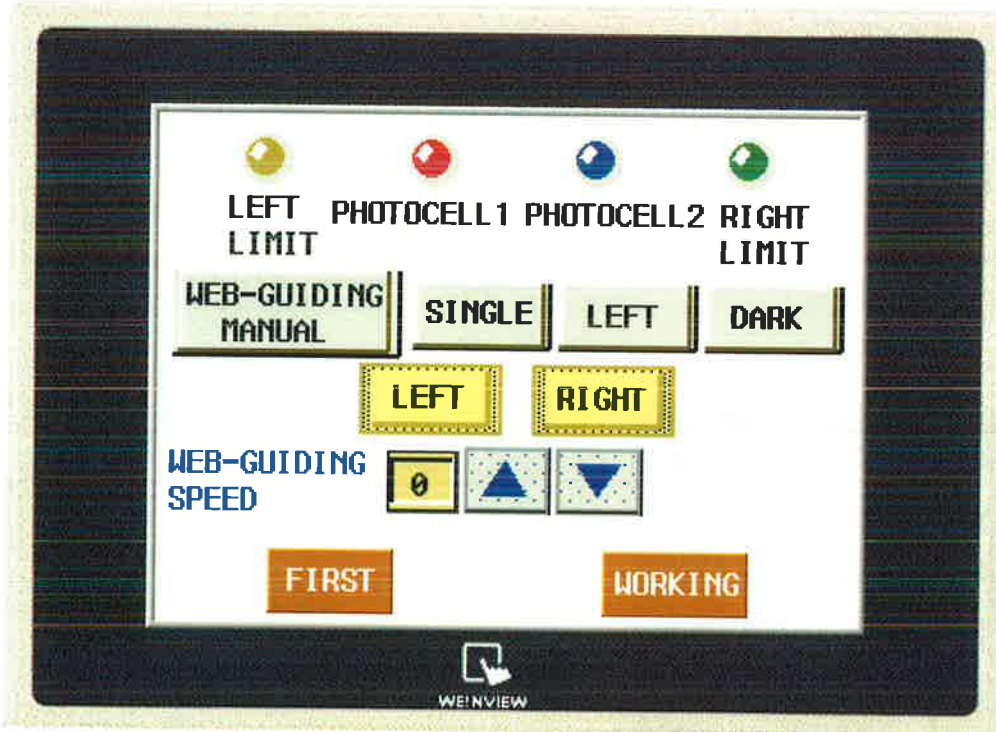
Note: if there are two kinds of label lengths, pls use the step length function. Enter the password 8888, then there will display “step set” page.





(1).Input the step length and step num, and the dynameters is fixed for 200, and no need to change any more

3. Press the key “Rectify”



(2) Set “Single Photoelectric/Double Photoelectric”. If it is going to make blank labels, please set “Single Photoelectric” or “Double Photoelectric”. But if the color code lines of the printed labels are not consecutive bars, please set “Double Photoelectric” to register the double color code or pattern.

(3) Set “Work (Black/White)”: Make a good choice of “Work ( Black/ White)” and the photoelectric eyes register to the sides of paper or platens. But the wrong choice will not have the auto rectifying function and move to along one side, then please refresh “Work (Black)” or “Work (White)”.

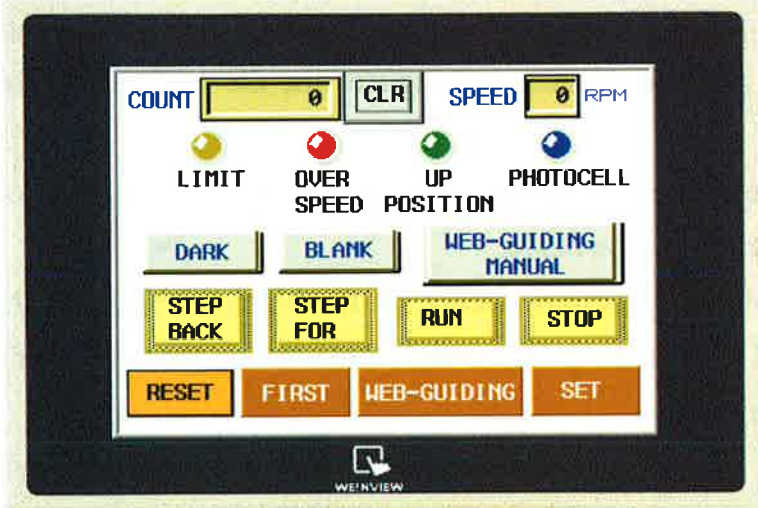
(4) Rectifying speed: There are 0 to 9 shifts for rectifying speed. “0” is the lowest one, while “9” is the fastest. If the machine works normally, please set the shifts for “9”.

(5) Manually inching is “Left” or “Right”. For example, if the material stand moves left or right to touch the sides, then the buzzer will sound and the indicators will flash on the right and left. At this time, turn off the “Auto” and then inch it manually to set “Left” or “Right” to have the

material stand move away from the left or right.

(6) First set well for the sensitivity of “Manual/Auto” photoelectric (See Figure 3) to register the sides of paper, and select the double or single photoelectric. And then turn on the Auto, if the rectifying moves along to one side; please switch the BLACK and WHITE.

