

PAPER CUTTER

double guide rail and slotless working table

SERVICE MANUAL

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I . Brief Introduction

520 Digital Printing Cutting Equipment---Single phase 220V Full hydraulic paper cutter it has compact structure, small size, and nice appearance. Cutting and paper-pressing system are driven by hydraulic, it has simpler structure, lower noise and lower power consumption than the mechanical transmission. It is suitable for cutting small paper or paper-like soft material, widely used in office and light printing business.

Slot-less working table make it simple for the system running. Paper pusher is driven by the screw below the working table, it is verticality and parallelism adjustment are completed independently, making the accuracy adjustment more simple.

Computer system adopts colorful touch screen and programmable logic controller PLC programming control, that makes the operation more easy; the machine equipped with photoelectric safety protection devices makes the operation more safer.

To protect the work precision, prolong the usage of machine, the operator need to read the manual carefully.

II. Main Technical Specification

1. Max. cutting width (mm) (in)	520mm 21"
2. Max. cutting length (mm) (in)	520mm 21"
3. Max. cutting height (mm) (in)	75mm 3"
4. Cutting speed (times/ min)	13time/min
5. Height from the floor to working table (mm) (in)	890mm 35"
6. Front extended length of working table (mm) (in)	475mm 18-45/64"
7. Max. Cutting pressure (N)	7000N
8. The machine width side table	790mm 31-7/64"
9. The total length of machine	1200mm 47-1/4"
10. Dimension of package	1370×920×1460mm 53-15/16"L*36-7/32"Wx57-31/64"H
11. N. W. of machine	370 KGS 816lbs

III. Structure、operation and adjustment of machine

1. Structure (diagram 1)

This machine is composed of electrical control cabinet、hydraulic control cabinet、main part and working table, and includes clamping bar system、cutting drive system、paper feeding system、safety system、digit-display system、hydraulic system and electrical control system etc.

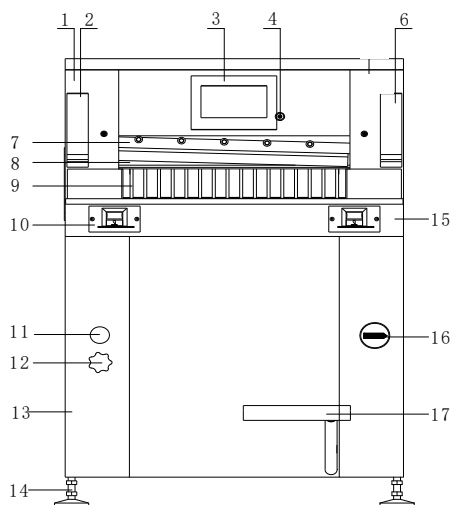
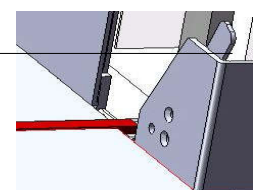


Diagram 1 schematics of paper cutter

1. The fuselage cover 2. photoelectric protective emission box 3. computer control panel 4. eccentric shaft for adjusting knife 6. photoelectric protective receive box 7. knife bed 8. clamping bar 9. Paper claw 10. cutting button 11. pressure hand wheel 12. Lock knife handle 13. foot 14. Foot support 15. The workbench 16. switch of power supply 17. foot pedal

Ejector rob of cutting stick



Picture 2 Ejecting device of cutting stick

2. Adjustment of Machine

1). The blade adjustment

The cutting stick can be used in both sides for four times.

When the cutting stick is badly worn, you need to adjust the side of cutting stick or change it.

Using ejector rod to push-out the cutting stick.(As shown in Picture 2)

After finished the replacement of knife, put the cutting stick into the groove from the front table.In that process the two ends of cutting stick should be put flat and then press cutting stick firmly into the groove.

2). Knife adjustment

1.1)Knife replacement (shown diagram 3)

When dismantling the knife (refer to diagram 4), turn off the power, first dismantle the second and sixth screw, insert the handle (diagram 3.1) into the second and sixth hole and screw down, then dismantle other screws, then rotate the handle (diagram 3.1) anticlockwise, take down the knife, please note: buttress the knife to prevent hurting operator.

