

## 紫外线光固机操作手册

### Instruction Manual



**Warning**

**Please read this operation manual carefully before working**

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## **Safety Instruction**

### **1.1.1 Safety regulation**

### **1.1.2 General safety regulation**

Before you haven't complete read and understood this operation handbook, don't try to operate machine. If user doesn't operate machine as the handbook, it may cause fire, electricity-touch or more serious person injury accident. Operator should always read this handbook, so as to keep persistent safety operation.

#### **1. Know your machine**

For your personal safety, read this handbook carefully. User should be familiar with the machine application and limitation and the potential danger with the machine.

#### **2. Keep the working area clean**

Messy working area and messy worktable will cause accident.

#### **3. Don't use in machine in dangerous environment**

Don't use machine in wet or raining place, or expose it in rain. Keep the working area in good illumination.

#### **4. Non-professional keep away**

All visitors must keep distance with machine in working area.

#### **5. Don't forced operate machine**

Let machine work safe under the designed speed. Use the correct instrument, don't use the machine by force or add device to work.

#### **6. Wear suitable clothes.**

Forbid wear loose clothes, glove, necklace, bracelet or jewelry. Suggest wear slip-preventing shoes, or hat to wrap long hair.

#### **7. Don't maintain the machine when it is running**

The machine should be maintained properly, such as lubricating and adjustment, but cannot be maintained when it with electricity and running.

8. Before maintenance or changing spare parts or motor installation or reinstallation, the machine's electrical source must be cut off
9. If replace the spare parts , please keep the model same as the original one.
10. Running foster care  
Don't run the machine without foster care. When the operator leaves, machine should be turned off.

### **1.1.3 UV machine's additional safety regulation**

11. Machine' electrical wire should be ground correctly .
12. Before work, please make sure the follow things :Whether the power source is connected and whether the lamps' height is suitable. Check all parts whether the locking screws and handles are tightened. Check whether the electrical source' three phase wires are connected correct. The method is: open the electrical source, try to run the conveying roller and check whether the running direction of the conveying roller is correct.
13. Check whether the cooling fan work normally and shield board' working situation ,
14. Pay attention to adjust the feeding speed.
15. Choose the proper paint thickness .It is difficult to dry if the thickness is too thick.
16. The static created by machine' high pressure will attract lots of dust which should be cleaned before every operation.
17. There are high voltage in the machine, so user should often check the machine's insulation capability to avoid creep age accident. Before checking, user should discharge the capacitance.
18. UV radiation can cause a strong physical injury to human eyes. During work or maintenance, do not let the ultraviolet radiation irradiate on the human body, do not see it direct by eyes.

### **1.1.1 UV machine electronic control system safety rules**

19. Only staff through formal training and with expertise can carry out electrical maintenance and troubleshooting
21. Before start-up, read and pay attention to warning signs.
22. When troubleshooting confirmed, we must cut off the power supply.

23. Note humid areas, to prevent the occurrence of electric shock.
24. Before the electric power is sent to the any equipment, the people must left.
25. Do not open the electrical box, unless there is a need to check the electrical equipment.
26. Do not amend circuit, unless authorized by the manufacturers.
27. When replacement of electrical parts, should first ensure whether they meet the specifications, including the wires' color-coded.
28. Do not wear metallic glasses, necklaces, during the electrical equipment running; In addition, do not wear rings, watches, bracelets.

## 1.2 Warning signs (fig/photo)

- 1、 There are follow warning signs on the machine to ensure the correct and safety operation.
- 2、 These signs on machine will indicate the dangerous point which will cause danger to the operator .
- 3、 Ensure to remember these signs and arouse others attention when it is necessary .
- 4、 Don't remove any safety signs from the machine.
- 5、 Safety signs identification



1. No fire and smoke



2. Forbid touch



3. Caution electric shock



4. Emergency stop



5. Caution rollers



6. Caution ultraviolet radiation



7. Protective glasses



8,. Grounding protect







9. Rotation direction



10. Lubrication

### 1.3 The interpretation of signs

1. (No fire and smoke)——During the machine running, it is possible to create flammable and easy exploding gas, so forbid smoking in the machine' workshop . Otherwise it is easy to cause fire accident.
2. ((Prohibition touch)---Forbid touch any running parts by hand when machine is running
3. (Caution electric shock)——People cannot touch any electriferous part when the machine with electricity, or there is danger of electric shock.
4. (Emergency stop)——If there are emergency occur, press this button immediately, then whole machine will stop to prevent the state of affairs more serious .
5. (Caution rollers)——Hands may be wrapped in the place where rollers and gears running ,
6. (Caution ultraviolet radiation)——UV lamps give off the ultraviolet radiation which will hurt the human body and eyes serious.
7. (Guard glass)——Protect the eyes from the ultraviolet radiation.
8. (Grounding protect)——Should check the grounding protect's continuity and effect.
9. (Rotation direction )——Point out correct rotation direction of motor.
10. (Lubricating) ——Add lubrication to the gear reduction term.

## 2 Specification

### 2.1 UV machine's working principle & function and feature

Working principle:

UV (Ultraviolet) is an ultraviolet light. In the application of curing, mainly through the irradiation of the ultraviolet, making the sensitive material generates polymeric cross-linking reaction, so that the ink achieves the purpose of drying and curing in a short time.

Comparison with the traditional self-drying and infrared drying, UV (Ultraviolet) has the quality of high gloss, high hardness, high wear resistance and solvent resistance, etc. on its cured products. It is very adapt to high-end packaging products, such as frosted, wrinkles, refraction, ice flowers, foam, polishing and so on.

Function and feature:

1. Well-designed cooling system reduces the heat generated by the light source, so as to avoid high temperature leaving some products (such as paper, PVC film) affected and deformed.
2. Electronic variable speed, speed is stable, sensitivity is adjustable.
3. High quality light source, long operating life, it can start instantly and access to normal brightness quickly.
4. Good stability and good environmental adaptability. During the use, energy output evenly, and after the prolonged uses, there is no significant change in the spectral distribution.
5. Strong exhaust pump makes the article adsorbed on the conveyor belt, and difficult to drift and fall.