4. Press the key “Working” to display the working pages



(1) Inching Forward/ Backward: When it is in the process of crossing the materials or to register the die cutting position, please inch forward or backward at the second gear speed. At the beginning, it is at a slow speed, but if consecutively press the key “Inching Forward” for 2 seconds, then it will speed up.

The well-set functions, counting and speed are displayed on the panel or screen. Turn on the key “Work” or the key “Work(Switch)” on the panel after all the functions have been well set. If you want to stop the machine, press the key “Stop” or the key “Stop” on the panel.

(2) Work

The die cut materials can be moved forward or backward by pressing the key “Inching forward/ Backward” when it is to stop. Press the key “Work” to start the main motor, and the die cutting machine will die cut according to the set data. In processing, press the key “Stop”, the former stop on the master motor will be at the state of stoppage, and press the key “Clear”, it will clear the unit and decimal for the first time, and for the second time, it will clear the total numbers. In processing, press the key “Immergence Switch” to stop the master motor. The “Immergence Switch” should not be connected with the power when you want to start the machine. The potentiometer governs the die cutting speed. And the number will be displayed on

the screen for “Die Cutting Speed”.

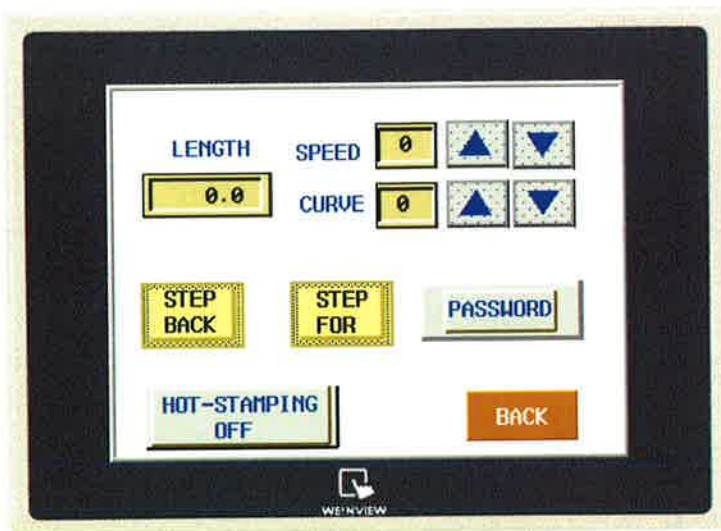
Observations: please have a thorough check of the key “Immergence Stop” and it must be at the position “ ? ” before operating the machine.

### (3) Description of Operation

1. Turn on the general power supply.
2. Cross the materials well according to the description chart. You can inch forward or back while crossing the materials. Adjust the position of slice and register the die cutting position and rectifying position if it is to slice.
3. Set the speed at a moderate one. Set the die cutting length at an actual one. If it is slightly too long or too short, certain addition or reduction can be made.
4. If you are going to manufacture with blank materials, please set the blank label. As to the printed ones, please set the printing label. If you are going to start from the bright to the dark, set the polarity for “Work Black” and vice versa.
5. Inch to adjust the die cutting position. If they are color materials, register the photoelectric eyes’ position, then press the key “Work” to start the machine and regulate the speed to a reasonable one.
6. If the main motor works too fast or it can not track the color code, the rectifying will display “Over-Speed”, the buzzer will warn and stop automatically. Please correct the color code and check the rectifying position, and then start it by pressing the key “Work”.
7. Press the key “Clear” to clear the numbers. And the calculator dial will warn when it reaches the set numbers.
8. The displacement transducer governs the feeding steplessly.
9. The rectifier can be operated manually left or right, and can rectify automatically through double or single photoelectric eyes.

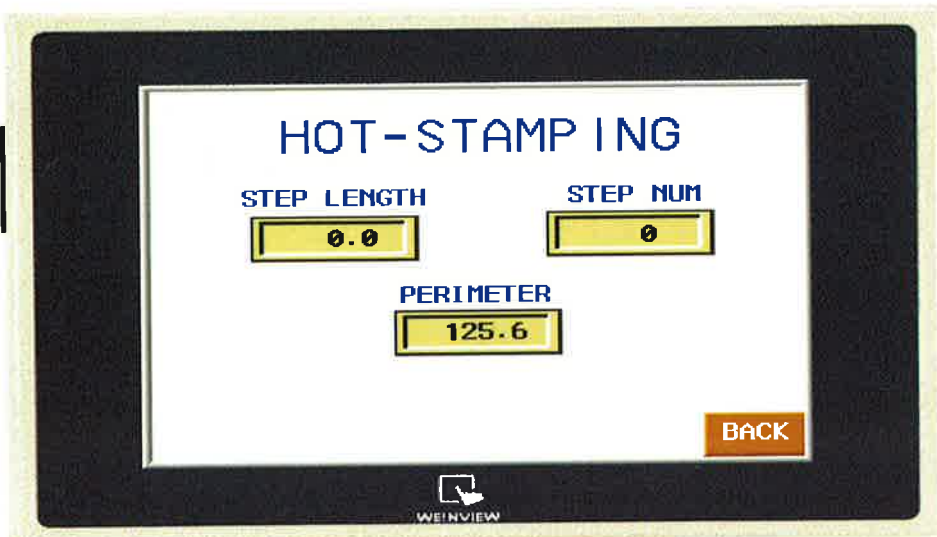


5. set “hot-stamping” (if the machine with the hot-stamping system ), press the key “ hot-stamping “then turn to the “ hot-stamping” page .