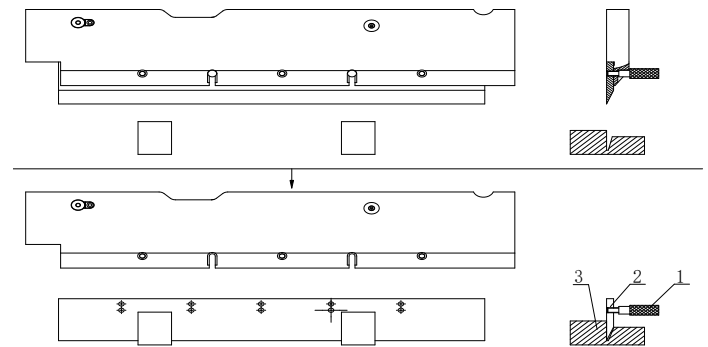


Diagram 3 schematics of knife dismantly

1. handle 2. knife 3. knife changer

1.2)Knife installation (shown in the diagram 4)

Turn off the power, first wipe the grinded knife by the cloth, (if the knife edge is rolled up, please grind it by whetstone).Screw the handle into the second and sixth hole, then install the knife grinded well on the wood knife changer (provided by the factory), push the wood knife changer and the knife together to knife installation position in front of clamping bar, make sure that the hook hole of the knife is put onto the hook board, loosen the two handles on the knife, then rotate the wrench, insert the knife onto the knife bed and align with the screw hole, then install the screw and tighten. Take down the wood knife changer and wrench.

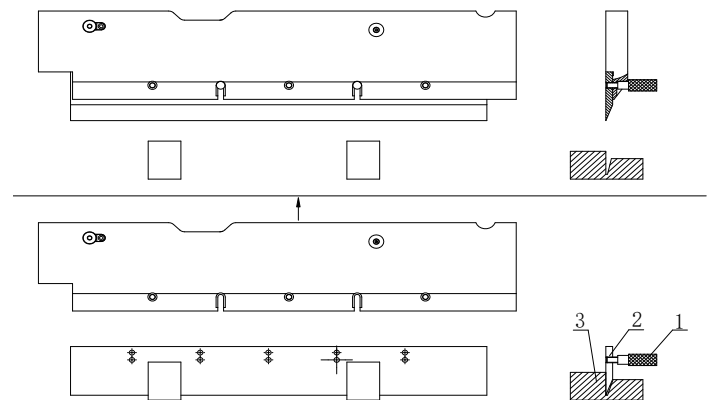


Diagram 4 schematics of knife installation

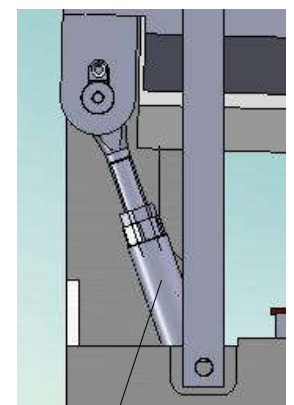
1. handle 2. knife 3. knife changer

Note:Do not put your arms under knife bed and clamping bar.

1.3)Knife adjustment

Every time install the new knife, or old knife grinded, adjust the height of knife bed by manual in order to adjust the cutting depth of the knife. To avoid the new knife replaced causing accidents because of deep cut due to big height.

To determine the depth of cutting: Manually pull the knife locking handle(Picture 1,11),press the two hands cutting button,and stop the knife bed in the lowest position after one circle of cutting , Then observe if the cutting depth is normal(the normal cutting depth is about 0.5~1mm (0-1/64"~0-3/64") . If the depth is not reasonable, bed height on the left side of the piston rod can be adjusted in the picture the edge of the sword;If the blade only touch the knife at one side,you can solve it by adjusting the hex screw of the knife eccentric shaft in front of the machine(Picture 1,4).



piston rod

When the blade wears about 12 to 15 mm(0-15/32" to 0-19/32"), you should use the second row of screws hole in the blade. If the blade is worn and unusable after using the second row of screw hole , the blade should be changed. When changing the new blade, Put a new blade should be tuned the piston

rod to the highest position.