## 2.2 Model and machine nameplate

Model compilation method in accordance with the People's Republic of China National Standard GB 12448-90 《compilation method of printing machinery model》as YF6113 for example, the meaning is as follows:

YF6113 ---- YF means this equipment belonging to printing auxiliary class, F represents the dryer, 13 represents its largest processing width.

Product nameplate shows as below:





TAMPRINTER PRINTING MACHINERY GROUP LIMITED  
SHENZHEN TAMPRINTER PRINTING MACHINERY LIMITED



## UV CURING MACHINE



MODEL:  NO:   
POWER:  Kw VOLTAGE:  v  
EXIT:  mm WEIGHT:  Kg  
SIZE:  mm DATE:

SHENZHEN TAMPRINTER PRINTING MAXHINERY LIMITED

ADD:111 Fourth Industrial Zone Guanlan Shenzhen City Guangdong China

Tel: 0086-159-94744161

Fax: 0086-755-23148182

Email: Tam@tamprinter.com

Web: www.tamprinter.com



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## 2.3 Specification table

Mode Parameter	TM-UV400	TM-UV750	TM-UV900	TM-UV1000	TM-UV1200
Conveyorbelt width(mm)	380	730	880	980	1180
Effective range (mm)	400	750	900	1000	1200
Product max height (mm)	40	40	40	40	40
Conveyor speed (m)	2~20	2~20	2~20	2~20	2~20
Power(P/V/Hz)	3/380/50	3/380/50	3/380/50	3/380/50	3/380/50
UV lamp (KW/1pcs/2pcs)	3	5.6	5.6	8	5.6
Conveyor power (W)	60	90	90	120	120
Total power (KW)	3.4	12.1	12	16.5	17
Dimension (L*W*H)	1700*700*1200	2500*1130*1100	2550*1200*1600	2550*1200*1600	4050*1460*1600
Weight(kg)	280	300	350	380	400

Note: All specification, dimension and design will not change if there is not any notice.

## 2.4 Machine noise value

The machine noise measured value determined by the standard EN ISO 3746.

	Idle	Normal load operation	Full load operation
A-weighted sound pressure level of claiming value (dB)			

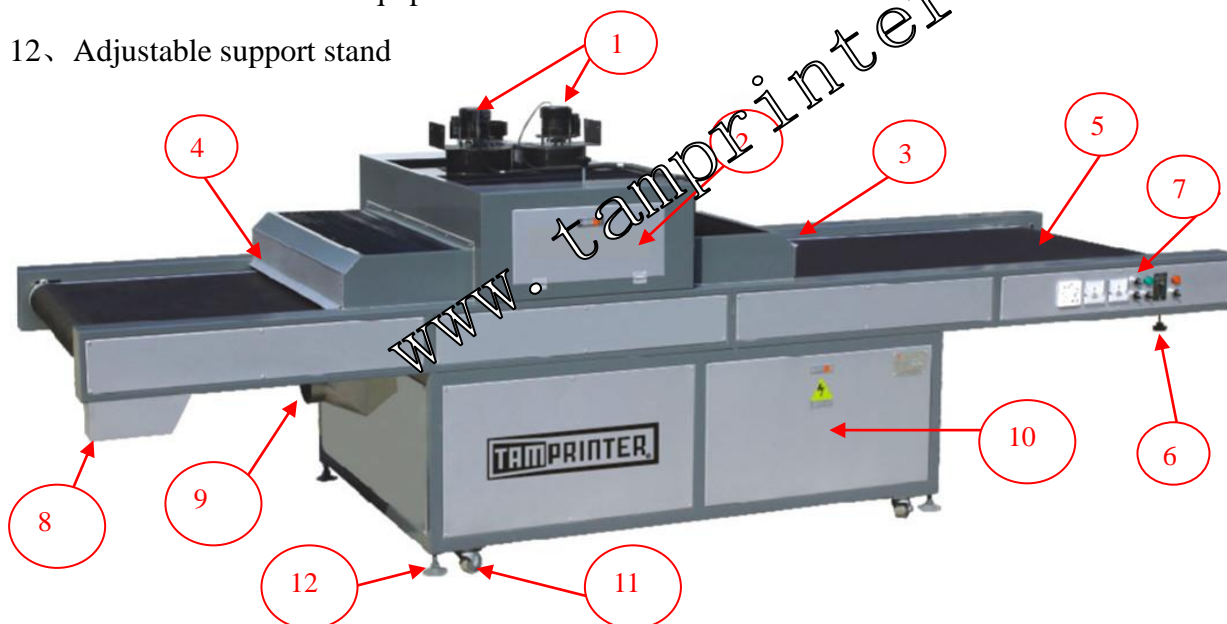
For the operator's position during the measurement, the measurement instrument is placed 1 meter distance from the machine and 1.5 m distance from the ground.

The figures quoted are emission levels and are not necessarily safe work levels. Whilst there a correlation between emission levels and exposure levels. This cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of work piece include the duration of noise (i.e. The number of other adjacent machines).

Also, the permissible exposure levels can vary from country to country. The information, however, will enable the machine user to make a better evaluation of hazard and the risk.