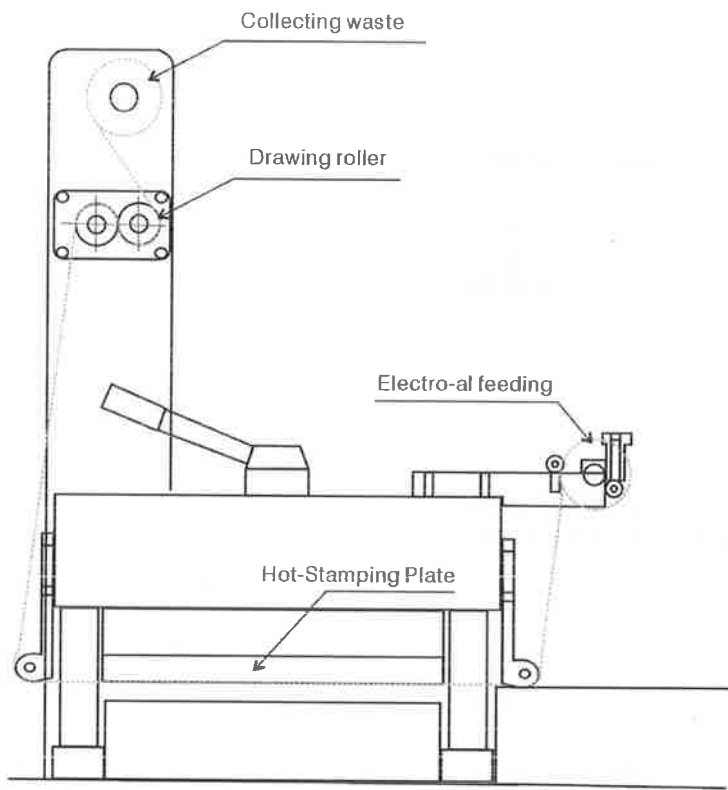


Set the “length, speed and cursive” .  
 Inching forward ----hot-stamping material move forward  
 Inching backward -----hot-stamping material move backward  
 Hot-stamping switch-----run or stop function  
 Notice: while hot-stamping need to step, press key password switch and input 8888 to enter the hot-stamping step page.

5. Hot-stamping step set page (OPTIONS)

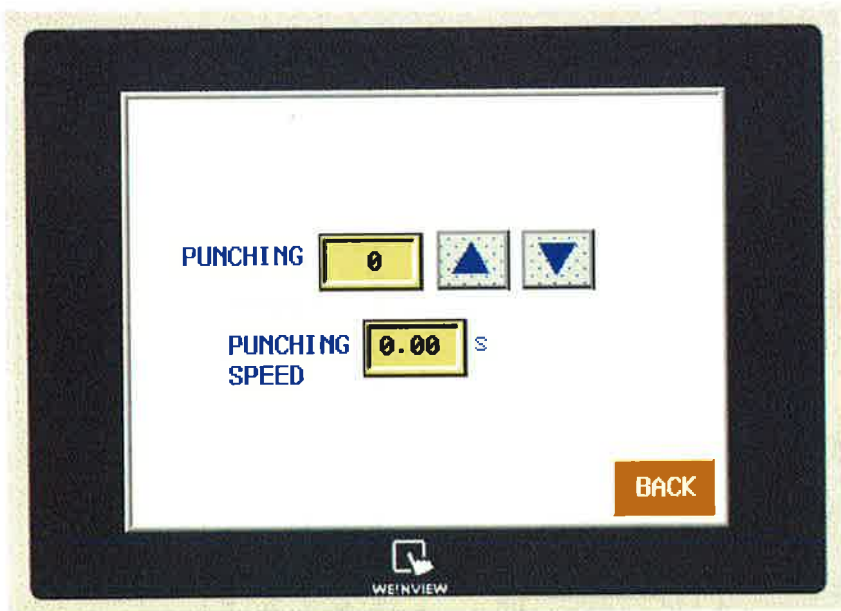


Input the step length and step num, perimeter is fixed for 125.6 mm , and no need to change any more .