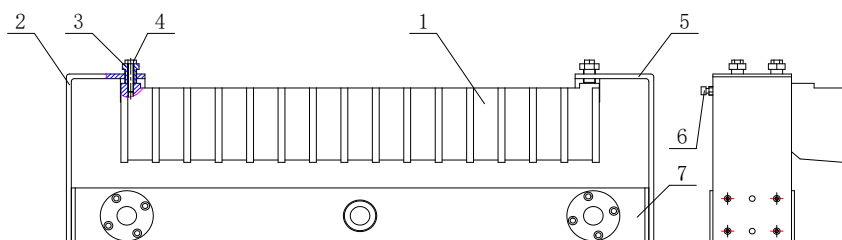
Note 1:After adjusting the knife, the knife locking handle should be adjusted to the original position.

Note 2: when the blade wear, adjust the knife bed height (piston rod) first, and then the knife bed eccentric shaft, and finally the knife bed delay time in a computer.

3).Adjustment of paper impeller

The adjustment of the verticality between the paper push side and working table surface is achieved by adjusting the screw(3).Before adjusting, please little loosen the bolt M6*30(4) and screw M5*15(6), then rotate the screw clockwise to lift the end of paper impeller, the angle between the paper push side and working table surface reduces; anti-clockwise rotates,the angle expands.After adjustment, you should hold the screw first and fix the bolt M6*30(4) firmly, and then lock the two screws M5*15(6).

The back limit of paper impeller is controlled by limit switch,front limit is controlled by PLC.



Picture 5 Structure of paper impeller
1.paper impeller 2.Left holder of paper impeller 3.Adjusting screw 4. Bolt M6*30 5.Right holder of paper impeller 6.Screw M5*15 7. Bottom holder

4). Adjustment of main motor

When adjusting the tension of synchronization belt on working table, first loose the M8×20, move the bottom board of motor right, the synchronization belt will tighten, otherwise, it will loose. when adjust to the position needed, tighten the M8×20.

3. The use of the machine

Encls service manual

IV. Electrical control principle

1. Power directions

The power supply is voltage of two phase 220V, 60HZ. Electrical current 14.18A, photoelectric protective voltage is AC 15V.

2. Working principle of program controller

The machine adopts advanced alternating digit servo control technology, liquid crystal display screen, data resolution factor 0.01mm(0"), with self disturbance-diagnosis and running pattern display, dynamic cutting display, running situation, dynamic follow-up, and memory.

3. IR photoelectric protection device

The minimum distance between light beams in photoelectric protection device: 38mm(1-1/2")

Resolution factor of photoelectric protection device: 50mm(1-31/32")

In front of paper cutter installed IR photoelectric protection device, there are two photoelectric boxes, the left one sends out light beams to the right one which senses the left light beam, cutting control system runs normally. If the light beam is stopped, the power for control system will be cut off, the electromagnetic clutch switches off, worm brakes to stop the knife base running.



Note: photoelectric protector is installed in the box where there are not parts available for user checking, so please do not dismantle or adjust it.

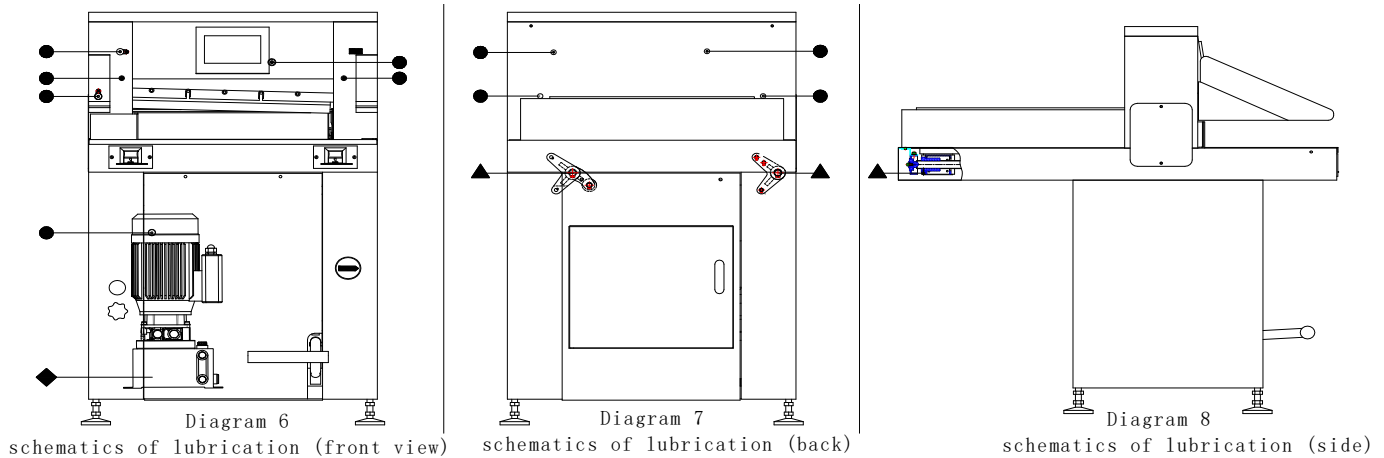
Warning: before running the machine and knife replace or after knife replacement in every shift, the efficiency of the photoelectric protector must be checked and make a report for that at a regular time.