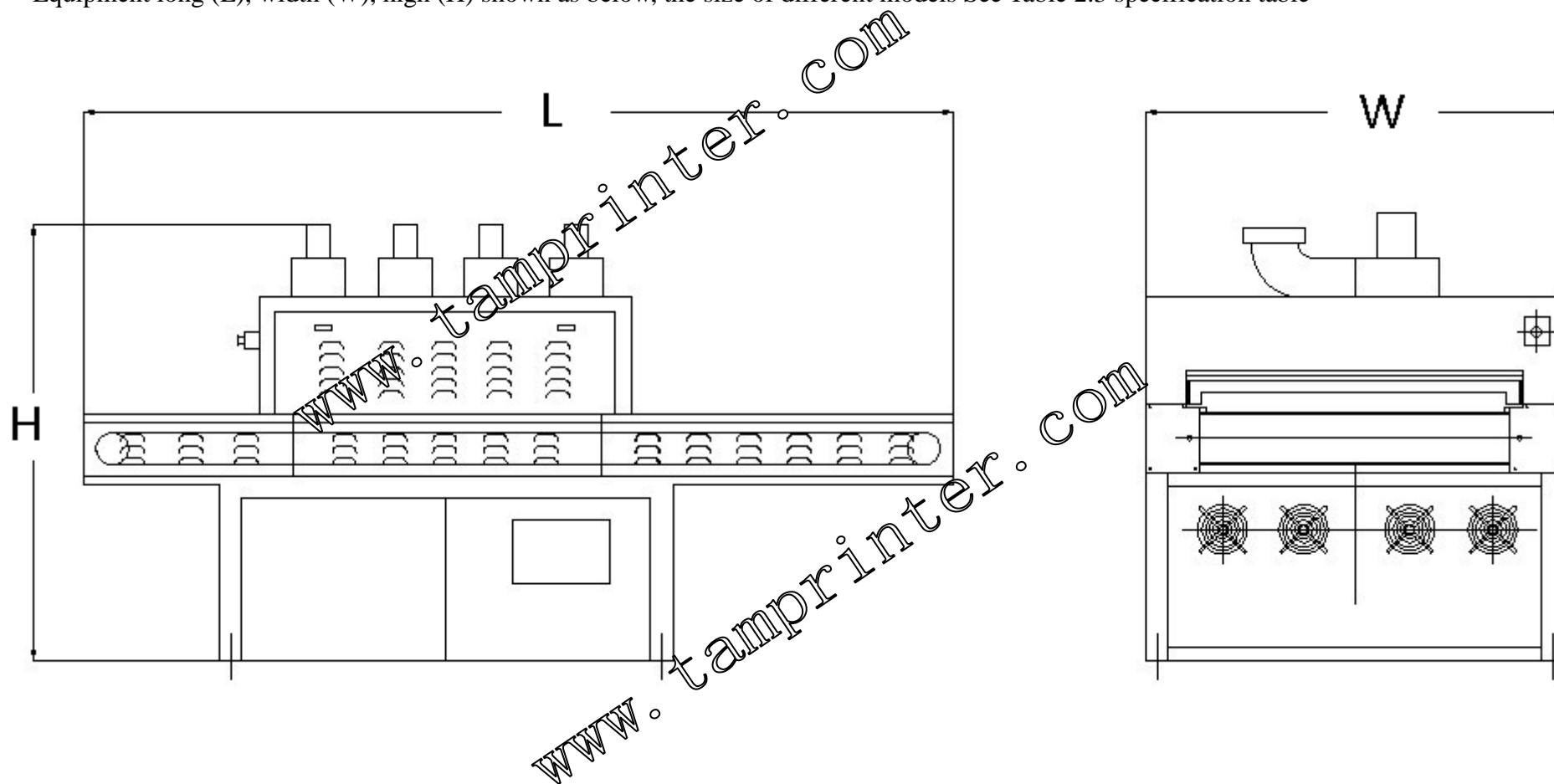
## 2.5 Main parts (figure)

- 1、Light source Heat Elimination Fan
- 2、Light source detection gates
- 3、Front shading plate
- 4、back shading plate
- 5、Conveyor
- 6、Belt adjustment handle
- 7、Electrical control panel
- 8、Send motor cover
- 9、Vents
- 10、Electrical equipment access doors
- 11、Casters
- 12、Adjustable support stand



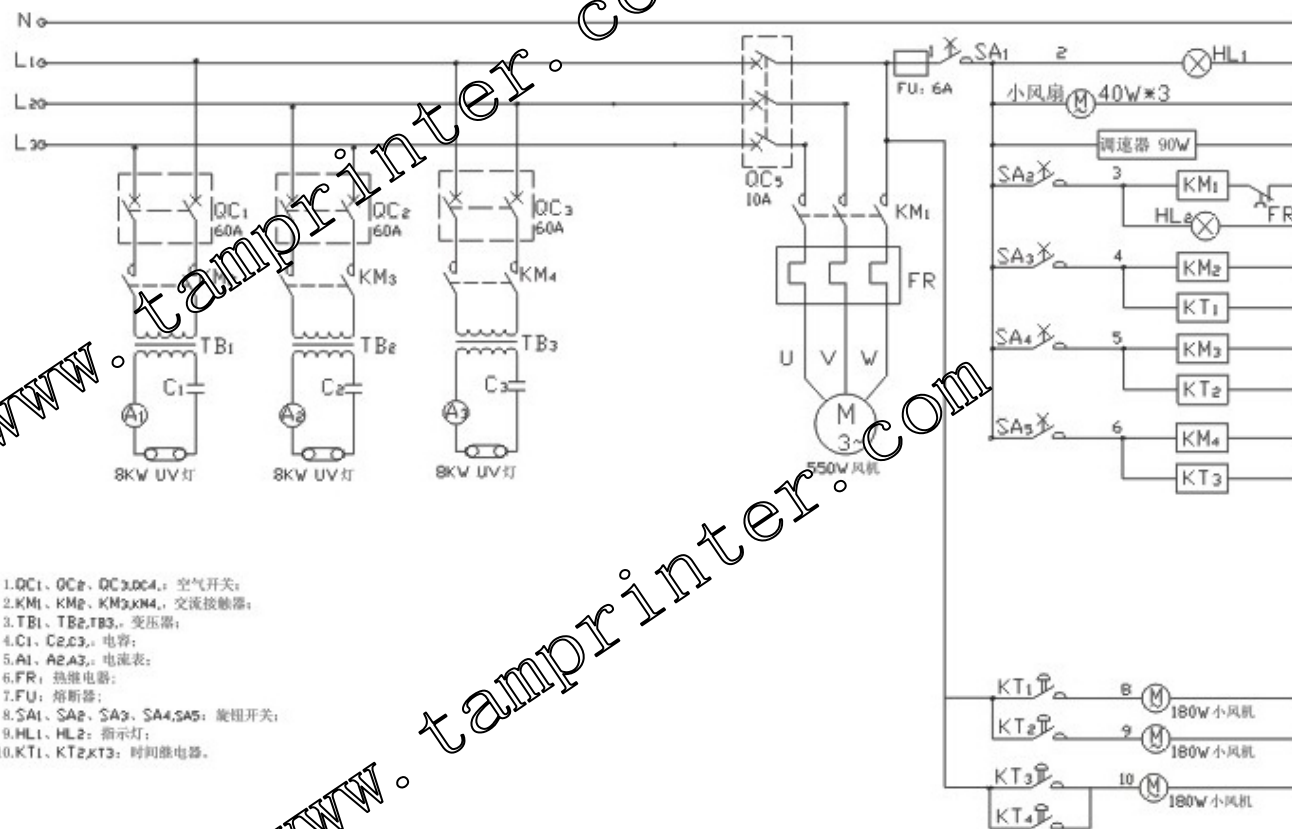
## 1.2 Machine dimension (figure)