DESCRIPTION FIGURE FOR ELECTROCHEMICAL ALUMINIUM CROSSING MATERIALS

6. Punching set , Press the key”Punching “ to display the punching page. (OPTIONS)



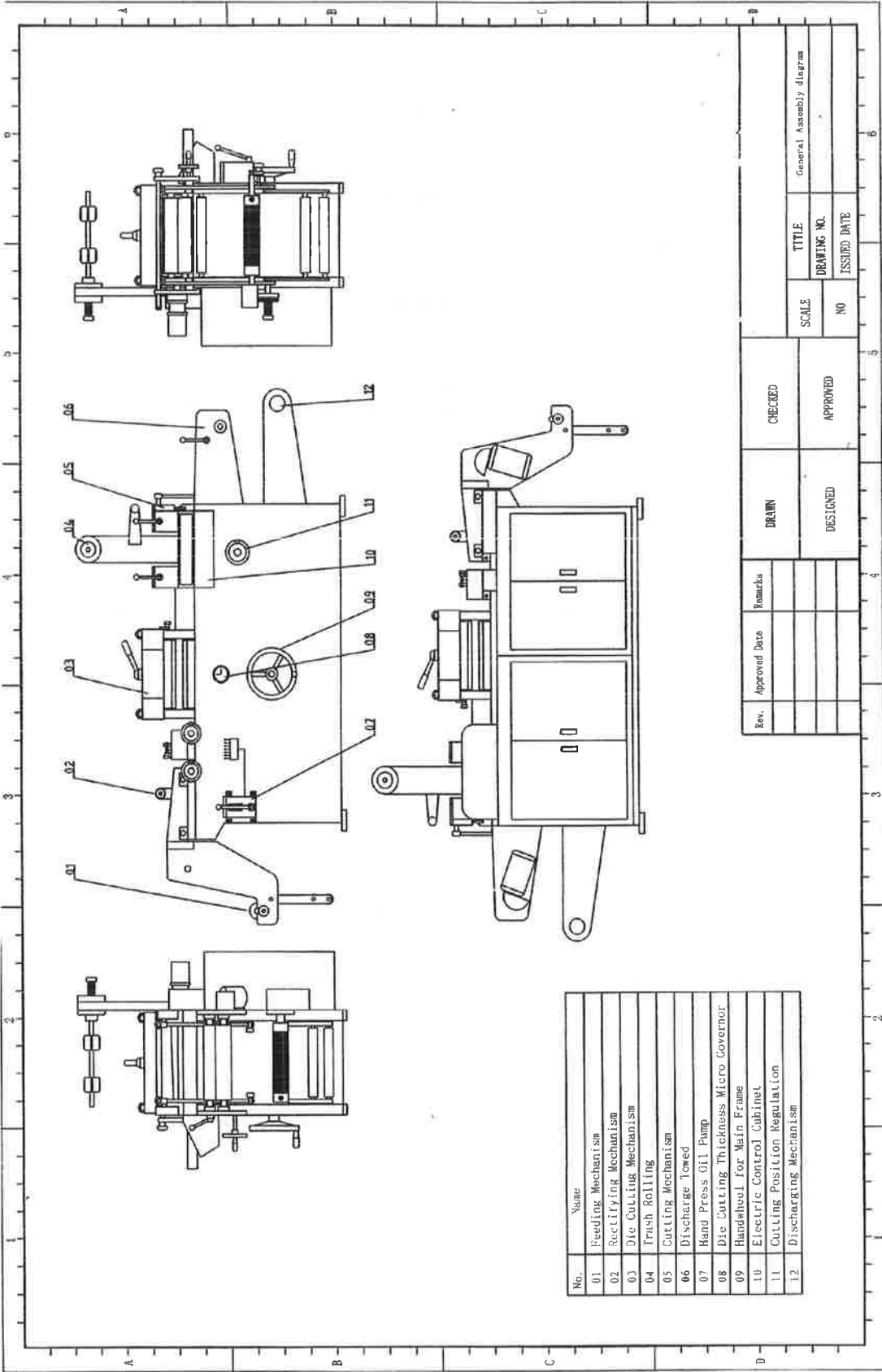
Punching -----set the punching distance, if you set “0”, there will be no punching. .  
 Punching speed -----we have already settled “ 0.15S” in the machine , if the machine running speed is fast , while the punching speed is too slow then lead to label punching damaged . You should adjust the punching speed accordingly.