V. Lubrication、Maintenance and care

Be careful:In order to ensure the paper cutter run well, keep the working precision and prolong its service life, you should lubricate it and clean it very often, this is very important.

1. Lubrication of paper cutter

Each lubricating position and method refer to attached diagram 6、7、8



- add 3# lithium lubrication twice time everyday
- ▲ add 3# lithium lubrication one time each week
- ◆ add N32# hydraulic oil to oil scale level,replace each year

- 1) adopt N46 mechanical oil in oil lubricating points
- 2) 3# lithium grease for grease lubricating points

2. Maintenance and care

- 1) before every shift (shift change or stop in midway then go on working), main parts in paper cutter should be checked and lubricated.
- 2) after every shift, do some cleaning to the machine, wipe its friction surface and lubricate them.
- 3) normally, complete cleaning and check should be made every two weeks.
- 4) if the paper cutter is not used for a long time, bright surfaces must be wiped clean, use some rusty oil, cover the machine with plastic cover
- 5) if the paper cutter is not used for more than three months, the rusty oil should be covered by moisture-proof paper.
- 6) when dismantling the paper cutter for checking and repairing, forbid to adopt unsuitable tools and operating methods.

3. Choice of hydraulic oil

- 1) suitable working temperature for this machine: 5~35°C (41~95°F), adoptL-HM46 abrasion-proof hydraulic oil.

- 2) oil temperature: 10~65°C (50~149°F)

if conditions do not meet the requirements, hydraulic oil used in hydraulic box is varied by the surrounding temperature and hydraulic oil of different viscosity is chosen.The volume of hydraulic box is 3 L, hydraulic oil should be changed regularly, at the first time, it should be changed after 200 hours, in future it is changed every half a year. When pouring oil, the oil tank and hydraulic components in it should be cleaned, the oil must be clean.

Safety check routine after everyday shift and knife replacement

Date: year month day

Machine and its model		Serial No.	
Manufacturer's name			
User's name			
User's address			
Safety establishments	Checking information and measures to be taken		
Photo-electric protective device			
Cutting brake clutch device			
Cutting device operated by double hands			
Safety cover			
Single acted protective function			

Operator:

managed by

Note: 1. The qualified operator who should be trained before can do this work.

2. If in the above safety check any of one establishment can not obtain the requirement, the operator must report it to the person who is in charge and stop using this machine immediately.

3. The operator must finish safety check after everyday shift and knife replacement to keep the machine be a good state and avoid it damaged when it is working.

4. The above list must be signed by the person who is in charge for this work in order to monitor the working done successfully.

P.S: The two lists are drafted for your reference, and they can be designed by yourselves for your file.

Safety check record after a quarter or half a year for paper cutter

Date: year month day

Machine and its model		Serial No.	
Manufacturer's name			
User's name			
User's address			
Safety establishments	Checking information and measures to be taken		
Photo-electric protective device			
Cutting, clutch, brake and driving device			
Safety device of knife bed and testing switches			
Cutting device operated by double hands			
The pressure of pressing paper (including Max or Min.)			
Time-relay knife replacement			
Single-run protection			
Other mechanical, pneumatic and hydraulic parts			
Other electrical parts			

Checked by the engineer: mechanical:

Electrical:

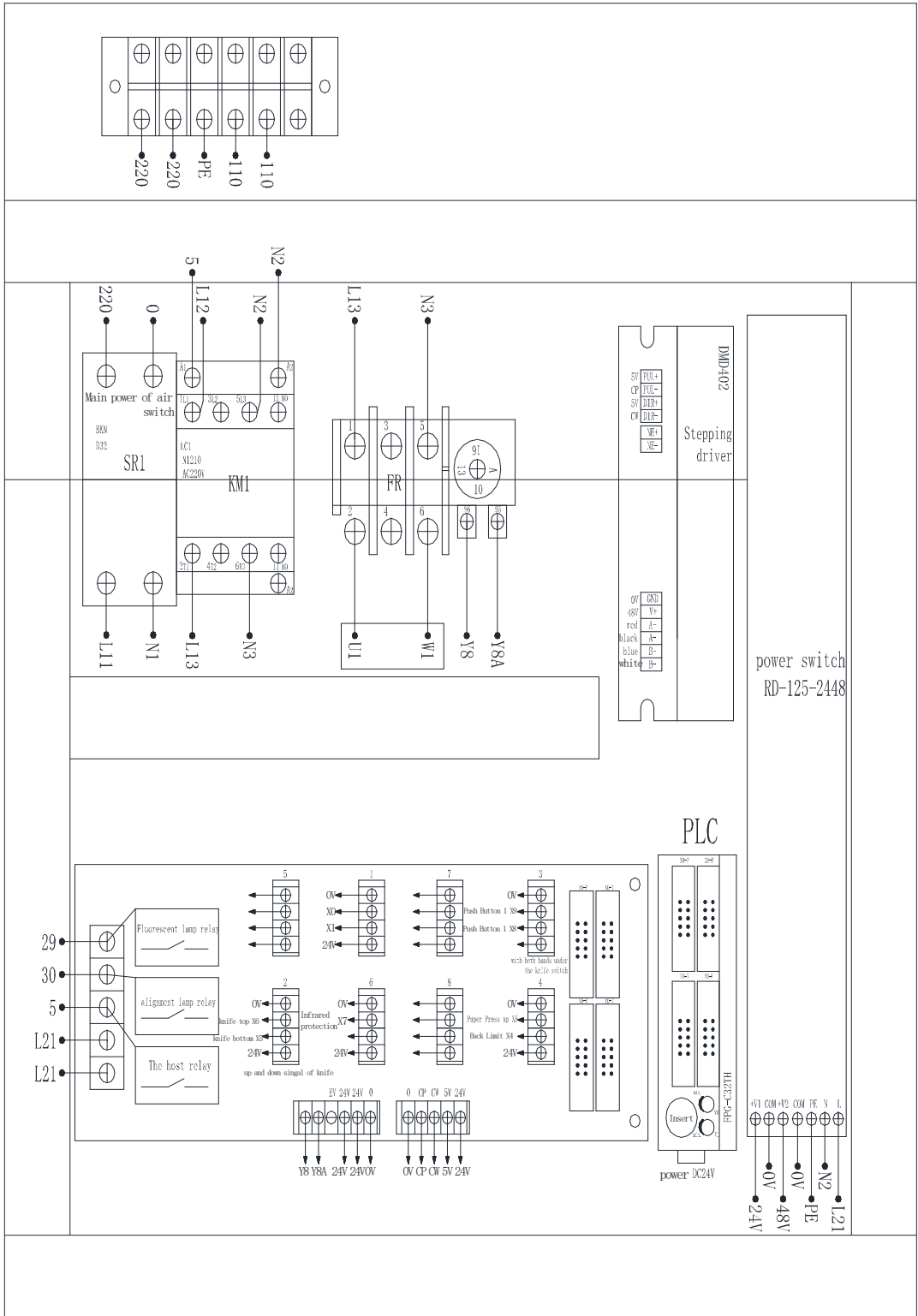
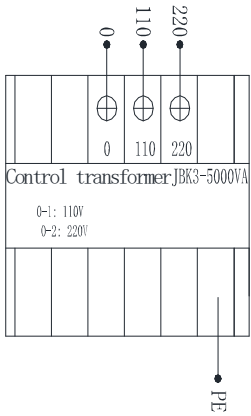
functionary in facility