Equipment long (L), width (W), high (H) shown as below, the size of different models See Table 2.3 specification table



## 1.3 Circuit diagram and electrical components list (the same: UV750、UV1000、UV1200)

# TM-UV 光固机电路原理图 Electrical circuit diagram





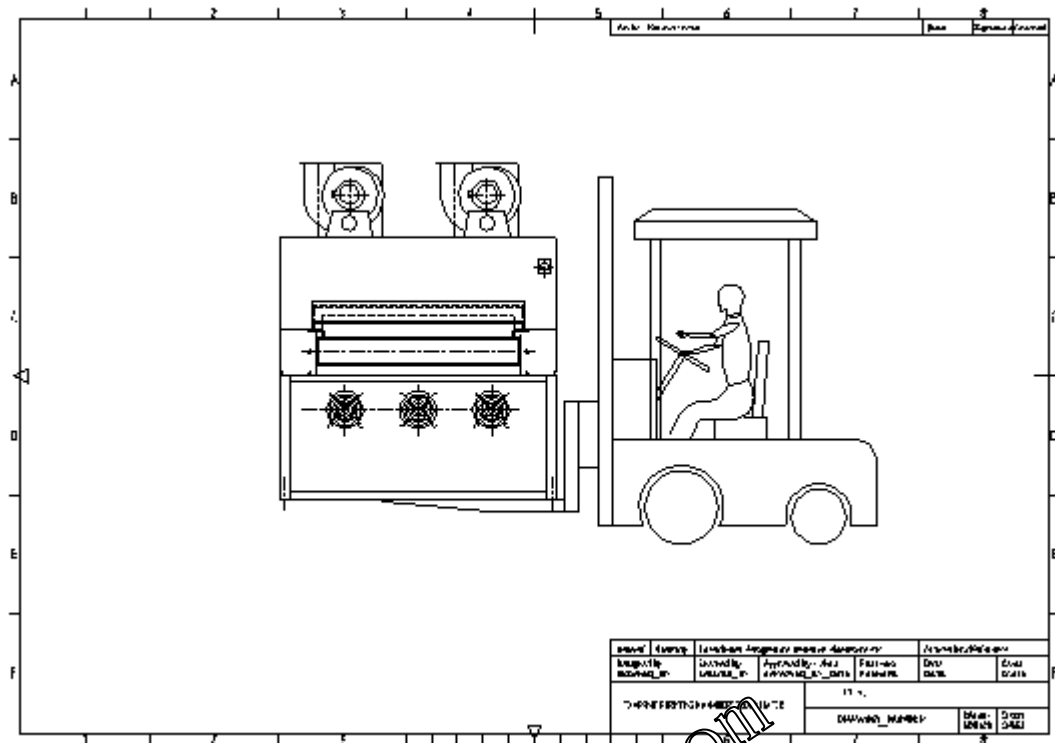
### **3 Installation**

#### **3.1 Transit safety item**

1. During transiting (moving or loading and unloading vehicles), machine should be moved by fork-lift and kept the balance. Carry it by carriage or container.
2. Use the enough load capability fork-lift to transit machine.
3. When move the machine, you can ask others to lead the ways and watch the safety.
4. During transiting, it should avoid collision and bad weather. And pay attention to protect the machine' surface painting from damaging. When need to save the machine temporarily, please place it in a dry and room temperature environment.
5. The fork lift must be driven by the experienced driver.
6. The equipment can be moved by push. But be caution the speed.
7. As the installation position plan, choose the proper installation position, and notice to keep enough distance with the surrounding barrier.
8. When install the machine, the machine's longitudinal and transverse level can be adjusted by the adjusting screw at four corners.
9. If the equipment is damaged or short of parts, please don't run it.

#### **3.2 Transit method**

1. Machine can be moved by fork lift.
2. Fork lift should insert the bottom of the machine.
3. Keep the balance of machine when moving it.