### VIII. Packing list and schematic diagram of electric circuit

#### (I) packing list

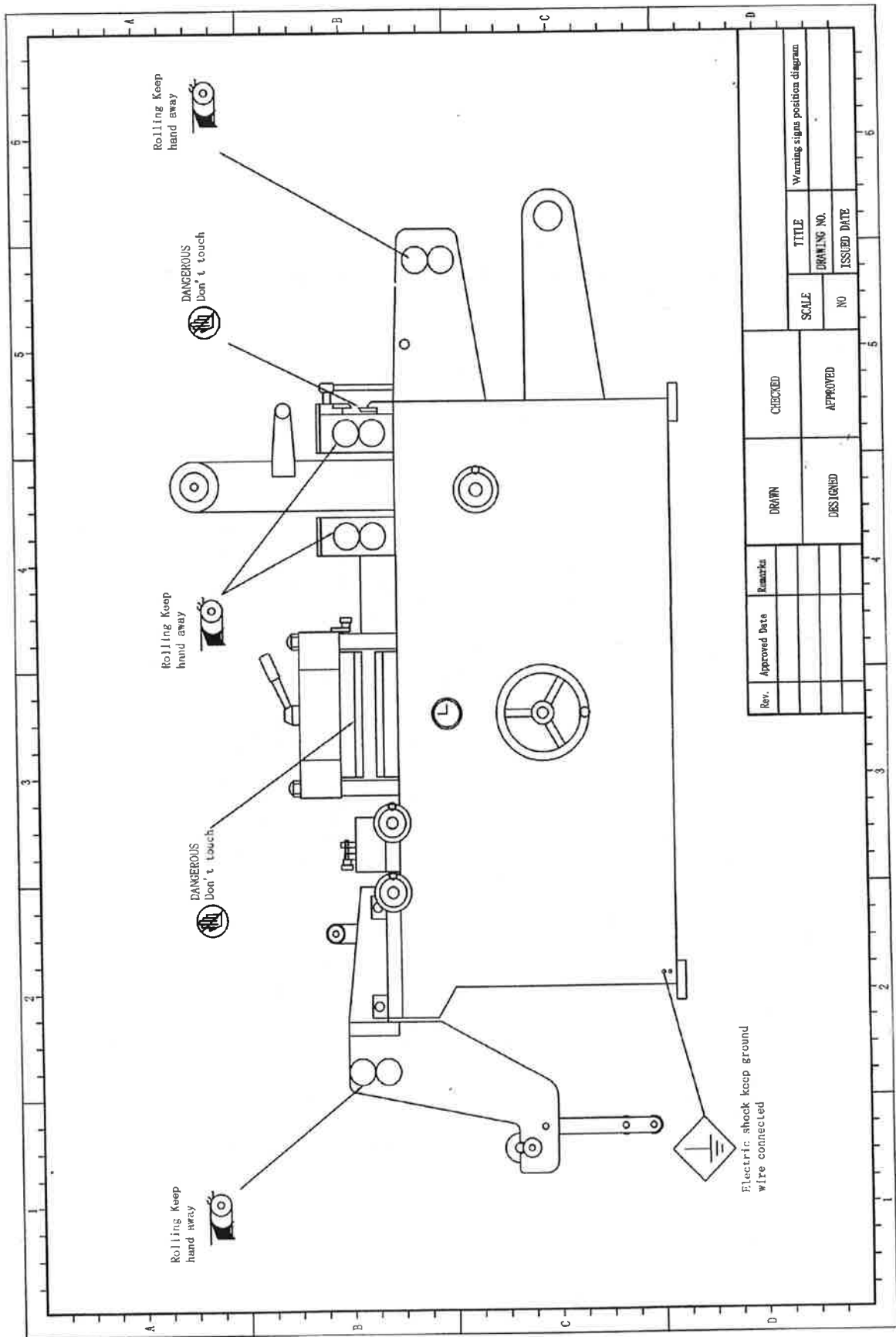
No.	Description	Unit	QTY
1	Die Cutting Complete Machine FXD-320	SET	1
2	Tool Box (with a Set of Tools; 4 Adjusting Screws, 4 Iron Pedals)	PC	1
3	Oil Tray	PC	1
4	Platen	SET	1
5	Operation Manual(in the tool box)	PC	1
6	Air Gun	PC	1

# General assembly diagram



Rev.	Approved Date	Remarks	DRAWN	CHECKED	SCALE	TITLE
			DESIGNED	APPROVED	NO	General Assembly diagram
						DRAWING NO.
						ISSUED DATE