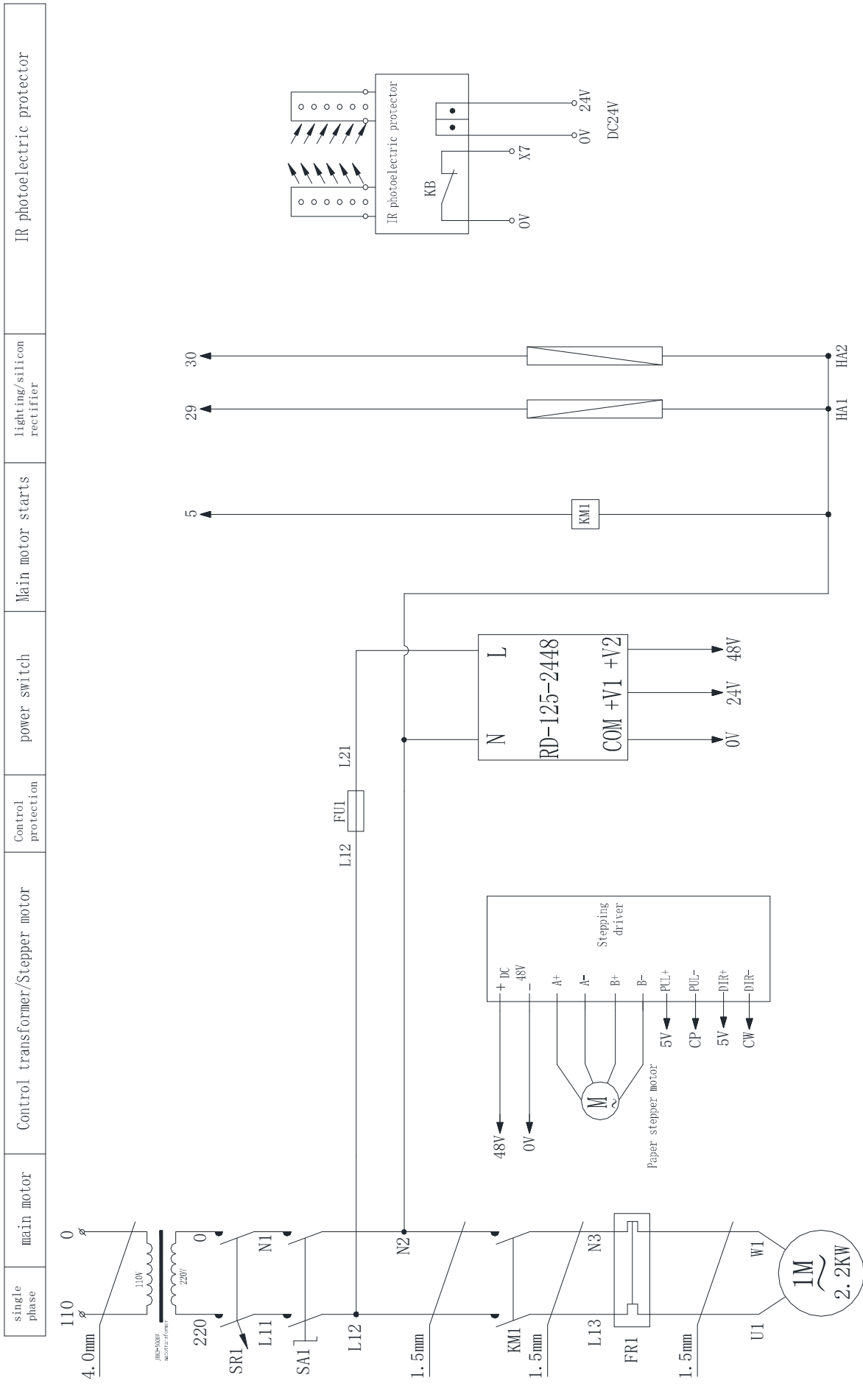
department:

Note: 1. The engineer for this paper cutter should be qualified, who play an vital important role in using the machine checked. So his check and test must be serious-minded and strict. He must prevent there is any defect causing danger.

2. After the engineer who is in charge of this machine check it in the round, except he fills in the record, and makes a detailed written report to all the possible defects. He should urge to settle the problem and draw a conclude and keep the safety record.

3. The recorder should be signed and confirmed by the person who is in charge for the machine.





single phase

main motor

Control transformer/Stepper motor

Control protection

power switch

Main motor starts

lighting/silicon rectifier

IR photoelectric protector

PLC