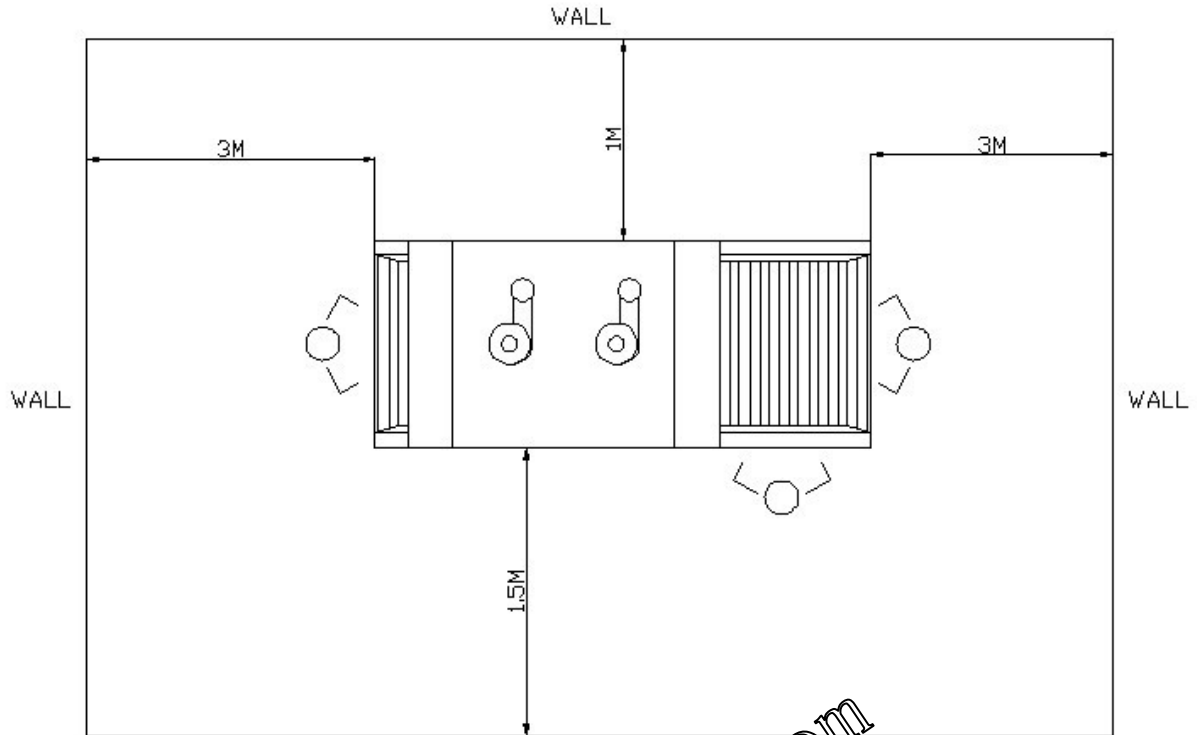
### 3.3 Installing place selection

Please run the machine in follow situation

Environment	Environment temperature	-10℃~45℃ (no ice cover)
	Environment humidity	Bellow 90%RH (no dew)
	Save temperature	-20℃~+65℃
	Environment	In room (No causticity, flammable gas、 paint dust)
	Altitude height	Below 1000m

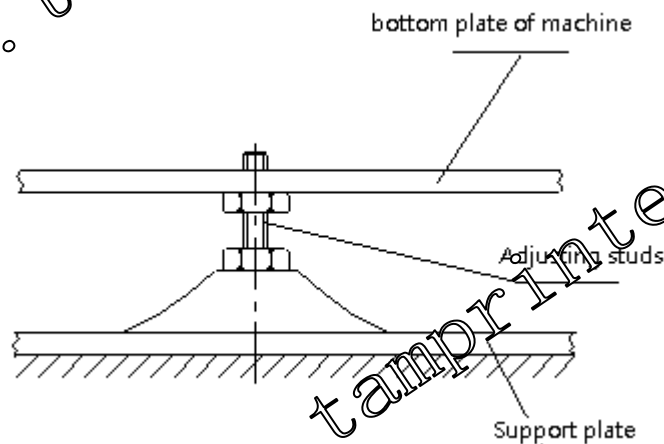
### 3.4 Installation method/figure

When installing the machine, there must be more than 1.5 m distance between the wall and machine. 3m spaces also have to be left for equipment operation.



### 3.5 Installation and level adjustment

Install this machine in the solid state reinforced concrete, and excess space can be used to place the work piece. When machine installed in the correct place, you can adjust machine longitudinal and transverse level by the adjusting screw at four corners.



### 3.6 Power source requirement

If the power source' voltage is not enough, it will affect the motor's output and the controller's function.

It is very important to use the correct voltage to connect the machine and the power

source. And only use the independent power source.

### 3.7 Exterior power source connection

Before connect the power source wire, you must make sure whether the machine voltage is the same as factory' power source voltage.

Connect the wire to L1、 L2、 L3 、N、 PE.

After connected the wire, make sure it is connected on the right Joints (figure)



Machine must be correct grounding so as to prevent from electric shock. Machine should be operated by the qualified electrician.