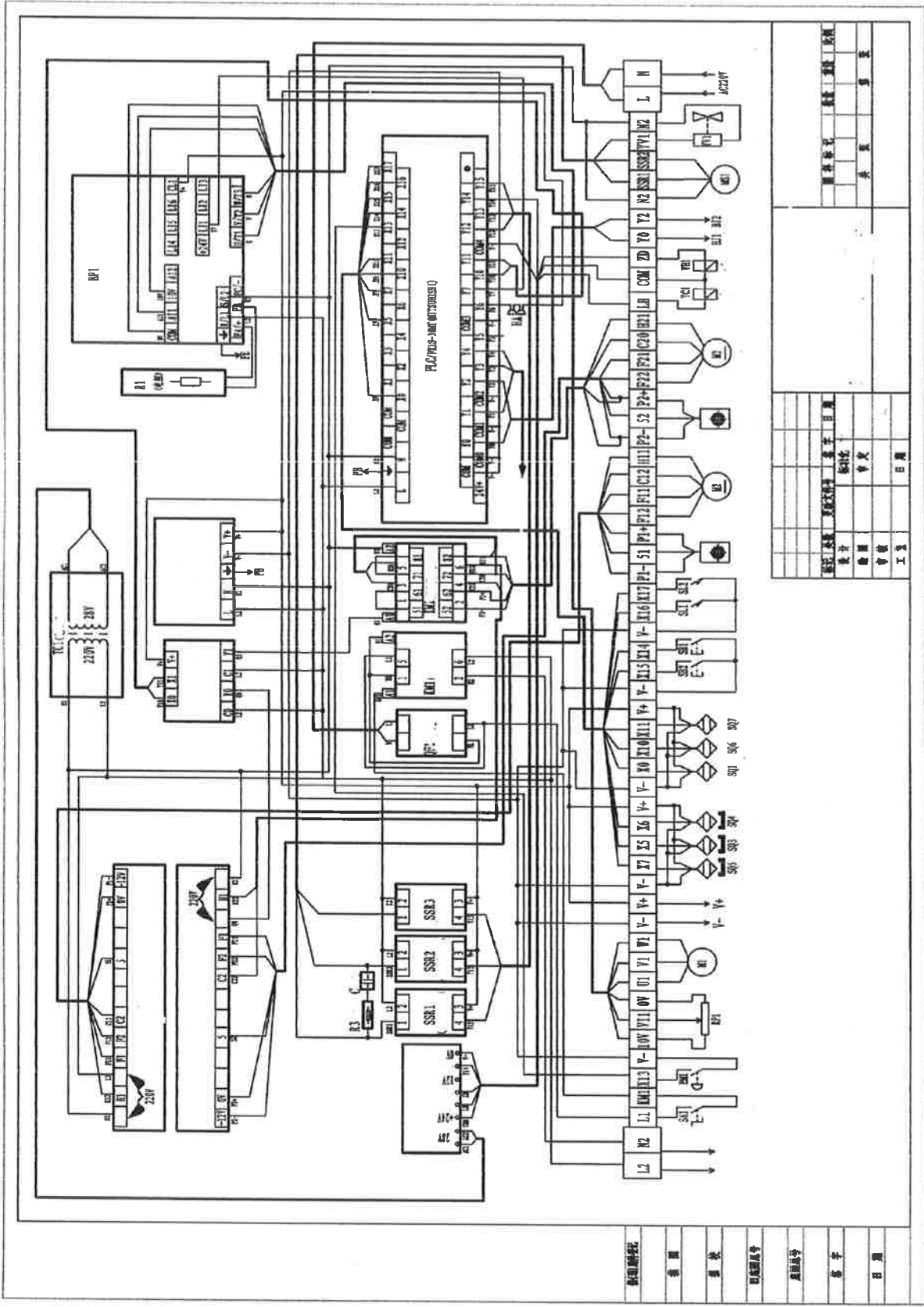
# Warning signs position diagram



Electric shock keep ground wire connected

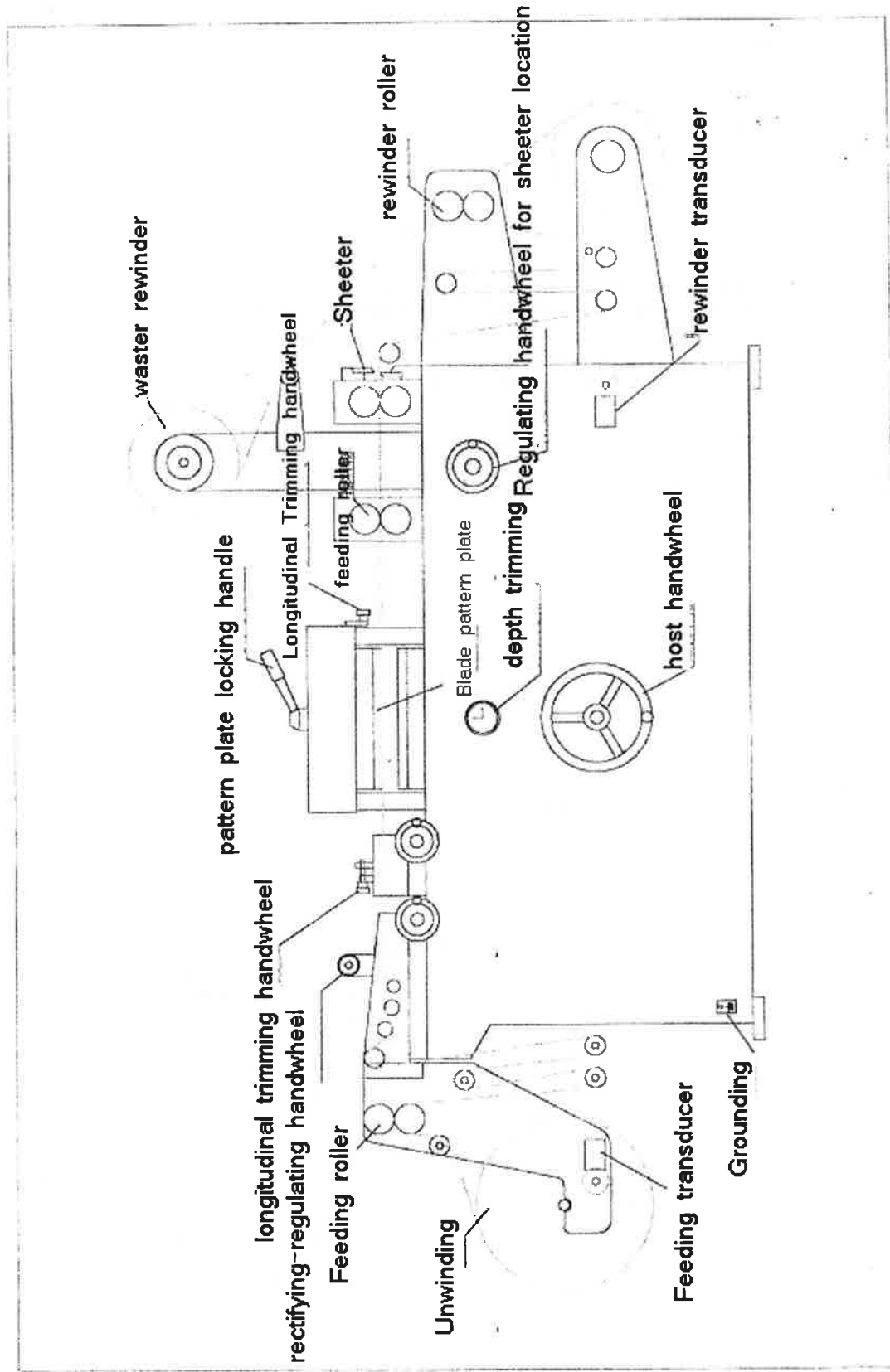
Rev.	Approved Date	Remarks	DRAWN	CHECKED	SCALE	TITLE	Warning sign position diagram
			DESIGNED	APPROVED	NO	DRAWING NO.	
						ISSUED DATE	

Diagram of Whole electrical lines (Mitsubishi PLC)



设计	审核	日期
制图	校对	日期
工艺	日期	
材料	数量	备注
名称	规格	数量

# Structure and material routing diagram



## Sketch for photo-electric switch: sensitivity regulation

rectifying photoelectric switch sensitivity regulation:

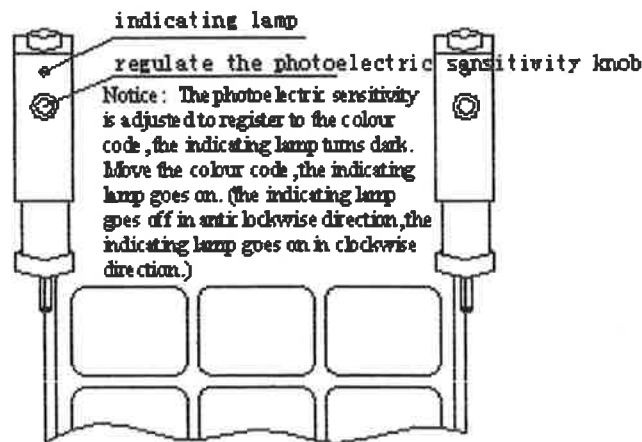


Figure 3

Regulation of tracking photoelectric switch sensitivity :

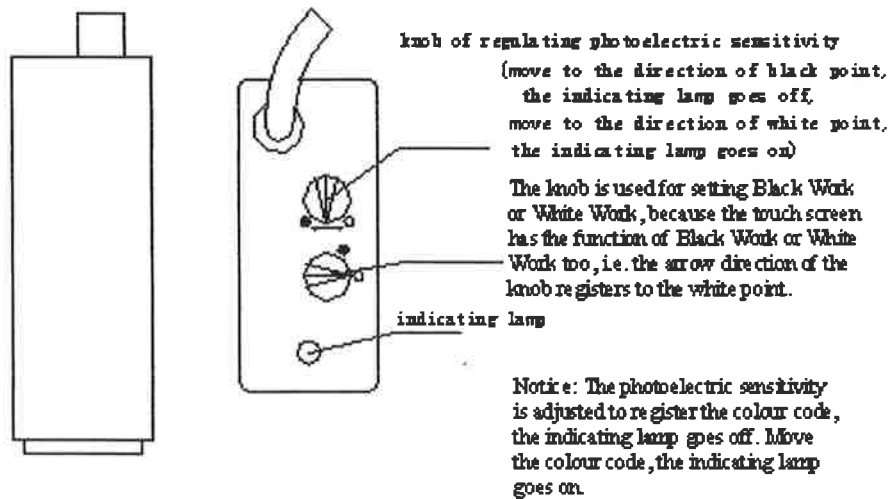
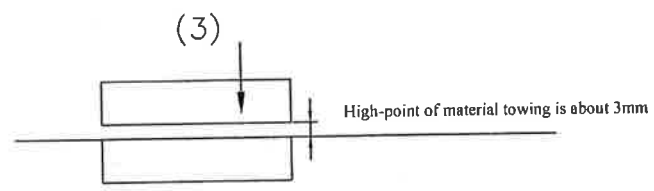
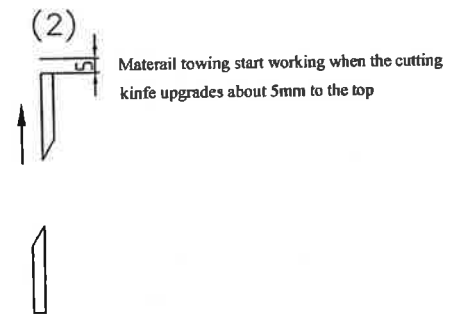
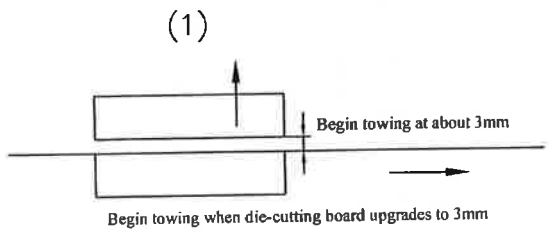
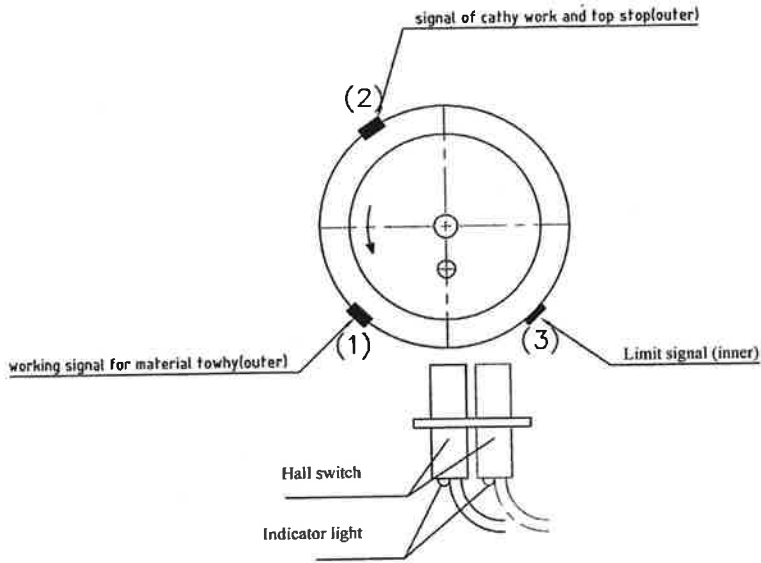