### 3.8 Power source inspection



Power Switch



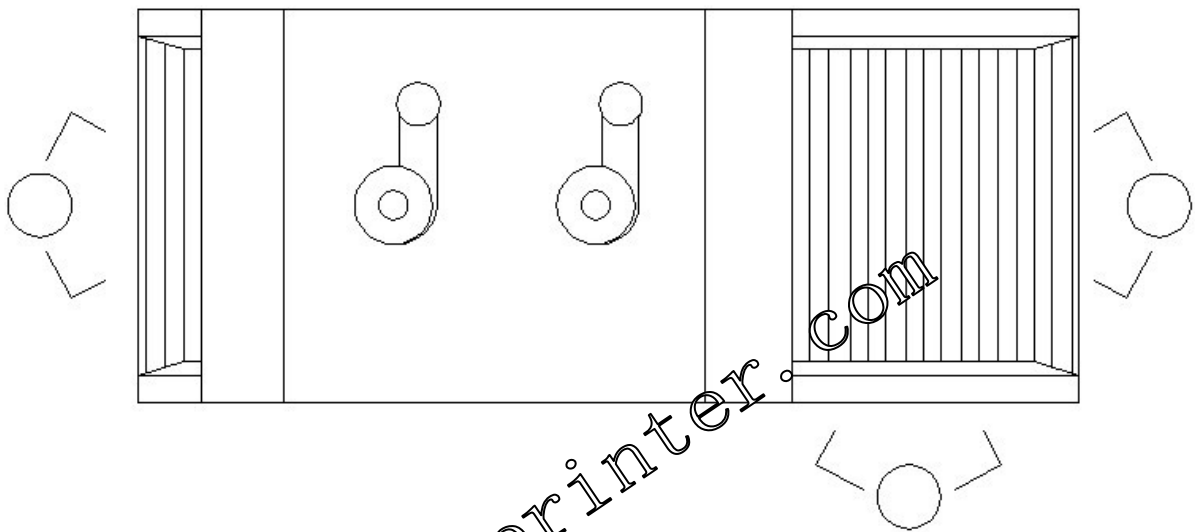
power source switch

1. After connect the power source, it is very necessary to check whether the wire are connect to the joints correct.

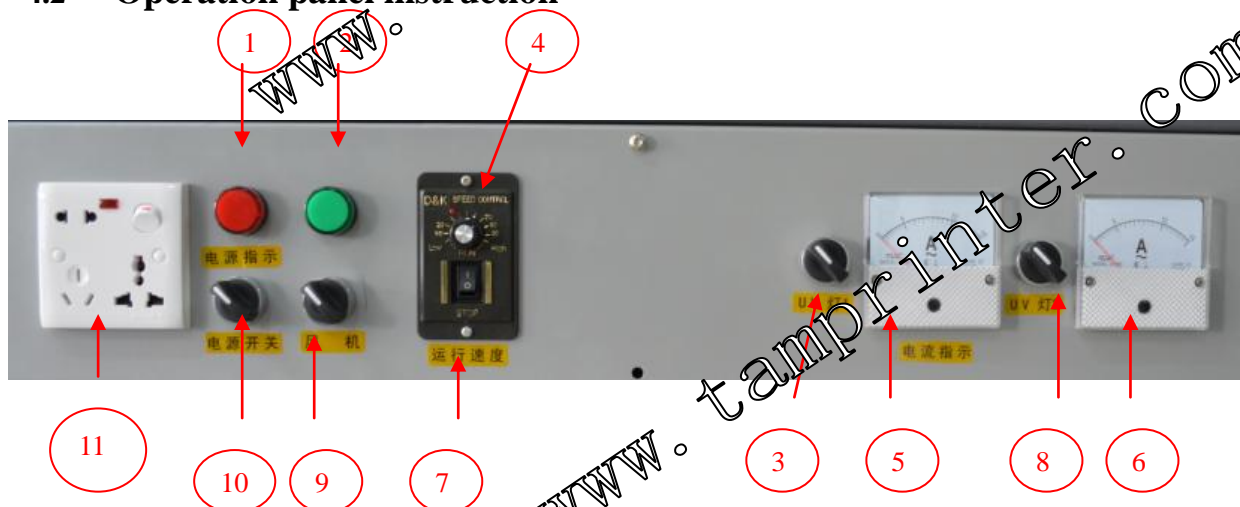
2. Rotate main switch on electric controller.
3. As press the start button of the conveying motor, then the conveying motor should rotate as appointed direction. If not, exchange any two wires connection of three phase line L1, L2, L3.
4. Above operation should be operated by the qualified electrician.

## 4. Operation

### 4.1 Operation position (figure)



### 4.2 Operation panel instruction



1. The total power indicator: Indicator lights, showing the machine has been powered up.
2. Fan power indicator: Indicator lights, showing cooling fan has been energized to start.
3. UV light 1 switch: the right panel, open the first UV lamp.

4. Speed control knob: Controls the conveyor speed, clockwise rotation, conveyor speed up; counterclockwise rotation, conveyor speed slows down.
5. UV lamp 1 ampere meter: Indicates the first UV lamp's current size.
6. UV lamp 1 ampere meter: Indicates the second UV lamp's current size.
7. Governor Power Switch: Press this switch at one end, the conveyor belt starts running; press the switch the other end, the conveyor belt stops.
8. UV light 2 switch: the right panel, open the second UV lamp.
9. Fan Switch: pull to the right, open source cooling fan.
10. Main Power Switch: pull to the right, the machine is powered on.
11. Other equipment power socket: when inserting, selection of a suitable jack.

### 4.3 Emergency stop



During the machine running, if there are any abnormal function occurred; press this button to stop all movement. When resume of the button, first switches all UV light at the off position.

### 4.4 Operational procedures



Figure 1



- 1、 Before the first start-up, machinery should be checked whether grounding, then user should pay attention to check whether the grounding line remains firmly grounded everyday.
- 2、 Before start-up , the UV lamp' protective covers and protective doors should be closed, or choose to use tape to seal the leaky mouth UV machine to avoiding strong ultraviolet to hurt eye.
- 3、 First turn power switch to the right (Figure 1), the main power lines in electronic control box are connected, and conveyor belt starts to work.
- 4、 Before opening the UV lamp is best to start conveyor belt, and let it run, in order to avoid the adhesion of debris on the conveyor belt. It will cause belt damage after sustained by the light in.
- 5、 Do not turn on all the light sources simultaneously. Open the first lamp, make sure the lamp's current stabilized at about 5-6A, and then open a second branch light, so as to avoid excessive current, causing light failed to light up, or even electrical fault.
- 6、 Paying attention to turn on cooling fan, to prevent high temperature from light irradiation, resulting in damage to the printed thing.
- 7、 Adding lubrication to the friction device at regular, locking screws, etc.
- 8、 Periodically check the electrical wiring for circuit phenomenon.
- 9、 Prepare a certain number of suitable consumable parts, such as UV lamp. You can immediately replace the aging damaged lamp, to avoid delays in production. Generally, UV light meter can measure the light intensity of the lamp. According to the light intensity's lowest allowable value, determine when to replace the lamp.
- 10、 Adjust the belt tension on both sides to prevent the belt running to the false way.
- 11、 Having good hygiene, to prevent dust.
- 12、 When turning on the UV light, do not look directly at the UV light source; staff should wear sunglasses to prevent ultraviolet light damage to the eye.
- 13、 If there is an imminently hazardous situation, immediately turn off the main power switch, to avoid further accidents.