Figure 4



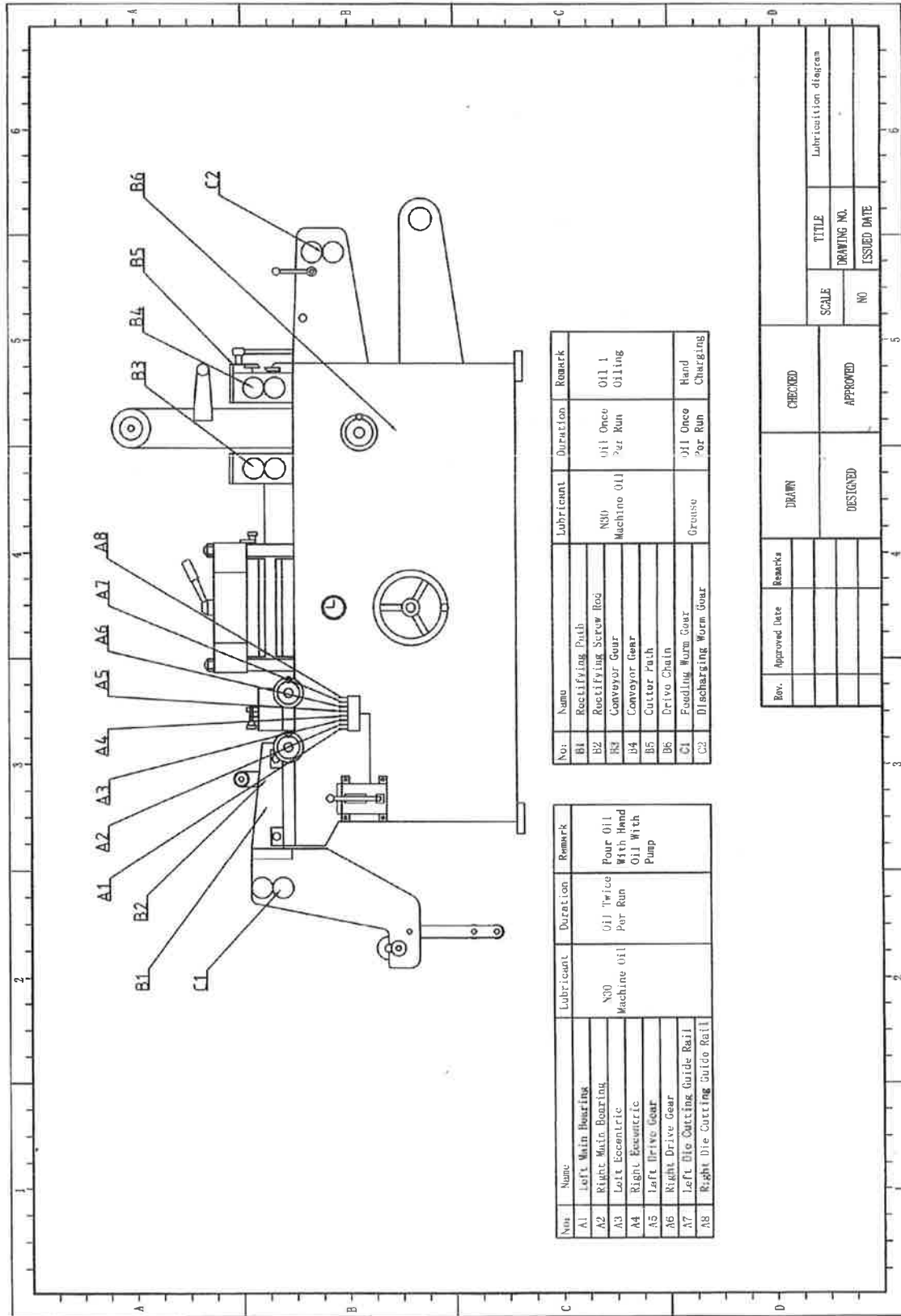
# Sketch for material towing adjustment and cutting knife adjustment



PIC NO2

Sketch map for material towing adjustment and cutting kinfe adjustment

# Diagram of lubrication



No.	Name	Lubricant	Duration	Remark
A1	Left Main Bearing	N30 Machine Oil	Oil Twice Per Run	Pour Oil With Hand Oil With Pump
A2	Right Main Bearing			
A3	Left Eccentric			
A4	Right Eccentric			
A5	Left Drive Gear			
A6	Right Drive Gear			
A7	Left Die Cutting Guide Rail			
A8	Right Die Cutting Guide Rail			

No.	Name	Lubricant	Duration	Remark
B1	Rectifying Patch	N30 Machine Oil	Oil Once Per Run	Oil 1 Oiling
B2	Rectifying Screw Rod			
B3	Conveyor Gear			
B4	Conveyor Gear			
B5	Cutter Patch	Crouse	Oil Once Per Run	Hand Charging
B6	Drive Chain			
C1	Feeding Worm Gear			
C2	Discharging Worm Gear			

Rev.	Approved Date	Remarks	DESIGNED	CHECKED	SCALE	TITLE
					NO	Lubrication design
					NO	DRIVING NO.
					NO	ISSUED DATE