## 4.5 Machine adjustment



### 4.5.1 The adjustment of conveyor belt

Conveyor belt's elasticity and moving track should be proper. When adjust the conveyor system, user should regulate the belt's tightness then regulate conveyor belt's track. Such as figure, adjusting the two adjusting bolt at the end of the table's guide ways can tighten or loose the conveying belt and regulate the landscape orientation movement:

As follows::

- ① If in the course of the conveyor system in operation, running the right side, tightening the right regulation bolt or loose the left regulation bolt until the conveyor belt in normal operation.
- ② As above methods, the user can adjust when conveyor belt deviation to the left.
- ③ If the conveyor belt is too loose or too tight, then at the same time tighten or loose the adjusting bolts on both sides.

### 4.5.2 The adjustment of inlet and outlet baffle (see figure below)

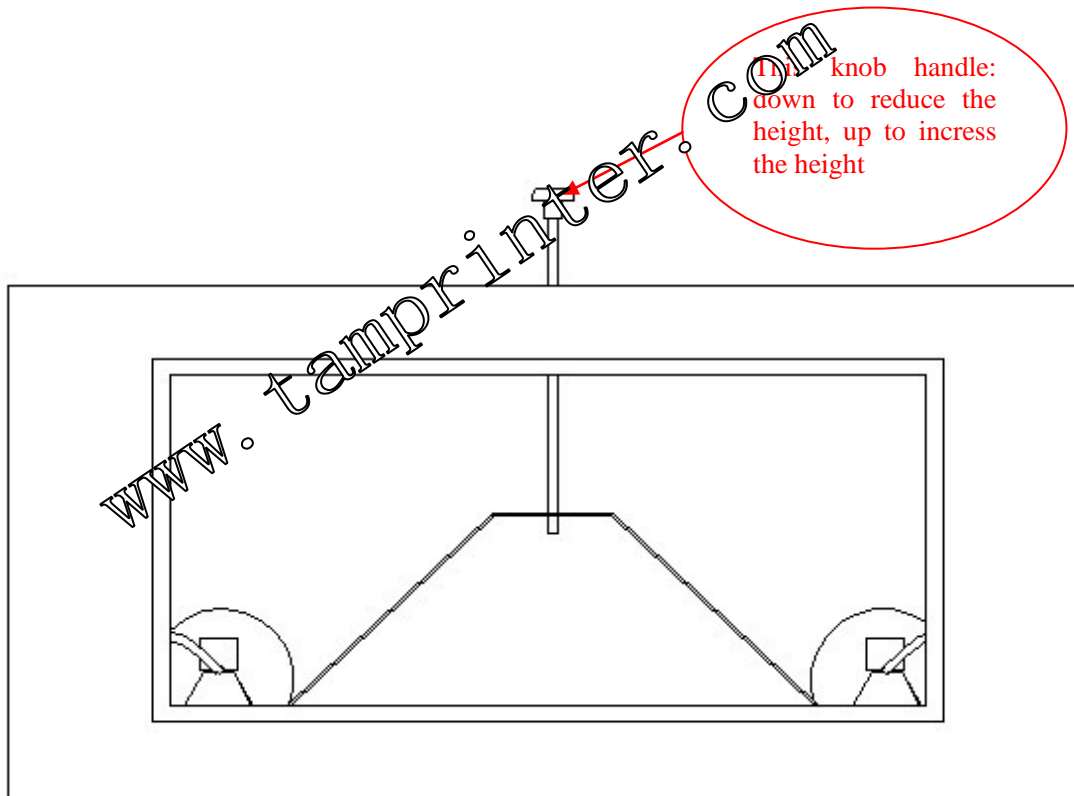
The height of the inlet and outlet baffle should be adjusted accord to the workpieces thickness, the adjustment standard is the baffle's bottom should be higher than the workpieces thickness 3-5 mm. When the thickness of the workpiece is changed, baffle height should be re-adjusted.



Inlet and outlet baffles

#### 4.5.3 The adjustment of UV lamp

According to different situation, the angle and height of lampshade can be adjusted. The adjustment methods are as follows



## 5 Maintenance

### 5.1 Machinery day、week、month 、 year maintenance

The normal inspection and maintenance is the precondition to ensure machines running efficient, long-term, safety, trouble-free. Except for proper operation, the user also needs to

attach importance to regular inspection and maintenance.

#### 5.1.1 Maintenance and safety regulations

First of all emphasize that the relevant professional technician or staff with qualification can take part in machine operation, maintenance work, please observe the following safety regulations.

5.1.1.1 Before maintenance, please cut off the external power supply.

5.1.1.2 Waiting three minutes after cutting off the power, then use multimeter to make sure the capacitor has been discharged. Then does the repair work.

5.1.1.3 Machines will produce a strong ultraviolet light during working which will damage person's body when direct irradiate body .It is necessary to guard against UV radiation during the running observation.

5.1.1.4 Forbid fire and no smoking during maintenance

#### 5.1.2 Repair and maintenance

5.1.2.1 At the beginning of each working day, staff must carry out regular checks of the following sites:

Whether the ground guard is well or not; whether the cable is damage or not; whether conveyer belt is deviation or not ;The sound of transformer is normal or not; whether there are abnormal sound in the machine; whether the lamp can normal illumine; The temperature of components in electric box and all wires cannot higher than 50 Celsius degree; if there are abnormal situation ,please stop machine to check .when malfunction removed ,the machine can be used again.

5.1.2.2 Please monitor UV lamp current, temperature control table detection temperature, electrical boxes components and wiring fever situation. If the UV lamp started but the corresponding Ammeter no current show, then show UV lamp is not lit; machines if the temperature exceeds the set temperature around 10 Celsius degree, then this machine can not disperse heat timely; if the electrical boxes components or wires temperature over 50 Celsius degree, it indicates related components or wires aging or connection terminals loose. If the above phenomenon occur, it must be resolved before continue production.

5.1.2.3 Each machine stop, the UV lamp can not be open again until lamp temperature drop to near room temperature.

5.1.2.4 Everyday before start machine, please use alcohol to wipe UV lamp and reflective panels to keeps the lamp' transparency and the reflection of the reflective panel.

5.1.2.5 At least once a week to check whether the executive function and protection

functions of all electrical components is normal or not , such as whether contactor has unusual noise or not, whether connection thermal is a loose or not , whether thermal relay' overload protective function and circuit breaker's creepage protective function are still valid. If there are abnormality, please remove the malfunction, then use machine.

5.1.2.6 At least once a month to check all the worm reducer, to see whether there is oil leak phenomenon, if this phenomenon occurs, staff should hasten to add oil.

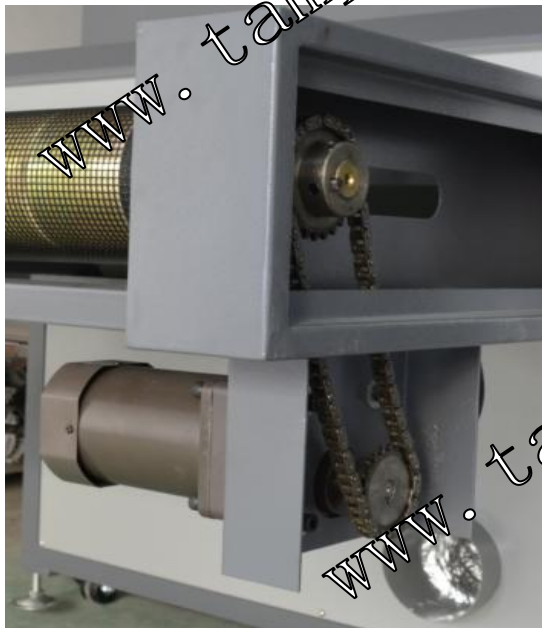
5.1.2.7 Check the motor's fixed situation monthly to see whether there is a loose on motor's fixed seat

5.1.2.8 Once a week to check all the wiring and insulation aging (including me, both inside and outside), if unusual, the replacement of cables and cable.

5.1.2.9 Please cleaning UV light once a week. Or it will lower the drying efficient.

## 5.2 Machinery lubrication

Lubricate to gear wheel and bearing seat, as follows show



Chain lubrication



Oil-mouth lubrication

All bearings need to add lubrication otherwise, once a high temperature may cause a danger of fire.

## 5.3 Machine malfunction and treatment

### 5.3.1 General malfunction and treatment

Trouble phenomenon	Trouble reason	Treatment
No work on Start-up status	Line fault	Check circuit
	Motor fault	Replace motor
	Transducer fault	Replace transducer
	Over loading	Check whether there are abnormal Resistances.
UV lamp can not work	Line fault	Check circuit
	Capacitance fault	Replace Capacitance
	UV lamp transformer fault	Replace transformer
	warm boot	Restart after cool down
Detection of high temperature	Indoor temperature is too high	Reduce the indoor temperature
	Exhaust fan is faulty	Replacing exhaust fan

### 5.3.2 Special malfunction phenomenon and treatment

#### 5.3.2.1 Emergency stop dispose

When found abnormal running situation or endanger the safety of staff, please press the emergency stop. Until the abnormal situation is removed, the machine can run again.

#### 5.3.2.2 Fire disposal

At least two fire extinguishers (carbon dioxide fire extinguisher or dry powder fire extinguishers).must be placed around the machine.

Fire extinguishers should be placed in the safe place where staff can quickly reach.

Operators should master the way of using fire extinguishers

When electrical fire occurs, first cut off the power (exclude lighting power). When using fire extinguishers, user should stand on fire's uptake, the nozzle (the mouth) aims at ignition point, and maintains a safe distance from the fire; the specific methods please refer to the use of fire extinguishers statement.

## 6. Machine waste disposal

When disassemble machines, first cooling machine, cut off the main power and stop the



supply of maintenance products, emptying medium, unloaded the maintenance of product pipeline joints and taking out of it. The basic unit during disassembling machine is divided into the following groups: plastics, non-ferrous metals, including chemical components, motors, and control components, such as steel. Please handle it as your company's needs and your country's environmental protection requirements.

After every day work, staffs have to clean up the scene, and put trash in the waste. The waste can be disposed according to local government environmental protection requirements.

For plastic package, please comply with your country's provisions dealing with waste. When the frequency converter and electric components reach end of life, as the industrial waste treatment, attention should be paid to the capacitance components which may explode during burning. Please do an environmental treatment in accordance with its domestic law.

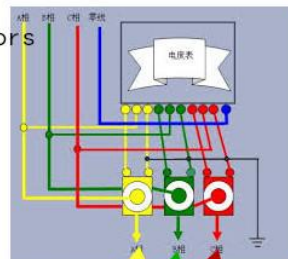
## 7. Safety and protection

When design the equipment, giving full consideration to the operator's safety and protection, posted the corresponding level of safety warning signs in the potentially dangerous region. When operators operate the equipment, please full compliance with safety rules and the manual.

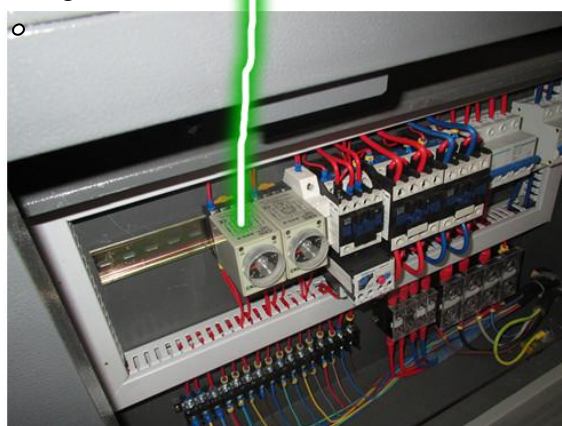


Boot order  
1: open UV light 2-3 mins;  
2: set 3  
3, open top 2 small Exhaust fan  
3, open bottom big Exhaust fan

Whether the three-phase electrical wiring errors  
 Detection methods:  
 To see whether the normal exhaust vents



Fan start delay  
 factory default  
 2 minutes





Exhaust separate



Boot order

- 1: open UV light 2-3 mins:  
Timer set 3
- 2, open top 2 small Exhaust fan
- 3, open bottom big Exhaust fan